

libquentier

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# Chapter 1

## libquentier

Set of Qt/C++ APIs for feature rich desktop clients for Evernote service

### 1.1 What's this

This library presents a set of Qt/C++ APIs useful for applications working as feature rich desktop clients for Evernote service. The most important and useful components of the library are the following:

- Local storage - persistence of data downloaded from Evernote service in a local SQLite database
- Synchronization - the logics of exchanging new and/or modified data with Evernote service
- Note editor - the UI component capable for notes displaying and editing

The library is based on the lower level functionality provided by [QEverCloud](#) library. It also serves as the functional core of [Quentier](#) application.

**1.1.1 WARNING: libquentier is in alpha state right now, neither API nor ABI can be considered stable yet!**

### 1.2 How to build/install

Please see the building/installation guide.

### 1.3 How to contribute

Please see the contribution guide for detailed info.



## Chapter 2

# Hierarchical Index

### 2.1 Class Hierarchy

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## Chapter 3

# Class Index

### 3.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

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# Chapter 4

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## Chapter 5

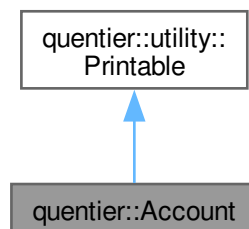
# Class Documentation

### 5.1 `quentier::Account` Class Reference

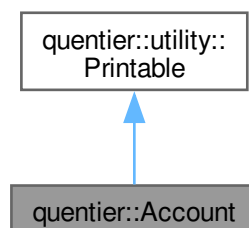
The `Account` class encapsulates some details about the account: its name, whether it is local or synchronized to Evernote and for the latter case - some additional details like upload limit etc.

```
#include <Account.h>
```

Inheritance diagram for `quentier::Account`:



Collaboration diagram for `quentier::Account`:



## Public Types

- enum class **Type** { **Local** , **Evernote** }
- enum class **EvernoteAccountType** { **Free** , **Plus** , **Premium** , **Business** }

## Public Member Functions

- **Account** (QString [name](#), Type [type](#), qevercloud::UserID [userId](#)=-1, EvernoteAccountType [evernoteAccountType](#)=EvernoteAccountType::Free, QString [evernoteHost](#)={}, QString [shardId](#)={})
- **Account** (const Account &other)
- **Account** (Account &&other) noexcept
- Account & **operator=** (const Account &other)
- Account & **operator=** (Account &&other) noexcept
- bool **operator==** (const Account &other) const noexcept
- bool **operator!=** (const Account &other) const noexcept
- bool **isEmpty** () const
- QString **name** () const
- void **setName** (QString [name](#))  
*setName sets the username to the account*
- QString **displayName** () const
- void **setDisplayName** (QString [displayName](#))
- Type **type** () const
- qevercloud::UserID **id** () const
- EvernoteAccountType **evernoteAccountType** () const
- QString **evernoteHost** () const
- QString **shardId** () const
- void **setEvernoteAccountType** (EvernoteAccountType [evernoteAccountType](#))
- void **setEvernoteHost** (QString [evernoteHost](#))
- void **setShardId** (QString [shardId](#))
- qint32 **mailLimitDaily** () const
- qint64 **noteSizeMax** () const
- qint64 **resourceSizeMax** () const
- qint32 **linkedNotebookMax** () const
- qint32 **noteCountMax** () const
- qint32 **notebookCountMax** () const
- qint32 **tagCountMax** () const
- qint32 **noteTagCountMax** () const
- qint32 **savedSearchCountMax** () const
- qint32 **noteResourceCountMax** () const
- void **setEvernoteAccountLimits** (const qevercloud::AccountLimits &limits)
- QTextStream & **print** (QTextStream &strm) const override

## Public Member Functions inherited from [quentier::utility::Printable](#)

- QString **toString** () const

## Friends

- QUENTIER\_EXPORT QTextStream & **operator**<< (QTextStream &strm, Type [type](#))
- QUENTIER\_EXPORT QDebug & **operator**<< (QDebug &dbg, Type [type](#))
- QUENTIER\_EXPORT QTextStream & **operator**<< (QTextStream &strm, EvernoteAccountType [type](#))
- QUENTIER\_EXPORT QDebug & **operator**<< (QDebug &dbg, EvernoteAccountType [type](#))



### 5.1.1 Detailed Description

The `Account` class encapsulates some details about the account: its name, whether it is local or synchronized to Evernote and for the latter case - some additional details like upload limit etc.

### 5.1.2 Member Function Documentation

#### 5.1.2.1 `displayName()`

```
QString quentier::Account::displayName () const [nodiscard]
```

##### Returns

Displayable user's name which is not used to uniquely identify the account, so this name may repeat across different local and Evernote accounts

#### 5.1.2.2 `evernoteAccountType()`

```
EvernoteAccountType quentier::Account::evernoteAccountType () const [nodiscard]
```

##### Returns

The type of the Evernote account; if applied to free account, returns "Free"

#### 5.1.2.3 `evernoteHost()`

```
QString quentier::Account::evernoteHost () const [nodiscard]
```

##### Returns

The Evernote server host with which the account is associated

#### 5.1.2.4 `id()`

```
qevercloud::UserID quentier::Account::id () const [nodiscard]
```

##### Returns

User id for Evernote accounts, -1 for local accounts (as the concept of user id is not defined for local accounts)

#### 5.1.2.5 `isEmpty()`

```
bool quentier::Account::isEmpty () const [nodiscard]
```

##### Returns

True if either the account is local but the name is empty or if the account is Evernote but user id is negative; in all other cases return false

#### 5.1.2.6 name()

```
QString quentier::Account::name () const [nodiscard]
```

##### Returns

Username for either local or Evernote account

#### 5.1.2.7 print()

```
QTextStream & quentier::Account::print (  
    QTextStream & strm) const [override], [virtual]
```

Implements [quentier::utility::Printable](#).

#### 5.1.2.8 setDisplayName()

```
void quentier::Account::setDisplayName (  
    QString displayName)
```

Set the printable name of the account

#### 5.1.2.9 shardId()

```
QString quentier::Account::shardId () const [nodiscard]
```

##### Returns

Shard id for Evernote accounts, empty string for local accounts (as the concept of shard id is not defined for local accounts)

#### 5.1.2.10 type()

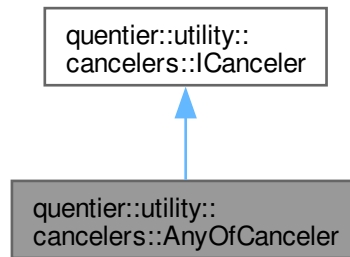
```
Type quentier::Account::type () const [nodiscard]
```

##### Returns

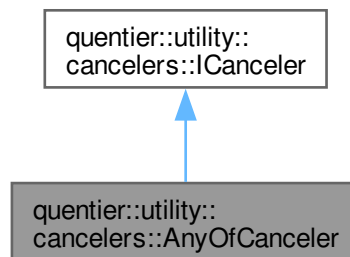
The type of the account: either local or Evernote

## 5.2 `quentier::utility::cancelers::AnyOfCanceler` Class Reference

Inheritance diagram for `quentier::utility::cancelers::AnyOfCanceler`:



Collaboration diagram for `quentier::utility::cancelers::AnyOfCanceler`:



### Public Member Functions

- **`AnyOfCanceler`** (`QList< ICancelerPtr > cancelers`)
- **`AnyOfCanceler`** (`AnyOfCanceler &&other`) `noexcept`
- `AnyOfCanceler & operator=` (`AnyOfCanceler &&other`) `noexcept`
- `bool isCanceled ()` `const` `noexcept` override

### 5.2.1 Member Function Documentation

#### 5.2.1.1 `isCanceled()`

```
bool quentier::utility::cancelers::AnyOfCanceler::isCanceled () const [nodiscard], [override], [virtual], [noexcept]
```

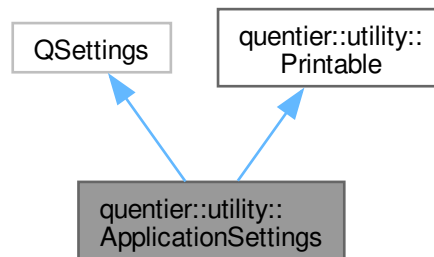
Implements [quentier::utility::cancelers::ICanceler](#).

## 5.3 quantier::utility::ApplicationSettings Class Reference

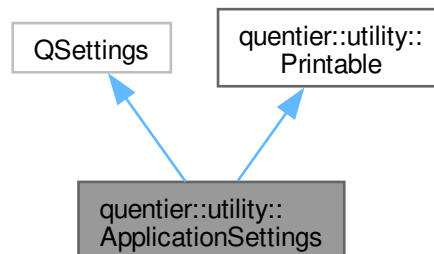
The [ApplicationSettings](#) class enhances the functionality of `QSettings`, in particular it simplifies the way of working with either application-wide or account-specific settings.

```
#include <ApplicationSettings.h>
```

Inheritance diagram for `quantier::utility::ApplicationSettings`:



Collaboration diagram for `quantier::utility::ApplicationSettings`:



### Classes

- struct [ArrayCloser](#)
- struct [GroupCloser](#)

## Public Member Functions

- [ApplicationSettings](#) (const QString &settingsName={})
- [ApplicationSettings](#) (const [Account](#) &account, const QString &settingsName={})
- [ApplicationSettings](#) (const [Account](#) &account, const char \*settingsName, int settingsNameSize=-1)
- [ApplicationSettings](#) (const [Account](#) &account, std::string\_view settingsName)
- [~ApplicationSettings](#) () override
- void [beginGroup](#) (const QString &prefix)
- void [beginGroup](#) (const char \*prefix, int size=-1)
- void [beginGroup](#) (std::string\_view prefix)
- int [beginReadArray](#) (const QString &prefix)
- int [beginReadArray](#) (const char \*prefix, int size=-1)
- int [beginReadArray](#) (std::string\_view prefix)
- void [beginWriteArray](#) (const QString &prefix, int arraySize=-1)
- void [beginWriteArray](#) (const char \*prefix, int arraySize=-1, int prefixSize=-1)
- void [beginWriteArray](#) (std::string\_view prefix, int arraySize=-1)
- bool [contains](#) (const QString &key) const
- bool [contains](#) (const char \*key, int size=-1) const
- bool [contains](#) (std::string\_view key) const
- void [remove](#) (const QString &key)
- void [remove](#) (const char \*key, int size=-1)
- void [remove](#) (std::string\_view key)
- void [setValue](#) (const QString &key, const QVariant &value)
- void [setValue](#) (const char \*key, const QVariant &value, int keySize=-1)
- void [setValue](#) (std::string\_view key, const QVariant &value)
- QVariant [value](#) (const QString &key, const QVariant &defaultValue={}) const
- QVariant [value](#) (const char \*key, const QVariant &defaultValue={}, int keySize=-1) const
- QVariant [value](#) (std::string\_view key, const QVariant &defaultValue={}) const
- QTextStream & [print](#) (QTextStream &strm) const override

## Public Member Functions inherited from [quantier::utility::Printable](#)

- QString [toString](#) () const

### 5.3.1 Detailed Description

The [ApplicationSettings](#) class enhances the functionality of QSettings, in particular it simplifies the way of working with either application-wide or account-specific settings.

### 5.3.2 Constructor & Destructor Documentation

#### 5.3.2.1 ApplicationSettings() [1/4]

```
quantier::utility::ApplicationSettings::ApplicationSettings (
    const QString & settingsName = {}) [explicit]
```

Constructor for application settings not being account-specific

**Parameters**

|                     |                                                                                                                                                                                                                                |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>settingsName</i> | If not empty, the created application settings would manage the settings stored in a file with a specific name within the common settings storage; otherwise they would be stored in the default settings file for the account |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**5.3.2.2 ApplicationSettings() [2/4]**

```
quentier::utility::ApplicationSettings::ApplicationSettings (
    const Account & account,
    const QString & settingsName = {}) [explicit]
```

Constructor for application settings specific to the account

**Parameters**

|                     |                                                                                                                                                                                                                                   |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>account</i>      | The account for which the settings are to be stored or read                                                                                                                                                                       |
| <i>settingsName</i> | If not empty, the created application settings would manage the settings stored in a file with a specific name within the account's settings storage; otherwise they would be stored in the default settings file for the account |

**5.3.2.3 ApplicationSettings() [3/4]**

```
quentier::utility::ApplicationSettings::ApplicationSettings (
    const Account & account,
    const char * settingsName,
    int settingsNameSize = -1)
```

Constructor for application settings specific to the account

**Parameters**

|                         |                                                                                                                                                                                                                                                                                                                           |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>account</i>          | The account for which the settings are to be stored or read                                                                                                                                                                                                                                                               |
| <i>settingsName</i>     | If not nullptr, the created application settings would manage the settings stored in a file with a specific name within the account's settings storage; otherwise they would be stored in the default settings file for the account. Must be UTF-8 encoded as internally it is converted to QString via QString::fromUtf8 |
| <i>settingsNameSize</i> | Size of the settingsName string. If negative (the default), the settingsName size is taken to be strlen(settingsName)                                                                                                                                                                                                     |

**5.3.2.4 ApplicationSettings() [4/4]**

```
quentier::utility::ApplicationSettings::ApplicationSettings (
    const Account & account,
    std::string_view settingsName)
```

Constructor for application settings specific to the account

**Parameters**

|                     |                                                                                                                                                                                                                                                                                                                         |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>account</i>      | The account for which the settings are to be stored or read                                                                                                                                                                                                                                                             |
| <i>settingsName</i> | If not empty, the created application settings would manage the settings stored in a file with a specific name within the account's settings storage; otherwise they would be stored in the default settings file for the account. Must be UTF-8 encoded as internally it is converted to QString via QString::fromUtf8 |

**5.3.2.5 ~ApplicationSettings()**

```
quentier::utility::ApplicationSettings::~~ApplicationSettings () [override]
```

Destructor

**5.3.3 Member Function Documentation****5.3.3.1 beginGroup() [1/3]**

```
void quentier::utility::ApplicationSettings::beginGroup (
    const char * prefix,
    int size = -1)
```

Appends prefix to the current group. Overload of beginGroup accepting const char \* and optionally the size of the string

**Parameters**

|               |                                                                                                                         |
|---------------|-------------------------------------------------------------------------------------------------------------------------|
| <i>prefix</i> | String containing the prefix name. Must be UTF-8 encoded as internally it is converted to QString via QString::fromUtf8 |
| <i>size</i>   | Size of the prefix string. If negative (the default), the prefix size is taken to be strlen(prefix).                    |

**5.3.3.2 beginGroup() [2/3]**

```
void quentier::utility::ApplicationSettings::beginGroup (
    const QString & prefix)
```

Appends prefix to the current group. The call is redirected to QSettings::beginGroup. It is required in this class only to workaround hiding QSettings method due to overloads

**Parameters**

|               |                                   |
|---------------|-----------------------------------|
| <i>prefix</i> | String containing the prefix name |
|---------------|-----------------------------------|

### 5.3.3.3 beginGroup() [3/3]

```
void quantier::utility::ApplicationSettings::beginGroup (
    std::string_view prefix)
```

Appends prefix to the current group. Overload of beginGroup accepting std::string\_view

#### Parameters

|               |                                                                                                                         |
|---------------|-------------------------------------------------------------------------------------------------------------------------|
| <i>prefix</i> | String containing the prefix name. Must be UTF-8 encoded as internally it is converted to QString via QString::fromUtf8 |
| <i>size</i>   | Size of the prefix string. If negative (the default), the prefix size is taken to be strlen(prefix).                    |

### 5.3.3.4 beginReadArray() [1/3]

```
int quantier::utility::ApplicationSettings::beginReadArray (
    const char * prefix,
    int size = -1) [nodiscard]
```

Adds prefix to the current group and starts reading from an array. Overload of beginReadArray accepting const char \* and optionally the size of the string

#### Parameters

|               |                                                                                                                         |
|---------------|-------------------------------------------------------------------------------------------------------------------------|
| <i>prefix</i> | String containing the prefix name. Must be UTF-8 encoded as internally it is converted to QString via QString::fromUtf8 |
| <i>size</i>   | Size of the prefix string. If negative (the default), the prefix size is taken to be strlen(prefix)                     |

### 5.3.3.5 beginReadArray() [2/3]

```
int quantier::utility::ApplicationSettings::beginReadArray (
    const QString & prefix) [nodiscard]
```

Adds prefix to the current group and starts reading from an array. The call is redirected to QSettings::beginReadArray. It is required in this class only to workaround hiding QSettings method due to overloads

#### Parameters

|               |                                   |
|---------------|-----------------------------------|
| <i>prefix</i> | String containing the prefix name |
|---------------|-----------------------------------|

#### Returns

The size of the array



**5.3.3.6 beginReadArray()** [3/3]

```
int quotientier::utility::ApplicationSettings::beginReadArray (
    std::string_view prefix) [nodiscard]
```

Adds prefix to the current group and starts reading from an array. Overload of beginReadArray accepting std::string\_view

**Parameters**

|               |                                                                                                                         |
|---------------|-------------------------------------------------------------------------------------------------------------------------|
| <i>prefix</i> | String containing the prefix name. Must be UTF-8 encoded as internally it is converted to QString via QString::fromUtf8 |
|---------------|-------------------------------------------------------------------------------------------------------------------------|

**5.3.3.7 beginWriteArray()** [1/3]

```
void quotientier::utility::ApplicationSettings::beginWriteArray (
    const char * prefix,
    int arraySize = -1,
    int prefixSize = -1)
```

Adds prefix to the current group and starts writing an array of size arraySize. Overload of beginWriteArray accepting const char \* and optionally the size of the string

**Parameters**

|                   |                                                                                                                                         |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| <i>prefix</i>     | String containing the prefix name. Must be UTF-8 encoded as internally it is converted to QString via QString::fromUtf8                 |
| <i>arraySize</i>  | Size of the array to be written. If negative (the default), it is automatically determined based on the indexes of the entries written. |
| <i>prefixSize</i> | Size of the prefix string. If negative (the default), the prefix size is taken to be strlen(prefix)                                     |

**5.3.3.8 beginWriteArray()** [2/3]

```
void quotientier::utility::ApplicationSettings::beginWriteArray (
    const QString & prefix,
    int arraySize = -1)
```

Adds prefix to the current group and starts writing an array of size arraySize. The call is redirected to QSettings::beginWriteArray. It is required in this class only to workaround hiding QSettings method due to overloads

**Parameters**

|                  |                                                                                                                                         |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| <i>prefix</i>    | String containing the prefix name                                                                                                       |
| <i>arraySize</i> | Size of the array to be written. If negative (the default), it is automatically determined based on the indexes of the entries written. |

**5.3.3.9 beginWriteArray() [3/3]**

```
void quantier::utility::ApplicationSettings::beginWriteArray (
    std::string_view prefix,
    int arraySize = -1)
```

Adds prefix to the current group and starts writing an array of size arraySize. Overload of beginWriteArray accepting std::string\_view

**Parameters**

|                  |                                                                                                                                         |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| <i>prefix</i>    | String containing the prefix name. Must be UTF-8 encoded as internally it is converted to QString via QString::fromUtf8                 |
| <i>arraySize</i> | Size of the array to be written. If negative (the default), it is automatically determined based on the indexes of the entries written. |

**5.3.3.10 contains() [1/3]**

```
bool quantier::utility::ApplicationSettings::contains (
    const char * key,
    int size = -1) const [nodiscard]
```

Overload of contains accepting const char \* and optionally the size of the string

**Parameters**

|             |                                                                                                                          |
|-------------|--------------------------------------------------------------------------------------------------------------------------|
| <i>key</i>  | String containing the setting name. Must be UTF-8 encoded as internally it is converted to QString via QString::fromUtf8 |
| <i>size</i> | Size of the key string. If negative (the default), the key size is taken to be strlen(key)                               |

**Returns**

True if there exists a setting called key; false otherwise

**5.3.3.11 contains() [2/3]**

```
bool quantier::utility::ApplicationSettings::contains (
    const QString & key) const [nodiscard]
```

The call is redirected to QSettings::contains. It is required in this class only to workaround hiding QSettings method due to overloads

**Parameters**

|            |                                    |
|------------|------------------------------------|
| <i>key</i> | The key being checked for presence |
|------------|------------------------------------|

**Returns**

True if there exists a setting called key; false otherwise

### 5.3.3.12 contains() [3/3]

```
bool quentier::utility::ApplicationSettings::contains (
    std::string_view key) const [nodiscard]
```

Overload of contains accepting std::string\_view

#### Parameters

|            |                                                                                                                          |
|------------|--------------------------------------------------------------------------------------------------------------------------|
| <i>key</i> | String containing the setting name. Must be UTF-8 encoded as internally it is converted to QString via QString::fromUtf8 |
|------------|--------------------------------------------------------------------------------------------------------------------------|

#### Returns

True if there exists a setting called key; false otherwise

### 5.3.3.13 print()

```
QTextStream & quentier::utility::ApplicationSettings::print (
    QTextStream & strm) const [override], [virtual]
```

Implements [quentier::utility::Printable](#).

### 5.3.3.14 remove() [1/3]

```
void quentier::utility::ApplicationSettings::remove (
    const char * key,
    int size = -1)
```

Removes the setting key and any sub-settings of key. Overload of remove accepting const char \* and optionally the size of the string

#### Parameters

|             |                                                                                                                          |
|-------------|--------------------------------------------------------------------------------------------------------------------------|
| <i>key</i>  | String containing the setting name. Must be UTF-8 encoded as internally it is converted to QString via QString::fromUtf8 |
| <i>size</i> | Size of the key string. If negative (the default), the key size is taken to be strlen(key).                              |

**5.3.3.15 remove()** [2/3]

```
void quentier::utility::ApplicationSettings::remove (
    const QString & key)
```

Removes the setting key and any sub-settings of key. The call is redirected to QSettings::remove. It is required in this class only to workaround hiding QSettings method due to overloads

**Parameters**

|            |                                    |
|------------|------------------------------------|
| <i>key</i> | String containing the setting name |
|------------|------------------------------------|

**5.3.3.16 remove()** [3/3]

```
void quentier::utility::ApplicationSettings::remove (
    std::string_view key)
```

Removes the setting key and any sub-settings of key. Overload of remove accepting std::string\_view

**Parameters**

|            |                                                                                                                          |
|------------|--------------------------------------------------------------------------------------------------------------------------|
| <i>key</i> | String containing the setting name. Must be UTF-8 encoded as internally it is converted to QString via QString::fromUtf8 |
|------------|--------------------------------------------------------------------------------------------------------------------------|

**5.3.3.17 setValue()** [1/3]

```
void quentier::utility::ApplicationSettings::setValue (
    const char * key,
    const QVariant & value,
    int keySize = -1)
```

Sets the value of setting. Overload of setValue accepting const char \* and optionally the size of the string

**Parameters**

|                |                                                                                                                          |
|----------------|--------------------------------------------------------------------------------------------------------------------------|
| <i>key</i>     | String containing the setting name. Must be UTF-8 encoded as internally it is converted to QString via QString::fromUtf8 |
| <i>value</i>   | Value for setting key                                                                                                    |
| <i>keySize</i> | Size of the key string. If negative (the default), the key size is taken to be strlen(key).                              |

**5.3.3.18 setValue()** [2/3]

```
void quantier::utility::ApplicationSettings::setValue (
    const QString & key,
    const QVariant & value)
```

Sets the value of setting. The call is redirected to QSettings::setValue. It is required in this class only to workaround hiding QSettings method due to overloads

**Parameters**

|              |                                    |
|--------------|------------------------------------|
| <i>key</i>   | String containing the setting name |
| <i>value</i> | Value for setting key              |

**5.3.3.19 setValue()** [3/3]

```
void quantier::utility::ApplicationSettings::setValue (
    std::string_view key,
    const QVariant & value)
```

Sets the value of setting. Overload of setValue accepting std::string\_view

**Parameters**

|              |                                                                                                                          |
|--------------|--------------------------------------------------------------------------------------------------------------------------|
| <i>key</i>   | String containing the setting name. Must be UTF-8 encoded as internally it is converted to QString via QString::fromUtf8 |
| <i>value</i> | Value for setting key                                                                                                    |

**5.3.3.20 value()** [1/3]

```
QVariant quantier::utility::ApplicationSettings::value (
    const char * key,
    const QVariant & defaultValue = {},
    int keySize = -1) const [nodiscard]
```

Fetches the value of setting. Overload of value accepting const char \* and optionally the size of the string

**Parameters**

|                     |                                                                                                                          |
|---------------------|--------------------------------------------------------------------------------------------------------------------------|
| <i>key</i>          | String containing the setting name. Must be UTF-8 encoded as internally it is converted to QString via QString::fromUtf8 |
| <i>defaultValue</i> | Default value returned if the setting doesn't exist                                                                      |
| <i>keySize</i>      | Size of the key string. If negative (the default), the key size is taken to be strlen(key)                               |

**Returns**

The value for setting key. If the setting doesn't exist, returns defaultValue. If no default value is specified, a default QVariant is returned.

### 5.3.3.21 value() [2/3]

```
QVariant quentier::utility::ApplicationSettings::value (  
    const QString & key,  
    const QVariant & defaultValue = {}) const [nodiscard]
```

Fetches the value of setting. The call is redirected to QSettings::value. It is required in this class only to workaround hiding QSettings method due to overloads

#### Parameters

|                     |                                                     |
|---------------------|-----------------------------------------------------|
| <i>key</i>          | String containing the setting name                  |
| <i>defaultValue</i> | Default value returned if the setting doesn't exist |

#### Returns

The value for setting key. If the setting doesn't exist, returns defaultValue. If no default value is specified, a default QVariant is returned.

### 5.3.3.22 value() [3/3]

```
QVariant quentier::utility::ApplicationSettings::value (  
    std::string_view key,  
    const QVariant & defaultValue = {}) const [nodiscard]
```

Fetches the value of setting. Overload of value accepting std::string\_view

#### Parameters

|                     |                                                                                                                          |
|---------------------|--------------------------------------------------------------------------------------------------------------------------|
| <i>key</i>          | String containing the setting name. Must be UTF-8 encoded as internally it is converted to QString via QString::fromUtf8 |
| <i>defaultValue</i> | Default value returned if the setting doesn't exist                                                                      |

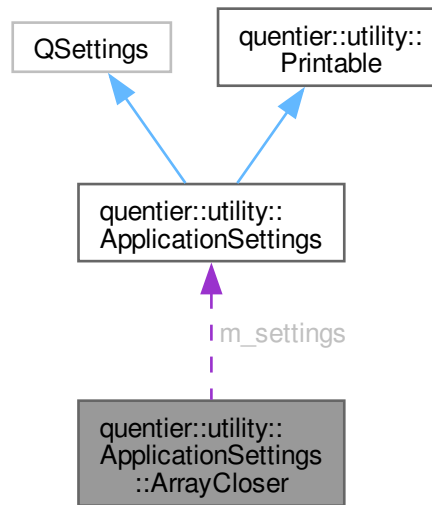
#### Returns

The value for setting key. If the setting doesn't exist, returns defaultValue. If no default value is specified, a default QVariant is returned.

## 5.4 quentier::utility::ApplicationSettings::ArrayCloser Struct Reference

```
#include <ApplicationSettings.h>
```

Collaboration diagram for `quentier::utility::ApplicationSettings::ArrayCloser`:



#### Public Member Functions

- **ArrayCloser** ([ApplicationSettings](#) &settings)

#### Public Attributes

- [ApplicationSettings](#) & **m\_settings**

### 5.4.1 Detailed Description

Helper struct for RAIL style of ensuring the array once began would be closed even if exception is thrown after beginning the array

## 5.5 `quentier::synchronization::AuthenticationExpiredError` Struct Reference

```
#include <Errors.h>
```

### 5.5.1 Detailed Description

Authentication expired error indicates that used authentication token has expired so authentication should be repeated before the next attempt to run synchronization.

## 5.6 `quentier::synchronization::ISyncConflictResolver::Conflict` Resolution Struct Reference

The `ConflictResolution` struct is a namespace inside which several other structs determining actual conflict resolutions.

```
#include <ISyncConflictResolver.h>
```

### Classes

- struct `UseTheirs`  
The `UseTheirs` conflict resolution means "override mine version with theirs version".
- struct `UseMine`  
The `UseMine` conflict resolution means "override theirs version with mine version".
- struct `IgnoreMine`  
The `IgnoreMine` conflict resolution means "use theirs version and ignore mine version as it doesn't really conflict with theirs version".
- struct `MoveMine`  
The `MoveMine` conflict resolution means "before using theirs version change mine version as specified". Note: the data item inside this conflict resolution might refer to something different than mine version passed to the conflict resolution function. It can be that way because the actual conflict might be with another local data item instead of the passed one.

### 5.6.1 Detailed Description

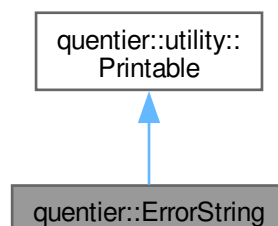
The `ConflictResolution` struct is a namespace inside which several other structs determining actual conflict resolutions.

## 5.7 `quentier::ErrorString` Class Reference

The `ErrorString` class encapsulates two (or more) strings which are meant to contain translatable (base) and non-translatable (details) parts of the error description.

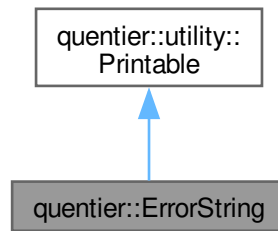
```
#include <ErrorString.h>
```

Inheritance diagram for `quentier::ErrorString`:





Collaboration diagram for `quentier::ErrorString`:



### Public Member Functions

- **ErrorString** (const char \*error=nullptr)
- **ErrorString** (const QString &error)
- **ErrorString** (const ErrorString &other)
- **ErrorString** (ErrorString &&other) noexcept
- ErrorString & **operator=** (const ErrorString &other)
- ErrorString & **operator=** (ErrorString &&other) noexcept
- const QString & **base** () const noexcept
- QString & **base** ()
- const QStringList & **additionalBases** () const noexcept
- QStringList & **additionalBases** ()
- const QString & **details** () const noexcept
- QString & **details** ()
- void **setBase** (QString error)
- void **setBase** (const char \*error)
- void **appendBase** (const QString &error)
- void **appendBase** (const QStringList &errors)
- void **appendBase** (const char \*error)
- void **setDetails** (const QString &error)
- void **setDetails** (const char \*error)
- bool **isEmpty** () const
- void **clear** ()
- QString **localizedString** () const
- QString **nonLocalizedString** () const
- QTextStream & **print** (QTextStream &strm) const override

### Public Member Functions inherited from `quentier::utility::Printable`

- QString **toString** () const

### 5.7.1 Detailed Description

The [ErrorString](#) class encapsulates two (or more) strings which are meant to contain translatable (base) and non-translatable (details) parts of the error description.

1. `base()` methods return const and non-const links to the primary translatable string
2. `details()` methods return const and non-const links to non-translatable string (coming from some third party library etc)
3. `additionalBases()` methods return const and non-const links to additional translatable strings; one translatable string is not always enough because the error message might be composed from different parts

### 5.7.2 Member Function Documentation

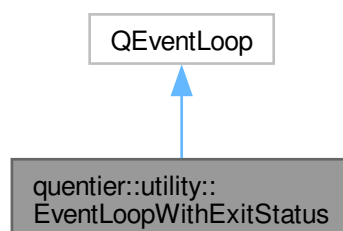
#### 5.7.2.1 `print()`

```
QTextStream & quentier::ErrorString::print (  
    QTextStream & strm) const [override], [virtual]
```

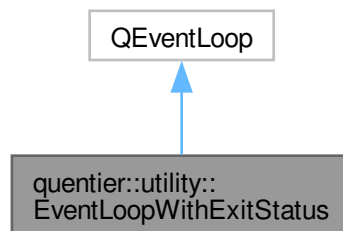
Implements [quentier::utility::Printable](#).

## 5.8 `quentier::utility::EventLoopWithExitStatus` Class Reference

Inheritance diagram for `quentier::utility::EventLoopWithExitStatus`:



Collaboration diagram for `quentier::utility::EventLoopWithExitStatus`:



### Public Types

- enum class **ExitStatus** { **Success** , **Failure** , **Timeout** }

### Public Slots

- void **exitAsSuccess** ()
- void **exitAsFailure** ()
- void **exitAsFailureWithError** (QString errorDescription)
- void **exitAsFailureWithErrorString** ([ErrorString](#) errorDescription)
- void **exitAsTimeout** ()

### Public Member Functions

- **EventLoopWithExitStatus** (QObject \*parent=nullptr)
- ExitStatus **exitStatus** () const
- const [ErrorString](#) & **errorDescription** () const

### Friends

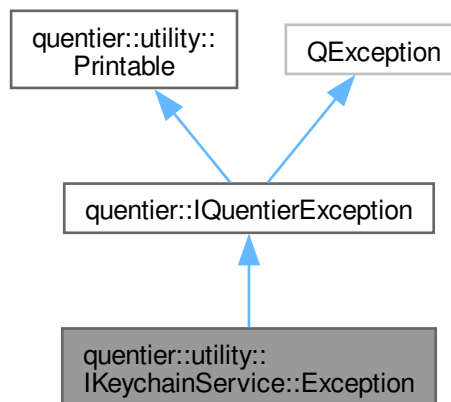
- QDebug & **operator**<< (QDebug &dbg, ExitStatus status)
- QTextStream & **operator**<< (QTextStream &strm, ExitStatus status)

## 5.9 `quentier::utility::IKeychainService::Exception` Class Reference

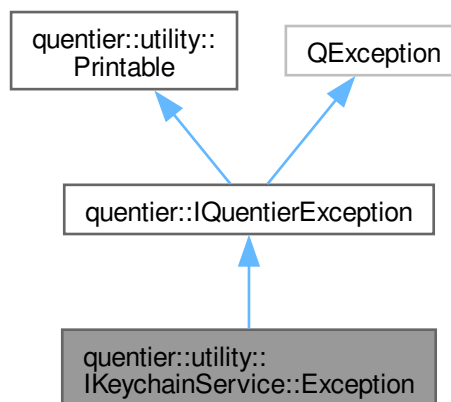
The [IKeychainService::Exception](#) class is the base class for exceptions returned inside QFutures from methods of [IKeychainService](#).

```
#include <IKeychainService.h>
```

Inheritance diagram for `quentier::utility::IKeychainService::Exception`:



Collaboration diagram for `quentier::utility::IKeychainService::Exception`:



## Public Member Functions

- **Exception** ([ErrorCode](#) errorCode) noexcept
- **Exception** ([ErrorCode](#) errorCode, [ErrorString](#) errorDescription) noexcept
- [ErrorCode](#) **errorCode** () const noexcept
- [QString](#) **exceptionDisplayName** () const override
- void **raise** () const override
- [Exception](#) \* **clone** () const override

## Public Member Functions inherited from `quentier::IQuentierException`

- `ErrorString errorMessage () const`
- `QString localizedErrorMessage () const`
- `QString nonLocalizedErrorMessage () const`
- `const char * what () const` noexcept override
- `QTextStream & print (QTextStream &strm) const` override

## Public Member Functions inherited from `quentier::utility::Printable`

- `QString toString () const`

## Additional Inherited Members

## Protected Member Functions inherited from `quentier::IQuentierException`

- `IQuentierException (ErrorString message)`
- `IQuentierException (const IQuentierException &other)`
- `IQuentierException & operator= (const IQuentierException &other)`

### 5.9.1 Detailed Description

The `IKeychainService::Exception` class is the base class for exceptions returned inside `QFutures` from methods of `IKeychainService`.

### 5.9.2 Member Function Documentation

#### 5.9.2.1 `exceptionDisplayName()`

```
QString quentier::utility::IKeychainService::Exception::exceptionDisplayName () const [nodiscard],  
[override], [virtual]
```

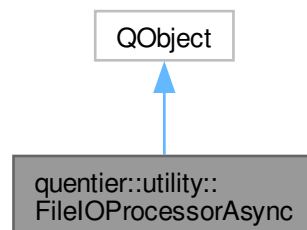
Implements `quentier::IQuentierException`.

## 5.10 `quentier::utility::FileIOProcessorAsync` Class Reference

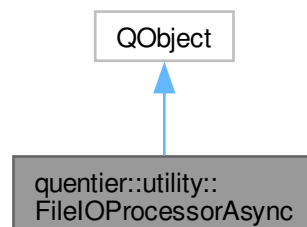
The `FileIOProcessorAsync` class is a wrapper under simple file IO operations, it is meant to be used for simple asynchronous IO.

```
#include <FileIOProcessorAsync.h>
```

Inheritance diagram for `quentier::utility::FileIOProcessorAsync`:



Collaboration diagram for `quentier::utility::FileIOProcessorAsync`:



### Public Slots

- void `onWriteFileRequest` (QString absoluteFilePath, QByteArray data, QUuid requestId, bool append)  
*onWriteFileRequest slot processes file write requests with given request ids*
- void `onReadFileRequest` (QString absoluteFilePath, QUuid requestId)  
*onReadFileRequest slot processes file read requests with given request ids*

## Signals

- void **readyForIO** ()  
*readyForIO signal is emitted when the queue for file IO is empty for some time (30 seconds by default, can also be configured via setIdleTimePeriod method) after the last IO event to signal listeners that they can perform some IO via the [FileIOProcessorAsync](#)*
- void **writeFileRequestProcessed** (bool success, [ErrorString](#) errorDescription, QUuid requestId)  
*writeFileRequestProcessed signal is emitted when the file write request with given id is finished*
- void **readFileRequestProcessed** (bool success, [ErrorString](#) errorDescription, QByteArray data, QUuid requestId)  
*readFileRequestProcessed signal is emitted when the file read request with given id is finished*

## Public Member Functions

- **FileIOProcessorAsync** (QObject \*parent=nullptr)
- void **setIdleTimePeriod** (qint32 seconds)  
*setIdleTimePeriod sets time period defining the idle state of [FileIOProcessorAsync](#): once the time measured since the last IO operation is over the specified number of seconds, the class emits readyForIO signal to any interested listeners of this event. If this method is not called ever, the default idle time period would be 30 seconds.*

### 5.10.1 Detailed Description

The [FileIOProcessorAsync](#) class is a wrapper under simple file IO operations, it is meant to be used for simple asynchronous IO.

### 5.10.2 Member Function Documentation

#### 5.10.2.1 onReadFileRequest

```
void quentier::utility::FileIOProcessorAsync::onReadFileRequest (
    QString absoluteFilePath,
    QUuid requestId) [slot]
```

onReadFileRequest slot processes file read requests with given request ids

#### Parameters

|                         |                                            |
|-------------------------|--------------------------------------------|
| <i>absoluteFilePath</i> | Absolute file path to be read              |
| <i>requestId</i>        | Unique identifier of the file read request |

### 5.10.2.2 onWriteFileRequest

```
void quentier::utility::FileIOProcessorAsync::onWriteFileRequest (
    QString absoluteFilePath,
    QByteArray data,
    QUuid requestId,
    bool append) [slot]
```

onWriteFileRequest slot processes file write requests with given request ids

#### Parameters

|                         |                                                                                                                        |
|-------------------------|------------------------------------------------------------------------------------------------------------------------|
| <i>absoluteFilePath</i> | Absolute file path to be written                                                                                       |
| <i>data</i>             | Data to be written to the file                                                                                         |
| <i>requestId</i>        | Unique identifier of the file write request                                                                            |
| <i>append</i>           | If true, the data would be appended to file, otherwise the entire file would be erased before with the data is written |

### 5.10.2.3 readFileRequestProcessed

```
void quentier::utility::FileIOProcessorAsync::readFileRequestProcessed (
    bool success,
    ErrorString errorDescription,
    QByteArray data,
    QUuid requestId) [signal]
```

readFileRequestProcessed signal is emitted when the file read request with given id is finished

#### Parameters

|                         |                                                        |
|-------------------------|--------------------------------------------------------|
| <i>success</i>          | True if read operation was successful, false otherwise |
| <i>errorDescription</i> | Textual description of the error                       |
| <i>data</i>             | Data read from file                                    |
| <i>requestId</i>        | Unique identifier of the file read request             |

### 5.10.2.4 setIdleTimePeriod()

```
void quentier::utility::FileIOProcessorAsync::setIdleTimePeriod (
    qint32 seconds)
```

setIdleTimePeriod sets time period defining the idle state of [FileIOProcessorAsync](#): once the time measured since the last IO operation is over the specified number of seconds, the class emits readyForIO signal to any interested listeners of this event. If this method is not called ever, the default idle time period would be 30 seconds.

#### Parameters



|                |                                        |
|----------------|----------------------------------------|
| <i>seconds</i> | Number of seconds for idle time period |
|----------------|----------------------------------------|

#### 5.10.2.5 writeFileRequestProcessed

```
void quantier::utility::FileIOProcessorAsync::writeFileRequestProcessed (  
    bool success,  
    QString errorDescription,  
    QUuid requestId) [signal]
```

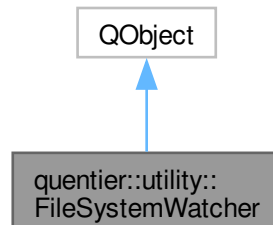
writeFileRequestProcessed signal is emitted when the file write request with given id is finished

#### Parameters

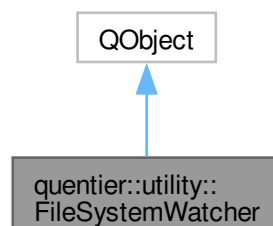
|                         |                                                         |
|-------------------------|---------------------------------------------------------|
| <i>success</i>          | True if write operation was successful, false otherwise |
| <i>errorDescription</i> | Textual description of the error                        |
| <i>requestId</i>        | Unique identifier of the file write request             |

## 5.11 quantier::utility::FileSystemWatcher Class Reference

Inheritance diagram for quantier::utility::FileSystemWatcher:



Collaboration diagram for quantier::utility::FileSystemWatcher:



## Signals

- void **directoryChanged** (const QString &path)
- void **directoryRemoved** (const QString &path)
- void **fileChanged** (const QString &path)
- void **fileRemoved** (const QString &path)

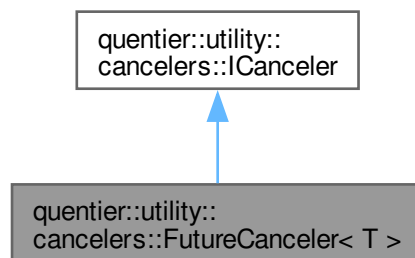
## Public Member Functions

- **FileSystemWatcher** (int removalTimeoutMSec=500, QObject \*parent=nullptr)
- **FileSystemWatcher** (const QStringList &paths, int removalTimeoutMSec=500, QObject \*parent=nullptr)
- void **addPath** (const QString &path)
- void **addPaths** (const QStringList &paths)
- QStringList **directories** () const
- QStringList **files** () const
- void **removePath** (const QString &path)
- void **removePaths** (const QStringList &paths)

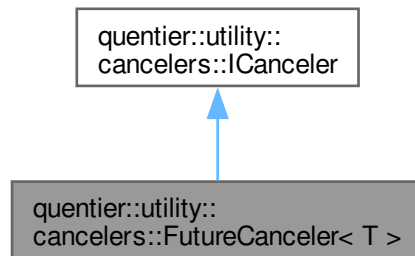
## 5.12 quantier::utility::cancelers::FutureCanceler< T > Class Template Reference

```
#include <FutureCanceler.h>
```

Inheritance diagram for quantier::utility::cancelers::FutureCanceler< T >:



Collaboration diagram for `quantier::utility::cancelers::FutureCanceler< T >`:



### Public Member Functions

- **FutureCanceler** (`QFuture< T > future`)
- `bool isCanceled () const noexcept override`

#### 5.12.1 Detailed Description

`template<class T>`  
**class** `quantier::utility::cancelers::FutureCanceler< T >`

`ICanceler` implementation which tracks the canceled status of a future.

#### 5.12.2 Member Function Documentation

##### 5.12.2.1 `isCanceled()`

```

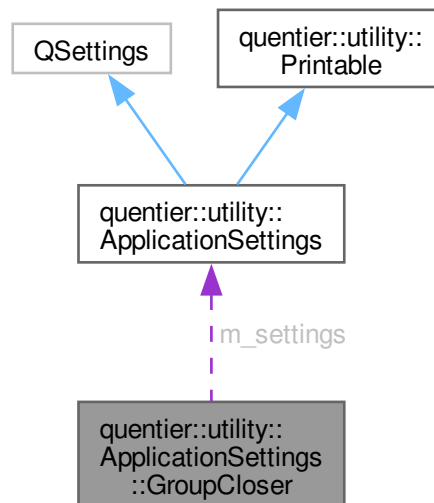
template<class T>
bool quantier::utility::cancelers::FutureCanceler< T >::isCanceled () const [inline], [nodiscard],
[override], [virtual], [noexcept]
  
```

Implements `quantier::utility::cancelers::ICanceler`.

## 5.13 quantier::utility::ApplicationSettings::GroupCloser Struct Reference

```
#include <ApplicationSettings.h>
```

Collaboration diagram for quantier::utility::ApplicationSettings::GroupCloser:



### Public Member Functions

- **GroupCloser** ([ApplicationSettings](#) &settings)

### Public Attributes

- [ApplicationSettings](#) & **m\_settings**

#### 5.13.1 Detailed Description

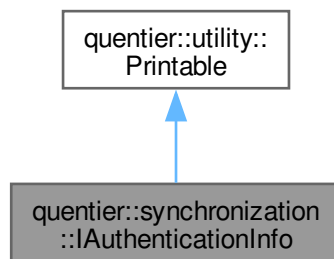
Helper struct for RAII style of ensuring the group once opened would be closed even if exception is thrown after beginning the group

## 5.14 quentier::synchronization::IAuthenticationInfo Class Reference

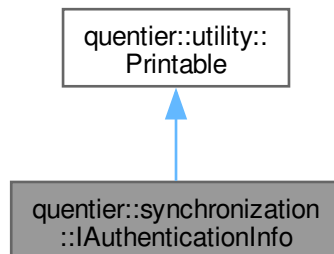
The [IAuthenticationInfo](#) interface represents the information obtained through OAuth and necessary to access Evernote API.

```
#include <IAuthenticationInfo.h>
```

Inheritance diagram for quentier::synchronization::IAuthenticationInfo:



Collaboration diagram for quentier::synchronization::IAuthenticationInfo:



### Public Member Functions

- virtual qevercloud::UserID [userId](#) () const =0
- virtual QString [authToken](#) () const =0
- virtual qevercloud::Timestamp [authTokenExpirationTime](#) () const =0
- virtual qevercloud::Timestamp [authenticationTime](#) () const =0
- virtual QString [shardId](#) () const =0
- virtual QString [noteStoreUrl](#) () const =0
- virtual QString [webApiUrlPrefix](#) () const =0
- virtual QList< QNetworkCookie > [userStoreCookies](#) () const =0

## Public Member Functions inherited from [quentier::utility::Printable](#)

- virtual QTextStream & **print** (QTextStream &strm) const =0
- QString **toString** () const

### 5.14.1 Detailed Description

The [IAuthenticationInfo](#) interface represents the information obtained through OAuth and necessary to access Evernote API.

### 5.14.2 Member Function Documentation

#### 5.14.2.1 authenticationTime()

```
virtual qevercloud::Timestamp quentier::synchronization::IAuthenticationInfo::authentication←  
Time () const [nodiscard], [pure virtual]
```

Timestamp at which authentication info was received from Evernote

#### 5.14.2.2 authToken()

```
virtual QString quentier::synchronization::IAuthenticationInfo::authToken () const [nodiscard],  
[pure virtual]
```

Authentication token which needs to be used for access to Evernote API

#### 5.14.2.3 authTokenExpirationTime()

```
virtual qevercloud::Timestamp quentier::synchronization::IAuthenticationInfo::authToken←  
ExpirationTime () const [nodiscard], [pure virtual]
```

Expiration timestamp for the authentication token

#### 5.14.2.4 noteStoreUrl()

```
virtual QString quentier::synchronization::IAuthenticationInfo::noteStoreUrl () const [nodiscard],  
[pure virtual]
```

Url of the note store service for this user

#### 5.14.2.5 shardId()

```
virtual QString quentier::synchronization::IAuthenticationInfo::shardId () const [nodiscard],  
[pure virtual]
```

Shard identifier which needs to be used for access to Evernote API along with the authentication token

#### 5.14.2.6 userId()

```
virtual qevercloud::UserID quantier::synchronization::IAuthenticationInfo::userId () const
[nodiscard], [pure virtual]
```

Identifier of the authenticated user

#### 5.14.2.7 userStoreCookies()

```
virtual QList< QNetworkCookie > quantier::synchronization::IAuthenticationInfo::userStore←
Cookies () const [nodiscard], [pure virtual]
```

The list of network cookies received during OAuth procedure. Although is is not mentioned anywhere in Evernote docs, these cookies might have to be used for access to user store. See this discussion for reference: <https://discussion.evernote.com/forums/topic/124257-calls-to-userstore-from-evernote-api-stop/>

#### 5.14.2.8 webApiUrlPrefix()

```
virtual QString quantier::synchronization::IAuthenticationInfo::webApiUrlPrefix () const [nodiscard],
[pure virtual]
```

Url prefix for Evernote Web API.

See also

qevercloud::PublicUserInfo::webApiUrlPrefix

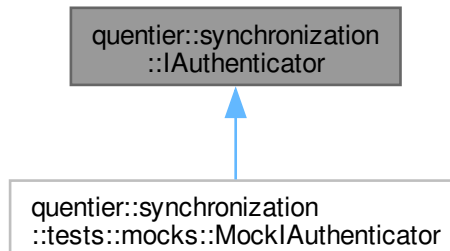
## 5.15 quantier::synchronization::IAuthenticationInfoBuilder Class Reference

### Public Member Functions

- virtual [IAuthenticationInfoBuilder](#) & **setUserId** (qevercloud::UserID userId)=0
- virtual [IAuthenticationInfoBuilder](#) & **setAuthToken** (QString token)=0
- virtual [IAuthenticationInfoBuilder](#) & **setAuthTokenExpirationTime** (qevercloud::Timestamp expiration←Time)=0
- virtual [IAuthenticationInfoBuilder](#) & **setAuthenticationTime** (qevercloud::Timestamp authenticationTime)=0
- virtual [IAuthenticationInfoBuilder](#) & **setShardId** (QString shardId)=0
- virtual [IAuthenticationInfoBuilder](#) & **setNoteStoreUrl** (QString noteStoreUrl)=0
- virtual [IAuthenticationInfoBuilder](#) & **setWebApiUrlPrefix** (QString webApiUrlPrefix)=0
- virtual [IAuthenticationInfoBuilder](#) & **setUserStoreCookies** (QList< QNetworkCookie > cookies)=0
- virtual [IAuthenticationInfoPtr](#) **build** ()=0

## 5.16 `quentier::synchronization::IAuthenticator` Class Reference

Inheritance diagram for `quentier::synchronization::IAuthenticator`:



### Public Member Functions

- virtual `QFuture< IAuthenticationInfoPtr >` **authenticateNewAccount** ()=0
- virtual `QFuture< IAuthenticationInfoPtr >` **authenticateAccount** ([Account](#) account)=0

## 5.17 `quentier::ResourceRecognitionIndexItem::IBarcodeItem` Struct Reference

### Public Member Functions

- virtual `QString` **barcode** () const =0
- virtual `int` **weight** () const =0

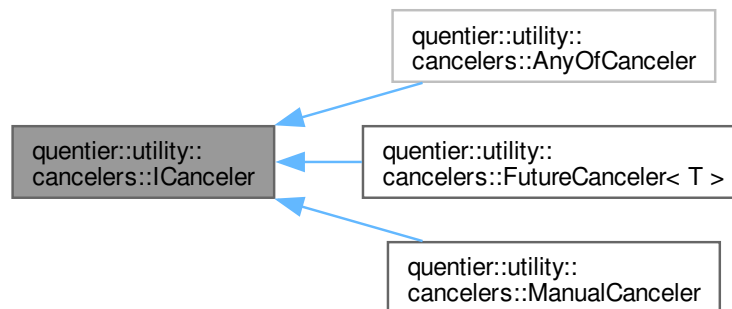
## 5.18 `quentier::utility::cancelers::ICanceler` Class Reference

The [ICanceler](#) interface provides `isCanceled` method which can be used to check whether some processing can be skipped because it was canceled.

```
#include <ICanceler.h>
```



Inheritance diagram for quantier::utility::cancelers::ICanceler:



### Public Member Functions

- virtual bool **isCanceled** () const =0

#### 5.18.1 Detailed Description

The [ICanceler](#) interface provides isCanceled method which can be used to check whether some processing can be skipped because it was canceled.

## 5.19 quantier::enml::IConverter Class Reference

The [IConverter](#) interface encapsulates a set of methods performing conversions between ENML and other note content formats, namely HTML.

```
#include <IConverter.h>
```

### Public Types

- enum class [EnexExportTags](#) { **Yes** = 0 , **No** }

*The [EnexExportTags](#) enum allows to specify whether export of note(s) to ENEX should include the names of note's tags or not.*

## Public Member Functions

- virtual [Result](#)< [QString](#), [ErrorString](#) > [convertHtmlToEnml](#) (const [QString](#) &html, [IDecryptedTextCache](#) &decryptedTextCache, const [QList](#)< [conversion\\_rules::ISkipRulePtr](#) > &skipRules={}) const =0
- virtual [Result](#)< void, [ErrorString](#) > [convertHtmlToDoc](#) (const [QString](#) &html, [QTextDocument](#) &doc, const [QList](#)< [conversion\\_rules::ISkipRulePtr](#) > &skipRules={}) const =0
- virtual [Result](#)< [QString](#), [ErrorString](#) > [convertHtmlToXml](#) (const [QString](#) &html) const =0
- virtual [Result](#)< [QString](#), [ErrorString](#) > [convertHtmlToXhtml](#) (const [QString](#) &html) const =0
- virtual [Result](#)< [IHtmlDataPtr](#), [ErrorString](#) > [convertEnmlToHtml](#) (const [QString](#) &enml, [IDecryptedTextCache](#) &decryptedTextCache) const =0
- virtual [Result](#)< [QString](#), [ErrorString](#) > [convertEnmlToPlainText](#) (const [QString](#) &enml) const =0
- virtual [Result](#)< [QStringList](#), [ErrorString](#) > [convertEnmlToWordsList](#) (const [QString](#) &enml) const =0
- virtual [QStringList](#) [convertPlainTextToWordsList](#) (const [QString](#) &plainText) const =0
- virtual [Result](#)< void, [ErrorString](#) > [validateEnml](#) (const [QString](#) &enml) const =0
- virtual [Result](#)< [QString](#), [ErrorString](#) > [validateAndFixupEnml](#) (const [QString](#) &enml) const =0
- virtual [Result](#)< [QString](#), [ErrorString](#) > [exportNotesToEnex](#) (const [QList](#)< [qevercloud::Note](#) > &notes, const [QHash](#)< [QString](#), [QString](#) > &tagNamesByTagLocalIds, [EnexExportTags](#) exportTagsOption, const [QString](#) &version={}) const =0
- virtual [Result](#)< [QList](#)< [qevercloud::Note](#) >, [ErrorString](#) > [importEnex](#) (const [QString](#) &enex) const =0

### 5.19.1 Detailed Description

The [IConverter](#) interface encapsulates a set of methods performing conversions between ENML and other note content formats, namely HTML.

### 5.19.2 Member Function Documentation

#### 5.19.2.1 [convertEnmlToHtml\(\)](#)

```
virtual Result< IHtmlDataPtr, ErrorString > quentier::enml::IConverter::convertEnmlToHtml (
    const QString & enml,
    IDecryptedTextCache & decryptedTextCache) const    [nodiscard], [pure virtual]
```

Converts ENML into HTML representation of note content

#### Parameters

|                           |                                     |
|---------------------------|-------------------------------------|
| <i>enml</i>               | ENML representation of note content |
| <i>decryptedTextCache</i> | cache of decrypted text fragments   |

#### Returns

[Result](#) with HTML data in case of success or error string in case of failure

### 5.19.2.2 convertEnmlToPlainText()

```
virtual Result< QString, ErrorString > quantier::enml::IConverter::convertEnmlToPlainText (  
    const QString & enml) const [nodiscard], [pure virtual]
```

Converts ENML into plain text representation of note content

#### Parameters

|             |                                     |
|-------------|-------------------------------------|
| <i>enml</i> | ENML representation of note content |
|-------------|-------------------------------------|

#### Returns

[Result](#) with plain text representation of note content in case of success or error string in case of failure

### 5.19.2.3 convertEnmlToWordsList()

```
virtual Result< QStringList, ErrorString > quantier::enml::IConverter::convertEnmlToWordsList (  
    const QString & enml) const [nodiscard], [pure virtual]
```

Converts ENML into a list of words

#### Parameters

|             |                                     |
|-------------|-------------------------------------|
| <i>enml</i> | ENML representation of note content |
|-------------|-------------------------------------|

#### Returns

[Result](#) with list of words in case of success or error string in case of failure

### 5.19.2.4 convertHtmlToDoc()

```
virtual Result< void, ErrorString > quantier::enml::IConverter::convertHtmlToDoc (  
    const QString & html,  
    QTextDocument & doc,  
    const QList< conversion_rules::ISkipRulePtr > & skipRules = {}) const [nodiscard],  
[pure virtual]
```

Convert HTML representation of note content into QTextDocument

#### Parameters

|                  |                                                            |
|------------------|------------------------------------------------------------|
| <i>html</i>      | HTML representation of note content                        |
| <i>doc</i>       | QTextDocument into which the converted note content is put |
| <i>skipRules</i> | skip rules to be used during the conversion                |

#### Returns

Valid result in case of success or error string in case of failure

### 5.19.2.5 convertHtmlToEnml()

```
virtual Result< QString, ErrorString > quantier::enml::IConverter::convertHtmlToEnml (  
    const QString & html,  
    IDecryptedTextCache & decryptedTextCache,  
    const QList< conversion_rules::ISkipRulePtr > & skipRules = {}) const [nodiscard],  
[pure virtual]
```

Converts HTML representation of note content into ENML

#### Parameters

|                           |                                             |
|---------------------------|---------------------------------------------|
| <i>html</i>               | HTML representation of note content         |
| <i>decryptedTextCache</i> | cache of decrypted text fragments           |
| <i>skipRules</i>          | skip rules to be used during the conversion |

#### Returns

[Result](#) with ENML in case of success or error string in case of failure

### 5.19.2.6 convertHtmlToXhtml()

```
virtual Result< QString, ErrorString > quantier::enml::IConverter::convertHtmlToXhtml (  
    const QString & html) const [nodiscard], [pure virtual]
```

Convert HTML representation of note content into a valid XHTML document

#### Parameters

|             |                                     |
|-------------|-------------------------------------|
| <i>html</i> | HTML representation of note content |
|-------------|-------------------------------------|

#### Returns

[Result](#) with XHTML in case of success or error string in case of failure

### 5.19.2.7 convertHtmlToXml()

```
virtual Result< QString, ErrorString > quantier::enml::IConverter::convertHtmlToXml (  
    const QString & html) const [nodiscard], [pure virtual]
```

Convert HTML representation of note content into a valid XML document

#### Parameters

|             |                                     |
|-------------|-------------------------------------|
| <i>html</i> | HTML representation of note content |
|-------------|-------------------------------------|

#### Returns

[Result](#) with XML in case of success or error string in case of failure

### 5.19.2.8 convertPlainTextToWordsList()

```
virtual QStringList quotientier::enml::IConverter::convertPlainTextToWordsList (
    const QString & plainText) const [nodiscard], [pure virtual]
```

Converts plain text into a list of words

#### Parameters

|                  |                                           |
|------------------|-------------------------------------------|
| <i>plainText</i> | plain text representation of note content |
|------------------|-------------------------------------------|

#### Returns

list of words

### 5.19.2.9 exportNotesToEnex()

```
virtual Result< QString, ErrorString > quotientier::enml::IConverter::exportNotesToEnex (
    const QList< qevercloud::Note > & notes,
    const QHash< QString, QString > & tagNamesByTagLocalIds,
    EnexExportTags exportTagsOption,
    const QString & version = {}) const [nodiscard], [pure virtual]
```

Exports a list of notes into ENEX

#### Parameters

|                              |                                                   |
|------------------------------|---------------------------------------------------|
| <i>notes</i>                 | notes to be exported into ENEX                    |
| <i>tagNamesByTagLocalIds</i> | mapper from tag local ids into tag names          |
| <i>exportTagsOption</i>      | option controlling the export of tag names        |
| <i>version</i>               | optional version tag for ENEX, omitted if not set |

#### Returns

[Result](#) with ENEX in case of success or error string in case of failure

### 5.19.2.10 importEnex()

```
virtual Result< QList< qevercloud::Note >, ErrorString > quotientier::enml::IConverter::importEnex (
    const QString & enex) const [nodiscard], [pure virtual]
```

Import notes from ENEX

#### Parameters

|             |                            |
|-------------|----------------------------|
| <i>enex</i> | ENEX to be used for import |
|-------------|----------------------------|

**Returns**

[Result](#) with list of notes in case of success or error string in case of failure

**Note**

if tag names are present in ENEX, corresponding notes would have their tagName field filled

**5.19.2.11 validateAndFixupEnml()**

```
virtual Result< QString, ErrorString > quantier::enml::IConverter::validateAndFixupEnml (
    const QString & enml) const [nodiscard], [pure virtual]
```

Validates ENML and attempts to fix it automatically if it's not valid

**Parameters**

|             |                                     |
|-------------|-------------------------------------|
| <i>enml</i> | ENML representation of note content |
|-------------|-------------------------------------|

**Returns**

[Result](#) with either unchanged or fixed up ENML in case of success or error string in case of failure

**5.19.2.12 validateEnml()**

```
virtual Result< void, ErrorString > quantier::enml::IConverter::validateEnml (
    const QString & enml) const [nodiscard], [pure virtual]
```

Validates ENML against rules

**Parameters**

|             |                                     |
|-------------|-------------------------------------|
| <i>enml</i> | ENML representation of note content |
|-------------|-------------------------------------|

**Returns**

valid [Result](#) in case of success or error string in case of failure

**5.20 quantier::enml::IDecryptedTextCache Class Reference****Public Types**

- enum class **RememberForSession** { **Yes** , **No** }

**Public Member Functions**

- virtual void **addDecryptTextInfo** (const QString &encryptedText, const QString &decryptedText, const QString &passphrase, [utility::IEncryptor::Cipher](#) cipher, RememberForSession rememberForSession)=0
- virtual std::optional< std::pair< QString, RememberForSession > > **findDecryptedTextInfo** (const QString &encryptedText) const =0
- virtual std::optional< QString > **updateDecryptedTextInfo** (const QString &originalEncryptedText, const QString &newDecryptedText)=0
- virtual bool **containsRememberedForSessionEntries** () const =0
- virtual void **removeDecryptedTextInfo** (const QString &encryptedText)=0
- virtual void **clearNonRememberedForSessionEntries** ()=0

**Friends**

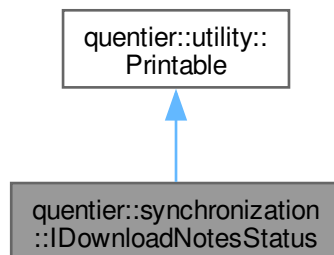
- QUENTIER\_EXPORT QDebug & **operator<<** (QDebug &dbg, RememberForSession rememberForSession)
- QUENTIER\_EXPORT QTextStream & **operator<<** (QTextStream &strm, RememberForSession rememberForSession)

## 5.21 quantier::synchronization::IDownloadNotesStatus Class Reference

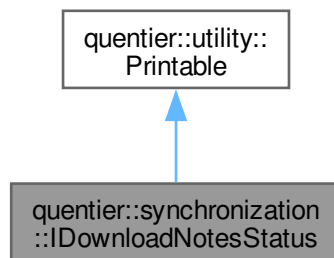
The [IDownloadNotesStatus](#) interface presents information about the status of notes downloading process.

```
#include <IDownloadNotesStatus.h>
```

Inheritance diagram for quantier::synchronization::IDownloadNotesStatus:



Collaboration diagram for `quentier::synchronization::IDownloadNotesStatus`:



## Public Types

- using **QExceptionPtr** = `std::shared_ptr<QException>`
- using **NoteWithException** = `std::pair<qevercloud::Note, QExceptionPtr>`
- using **GuidWithException** = `std::pair<qevercloud::Guid, QExceptionPtr>`
- using **UpdateSequenceNumbersByGuid** = `QHash<qevercloud::Guid, qint32>`

## Public Member Functions

- virtual quint64 **totalNewNotes** () const =0
- virtual quint64 **totalUpdatedNotes** () const =0
- virtual quint64 **totalExpungedNotes** () const =0
- virtual QList< NoteWithException > **notesWhichFailedToDownload** () const =0
- virtual QList< NoteWithException > **notesWhichFailedToProcess** () const =0
- virtual QList< GuidWithException > **noteGuidsWhichFailedToExpunge** () const =0
- virtual UpdateSequenceNumbersByGuid **processedNoteGuidsAndUsns** () const =0
- virtual UpdateSequenceNumbersByGuid **cancelledNoteGuidsAndUsns** () const =0
- virtual QList< qevercloud::Guid > **expungedNoteGuids** () const =0
- virtual StopSynchronizationError **stopSynchronizationError** () const =0

## Public Member Functions inherited from [quentier::utility::Printable](#)

- virtual QTextStream & **print** (QTextStream &strm) const =0
- QString **toString** () const

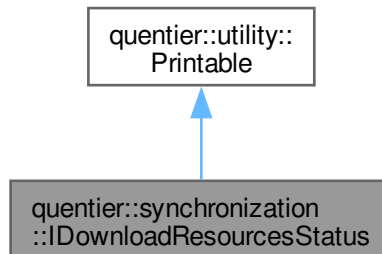
### 5.21.1 Detailed Description

The [IDownloadNotesStatus](#) interface presents information about the status of notes downloading process.

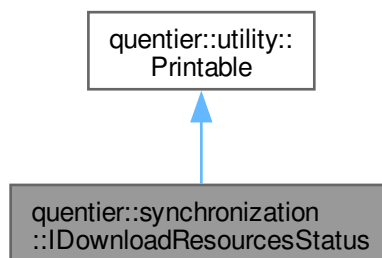


## 5.22 quantier::synchronization::IDownloadResourcesStatus Class Reference

Inheritance diagram for quantier::synchronization::IDownloadResourcesStatus:



Collaboration diagram for quantier::synchronization::IDownloadResourcesStatus:



### Public Types

- using **QExceptionPtr** = std::shared\_ptr<QException>
- using [ResourceWithException](#)
- using **UpdateSequenceNumbersByGuid** = QHash<qevercloud::Guid, qint32>

### Public Member Functions

- virtual quint64 **totalNewResources** () const =0
- virtual quint64 **totalUpdatedResources** () const =0
- virtual QList< ResourceWithException > **resourcesWhichFailedToDownload** () const =0
- virtual QList< ResourceWithException > **resourcesWhichFailedToProcess** () const =0
- virtual UpdateSequenceNumbersByGuid **processedResourceGuidsAndUsns** () const =0
- virtual UpdateSequenceNumbersByGuid **cancelledResourceGuidsAndUsns** () const =0
- virtual StopSynchronizationError **stopSynchronizationError** () const =0

## Public Member Functions inherited from [quentier::utility::Printable](#)

- virtual QTextStream & **print** (QTextStream &strm) const =0
- QString **toString** () const

### 5.22.1 Member Typedef Documentation

#### 5.22.1.1 ResourceWithException

```
using quentier::synchronization::IDownloadResourcesStatus::ResourceWithException
```

Initial value:

```
std::pair<qevercloud::Resource, QExceptionPtr>
```

## 5.23 quentier::utility::IEncryptor Struct Reference

The [IEncryptor](#) interface provides encryption and decryption functionality which is compatible with that used by Evernote service.

```
#include <IEncryptor.h>
```

### Public Types

- enum class [Cipher](#) { [RC2](#) , [AES](#) }

### Public Member Functions

- virtual [Result](#)< QString, [ErrorString](#) > **encrypt** (const QString &text, const QString &passphrase)=0
- virtual [Result](#)< QString, [ErrorString](#) > **decrypt** (const QString &encryptedText, const QString &passphrase, [Cipher](#) cipher)=0

### Friends

- QUENTIER\_EXPORT QDebug & **operator**<< (QDebug &dbg, [Cipher](#) cipher)
- QUENTIER\_EXPORT QTextStream & **operator**<< (QTextStream &strm, [Cipher](#) cipher)

### 5.23.1 Detailed Description

The [IEncryptor](#) interface provides encryption and decryption functionality which is compatible with that used by Evernote service.

## 5.23.2 Member Enumeration Documentation

### 5.23.2.1 Cipher

```
enum class quotientier::utility::IEncryptor::Cipher [strong]
```

[Cipher](#) used for encryption/decryption

#### Enumerator

|     |                          |
|-----|--------------------------|
| RC2 | RC2 64 bit block cipher  |
| AES | AES 128 bit block cipher |

## 5.23.3 Member Function Documentation

### 5.23.3.1 decrypt()

```
virtual Result< QString, ErrorString > quotientier::utility::IEncryptor::decrypt (  
    const QString & encryptedText,  
    const QString & passphrase,  
    Cipher cipher) [nodiscard], [pure virtual]
```

Decrypt previously encrypted text fragment

#### Parameters

|                      |                                             |
|----------------------|---------------------------------------------|
| <i>encryptedText</i> | Encrypted text to decrypt                   |
| <i>passphrase</i>    | Passhprase used to encrypt text             |
| <i>cipher</i>        | <a href="#">Cipher</a> used to encrypt text |

#### Returns

[Result](#) with either decrypted text or error message

### 5.23.3.2 encrypt()

```
virtual Result< QString, ErrorString > quotientier::utility::IEncryptor::encrypt (  
    const QString & text,  
    const QString & passphrase) [nodiscard], [pure virtual]
```

Encrypt text fragment using AES cipher (RC2 cipher is only used for decryption)

#### Parameters

|             |                 |
|-------------|-----------------|
| <i>text</i> | Text to encrypt |
|-------------|-----------------|

|                   |                                                  |
|-------------------|--------------------------------------------------|
| <i>passphrase</i> | Passphrase which can be used to decrypt the text |
|-------------------|--------------------------------------------------|

#### Returns

[Result](#) with either encrypted text or error message

## 5.24 quotientier::enml::IENMLTagsConverter Class Reference

The [IENMLTagsConverter](#) interfaces provides methods which convert Evernote-specific markup tags such as en-crypt, en-media etc. into their counterparts which should be used in the HTML representation of note content.

```
#include <IENMLTagsConverter.h>
```

### Public Member Functions

- virtual QString [convertEnToDo](#) (bool checked, quint32 index) const =0
- virtual QString [convertEncryptedText](#) (const QString &encryptedText, const QString &hint, [utility::IEncryptor::Cipher](#) cipher, quint32 index) const =0
- virtual QString [convertDecryptedText](#) (const QString &decryptedText, const QString &encryptedText, const QString &hint, [utility::IEncryptor::Cipher](#) cipher, quint32 index) const =0
- virtual [Result](#)< QString, [ErrorString](#) > [convertResource](#) (const qevercloud::Resource &resource) const =0

### 5.24.1 Detailed Description

The [IENMLTagsConverter](#) interfaces provides methods which convert Evernote-specific markup tags such as en-crypt, en-media etc. into their counterparts which should be used in the HTML representation of note content.

### 5.24.2 Member Function Documentation

#### 5.24.2.1 convertDecryptedText()

```
virtual QString quotientier::enml::IENMLTagsConverter::convertDecryptedText (
    const QString & decryptedText,
    const QString & encryptedText,
    const QString & hint,
    utility::IEncryptor::Cipher cipher,
    quint32 index) const [nodiscard], [pure virtual]
```

Converts already decrypted en-crypt tag into its HTML counterpart

#### Parameters

|                      |                                                          |
|----------------------|----------------------------------------------------------|
| <i>decryptedText</i> | decrypted text from en-crypt tag                         |
| <i>encryptedText</i> | encrypted text contained within en-crypt tag             |
| <i>hint</i>          | hint to be displayed when user tries to decrypt the text |

|               |                                                                                                                |
|---------------|----------------------------------------------------------------------------------------------------------------|
| <i>cipher</i> | cipher used to ecrypt the text                                                                                 |
| <i>index</i>  | index of particular en-crypt tag within the note content so that different en-crypt tags can be differentiated |

#### Returns

HTML representation of decrypted en-crypt tag

#### 5.24.2.2 convertEncryptedText()

```
virtual QString quantier::enml::IENMLTagsConverter::convertEncryptedText (
    const QString & encryptedText,
    const QString & hint,
    utility::IEncryptor::Cipher cipher,
    quint32 index) const [nodiscard], [pure virtual]
```

Converts en-crypt tag into its HTML counterpart

#### Parameters

|                      |                                                                                                                |
|----------------------|----------------------------------------------------------------------------------------------------------------|
| <i>encryptedText</i> | encrypted text contained within en-crypt tag                                                                   |
| <i>hint</i>          | hint to be displayed when user tries to decrypt the text                                                       |
| <i>cipher</i>        | cipher used to ecrypt the text                                                                                 |
| <i>index</i>         | index of particular en-crypt tag within the note content so that different en-crypt tags can be differentiated |

#### Returns

HTML representation of en-crypt tag

#### 5.24.2.3 convertEnToDo()

```
virtual QString quantier::enml::IENMLTagsConverter::convertEnToDo (
    bool checked,
    quint32 index) const [nodiscard], [pure virtual]
```

Converts en-todo tag into its HTML counterpart

#### Parameters

|                |                                                                                                           |
|----------------|-----------------------------------------------------------------------------------------------------------|
| <i>checked</i> | indicates whether this todo is checked or not                                                             |
| <i>index</i>   | index of particular en-todo tag within the note content so that different todo tags can be differentiated |

#### Returns

HTML representation of en-todo tag

#### 5.24.2.4 convertResource()

```
virtual Result< QString, ErrorString > quantier::enml::IENMLTagsConverter::convertResource (
    const qevercloud::Resource & resource) const [nodiscard], [pure virtual]
```

Converts en-media tag representing a resource into its HTML counterpart

##### Parameters

|                 |                                        |
|-----------------|----------------------------------------|
| <i>resource</i> | resource corresponding to en-media tag |
|-----------------|----------------------------------------|

##### Returns

[Result](#) with valid HTML representing the resource/en-media tag in case of success or error string in case of failure

### 5.25 quantier::synchronization::ISyncConflictResolver::ConflictResolution::IgnoreMine Struct Reference

The [IgnoreMine](#) conflict resolution means "use theirs version and ignore mine version as it doesn't really conflict with theirs version".

```
#include <ISyncConflictResolver.h>
```

#### 5.25.1 Detailed Description

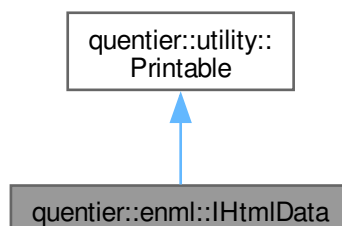
The [IgnoreMine](#) conflict resolution means "use theirs version and ignore mine version as it doesn't really conflict with theirs version".

### 5.26 quantier::enml::IHtmlData Struct Reference

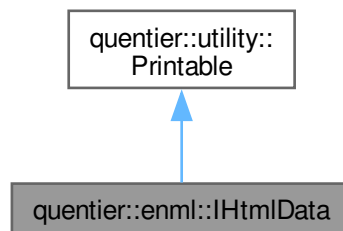
The [IHtmlData](#) represents the result of ENML to HTML conversion: HTML itself plus some metadata.

```
#include <IHtmlData.h>
```

Inheritance diagram for quantier::enml::IHtmlData:



Collaboration diagram for `quentier::enml::IHtmlData`:



### Public Member Functions

- virtual `QString` `html` () const =0
- virtual `quint32` `numEnToDoNodes` () const =0
- virtual `quint32` `numHyperlinkNodes` () const =0
- virtual `quint32` `numEnCryptNodes` () const =0
- virtual `quint32` `numEnDecryptedNodes` () const =0
- `QTextStream &` `print` (`QTextStream &strm`) const override

### Public Member Functions inherited from `quentier::utility::Printable`

- `QString` `toString` () const

#### 5.26.1 Detailed Description

The `IHtmlData` represents the result of ENML to HTML conversion: HTML itself plus some metadata.

#### 5.26.2 Member Function Documentation

##### 5.26.2.1 `html()`

```
virtual QString quentier::enml::IHtmlData::html () const [nodiscard], [pure virtual]
```

HTML representation of note content

##### 5.26.2.2 `numEnCryptNodes()`

```
virtual quint32 quentier::enml::IHtmlData::numEnCryptNodes () const [nodiscard], [pure virtual]
```

Number of en-crypt nodes within note HTML

### 5.26.2.3 numEnDecryptedNodes()

```
virtual quint32 quentier::enml::IHtmlData::numEnDecryptedNodes () const [nodiscard], [pure virtual]
```

Number of decrypted en-crypt nodes within note HTML

### 5.26.2.4 numEnToDoNodes()

```
virtual quint32 quentier::enml::IHtmlData::numEnToDoNodes () const [nodiscard], [pure virtual]
```

Number of ToDo nodes within note HTML

### 5.26.2.5 numHyperlinkNodes()

```
virtual quint32 quentier::enml::IHtmlData::numHyperlinkNodes () const [nodiscard], [pure virtual]
```

Number of hyperlink nodes within note HTML

### 5.26.2.6 print()

```
QTextStream & quentier::enml::IHtmlData::print (
    QTextStream & strm) const [override], [virtual]
```

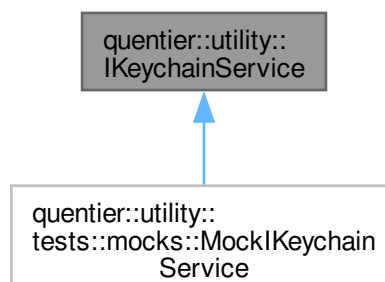
Implements [quentier::utility::Printable](#).

## 5.27 quentier::utility::IKeychainService Class Reference

The [IKeychainService](#) interface provides the ability to interact with the storage of sensitive data - read, write and delete it.

```
#include <IKeychainService.h>
```

Inheritance diagram for quentier::utility::IKeychainService:





## Classes

- class [Exception](#)

The [IKeychainService::Exception](#) class is the base class for exceptions returned inside QFutures from methods of [IKeychainService](#).

## Public Types

- enum class [ErrorCode](#) {  
[NoError](#) , [EntryNotFound](#) , [CouldNotDeleteEntry](#) , [AccessDeniedByUser](#) ,  
[AccessDenied](#) , [NoBackendAvailable](#) , [NotImplemented](#) , [OtherError](#) }

## Public Member Functions

- virtual QFuture< void > [writePassword](#) (QString service, QString key, QString password)=0
- virtual QFuture< QString > [readPassword](#) (QString service, QString key) const =0
- virtual QFuture< void > [deletePassword](#) (QString service, QString key)=0

## Friends

- QUENTIER\_EXPORT QTextStream & **operator**<< (QTextStream &strm, [ErrorCode](#) errorCode)
- QUENTIER\_EXPORT QDebug & **operator**<< (QDebug &dbg, [ErrorCode](#) errorCode)

### 5.27.1 Detailed Description

The [IKeychainService](#) interface provides the ability to interact with the storage of sensitive data - read, write and delete it.

### 5.27.2 Member Enumeration Documentation

#### 5.27.2.1 ErrorCode

```
enum class quentier::utility::IKeychainService::ErrorCode [strong]
```

Error codes for results of operations with the keychain service

#### Enumerator

|                     |                                                 |
|---------------------|-------------------------------------------------|
| NoError             | No error occurred, operation was successful     |
| EntryNotFound       | For the given key no data was found             |
| CouldNotDeleteEntry | Could not delete existing secret data           |
| AccessDeniedByUser  | User denied access to keychain                  |
| AccessDenied        | Access denied for some reason                   |
| NoBackendAvailable  | No platform-specific keychain service available |
| NotImplemented      | Not implemented on platform                     |

|            |                                                                 |
|------------|-----------------------------------------------------------------|
| OtherError | Something else went wrong, the error description specifies what |
|------------|-----------------------------------------------------------------|

### 5.27.3 Member Function Documentation

#### 5.27.3.1 deletePassword()

```
virtual QFuture< void > quentier::utility::IKeychainService::deletePassword (
    QString service,
    QString key) [nodiscard], [pure virtual]
```

deletePassword potentially asynchronously deletes password from the keychain.

##### Parameters

|                |                                        |
|----------------|----------------------------------------|
| <i>service</i> | Name of service within the keychain    |
| <i>key</i>     | Key under which the password is stored |

##### Returns

Future which becomes finished when the operation is complete. If the operation fails, the future would contain an exception.

#### 5.27.3.2 readPassword()

```
virtual QFuture< QString > quentier::utility::IKeychainService::readPassword (
    QString service,
    QString key) const [nodiscard], [pure virtual]
```

readPassword method potentially asynchronously reads password from the keychain.

##### Parameters

|                |                                        |
|----------------|----------------------------------------|
| <i>service</i> | Name of service within the keychain    |
| <i>key</i>     | Key under which the password is stored |

##### Returns

Future which becomes finished when the operation is complete. The value inside the future would be the read password. If the operation fails, the future would contain an exception.

### 5.27.3.3 writePassword()

```
virtual QFuture< void > quantier::utility::IKeychainService::writePassword (
    QString service,
    QString key,
    QString password) [nodiscard], [pure virtual]
```

writePassword method potentially asynchronously writes password to the keychain.

#### Parameters

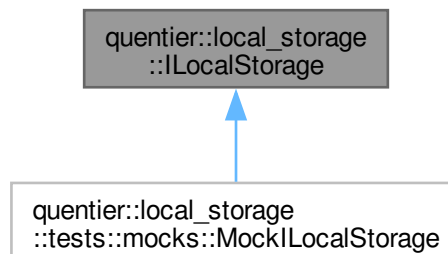
|                 |                                     |
|-----------------|-------------------------------------|
| <i>service</i>  | Name of service within the keychain |
| <i>key</i>      | Key to store the password under     |
| <i>password</i> | Password to store in the keychain   |

#### Returns

Future which becomes finished when the operation is complete. If the operation fails, the future would contain an exception.

## 5.28 quantier::local\_storage::ILocalStorage Class Reference

Inheritance diagram for quantier::local\_storage::ILocalStorage:



#### Classes

- struct [ListObjectsFilters](#)
- struct [ListGuidsFilters](#)
- struct [ListOptionsBase](#)
- struct [ListNotebooksOptions](#)
- struct [ListLinkedNotebooksOptions](#)
- struct [ListSavedSearchesOptions](#)
- struct [ListNotesOptions](#)
- struct [ListTagsOptions](#)

## Public Types

- enum class **StartupOption** { **ClearDatabase** = 1 << 1 , **OverrideLock** = 1 << 2 }
- enum class **ListObjectsFilter** { **Include** , **Exclude** }
- enum class **OrderDirection** { **Ascending** , **Descending** }
- enum class **ListNotebooksOrder** { **NoOrder** , **ByUpdateSequenceNumber** , **ByNotebookName** , **ByCreationTimestamp** , **ByModificationTimestamp** }
- enum class **ListLinkedNotebooksOrder** { **NoOrder** , **ByUpdateSequenceNumber** , **ByShareName** , **ByUsername** }
- enum class **ListTagsOrder** { **NoOrder** , **ByUpdateSequenceNumber** , **ByName** }
- enum class **ListNotesOrder** { **NoOrder** , **ByUpdateSequenceNumber** , **ByTitle** , **ByCreationTimestamp** , **ByModificationTimestamp** , **ByDeletionTimestamp** , **ByAuthor** , **BySource** , **BySourceApplication** , **ByReminderTime** , **ByPlaceName** }
- enum class **ListSavedSearchesOrder** { **NoOrder** , **ByUpdateSequenceNumber** , **ByName** , **ByFormat** }
- enum class **Affiliation** { **Any** , **User** , **AnyLinkedNotebook** , **ParticularLinkedNotebooks** }
- enum class **TagNotesRelation** { **Any** , **WithNotes** , **WithoutNotes** }
- enum class **NoteCountOption** { **IncludeNonDeletedNotes** = 1 << 1 , **IncludeDeletedNotes** = 1 << 2 }
- enum class **UpdateNoteOption** { **UpdateResourceMetadata** = 1 << 1 , **UpdateResourceBinaryData** = 1 << 2 , **UpdateTags** = 1 << 3 }
- enum class **FetchNoteOption** { **WithResourceMetadata** = 1 << 1 , **WithResourceBinaryData** = 1 << 2 }
- enum class **FetchResourceOption** { **WithBinaryData** = 1 << 1 }
- enum class **HighestUsnOption** { **WithinUserOwnContent** , **WithinUserOwnContentAndLinkedNotebooks** }

## Public Member Functions

- **Q\_DECLARE\_FLAGS** (StartupOptions, StartupOption)
- virtual QFuture< bool > **isVersionTooHigh** () const =0
- virtual QFuture< bool > **requiresUpgrade** () const =0
- virtual QFuture< QList< IPatchPtr > > **requiredPatches** () const =0
- virtual QFuture< quint32 > **version** () const =0
- virtual QFuture< quint32 > **highestSupportedVersion** () const =0
- virtual QFuture< quint32 > **userCount** () const =0
- virtual QFuture< void > **putUser** (qevercloud::User user)=0
- virtual QFuture< std::optional< qevercloud::User > > **findUserById** (qevercloud::UserID userId) const =0
- virtual QFuture< void > **expungeUserById** (qevercloud::UserID userId)=0
- virtual QFuture< quint32 > **notebookCount** () const =0
- virtual QFuture< void > **putNotebook** (qevercloud::Notebook notebook)=0
- virtual QFuture< std::optional< qevercloud::Notebook > > **findNotebookByLocalId** (QString notebookLocalId) const =0
- virtual QFuture< std::optional< qevercloud::Notebook > > **findNotebookByGuid** (qevercloud::Guid guid) const =0
- virtual QFuture< std::optional< qevercloud::Notebook > > **findNotebookByName** (QString notebookName, std::optional< qevercloud::Guid > linkedNotebookGuid=std::nullopt) const =0
- virtual QFuture< std::optional< qevercloud::Notebook > > **findDefaultNotebook** () const =0
- virtual QFuture< void > **expungeNotebookByLocalId** (QString notebookLocalId)=0
- virtual QFuture< void > **expungeNotebookByGuid** (qevercloud::Guid notebookGuid)=0
- virtual QFuture< void > **expungeNotebookByName** (QString name, std::optional< qevercloud::Guid > linkedNotebookGuid=std::nullopt)=0
- virtual QFuture< QList< qevercloud::Notebook > > **listNotebooks** (ListNotebooksOptions options={}) const =0
- virtual QFuture< QList< qevercloud::SharedNotebook > > **listSharedNotebooks** (qevercloud::Guid notebookGuid={}) const =0

- virtual `QFuture< QSet< qevercloud::Guid > >` **listNotebookGuids** ([ListGuidsFilters](#) filters, `std::optional< qevercloud::Guid > linkedNotebookGuid={}`) `const =0`
- virtual `QFuture< quint32 >` **linkedNotebookCount** () `const =0`
- virtual `QFuture< void >` **putLinkedNotebook** (`qevercloud::LinkedNotebook linkedNotebook`)=`0`
- virtual `QFuture< std::optional< qevercloud::LinkedNotebook > >` **findLinkedNotebookByGuid** (`qevercloud::Guid guid`) `const =0`
- virtual `QFuture< void >` **expungeLinkedNotebookByGuid** (`qevercloud::Guid guid`)=`0`
- virtual `QFuture< QList< qevercloud::LinkedNotebook > >` **listLinkedNotebooks** ([ListLinkedNotebooksOptions](#) options=`{}`) `const =0`
- virtual `QFuture< quint32 >` **noteCount** (`NoteCountOptions options=NoteCountOptions(NoteCountOption::IncludeNonDeletedNotes)`) `const =0`
- virtual `QFuture< quint32 >` **noteCountPerNotebookLocalId** (`QString notebookLocalId, NoteCountOptions options=NoteCountOptions(NoteCountOption::IncludeNonDeletedNotes)`) `const =0`
- virtual `QFuture< quint32 >` **noteCountPerTagLocalId** (`QString tagLocalId, NoteCountOptions options=NoteCountOptions(NoteCountOption::IncludeNonDeletedNotes)`) `const =0`
- virtual `QFuture< QHash< QString, quint32 > >` **noteCountsPerTags** ([ListTagsOptions](#) listTagsOptions=`{}`, `NoteCountOptions options=NoteCountOptions(NoteCountOption::IncludeNonDeletedNotes)`) `const =0`
- virtual `QFuture< quint32 >` **noteCountPerNotebookAndTagLocalIds** (`QStringList notebookLocalIds, QStringList tagLocalIds, NoteCountOptions options=NoteCountOptions(NoteCountOption::IncludeNonDeletedNotes)`) `const =0`
- virtual `QFuture< void >` **putNote** (`qevercloud::Note note`)=`0`
- virtual `QFuture< void >` **updateNote** (`qevercloud::Note note, UpdateNoteOptions options`)=`0`
- virtual `QFuture< std::optional< qevercloud::Note > >` **findNoteByLocalId** (`QString noteLocalId, FetchNoteOptions options`) `const =0`
- virtual `QFuture< std::optional< qevercloud::Note > >` **findNoteByGuid** (`qevercloud::Guid noteGuid, FetchNoteOptions options`) `const =0`
- virtual `QFuture< QList< qevercloud::Note > >` **listNotes** (`FetchNoteOptions fetchOptions, ListNotesOptions listOptions={}`) `const =0`
- virtual `QFuture< QList< qevercloud::Note > >` **listNotesPerNotebookLocalId** (`QString notebookLocalId, FetchNoteOptions fetchOptions, ListNotesOptions listOptions={}`) `const =0`
- virtual `QFuture< QList< qevercloud::Note > >` **listNotesPerTagLocalId** (`QString tagLocalId, FetchNoteOptions fetchOptions, ListNotesOptions listOptions={}`) `const =0`
- virtual `QFuture< QList< qevercloud::Note > >` **listNotesPerNotebookAndTagLocalIds** (`QStringList notebookLocalIds, QStringList tagLocalIds, FetchNoteOptions fetchOptions, ListNotesOptions listOptions={}`) `const =0`
- virtual `QFuture< QList< qevercloud::Note > >` **listNotesByLocalIds** (`QStringList noteLocalIds, FetchNoteOptions fetchOptions, ListNotesOptions listOptions={}`) `const =0`
- virtual `QFuture< QSet< qevercloud::Guid > >` **listNoteGuids** ([ListGuidsFilters](#) filters, `std::optional< qevercloud::Guid > linkedNotebookGuid={}`) `const =0`
- virtual `QFuture< QList< qevercloud::Note > >` **queryNotes** ([NoteSearchQuery](#) query, `FetchNoteOptions fetchOptions`) `const =0`
- virtual `QFuture< QStringList >` **queryNoteLocalIds** ([NoteSearchQuery](#) query) `const =0`
- virtual `QFuture< void >` **expungeNoteByLocalId** (`QString noteLocalId`)=`0`
- virtual `QFuture< void >` **expungeNoteByGuid** (`qevercloud::Guid noteGuid`)=`0`
- virtual `QFuture< quint32 >` **tagCount** () `const =0`
- virtual `QFuture< void >` **putTag** (`qevercloud::Tag tag`)=`0`
- virtual `QFuture< std::optional< qevercloud::Tag > >` **findTagByLocalId** (`QString tagLocalId`) `const =0`
- virtual `QFuture< std::optional< qevercloud::Tag > >` **findTagByGuid** (`qevercloud::Guid tagGuid`) `const =0`
- virtual `QFuture< std::optional< qevercloud::Tag > >` **findTagByName** (`QString tagName, std::optional< qevercloud::Guid > linkedNotebookGuid=std::nullopt`) `const =0`
- virtual `QFuture< QList< qevercloud::Tag > >` **listTags** ([ListTagsOptions](#) options=`{}`) `const =0`
- virtual `QFuture< QList< qevercloud::Tag > >` **listTagsPerNoteLocalId** (`QString noteLocalId, ListTagsOptions options={}`) `const =0`
- virtual `QFuture< QSet< qevercloud::Guid > >` **listTagGuids** ([ListGuidsFilters](#) filters, `std::optional< qevercloud::Guid > linkedNotebookGuid={}`) `const =0`
- virtual `QFuture< void >` **expungeTagByLocalId** (`QString tagLocalId`)=`0`

- virtual QFuture< void > **expungeTagByGuid** (qevercloud::Guid tagGuid)=0
- virtual QFuture< void > **expungeTagByName** (QString name, std::optional< qevercloud::Guid > linked← NotebookGuid=std::nullopt)=0
- virtual QFuture< quint32 > **resourceCount** (NoteCountOptions options=NoteCountOptions(NoteCount← Option::IncludeNonDeletedNotes)) const =0
- virtual QFuture< quint32 > **resourceCountPerNoteLocalId** (QString noteLocalId) const =0
- virtual QFuture< void > **putResource** (qevercloud::Resource resource)=0
- virtual QFuture< std::optional< qevercloud::Resource > > **findResourceByLocalId** (QString resource← LocalId, FetchResourceOptions options={}) const =0
- virtual QFuture< std::optional< qevercloud::Resource > > **findResourceByGuid** (qevercloud::Guid resourceGuid, FetchResourceOptions options={}) const =0
- virtual QFuture< void > **expungeResourceByLocalId** (QString resourceLocalId)=0
- virtual QFuture< void > **expungeResourceByGuid** (qevercloud::Guid resourceGuid)=0
- virtual QFuture< quint32 > **savedSearchCount** () const =0
- virtual QFuture< void > **putSavedSearch** (qevercloud::SavedSearch search)=0
- virtual QFuture< std::optional< qevercloud::SavedSearch > > **findSavedSearchByLocalId** (QString savedSearchLocalId) const =0
- virtual QFuture< std::optional< qevercloud::SavedSearch > > **findSavedSearchByGuid** (qevercloud::Guid guid) const =0
- virtual QFuture< std::optional< qevercloud::SavedSearch > > **findSavedSearchByName** (QString name) const =0
- virtual QFuture< QList< qevercloud::SavedSearch > > **listSavedSearches** ([ListSavedSearchesOptions](#) options={}) const =0
- virtual QFuture< QSet< qevercloud::Guid > > **listSavedSearchGuids** ([ListGuidsFilters](#) filters) const =0
- virtual QFuture< void > **expungeSavedSearchByLocalId** (QString savedSearchLocalId)=0
- virtual QFuture< void > **expungeSavedSearchByGuid** (qevercloud::Guid guid)=0
- virtual QFuture< qint32 > **highestUpdateSequenceNumber** (HighestUsnOption option) const =0
- virtual QFuture< qint32 > **highestUpdateSequenceNumber** (qevercloud::Guid linkedNotebookGuid) const =0
- virtual [ILocalStorageNotifier](#) \* **notifier** () const =0

## Friends

- QUENTIER\_EXPORT QTextStream & **operator**<< (QTextStream &strm, StartupOption option)
- QUENTIER\_EXPORT QDebug & **operator**<< (QDebug &dbg, StartupOption option)
- QUENTIER\_EXPORT QTextStream & **operator**<< (QTextStream &strm, StartupOptions options)
- QUENTIER\_EXPORT QDebug & **operator**<< (QDebug &dbg, StartupOptions options)
- QUENTIER\_EXPORT QTextStream & **operator**<< (QTextStream &strm, ListObjectsFilter filter)
- QUENTIER\_EXPORT QDebug & **operator**<< (QDebug &dbg, ListObjectsFilter filter)
- QUENTIER\_EXPORT QTextStream & **operator**<< (QTextStream &strm, const [ListObjectsFilters](#) &filters)
- QUENTIER\_EXPORT QDebug & **operator**<< (QDebug &dbg, const [ListObjectsFilters](#) &filters)
- QUENTIER\_EXPORT QTextStream & **operator**<< (QTextStream &strm, const [ListGuidsFilters](#) &filters)
- QUENTIER\_EXPORT QDebug & **operator**<< (QDebug &dbg, const [ListGuidsFilters](#) &filters)
- QUENTIER\_EXPORT QTextStream & **operator**<< (QTextStream &strm, OrderDirection orderDirection)
- QUENTIER\_EXPORT QDebug & **operator**<< (QDebug &dbg, OrderDirection orderDirection)
- QUENTIER\_EXPORT QTextStream & **operator**<< (QTextStream &strm, ListNotebooksOrder order)
- QUENTIER\_EXPORT QDebug & **operator**<< (QDebug &dbg, ListNotebooksOrder order)
- QUENTIER\_EXPORT QTextStream & **operator**<< (QTextStream &strm, ListLinkedNotebooksOrder order)
- QUENTIER\_EXPORT QDebug & **operator**<< (QDebug &dbg, ListLinkedNotebooksOrder order)
- QUENTIER\_EXPORT QTextStream & **operator**<< (QTextStream &strm, ListTagsOrder order)
- QUENTIER\_EXPORT QDebug & **operator**<< (QDebug &dbg, ListTagsOrder order)
- QUENTIER\_EXPORT QTextStream & **operator**<< (QTextStream &strm, ListNotesOrder order)
- QUENTIER\_EXPORT QDebug & **operator**<< (QDebug &dbg, ListNotesOrder order)
- QUENTIER\_EXPORT QTextStream & **operator**<< (QTextStream &strm, ListSavedSearchesOrder order)

- `QUENTIER_EXPORT QDebug & operator<< (QDebug &dbg, ListSavedSearchesOrder order)`
- `QUENTIER_EXPORT QTextStream & operator<< (QTextStream &strm, Affiliation affiliation)`
- `QUENTIER_EXPORT QDebug & operator<< (QDebug &dbg, Affiliation affiliation)`
- `QUENTIER_EXPORT QTextStream & operator<< (QTextStream &strm, const ListNotebooksOptions &options)`
- `QUENTIER_EXPORT QDebug & operator<< (QDebug &dbg, const ListNotebooksOptions &options)`
- `QUENTIER_EXPORT QTextStream & operator<< (QTextStream &strm, const ListLinkedNotebooksOptions &options)`
- `QUENTIER_EXPORT QDebug & operator<< (QDebug &dbg, const ListLinkedNotebooksOptions &options)`
- `QUENTIER_EXPORT QTextStream & operator<< (QTextStream &strm, const ListSavedSearchesOptions &options)`
- `QUENTIER_EXPORT QDebug & operator<< (QDebug &dbg, const ListSavedSearchesOptions &options)`
- `QUENTIER_EXPORT QTextStream & operator<< (QTextStream &strm, const ListNotesOptions &options)`
- `QUENTIER_EXPORT QDebug & operator<< (QDebug &dbg, const ListNotesOptions &options)`
- `QUENTIER_EXPORT QTextStream & operator<< (QTextStream &strm, const ListTagsOptions &options)`
- `QUENTIER_EXPORT QDebug & operator<< (QDebug &dbg, const ListTagsOptions &options)`
- `QUENTIER_EXPORT QTextStream & operator<< (QTextStream &strm, NoteCountOption option)`
- `QUENTIER_EXPORT QDebug & operator<< (QDebug &dbg, NoteCountOption option)`
- `QUENTIER_EXPORT QTextStream & operator<< (QTextStream &strm, NoteCountOptions options)`
- `QUENTIER_EXPORT QDebug & operator<< (QDebug &dbg, NoteCountOptions options)`
- `QUENTIER_EXPORT QTextStream & operator<< (QTextStream &strm, UpdateNoteOption option)`
- `QUENTIER_EXPORT QDebug & operator<< (QDebug &dbg, UpdateNoteOption option)`
- `QUENTIER_EXPORT QTextStream & operator<< (QTextStream &strm, UpdateNoteOptions options)`
- `QUENTIER_EXPORT QDebug & operator<< (QDebug &dbg, UpdateNoteOptions options)`
- `QUENTIER_EXPORT QTextStream & operator<< (QTextStream &strm, FetchNoteOption option)`
- `QUENTIER_EXPORT QDebug & operator<< (QDebug &dbg, FetchNoteOption option)`
- `QUENTIER_EXPORT QTextStream & operator<< (QTextStream &strm, FetchNoteOptions options)`
- `QUENTIER_EXPORT QDebug & operator<< (QDebug &dbg, FetchNoteOptions options)`
- `QUENTIER_EXPORT QTextStream & operator<< (QTextStream &strm, FetchResourceOption option)`
- `QUENTIER_EXPORT QDebug & operator<< (QDebug &dbg, FetchResourceOption option)`
- `QUENTIER_EXPORT QTextStream & operator<< (QTextStream &strm, FetchResourceOptions options)`
- `QUENTIER_EXPORT QDebug & operator<< (QDebug &dbg, FetchResourceOptions options)`
- `QUENTIER_EXPORT QTextStream & operator<< (QTextStream &strm, HighestUsnOption option)`
- `QUENTIER_EXPORT QDebug & operator<< (QDebug &dbg, HighestUsnOption option)`

## 5.28.1 Member Enumeration Documentation

### 5.28.1.1 Affiliation

```
enum class quentier::local\_storage::ILocalStorage::Affiliation [strong]
```

Denotes whether some data item belongs to user's own account, any of linked notebooks or particular linked notebooks

### 5.28.1.2 TagNotesRelation

```
enum class quentier::local\_storage::ILocalStorage::TagNotesRelation [strong]
```

Denotes the relation between tag and notes - whether any note us using the given tag

#### Enumerator

|              |                                                         |
|--------------|---------------------------------------------------------|
| Any          | The tag might be used by some notes or it might not be. |
| WithNotes    | The tag is used by some notes.                          |
| WithoutNotes | The tag is not used by any note.                        |

## 5.28.2 Member Function Documentation

### 5.28.2.1 notifier()

```
virtual ILocalStorageNotifier * quentier::local_storage::ILocalStorage::notifier () const  
[nodiscard], [pure virtual]
```

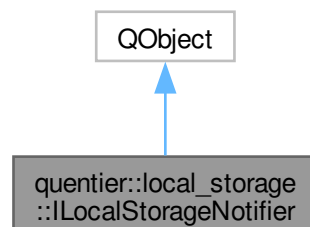
Notifications about the events occurring with the local storage are done via signals emitted by [ILocalStorageNotifier](#).

#### Returns

the pointer to [ILocalStorageNotifier](#) object which would be valid for at least as long as [ILocalStorage](#) object that returned it is alive.

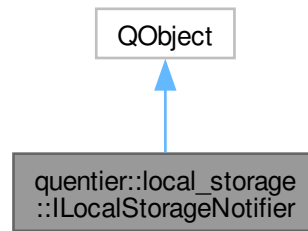
## 5.29 quentier::local\_storage::ILocalStorageNotifier Class Reference

Inheritance diagram for quentier::local\_storage::ILocalStorageNotifier:





Collaboration diagram for quantier::local\_storage::ILocalStorageNotifier:



## Signals

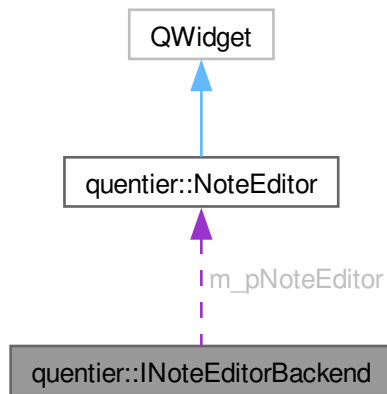
- void **userPut** (qevercloud::User user)
- void **userExpunged** (qevercloud::UserID userId)
- void **notebookPut** (qevercloud::Notebook notebook)
- void **notebookExpunged** (QString notebookLocalId)
- void **linkedNotebookPut** (qevercloud::LinkedNotebook linkedNotebook)
- void **linkedNotebookExpunged** (qevercloud::Guid linkedNotebookGuid)
- void **notePut** (qevercloud::Note note)
- void **noteUpdated** (qevercloud::Note note, ILocalStorage::UpdateNoteOptions options)
- void **noteExpunged** (QString noteLocalId)
- void **tagPut** (qevercloud::Tag tag)
- void **tagExpunged** (QString tagLocalId, QStringList expungedChildTagLocalIds)
- void **resourcePut** (qevercloud::Resource resource)
- void **resourceMetadataPut** (qevercloud::Resource resource)
- void **resourceExpunged** (QString resourceLocalId)
- void **savedSearchPut** (qevercloud::SavedSearch savedSearch)
- void **savedSearchExpunged** (QString savedSearchLocalId)

## Protected Member Functions

- **ILocalStorageNotifier** (QObject \*parent=nullptr)

## 5.30 quantier::INoteEditorBackend Class Reference

Collaboration diagram for quantier::INoteEditorBackend:



### Public Types

- enum class **Rotation** { **Clockwise** , **Counterclockwise** }

### Public Member Functions

- virtual void **initialize** (local\_storage::ILocalStoragePtr localStorage, [SpellChecker](#) &spellChecker, const [Account](#) &account, QThread \*backgroundJobsThread, enml::IDecryptedTextCachePtr decryptedTextCache)=0
- virtual QObject \* **object** ()=0
- virtual QWidget \* **widget** ()=0
- virtual void **setAccount** (const [Account](#) &account)=0
- virtual void **setUndoStack** (QUndoStack \*pUndoStack)=0
- virtual void **setInitialPageHtml** (const QString &html)=0
- virtual void **setNoteNotFoundPageHtml** (const QString &html)=0
- virtual void **setNoteDeletedPageHtml** (const QString &html)=0
- virtual void **setNoteLoadingPageHtml** (const QString &html)=0
- virtual bool **isNoteLoaded** () const =0
- virtual qint64 **idleTime** () const =0
- virtual void **convertToNote** ()=0
- virtual void **saveNoteToLocalStorage** ()=0
- virtual void **setNoteTitle** (const QString &noteTitle)=0
- virtual void **setTagIds** (const QStringList &tagLocalUids, const QStringList &tagGuids)=0
- virtual void **undo** ()=0
- virtual void **redo** ()=0
- virtual void **cut** ()=0
- virtual void **copy** ()=0
- virtual void **paste** ()=0
- virtual void **pasteUnformatted** ()=0

- virtual void **selectAll** ()=0
- virtual void **formatSelectionAsSourceCode** ()=0
- virtual void **fontMenu** ()=0
- virtual void **textBold** ()=0
- virtual void **textItalic** ()=0
- virtual void **textUnderline** ()=0
- virtual void **textStrikethrough** ()=0
- virtual void **textHighlight** ()=0
- virtual void **alignLeft** ()=0
- virtual void **alignCenter** ()=0
- virtual void **alignRight** ()=0
- virtual void **alignFull** ()=0
- virtual QString **selectedText** () const =0
- virtual bool **hasSelection** () const =0
- virtual void **findNext** (const QString &text, bool matchCase) const =0
- virtual void **findPrevious** (const QString &text, bool matchCase) const =0
- virtual void **replace** (const QString &textToReplace, const QString &replacementText, bool matchCase)=0
- virtual void **replaceAll** (const QString &textToReplace, const QString &replacementText, bool matchCase)=0
- virtual void **insertToDoCheckbox** ()=0
- virtual void **insertInAppNoteLink** (const QString &userId, const QString &shardId, const QString &noteGuid, const QString &linkText)=0
- virtual void **setSpellcheck** (bool enabled)=0
- virtual bool **spellCheckEnabled** () const =0
- virtual void **setFont** (const QFont &font)=0
- virtual void **setFontHeight** (int height)=0
- virtual void **setFontColor** (const QColor &color)=0
- virtual void **setBackgroundColor** (const QColor &color)=0
- virtual QPalette **defaultPalette** () const =0
- virtual void **setDefaultPalette** (const QPalette &pal)=0
- virtual const QFont \* **defaultFont** () const =0
- virtual void **setDefaultFont** (const QFont &font)=0
- virtual void **insertHorizontalLine** ()=0
- virtual void **increaseFontSize** ()=0
- virtual void **decreaseFontSize** ()=0
- virtual void **increaseIndentation** ()=0
- virtual void **decreaseIndentation** ()=0
- virtual void **insertBulletedList** ()=0
- virtual void **insertNumberedList** ()=0
- virtual void **insertTableDialog** ()=0
- virtual void **insertFixedWidthTable** (int rows, int columns, int widthInPixels)=0
- virtual void **insertRelativeWidthTable** (int rows, int columns, double relativeWidth)=0
- virtual void **insertTableRow** ()=0
- virtual void **insertTableColumn** ()=0
- virtual void **removeTableRow** ()=0
- virtual void **removeTableColumn** ()=0
- virtual void **addAttachmentDialog** ()=0
- virtual void **saveAttachmentDialog** (const QByteArray &resourceHash)=0
- virtual void **saveAttachmentUnderCursor** ()=0
- virtual void **openAttachment** (const QByteArray &resourceHash)=0
- virtual void **openAttachmentUnderCursor** ()=0
- virtual void **copyAttachment** (const QByteArray &resourceHash)=0
- virtual void **copyAttachmentUnderCursor** ()=0
- virtual void **removeAttachment** (const QByteArray &resourceHash)=0
- virtual void **removeAttachmentUnderCursor** ()=0
- virtual void **renameAttachment** (const QByteArray &resourceHash)=0

- virtual void **renameAttachmentUnderCursor** ()=0
- virtual void **rotatImageAttachment** (const QByteArray &resourceHash, Rotation rotationDirection)=0
- virtual void **rotatImageAttachmentUnderCursor** (Rotation rotationDirection)=0
- virtual void **encryptSelectedText** ()=0
- virtual void **decryptEncryptedTextUnderCursor** ()=0
- virtual void **decryptEncryptedText** (QString encryptedText, QString cipher, QString hint, QString enCrypt↔Index)=0
- virtual void **hideDecryptedTextUnderCursor** ()=0
- virtual void **hideDecryptedText** (QString encryptedText, QString decryptedText, QString cipher, QString hint, QString enDecryptedIndex)=0
- virtual void **editHyperlinkDialog** ()=0
- virtual void **copyHyperlink** ()=0
- virtual void **removeHyperlink** ()=0
- virtual void **onNoteLoadCancelled** ()=0
- virtual bool **print** (QPrinter &printer, [ErrorString](#) &errorDescription)=0
- virtual bool **exportToPdf** (const QString &absoluteFilePath, [ErrorString](#) &errorDescription)=0
- virtual bool **exportToEnex** (const QStringList &tagNames, QString &enex, [ErrorString](#) &errorDescription)=0
- virtual QString **currentNoteLocalId** () const =0
- virtual void **setCurrentNoteLocalId** (const QString &noteLocalUid)=0
- virtual void **clear** ()=0
- virtual bool **isModified** () const =0
- virtual bool **isEditorPageModified** () const =0
- virtual void **setFocusToEditor** ()=0

#### Protected Member Functions

- **INoteEditorBackend** ([NoteEditor](#) \*parent)

#### Protected Attributes

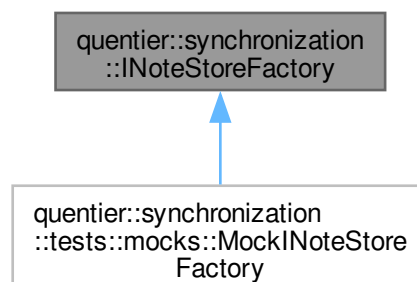
- [NoteEditor](#) \* **m\_pNoteEditor**

#### Friends

- QUENTIER\_EXPORT QTextStream & **operator<<** (QTextStream &strm, Rotation rotation)
- QUENTIER\_EXPORT QDebug & **operator<<** (QDebug &dbg, Rotation rotation)

## 5.31 quantier::synchronization::INoteStoreFactory Class Reference

Inheritance diagram for quantier::synchronization::INoteStoreFactory:

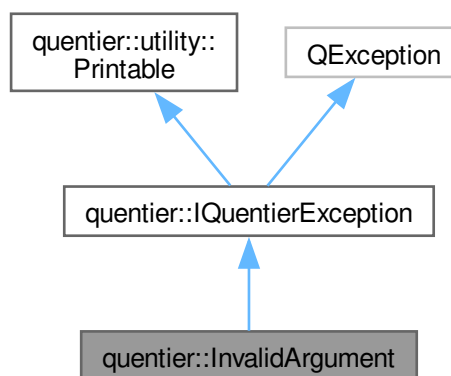


### Public Member Functions

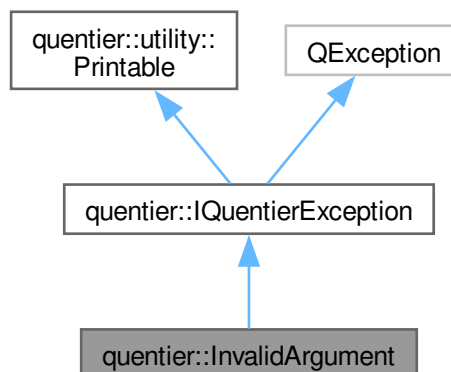
- virtual qevercloud::INoteStorePtr **createNoteStore** (QString noteStoreUrl={}, std::optional< qevercloud::↵ Guid > linkedNotebookGuid={}, qevercloud::IRequestContextPtr ctx={}, qevercloud::IRetryPolicyPtr retry↵ Policy={} )=0

## 5.32 quantier::InvalidArgument Class Reference

Inheritance diagram for quantier::InvalidArgument:



Collaboration diagram for quantier::InvalidArgument:



### Public Member Functions

- **InvalidArgument** ([ErrorString](#) message)
- InvalidArgument \* **clone** () const override
- void **raise** () const override

### Public Member Functions inherited from [quentier::IQuentierException](#)

- [ErrorString](#) **errorMessage** () const
- QString **localizedErrorMessage** () const
- QString **nonLocalizedErrorMessage** () const
- const char \* **what** () const noexcept override
- QTextStream & [print](#) (QTextStream &strm) const override

### Public Member Functions inherited from [quentier::utility::Printable](#)

- QString **toString** () const

### Protected Member Functions

- QString [exceptionDisplayName](#) () const override

### Protected Member Functions inherited from [quentier::IQuentierException](#)

- **IQuentierException** ([ErrorString](#) message)
- **IQuentierException** (const IQuentierException &other)
- IQuentierException & **operator=** (const IQuentierException &other)

## 5.32.1 Member Function Documentation

### 5.32.1.1 [exceptionDisplayName\(\)](#)

```
QString quentier::InvalidArgument::exceptionDisplayName () const [nodiscard], [override],
[protected], [virtual]
```

Implements [quentier::IQuentierException](#).

## 5.33 [quentier::ResourceRecognitionIndexItem::IObjectItem](#) Struct Reference

### Public Member Functions

- virtual QString **objectType** () const =0
- virtual int **weight** () const =0

## 5.34 quantier::local\_storage::IPatch Class Reference

The [IPatch](#) interface represents patches of the local storage. Each such patch somehow changes the layout of local storage persistence so that only compliant & corresponding versions of libquentier can be used to work with it.

```
#include <IPatch.h>
```

### Public Member Functions

- virtual int [fromVersion](#) () const noexcept=0
- virtual int [toVersion](#) () const noexcept=0
- virtual QString [patchShortDescription](#) () const =0
- virtual QString [patchLongDescription](#) () const =0
- virtual QFuture< void > [backupLocalStorage](#) ()=0
- virtual QFuture< void > [restoreLocalStorageFromBackup](#) ()=0
- virtual QFuture< void > [removeLocalStorageBackup](#) ()=0
- virtual QFuture< void > [apply](#) ()=0

### 5.34.1 Detailed Description

The [IPatch](#) interface represents patches of the local storage. Each such patch somehow changes the layout of local storage persistence so that only compliant & corresponding versions of libquentier can be used to work with it.

### 5.34.2 Member Function Documentation

#### 5.34.2.1 [apply\(\)](#)

```
virtual QFuture< void > quantier::local_storage::IPatch::apply () [nodiscard], [pure virtual]
```

Apply the patch to local storage

#### Returns

Future which can be awaited for patch application. Contains exception if patch application fails.

#### 5.34.2.2 [backupLocalStorage\(\)](#)

```
virtual QFuture< void > quantier::local_storage::IPatch::backupLocalStorage () [nodiscard],  
[pure virtual]
```

Backup either the entire local storage or its parts affected by the particular patch, should be called before applying the patch (but can be skipped if not desired).

#### Returns

Future which can be awaited for the backup completion. Contains exception if backup fails.

#### 5.34.2.3 fromVersion()

```
virtual int quentier::local_storage::IPatch::fromVersion () const [nodiscard], [pure virtual],  
[noexcept]
```

##### Returns

Version of local storage to which the patch needs to be applied

#### 5.34.2.4 patchLongDescription()

```
virtual QString quentier::local_storage::IPatch::patchLongDescription () const [nodiscard],  
[pure virtual]
```

##### Returns

Long i.e. detailed description of the patch

#### 5.34.2.5 patchShortDescription()

```
virtual QString quentier::local_storage::IPatch::patchShortDescription () const [nodiscard],  
[pure virtual]
```

##### Returns

Short description of the patch

#### 5.34.2.6 removeLocalStorageBackup()

```
virtual QFuture< void > quentier::local_storage::IPatch::removeLocalStorageBackup () [nodiscard],  
[pure virtual]
```

Remove the previously made backup of local storage, presumably after successful application of the patch so the backup is no longer needed. It won't work if no backup was made before applying a patch, obviously.

##### Returns

Future which can be awaited for local storage backup removal. Contains exception if backup removal fails.

#### 5.34.2.7 restoreLocalStorageFromBackup()

```
virtual QFuture< void > quentier::local_storage::IPatch::restoreLocalStorageFromBackup ()  
[nodiscard], [pure virtual]
```

Restore local storage from previously made backup, presumably after the failed attempt to apply a patch. Won't work if no backup was made before applying a patch, obviously.

##### Returns

Future which can be awaited for the backup restoration completion. Contains exception if backup restoration fails.



## 5.34.2.8 toVersion()

```
virtual int quantier::local_storage::IPatch::toVersion () const [nodiscard], [pure virtual],
[noexcept]
```

## Returns

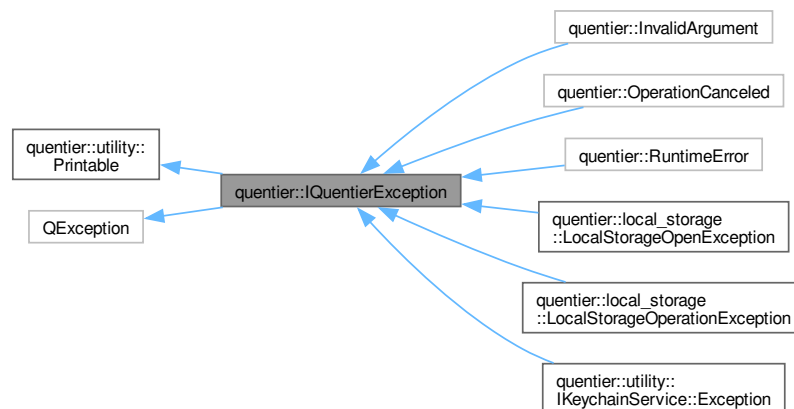
Version of local storage to which the patch would upgrade the local storage

## 5.35 quantier::IQuantierException Class Reference

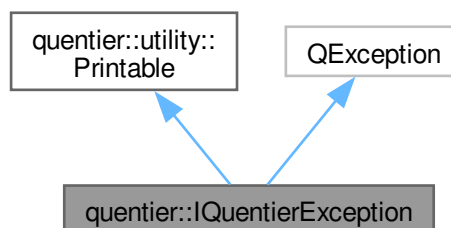
The [IQuantierException](#) class represents the interface for exceptions specific to libquantier and applications based on it.

```
#include <IQuantierException.h>
```

Inheritance diagram for quantier::IQuantierException:



Collaboration diagram for quantier::IQuantierException:



### Public Member Functions

- [ErrorString](#) **errorMessage** () const
- QString **localizedErrorMessage** () const
- QString **nonLocalizedErrorMessage** () const
- const char \* **what** () const noexcept override
- QTextStream & [print](#) (QTextStream &strm) const override

### Public Member Functions inherited from [quentier::utility::Printable](#)

- QString **toString** () const

### Protected Member Functions

- **IQuentierException** ([ErrorString](#) message)
- **IQuentierException** (const IQuentierException &other)
- IQuentierException & **operator=** (const IQuentierException &other)
- virtual QString **exceptionDisplayName** () const =0

## 5.35.1 Detailed Description

The [IQuentierException](#) class represents the interface for exceptions specific to libquentier and applications based on it.

In addition to standard exception features inherited from `std::exception`, [IQuentierException](#) based exceptions can provide both localized and non-localized error messages.

## 5.35.2 Member Function Documentation

### 5.35.2.1 `print()`

```
QTextStream & quentier::IQuentierException::print (  
    QTextStream & strm) const [override], [virtual]
```

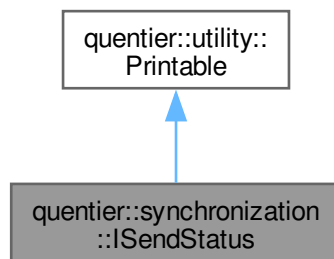
Implements [quentier::utility::Printable](#).

## 5.36 quantier::synchronization::ISendStatus Class Reference

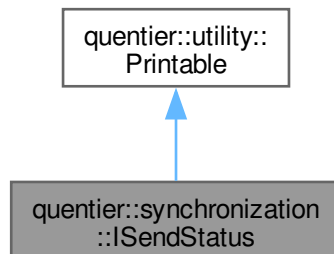
The [ISendStatus](#) interface represents the information about the attempt to send information either from user's own account or from some linked notebook to Evernote.

```
#include <ISendStatus.h>
```

Inheritance diagram for quantier::synchronization::ISendStatus:



Collaboration diagram for quantier::synchronization::ISendStatus:



### Public Types

- using **QExceptionPtr** = std::shared\_ptr<QException>
- using **NoteWithException** = std::pair<qevercloud::Note, QExceptionPtr>
- using [NotebookWithException](#)
- using [SavedSearchWithException](#)
- using **TagWithException** = std::pair<qevercloud::Tag, QExceptionPtr>

## Public Member Functions

- virtual quint64 [totalAttemptedToSendNotes](#) () const =0
- virtual quint64 [totalAttemptedToSendNotebooks](#) () const =0
- virtual quint64 [totalAttemptedToSendSavedSearches](#) () const =0
- virtual quint64 [totalAttemptedToSendTags](#) () const =0
- virtual quint64 [totalSuccessfullySentNotes](#) () const =0
- virtual QList< NoteWithException > [failedToSendNotes](#) () const =0
- virtual quint64 [totalSuccessfullySentNotebooks](#) () const =0
- virtual QList< NotebookWithException > [failedToSendNotebooks](#) () const =0
- virtual quint64 [totalSuccessfullySentSavedSearches](#) () const =0
- virtual QList< SavedSearchWithException > [failedToSendSavedSearches](#) () const =0
- virtual quint64 [totalSuccessfullySentTags](#) () const =0
- virtual QList< TagWithException > [failedToSendTags](#) () const =0
- virtual StopSynchronizationError [stopSynchronizationError](#) () const =0
- virtual bool [needToRepeatIncrementalSync](#) () const =0

## Public Member Functions inherited from [quentier::utility::Printable](#)

- virtual QTextStream & [print](#) (QTextStream &strm) const =0
- QString [toString](#) () const

### 5.36.1 Detailed Description

The [ISendStatus](#) interface represents the information about the attempt to send information either from user's own account or from some linked notebook to Evernote.

### 5.36.2 Member Typedef Documentation

#### 5.36.2.1 NotebookWithException

```
using quentier::synchronization::ISendStatus::NotebookWithException
```

**Initial value:**

```
std::pair<qevercloud::Notebook, QExceptionPtr>
```

#### 5.36.2.2 SavedSearchWithException

```
using quentier::synchronization::ISendStatus::SavedSearchWithException
```

**Initial value:**

```
std::pair<qevercloud::SavedSearch, QExceptionPtr>
```

## 5.36.3 Member Function Documentation

### 5.36.3.1 failedToSendNotebooks()

```
virtual QList< NotebookWithException > quantier::synchronization::ISendStatus::failedToSendNotebooks () const [nodiscard], [pure virtual]
```

#### Returns

list with notebooks and exceptions representing failures to send these notebooks to Evernote

### 5.36.3.2 failedToSendNotes()

```
virtual QList< NoteWithException > quantier::synchronization::ISendStatus::failedToSendNotes () const [nodiscard], [pure virtual]
```

#### Returns

list with notes and exceptions representing failures to send these notes to Evernote

### 5.36.3.3 failedToSendSavedSearches()

```
virtual QList< SavedSearchWithException > quantier::synchronization::ISendStatus::failedToSendSavedSearches () const [nodiscard], [pure virtual]
```

#### Returns

list with saved searches and exceptions representing failures to send these saved searches to Evernote

### 5.36.3.4 failedToSendTags()

```
virtual QList< TagWithException > quantier::synchronization::ISendStatus::failedToSendTags () const [nodiscard], [pure virtual]
```

#### Returns

list with tags and exceptions representing failures to send these tags to Evernote

### 5.36.3.5 needToRepeatIncrementalSync()

```
virtual bool quantier::synchronization::ISendStatus::needToRepeatIncrementalSync () const [nodiscard], [pure virtual]
```

If during the send step of synchronization it was found out that Evernote service's state of account has been updated since the last download step, returns true meaning that incremental download step should be repeated. Otherwise returns false.

#### 5.36.3.6 stopSynchronizationError()

```
virtual StopSynchronizationError quentier::synchronization::ISendStatus::stopSynchronization←  
Error () const [nodiscard], [pure virtual]
```

##### Returns

error which might have occurred during sending the data to Evernote which has prevented further attempts to send anything to Evernote or std::monostate if no such error has occurred

#### 5.36.3.7 totalAttemptedToSendNotebooks()

```
virtual quint64 quentier::synchronization::ISendStatus::totalAttemptedToSendNotebooks () const  
[nodiscard], [pure virtual]
```

##### Returns

total number of notebooks attempted to be sent to Evernote

#### 5.36.3.8 totalAttemptedToSendNotes()

```
virtual quint64 quentier::synchronization::ISendStatus::totalAttemptedToSendNotes () const  
[nodiscard], [pure virtual]
```

##### Returns

total number of notes attempted to be sent to Evernote

#### 5.36.3.9 totalAttemptedToSendSavedSearches()

```
virtual quint64 quentier::synchronization::ISendStatus::totalAttemptedToSendSavedSearches ()  
const [nodiscard], [pure virtual]
```

##### Returns

total number of saved searches attempted to be sent to Evernote

#### 5.36.3.10 totalAttemptedToSendTags()

```
virtual quint64 quentier::synchronization::ISendStatus::totalAttemptedToSendTags () const  
[nodiscard], [pure virtual]
```

##### Returns

total number of tags attempted to be sent to Evernote

#### 5.36.3.11 `totalSuccessfullySentNotebooks()`

```
virtual quint64 quentier::synchronization::ISendStatus::totalSuccessfullySentNotebooks ()  
const [nodiscard], [pure virtual]
```

##### Returns

number of notebooks which were successfully sent to Evernote

#### 5.36.3.12 `totalSuccessfullySentNotes()`

```
virtual quint64 quentier::synchronization::ISendStatus::totalSuccessfullySentNotes () const  
[nodiscard], [pure virtual]
```

##### Returns

number of notes which were successfully sent to Evernote

#### 5.36.3.13 `totalSuccessfullySentSavedSearches()`

```
virtual quint64 quentier::synchronization::ISendStatus::totalSuccessfullySentSavedSearches ()  
const [nodiscard], [pure virtual]
```

##### Returns

number of saved searches which were successfully sent to Evernote

#### 5.36.3.14 `totalSuccessfullySentTags()`

```
virtual quint64 quentier::synchronization::ISendStatus::totalSuccessfullySentTags () const  
[nodiscard], [pure virtual]
```

##### Returns

number of tags which were successfully sent to Evernote

## 5.37 `quentier::ResourceRecognitionIndexItem::IShapeItem` Struct Reference

### Public Member Functions

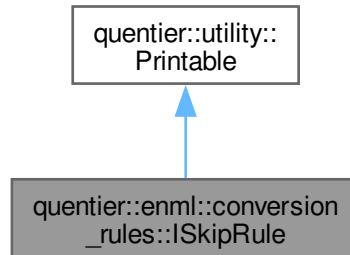
- virtual `QString` **shape** () const =0
- virtual `int` **weight** () const =0

## 5.38 quantier::enml::conversion\_rules::ISkipRule Class Reference

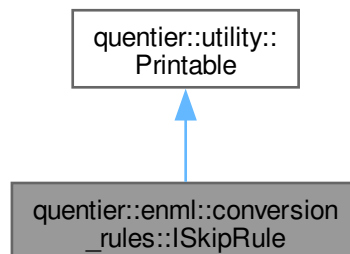
The [ISkipRule](#) interface describes a conversion rule with regards to which some ENML/HTML element/attribute should be skipped during the conversion.

```
#include <ISkipRule.h>
```

Inheritance diagram for quantier::enml::conversion\_rules::ISkipRule:



Collaboration diagram for quantier::enml::conversion\_rules::ISkipRule:



### Public Types

- enum class [Target](#) { [Element](#) , [AttibuteName](#) , [AttributeValue](#) }

### Public Member Functions

- virtual [Target](#) [target](#) () const =0
- virtual QString [value](#) () const =0
- virtual MatchMode [matchMode](#) () const =0
- virtual bool [includeContents](#) () const =0
- virtual Qt::CaseSensitivity [caseSensitivity](#) () const =0
- QTextStream & [print](#) (QTextStream &strm) const override



## Public Member Functions inherited from [quantier::utility::Printable](#)

- QString **toString** () const

## Friends

- QUENTIER\_EXPORT QTextStream & **operator**<< (QTextStream &strm, [Target target](#))
- QUENTIER\_EXPORT QDebug & **operator**<< (QDebug &dbg, [Target target](#))

## 5.38.1 Detailed Description

The [ISkipRule](#) interface describes a conversion rule with regards to which some ENML/HTML element/attribute should be skipped during the conversion.

ENML format prohibits the use of certain HTML tags and attributes. This interface facilitates skipping these tags and attributes in the process of conversion from HTML to ENML

## 5.38.2 Member Enumeration Documentation

### 5.38.2.1 Target

```
enum class quantier::enml::conversion\_rules::ISkipRule::Target [strong]
```

[Target](#) to be affected by the skip rule

### Enumerator

|                |                                     |
|----------------|-------------------------------------|
| Element        | HTML element                        |
| AttributeName  | HTML attribute with specified name  |
| AttributeValue | HTML attribute with specified value |

## 5.38.3 Member Function Documentation

### 5.38.3.1 caseSensitivity()

```
virtual Qt::CaseSensitivity quantier::enml::conversion\_rules::ISkipRule::caseSensitivity ()  
const [nodiscard], [pure virtual]
```

Case sensitivity for target name/value check

### 5.38.3.2 includeContents()

```
virtual bool quantier::enml::conversion\_rules::ISkipRule::includeContents () const [nodiscard],  
[pure virtual]
```

Specifies whether the element contents should be included without the element itself if it needs to be skipped or not

### 5.38.3.3 `matchMode()`

```
virtual MatchMode quentier::enml::conversion_rules::ISkipRule::matchMode () const [nodiscard],  
[pure virtual]
```

Match mode for name or value of the target

### 5.38.3.4 `print()`

```
QTextStream & quentier::enml::conversion_rules::ISkipRule::print (  
    QTextStream & strm) const [override], [virtual]
```

Implements [quentier::utility::Printable](#).

### 5.38.3.5 `target()`

```
virtual Target quentier::enml::conversion_rules::ISkipRule::target () const [nodiscard], [pure  
virtual]
```

[Target](#) to be affected by the skip rule

### 5.38.3.6 `value()`

```
virtual QString quentier::enml::conversion_rules::ISkipRule::value () const [nodiscard], [pure  
virtual]
```

Name or value of the target

## 5.39 `quentier::enml::conversion_rules::ISkipRuleBuilder` Class Reference

### Public Member Functions

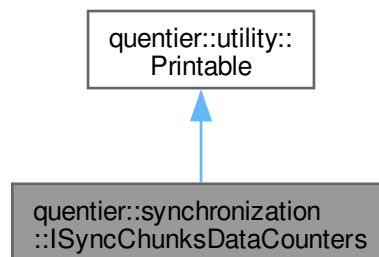
- virtual [ISkipRuleBuilder](#) & **setTarget** ([ISkipRule::Target](#) target)=0
- virtual [ISkipRuleBuilder](#) & **setValue** (QString value)=0
- virtual [ISkipRuleBuilder](#) & **setMatchMode** (MatchMode matchMode)=0
- virtual [ISkipRuleBuilder](#) & **setIncludeContents** (bool includeContents)=0
- virtual [ISkipRuleBuilder](#) & **setCaseSensitivity** (Qt::CaseSensitivity caseSensitivity)=0
- virtual [ISkipRulePtr](#) **build** ()=0

## 5.40 quantier::synchronization::ISyncChunksDataCounters Struct Reference

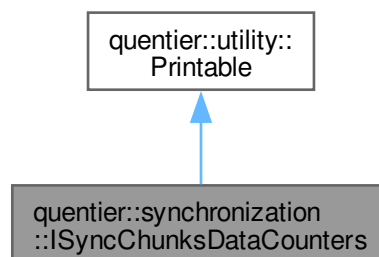
The [ISyncChunksDataCounters](#) interface provides integer counters representing the current progress on processing the data from downloaded sync chunks.

```
#include <ISyncChunksDataCounters.h>
```

Inheritance diagram for quantier::synchronization::ISyncChunksDataCounters:



Collaboration diagram for quantier::synchronization::ISyncChunksDataCounters:



### Public Member Functions

- virtual quint64 [totalSavedSearches](#) () const noexcept=0
- virtual quint64 [totalExpungedSavedSearches](#) () const noexcept=0
- virtual quint64 [addedSavedSearches](#) () const noexcept=0
- virtual quint64 [updatedSavedSearches](#) () const noexcept=0
- virtual quint64 [expungedSavedSearches](#) () const noexcept=0
- virtual quint64 [totalTags](#) () const noexcept=0
- virtual quint64 [totalExpungedTags](#) () const noexcept=0

- virtual quint64 [addedTags](#) () const noexcept=0
- virtual quint64 [updatedTags](#) () const noexcept=0
- virtual quint64 [expungedTags](#) () const noexcept=0
- virtual quint64 [totalLinkedNotebooks](#) () const noexcept=0
- virtual quint64 [totalExpungedLinkedNotebooks](#) () const noexcept=0
- virtual quint64 [addedLinkedNotebooks](#) () const noexcept=0
- virtual quint64 [updatedLinkedNotebooks](#) () const noexcept=0
- virtual quint64 [expungedLinkedNotebooks](#) () const noexcept=0
- virtual quint64 [totalNotebooks](#) () const noexcept=0
- virtual quint64 [totalExpungedNotebooks](#) () const noexcept=0
- virtual quint64 [addedNotebooks](#) () const noexcept=0
- virtual quint64 [updatedNotebooks](#) () const noexcept=0
- virtual quint64 [expungedNotebooks](#) () const noexcept=0

## Public Member Functions inherited from [quentier::utility::Printable](#)

- virtual QTextStream & **print** (QTextStream &strm) const =0
- QString **toString** () const

### 5.40.1 Detailed Description

The [ISyncChunksDataCounters](#) interface provides integer counters representing the current progress on processing the data from downloaded sync chunks.

### 5.40.2 Member Function Documentation

#### 5.40.2.1 [addedLinkedNotebooks\(\)](#)

```
virtual quint64 quentier::synchronization::ISyncChunksDataCounters::addedLinkedNotebooks ()
const [nodiscard], [pure virtual], [noexcept]
```

Number of linked notebooks from sync chunks added to the local storage so far

#### 5.40.2.2 [addedNotebooks\(\)](#)

```
virtual quint64 quentier::synchronization::ISyncChunksDataCounters::addedNotebooks () const
[nnodiscard], [pure virtual], [noexcept]
```

Number of notebooks from sync chunks added to the local storage so far

#### 5.40.2.3 [addedSavedSearches\(\)](#)

```
virtual quint64 quentier::synchronization::ISyncChunksDataCounters::addedSavedSearches ()
const [nodiscard], [pure virtual], [noexcept]
```

Number of saved searches from sync chunks added to the local storage so far

#### 5.40.2.4 addedTags()

```
virtual quint64 quentier::synchronization::ISyncChunksDataCounters::addedTags () const [nodiscard],  
[pure virtual], [noexcept]
```

Number of tags from sync chunks added to the local storage so far

#### 5.40.2.5 expungedLinkedNotebooks()

```
virtual quint64 quentier::synchronization::ISyncChunksDataCounters::expungedLinkedNotebooks ()  
const [nodiscard], [pure virtual], [noexcept]
```

Number of linked notebooks from sync chunks expunged from the local storage so far

#### 5.40.2.6 expungedNotebooks()

```
virtual quint64 quentier::synchronization::ISyncChunksDataCounters::expungedNotebooks () const  
[nodiscard], [pure virtual], [noexcept]
```

Number of notebooks from sync chunks expunged from the local storage so far

#### 5.40.2.7 expungedSavedSearches()

```
virtual quint64 quentier::synchronization::ISyncChunksDataCounters::expungedSavedSearches ()  
const [nodiscard], [pure virtual], [noexcept]
```

Number of saved searches from sync chunks expunged from the local storage so far

#### 5.40.2.8 expungedTags()

```
virtual quint64 quentier::synchronization::ISyncChunksDataCounters::expungedTags () const  
[nodiscard], [pure virtual], [noexcept]
```

Number of tags from sync chunks expunged from the local storage so far

#### 5.40.2.9 totalExpungedLinkedNotebooks()

```
virtual quint64 quentier::synchronization::ISyncChunksDataCounters::totalExpungedLinked←  
Notebooks () const [nodiscard], [pure virtual], [noexcept]
```

Total number of expunged saved searches in downloaded sync chunks

#### 5.40.2.10 totalExpungedNotebooks()

```
virtual quint64 quentier::synchronization::ISyncChunksDataCounters::totalExpungedNotebooks ()  
const [nodiscard], [pure virtual], [noexcept]
```

Total number of expunged notebooks in downloaded sync chunks

#### 5.40.2.11 totalExpungedSavedSearches()

```
virtual quint64 quentier::synchronization::ISyncChunksDataCounters::totalExpungedSavedSearches  
( ) const [nodiscard], [pure virtual], [noexcept]
```

Total number of expunged saved searches in downloaded sync chunks

#### 5.40.2.12 totalExpungedTags()

```
virtual quint64 quentier::synchronization::ISyncChunksDataCounters::totalExpungedTags ( ) const  
[nodiscard], [pure virtual], [noexcept]
```

Total number of expunged tags in downloaded sync chunks

#### 5.40.2.13 totalLinkedNotebooks()

```
virtual quint64 quentier::synchronization::ISyncChunksDataCounters::totalLinkedNotebooks ( )  
const [nodiscard], [pure virtual], [noexcept]
```

Total number of new or updated linked notebooks in downloaded sync chunks

#### 5.40.2.14 totalNotebooks()

```
virtual quint64 quentier::synchronization::ISyncChunksDataCounters::totalNotebooks ( ) const  
[nodiscard], [pure virtual], [noexcept]
```

Total number of new or updated notebooks in downloaded sync chunks

#### 5.40.2.15 totalSavedSearches()

```
virtual quint64 quentier::synchronization::ISyncChunksDataCounters::totalSavedSearches ( )  
const [nodiscard], [pure virtual], [noexcept]
```

Total number of new or updated saved searches in downloaded sync chunks

#### 5.40.2.16 totalTags()

```
virtual quint64 quentier::synchronization::ISyncChunksDataCounters::totalTags ( ) const [nodiscard],  
[pure virtual], [noexcept]
```

Total number of new or updated tags in downloaded sync chunks

#### 5.40.2.17 updatedLinkedNotebooks()

```
virtual quint64 quentier::synchronization::ISyncChunksDataCounters::updatedLinkedNotebooks ( )  
const [nodiscard], [pure virtual], [noexcept]
```

Number of linked notebooks from sync chunks updated in the local storage so far

**5.40.2.18 updatedNotebooks()**

```
virtual quint64 quantier::synchronization::ISyncChunksDataCounters::updatedNotebooks () const
[nodiscard], [pure virtual], [noexcept]
```

Number of notebooks from sync chunks updated in the local storage so far

**5.40.2.19 updatedSavedSearches()**

```
virtual quint64 quantier::synchronization::ISyncChunksDataCounters::updatedSavedSearches ()
const [nodiscard], [pure virtual], [noexcept]
```

Number of saved searches from sync chunks updated in the local storage so far

**5.40.2.20 updatedTags()**

```
virtual quint64 quantier::synchronization::ISyncChunksDataCounters::updatedTags () const [nodiscard],
[pure virtual], [noexcept]
```

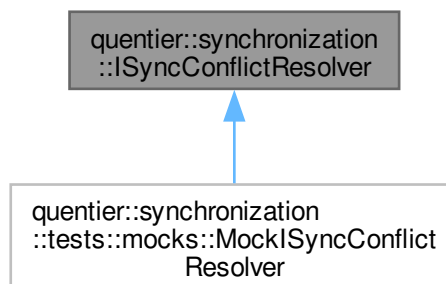
Number of tags from sync chunks updated in the local storage so far

**5.41 quantier::synchronization::ISyncConflictResolver Class Reference**

The [ISyncConflictResolver](#) interface provides methods used to resolve conflicts between local and remote versions of the same data item.

```
#include <ISyncConflictResolver.h>
```

Inheritance diagram for quantier::synchronization::ISyncConflictResolver:

**Classes**

- struct [ConflictResolution](#)

The [ConflictResolution](#) struct is a namespace inside which several other structs determining actual conflict resolutions.

## Public Types

- using [NotebookConflictResolution](#)
- using [NoteConflictResolution](#)
- using [SavedSearchConflictResolution](#)
- using [TagConflictResolution](#)

## Public Member Functions

- virtual QFuture< NotebookConflictResolution > **resolveNotebookConflict** (qevercloud::Notebook theirs, qevercloud::Notebook mine)=0
- virtual QFuture< NoteConflictResolution > **resolveNoteConflict** (qevercloud::Note theirs, qevercloud::Note mine)=0
- virtual QFuture< SavedSearchConflictResolution > **resolveSavedSearchConflict** (qevercloud::SavedSearch theirs, qevercloud::SavedSearch mine)=0
- virtual QFuture< TagConflictResolution > **resolveTagConflict** (qevercloud::Tag theirs, qevercloud::Tag mine)=0

### 5.41.1 Detailed Description

The [ISyncConflictResolver](#) interface provides methods used to resolve conflicts between local and remote versions of the same data item.

### 5.41.2 Member Typedef Documentation

#### 5.41.2.1 NotebookConflictResolution

```
using quantier::synchronization::ISyncConflictResolver::NotebookConflictResolution
```

##### Initial value:

```
std::variant<
    ConflictResolution::UseTheirs, ConflictResolution::UseMine,
    ConflictResolution::IgnoreMine,
    ConflictResolution::MoveMine<qevercloud::Notebook>>
```

#### 5.41.2.2 NoteConflictResolution

```
using quantier::synchronization::ISyncConflictResolver::NoteConflictResolution
```

##### Initial value:

```
std::variant<
    ConflictResolution::UseTheirs, ConflictResolution::UseMine,
    ConflictResolution::IgnoreMine,
    ConflictResolution::MoveMine<qevercloud::Note>>
```

#### 5.41.2.3 SavedSearchConflictResolution

```
using quantier::synchronization::ISyncConflictResolver::SavedSearchConflictResolution
```

##### Initial value:

```
std::variant<
    ConflictResolution::UseTheirs, ConflictResolution::UseMine,
    ConflictResolution::IgnoreMine,
    ConflictResolution::MoveMine<qevercloud::SavedSearch>>
```



### 5.41.2.4 TagConflictResolution

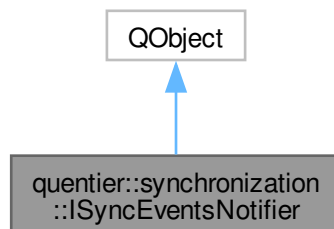
```
using quantier::synchronization::ISyncConflictResolver::TagConflictResolution
```

#### Initial value:

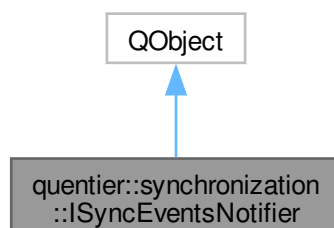
```
std::variant<
    ConflictResolution::IgnoreMine, ConflictResolution::UseTheirs,
    ConflictResolution::UseMine,
    ConflictResolution::MoveMine<qevercloud::Tag>>
```

## 5.42 quantier::synchronization::ISyncEventsNotifier Class Reference

Inheritance diagram for quantier::synchronization::ISyncEventsNotifier:



Collaboration diagram for quantier::synchronization::ISyncEventsNotifier:



### Signals

- void [syncChunksDownloadProgress](#) (qint32 highestDownloadedUsn, qint32 highestServerUsn, qint32 last← PreviousUsn)
- void [syncChunksDownloaded](#) ()
- void [syncChunksDataProcessingProgress](#) (ISyncChunksDataCountersPtr counters)

- void [startLinkedNotebooksDataDownloading](#) (const QList< [qevercloud::LinkedNotebook](#) > &linkedNotebooks)
- void [linkedNotebookSyncChunksDownloadProgress](#) (qint32 highestDownloadedUsn, qint32 highestServerUsn, qint32 lastPreviousUsn, const [qevercloud::LinkedNotebook](#) &linkedNotebook)
- void [linkedNotebookSyncChunksDownloaded](#) (const [qevercloud::LinkedNotebook](#) &linkedNotebook)
- void [linkedNotebookSyncChunksDataProcessingProgress](#) (ISyncChunksDataCountersPtr counters, const [qevercloud::LinkedNotebook](#) &linkedNotebook)
- void [notesDownloadProgress](#) (qint32 notesDownloaded, quint32 totalNotesToDownload)
- void [linkedNotebookNotesDownloadProgress](#) (qint32 notesDownloaded, quint32 totalNotesToDownload, const [qevercloud::LinkedNotebook](#) &linkedNotebook)
- void [resourcesDownloadProgress](#) (qint32 resourcesDownloaded, quint32 totalResourcesToDownload)
- void [linkedNotebookResourcesDownloadProgress](#) (qint32 resourcesDownloaded, quint32 totalResourcesToDownload, const [qevercloud::LinkedNotebook](#) &linkedNotebook)
- void [downloadFinished](#) (bool dataDownloaded)
- void [userOwnSendStatusUpdate](#) (ISendStatusPtr sendStatus)
- void [linkedNotebookSendStatusUpdate](#) (const [qevercloud::Guid](#) &linkedNotebookGuid, ISendStatusPtr sendStatus)

## Protected Member Functions

- [ISyncEventsNotifier](#) (QObject \*parent=nullptr)

## 5.42.1 Member Function Documentation

### 5.42.1.1 downloadFinished

```
void qentier::synchronization::ISyncEventsNotifier::downloadFinished (
    bool dataDownloaded) [signal]
```

This signal is emitted when the initial download step is finished.

#### Parameters

|                       |                                                                                                                                                       |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>dataDownloaded</i> | True if some data was actually downloaded during this step i.e. there were some updates on Evernote servers compared to local state, false otherwise. |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|

### 5.42.1.2 linkedNotebookNotesDownloadProgress

```
void qentier::synchronization::ISyncEventsNotifier::linkedNotebookNotesDownloadProgress (
    quint32 notesDownloaded,
    quint32 totalNotesToDownload,
    const qevercloud::LinkedNotebook & linkedNotebook) [signal]
```

This signal is emitted on each successful download of full note data from some linked notebook.

#### Parameters

|                             |                                                                     |
|-----------------------------|---------------------------------------------------------------------|
| <i>notesDownloaded</i>      | The number of notes downloaded by the moment                        |
| <i>totalNotesToDownload</i> | The total number of notes that need to be downloaded                |
| <i>linkedNotebook</i>       | The linked notebook which notes download progress is being reported |

#### 5.42.1.3 linkedNotebookResourcesDownloadProgress

```
void quantier::synchronization::ISyncEventsNotifier::linkedNotebookResourcesDownloadProgress (
    quint32 resourcesDownloaded,
    quint32 totalResourcesToDownload,
    const qevercloud::LinkedNotebook & linkedNotebook) [signal]
```

This signal is emitted on each successful download of full resource data from linked notebooks during the incremental sync (as individual resources are downloaded along with their notes during full sync).

##### Parameters

|                                 |                                                                         |
|---------------------------------|-------------------------------------------------------------------------|
| <i>resourcesDownloaded</i>      | The number of resources downloaded by the moment                        |
| <i>totalResourcesToDownload</i> | The total number of resources that need to be downloaded                |
| <i>linkedNotebook</i>           | The linked notebook which resources download progress is being reported |

#### 5.42.1.4 linkedNotebookSendStatusUpdate

```
void quantier::synchronization::ISyncEventsNotifier::linkedNotebookSendStatusUpdate (
    const qevercloud::Guid & linkedNotebookGuid,
    ISendStatusPtr sendStatus) [signal]
```

This signal is emitted on each successful or unsuccessful attempt to send some new or locally modified data item from some linked notebook to Evernote.

##### Parameters

|                           |                                                                   |
|---------------------------|-------------------------------------------------------------------|
| <i>linkedNotebookGuid</i> | Guid of the linked notebook for which the send status was updated |
| <i>sendStatus</i>         | The updated send status                                           |

#### 5.42.1.5 linkedNotebookSyncChunksDataProcessingProgress

```
void quantier::synchronization::ISyncEventsNotifier::linkedNotebookSyncChunksDataProcessing↵
Progress (
    ISyncChunksDataCountersPtr counters,
    const qevercloud::LinkedNotebook & linkedNotebook) [signal]
```

This signal is emitted during some linked notebook's downloaded sync chunks contents processing and denotes the progress on that step.

**Parameters**

|                       |                                                                                  |
|-----------------------|----------------------------------------------------------------------------------|
| <i>counters</i>       | Updated sync chunks data counters                                                |
| <i>linkedNotebook</i> | The linked notebook which sync chunks data processing progress is being reported |

**5.42.1.6 linkedNotebookSyncChunksDownloaded**

```
void quantier::synchronization::ISyncEventsNotifier::linkedNotebookSyncChunksDownloaded (
    const qevercloud::LinkedNotebook & linkedNotebook) [signal]
```

This signal is emitted when the sync chunks for data from some linked notebook are downloaded during "remote to local" synchronization step

**Parameters**

|                       |                                                       |
|-----------------------|-------------------------------------------------------|
| <i>linkedNotebook</i> | The linked notebook which sync chunks were downloaded |
|-----------------------|-------------------------------------------------------|

**5.42.1.7 linkedNotebookSyncChunksDownloadProgress**

```
void quantier::synchronization::ISyncEventsNotifier::linkedNotebookSyncChunksDownloadProgress (
    quint32 highestDownloadedUsn,
    quint32 highestServerUsn,
    quint32 lastPreviousUsn,
    const qevercloud::LinkedNotebook & linkedNotebook) [signal]
```

This signal is emitted during linked notebooks sync chunks downloading and denotes the progress of that step, individually for each linked notebook. The percentage of completeness can be computed roughly as  $(\text{highestDownloadedUsn} - \text{lastPreviousUsn}) / (\text{highestServerUsn} - \text{lastPreviousUsn}) * 100\%$ .

**Parameters**

|                             |                                                                                                                                       |
|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| <i>highestDownloadedUsn</i> | The highest update sequence number within data items from linked notebook sync chunks downloaded so far                               |
| <i>highestServerUsn</i>     | The current highest update sequence number within the linked notebook                                                                 |
| <i>lastPreviousUsn</i>      | The last update sequence number from previous sync of the given linked notebook; if current sync is the first one, this value is zero |
| <i>linkedNotebook</i>       | The linked notebook which sync chunks download progress is reported                                                                   |

**5.42.1.8 notesDownloadProgress**

```
void quantier::synchronization::ISyncEventsNotifier::notesDownloadProgress (
    quint32 notesDownloaded,
    quint32 totalNotesToDownload) [signal]
```

This signal is emitted on each successful download of full note data from user's own account.

**Parameters**

|                             |                                                      |
|-----------------------------|------------------------------------------------------|
| <i>notesDownloaded</i>      | The number of notes downloaded by the moment         |
| <i>totalNotesToDownload</i> | The total number of notes that need to be downloaded |

**5.42.1.9 resourcesDownloadProgress**

```
void quantier::synchronization::ISyncEventsNotifier::resourcesDownloadProgress (
    quint32 resourcesDownloaded,
    quint32 totalResourcesToDownload) [signal]
```

This signal is emitted on each successful download of full resource data from user's own account during the incremental sync (as individual resources are downloaded along with their notes during full sync).

**Parameters**

|                                 |                                                          |
|---------------------------------|----------------------------------------------------------|
| <i>resourcesDownloaded</i>      | The number of resources downloaded by the moment         |
| <i>totalResourcesToDownload</i> | The total number of resources that need to be downloaded |

**5.42.1.10 startLinkedNotebooksDataDownloading**

```
void quantier::synchronization::ISyncEventsNotifier::startLinkedNotebooksDataDownloading (
    const QList< qevercloud::LinkedNotebook > & linkedNotebooks) [signal]
```

This signal is emitted before the downloading of data corresponding to linked notebooks starts.

**Parameters**

|                        |                                                                                                       |
|------------------------|-------------------------------------------------------------------------------------------------------|
| <i>linkedNotebooks</i> | Linked notebooks the data from which will start being downloaded after the execution of this callback |
|------------------------|-------------------------------------------------------------------------------------------------------|

**5.42.1.11 syncChunksDataProcessingProgress**

```
void quantier::synchronization::ISyncEventsNotifier::syncChunksDataProcessingProgress (
    ISyncChunksDataCountersPtr counters) [signal]
```

This signal is emitted during user own account's downloaded sync chunks contents processing and denotes the progress on that step.

**5.42.1.12 syncChunksDownloaded**

```
void quantier::synchronization::ISyncEventsNotifier::syncChunksDownloaded () [signal]
```

This signal is emitted when the sync chunks for data from user's own account are downloaded during the download synchronization step.

### 5.42.1.13 syncChunksDownloadProgress

```
void quentier::synchronization::ISyncEventsNotifier::syncChunksDownloadProgress (
    qint32 highestDownloadedUsn,
    qint32 highestServerUsn,
    qint32 lastPreviousUsn) [signal]
```

This signal is emitted during user own account's sync chunks downloading and denotes the progress of that step. The percentage of completeness can be computed roughly as  $(\text{highestDownloadedUsn} - \text{lastPreviousUsn}) / (\text{highestServerUsn} - \text{lastPreviousUsn}) * 100\%$ .

#### Parameters

|                             |                                                                                                          |
|-----------------------------|----------------------------------------------------------------------------------------------------------|
| <i>highestDownloadedUsn</i> | The highest update sequence number within data items from sync chunks downloaded so far                  |
| <i>highestServerUsn</i>     | The current highest update sequence number within the account                                            |
| <i>lastPreviousUsn</i>      | The last update sequence number from previous sync; if current sync is the first one, this value is zero |

### 5.42.1.14 userOwnSendStatusUpdate

```
void quentier::synchronization::ISyncEventsNotifier::userOwnSendStatusUpdate (
    ISendStatusPtr sendStatus) [signal]
```

This signal is emitted on each successful or unsuccessful attempt to send some new or locally modified data item from user's own account to Evernote.

#### Parameters

|                   |                         |
|-------------------|-------------------------|
| <i>sendStatus</i> | The updated send status |
|-------------------|-------------------------|

## 5.43 quentier::synchronization::ISynchronizer Class Reference

### Public Types

- using [SyncResult](#)

### Public Member Functions

- virtual QFuture< std::pair< [Account](#), IAuthenticationInfoPtr > > **authenticateNewAccount** ()=0
- virtual QFuture< IAuthenticationInfoPtr > **authenticateAccount** ([Account](#) account)=0
- virtual SyncResult **synchronizeAccount** ([Account](#) account, local\_storage::ILocalStoragePtr localStorage, utility::cancelers::ICancelerPtr canceler, ISyncOptionsPtr options=nullptr, ISyncConflictResolverPtr syncConflictResolver=nullptr)=0
- virtual void **revokeAuthentication** (qevercloud::UserID userId)=0

### 5.43.1 Member Typedef Documentation

#### 5.43.1.1 SyncResult

```
using quantier::synchronization::ISynchronizer::SyncResult
```

**Initial value:**

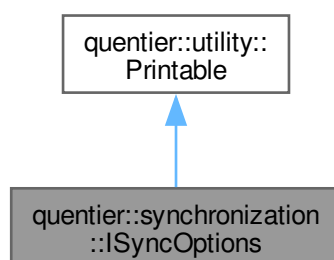
```
std::pair<QFuture<ISyncResultPtr>, ISyncEventsNotifier *>
```

## 5.44 quantier::synchronization::ISyncOptions Class Reference

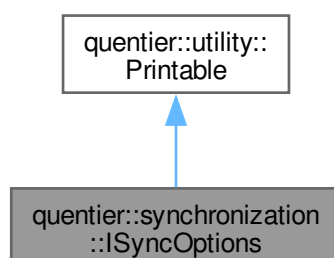
Options for synchronization process.

```
#include <ISyncOptions.h>
```

Inheritance diagram for quantier::synchronization::ISyncOptions:



Collaboration diagram for quantier::synchronization::ISyncOptions:



## Public Member Functions

- virtual bool [downloadNoteThumbnails](#) () const =0
- virtual std::optional< QDir > [inkNoteImagesStorageDir](#) () const =0
- virtual qevercloud::IRequestContextPtr [requestContext](#) () const =0
- virtual qevercloud::IRetryPolicyPtr [retryPolicy](#) () const =0
- virtual std::optional< quint32 > [maxConcurrentNoteDownloads](#) () const =0
- virtual std::optional< quint32 > [maxConcurrentResourceDownloads](#) () const =0

## Public Member Functions inherited from [quentier::utility::Printable](#)

- virtual QTextStream & [print](#) (QTextStream &strm) const =0
- QString [toString](#) () const

### 5.44.1 Detailed Description

Options for synchronization process.

### 5.44.2 Member Function Documentation

#### 5.44.2.1 [downloadNoteThumbnails\(\)](#)

```
virtual bool quentier::synchronization::ISyncOptions::downloadNoteThumbnails () const [nodiscard],
[pure virtual]
```

Flag to enable or disable downloading of note thumbnails during the sync. Note thumbnails are stored inside the local storage along with other note data.

#### 5.44.2.2 [inkNoteImagesStorageDir\(\)](#)

```
virtual std::optional< QDir > quentier::synchronization::ISyncOptions::inkNoteImagesStorageDir
() const [nodiscard], [pure virtual]
```

Directory to store the downloaded ink note images. If this method returns std::nullopt, ink note images would not be downloaded during the sync.

Ink notes images data is stored inside note's resources but the format of the data is not documented, which makes it quite hard to implement note editor able to fully handle ink notes. An easier option is to visualize a static image corresponding to the last revision of the ink note. Such images need to be downloaded separately during the sync if they are required.

Ink note images are stored right in this directory without any subdirectories, file names correspond to pattern <resource guid>.png.

#### 5.44.2.3 [maxConcurrentNoteDownloads\(\)](#)

```
virtual std::optional< quint32 > quentier::synchronization::ISyncOptions::maxConcurrentNote↵
Downloads () const [nodiscard], [pure virtual]
```

Maximal number of concurrent note downloads. Allowing unlimited concurrent note downloads can lead to errors due to reaching the platform's limit on the number of open files. If std::nullopt is returned, the default limit is used.



#### 5.44.2.4 maxConcurrentResourceDownloads()

```
virtual std::optional< quint32 > quentier::synchronization::ISyncOptions::maxConcurrentResourceDownloads () const [nodiscard], [pure virtual]
```

Maximal number of concurrent resource downloads. Allowing unlimited concurrent resource downloads can lead to errors due to reaching the platform's limit on the number of open files. If std::ullopt is returned, the default limit is used.

#### 5.44.2.5 requestContext()

```
virtual qevercloud::IRequestContextPtr quentier::synchronization::ISyncOptions::requestContext () const [nodiscard], [pure virtual]
```

Request context with settings which should be used during the sync. If nullptr then request context with default settings would be used.

#### 5.44.2.6 retryPolicy()

```
virtual qevercloud::IRetryPolicyPtr quentier::synchronization::ISyncOptions::retryPolicy () const [nodiscard], [pure virtual]
```

Retry policy which should be used during the sync. If nullptr then the default retry policy would be used.

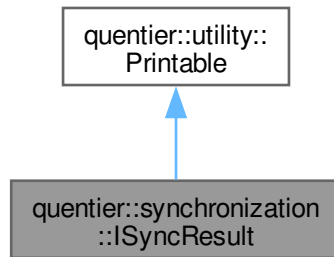
## 5.45 quentier::synchronization::ISyncOptionsBuilder Class Reference

### Public Member Functions

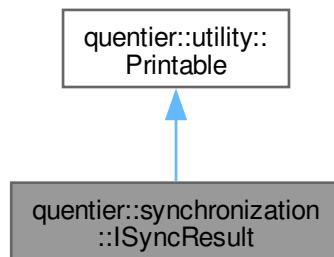
- virtual [ISyncOptionsBuilder](#) & **setDownloadNoteThumbnails** (bool value)=0
- virtual [ISyncOptionsBuilder](#) & **setInkNotelmagesStorageDir** (std::optional< QDir > dir)=0
- virtual [ISyncOptionsBuilder](#) & **setRequestContext** (qevercloud::IRequestContextPtr ctx)=0
- virtual [ISyncOptionsBuilder](#) & **setRetryPolicy** (qevercloud::IRetryPolicyPtr retryPolicy)=0
- virtual [ISyncOptionsBuilder](#) & **setMaxConcurrentNoteDownloads** (std::optional< quint32 > maxConcurrentNoteDownloads)=0
- virtual [ISyncOptionsBuilder](#) & **setMaxConcurrentResourceDownloads** (std::optional< quint32 > maxConcurrentResourceDownloads)=0
- virtual [ISyncOptionsPtr](#) **build** ()=0

## 5.46 quantier::synchronization::ISyncResult Class Reference

Inheritance diagram for quantier::synchronization::ISyncResult:



Collaboration diagram for quantier::synchronization::ISyncResult:



### Public Member Functions

- virtual ISyncStatePtr **syncState** () const =0
- virtual ISyncChunksDataCountersPtr **userAccountSyncChunksDataCounters** () const =0
- virtual QHash< qevercloud::Guid, ISyncChunksDataCountersPtr > **linkedNotebookSyncChunksDataCounters** () const =0
- virtual bool **userAccountSyncChunksDownloaded** () const =0
- virtual QSet< qevercloud::Guid > **linkedNotebookGuidsWithSyncChunksDownloaded** () const =0
- virtual IDownloadNotesStatusPtr **userAccountDownloadNotesStatus** () const =0
- virtual QHash< qevercloud::Guid, IDownloadNotesStatusPtr > **linkedNotebookDownloadNotesStatuses** () const =0
- virtual IDownloadResourcesStatusPtr **userAccountDownloadResourcesStatus** () const =0
- virtual QHash< qevercloud::Guid, IDownloadResourcesStatusPtr > **linkedNotebookDownloadResourcesStatuses** () const =0
- virtual ISendStatusPtr **userAccountSendStatus** () const =0
- virtual QHash< qevercloud::Guid, ISendStatusPtr > **linkedNotebookSendStatuses** () const =0
- virtual StopSynchronizationError **stopSynchronizationError** () const =0

## Public Member Functions inherited from [quentier::utility::Printable](#)

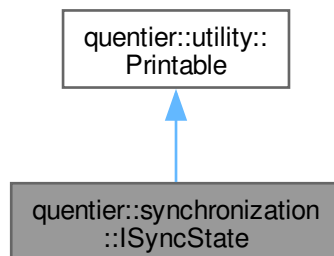
- virtual QTextStream & **print** (QTextStream &strm) const =0
- QString **toString** () const

## 5.47 quentier::synchronization::ISyncState Class Reference

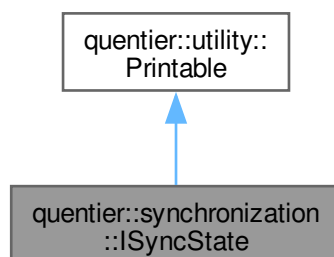
The [ISyncState](#) interface provides accessory methods to determine the sync state for the account.

```
#include <ISyncState.h>
```

Inheritance diagram for quentier::synchronization::ISyncState:



Collaboration diagram for quentier::synchronization::ISyncState:



## Public Member Functions

- virtual qint32 **userDataUpdateCount** () const =0
- virtual qevercloud::Timestamp **userDataLastSyncTime** () const =0
- virtual QHash< qevercloud::Guid, qint32 > **linkedNotebookUpdateCounts** () const =0
- virtual QHash< qevercloud::Guid, qevercloud::Timestamp > **linkedNotebookLastSyncTimes** () const =0

## Public Member Functions inherited from [quentier::utility::Printable](#)

- virtual QTextStream & **print** (QTextStream &strm) const =0
- QString **toString** () const

### 5.47.1 Detailed Description

The [ISyncState](#) interface provides accessory methods to determine the sync state for the account.

## 5.48 quentier::synchronization::ISyncStateBuilder Class Reference

### Public Member Functions

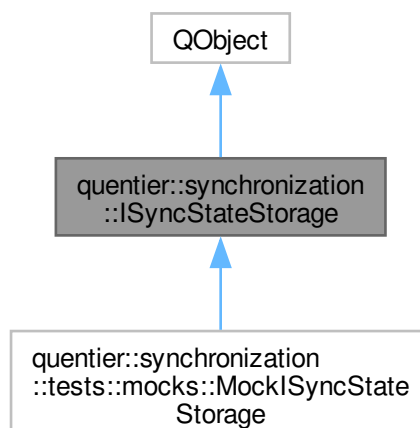
- virtual [ISyncStateBuilder](#) & **setUserDataUpdateCount** (qint32 updateCount)=0
- virtual [ISyncStateBuilder](#) & **setUserDataLastSyncTime** (qevercloud::Timestamp lastSyncTime)=0
- virtual [ISyncStateBuilder](#) & **setLinkedNotebookUpdateCounts** (QHash< qevercloud::Guid, qint32 > updateCounts)=0
- virtual [ISyncStateBuilder](#) & **setLinkedNotebookLastSyncTimes** (QHash< qevercloud::Guid, qevercloud::Timestamp > lastSyncTimes)=0
- virtual ISyncStatePtr **build** ()=0

## 5.49 quentier::synchronization::ISyncStateStorage Class Reference

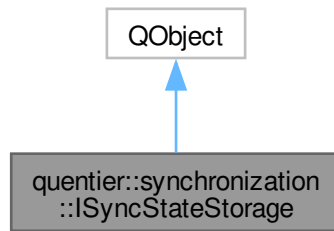
The [ISyncStateStorage](#) interface represents the interface of a class which stores sync state for given accounts persistently and provides access to previously stores sync states.

```
#include <ISyncStateStorage.h>
```

Inheritance diagram for quentier::synchronization::ISyncStateStorage:



Collaboration diagram for `quentier::synchronization::ISyncStateStorage`:



### Signals

- void `notifySyncStateUpdated` (`Account` account, `ISyncStatePtr` syncState)

### Public Member Functions

- virtual `ISyncStatePtr` `getSyncState` (const `Account` &account)=0
- virtual void `setSyncState` (const `Account` &account, `ISyncStatePtr` syncState)=0

### Protected Member Functions

- `ISyncStateStorage` (`QObject` \*parent=nullptr)

## 5.49.1 Detailed Description

The `ISyncStateStorage` interface represents the interface of a class which stores sync state for given accounts persistently and provides access to previously stores sync states.

## 5.49.2 Member Function Documentation

### 5.49.2.1 `notifySyncStateUpdated`

```
void quentier::synchronization::ISyncStateStorage::notifySyncStateUpdated (
    Account account,
    ISyncStatePtr syncState) [signal]
```

Classes implementing `ISyncStateStorage` interface are expected to emit `notifySyncStateUpdated` signal each time when sync state for the corresponding account is updated

## 5.50 `quentier::ResourceRecognitionIndexItem::ITextItem` Struct Reference

### Public Member Functions

- virtual `QString text ()` const =0
- virtual `int weight ()` const =0

## 5.51 `quentier::synchronization::IUserStoreFactory` Class Reference

### Public Member Functions

- virtual `qevercloud::IUserStorePtr createUserStore (QString userStoreUrl={}, qevercloud::IRequestContextPtr ctx={}, qevercloud::IRetryPolicyPtr retryPolicy={})`=0

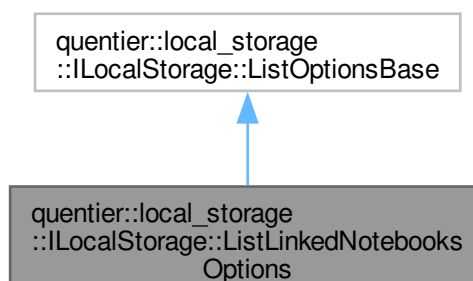
## 5.52 `quentier::local_storage::ILocalStorage::ListGuidsFilters` Struct Reference

### Public Attributes

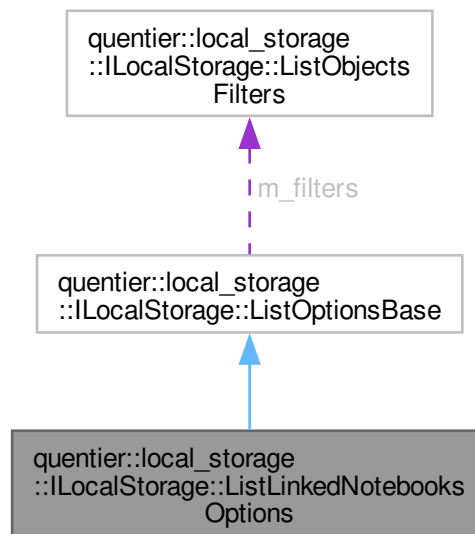
- `std::optional< ListObjectsFilter > m_locallyModifiedFilter`
- `std::optional< ListObjectsFilter > m_locallyFavoritedFilter`

## 5.53 `quentier::local_storage::ILocalStorage::ListLinkedNotebooksOptions` Struct Reference

Inheritance diagram for `quentier::local_storage::ILocalStorage::ListLinkedNotebooksOptions`:



Collaboration diagram for `quentier::local_storage::ILocalStorage::ListLinkedNotebooksOptions`:



#### Public Attributes

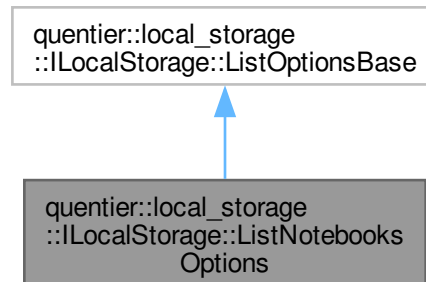
- `ListLinkedNotebooksOrder` **m\_order** = `ListLinkedNotebooksOrder::NoOrder`

#### Public Attributes inherited from `quentier::local_storage::ILocalStorage::ListOptionsBase`

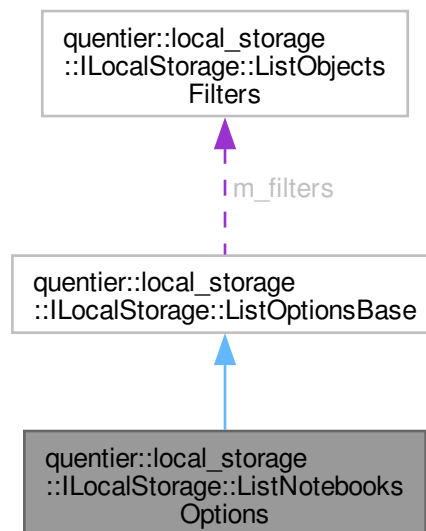
- `ListObjectsFilters` **m\_filters** = {}
- quint64 **m\_limit** = 0UL
- quint64 **m\_offset** = 0UL
- `OrderDirection` **m\_direction** = `OrderDirection::Ascending`

## 5.54 quantier::local\_storage::ILocalStorage::ListNotebooksOptions Struct Reference

Inheritance diagram for quantier::local\_storage::ILocalStorage::ListNotebooksOptions:



Collaboration diagram for quantier::local\_storage::ILocalStorage::ListNotebooksOptions:



### Public Attributes

- ListNotebooksOrder **m\_order** = ListNotebooksOrder::NoOrder
- [Affiliation](#) **m\_affiliation** = Affiliation::Any
- `QList< qevercloud::Guid >` **m\_linkedNotebookGuids**

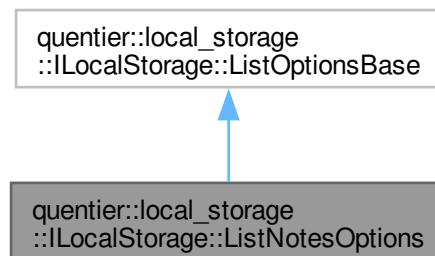


**Public Attributes inherited from [quantier::local\\_storage::ILocalStorage::ListOptionsBase](#)**

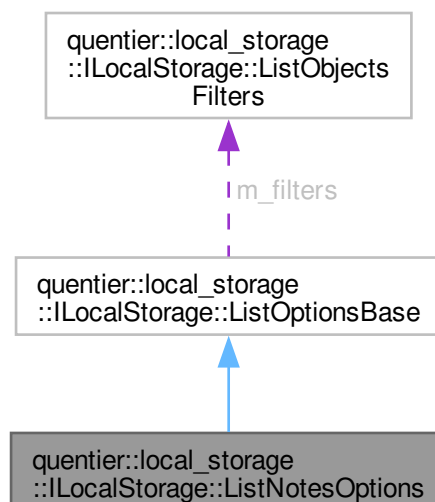
- [ListObjectsFilters](#) **m\_filters** = {}
- quint64 **m\_limit** = 0UL
- quint64 **m\_offset** = 0UL
- OrderDirection **m\_direction** = OrderDirection::Ascending

**5.55 quantier::local\_storage::ILocalStorage::ListNotesOptions Struct Reference**

Inheritance diagram for quantier::local\_storage::ILocalStorage::ListNotesOptions:



Collaboration diagram for quantier::local\_storage::ILocalStorage::ListNotesOptions:



**Public Attributes**

- ListNotesOrder **m\_order** = ListNotesOrder::NoOrder

**Public Attributes inherited from [quentier::local\\_storage::ILocalStorage::ListOptionsBase](#)**

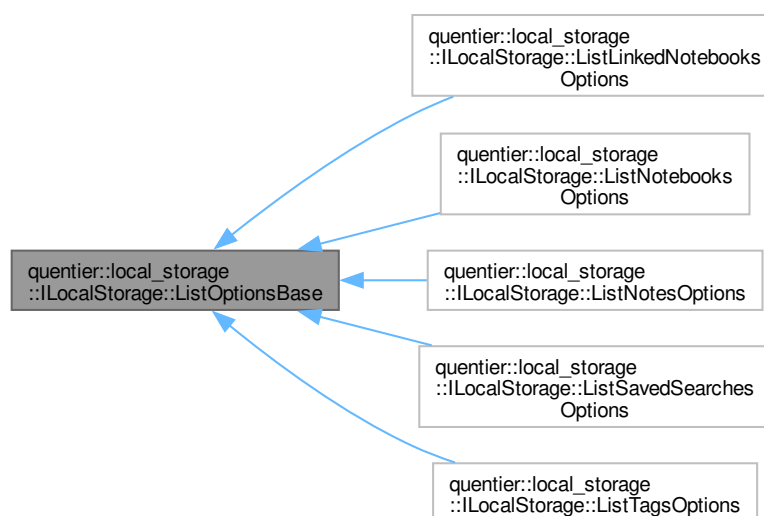
- [ListObjectsFilters](#) **m\_filters** = {}
- quint64 **m\_limit** = 0UL
- quint64 **m\_offset** = 0UL
- OrderDirection **m\_direction** = OrderDirection::Ascending

**5.56 quentier::local\_storage::ILocalStorage::ListObjectsFilters Struct Reference****Public Attributes**

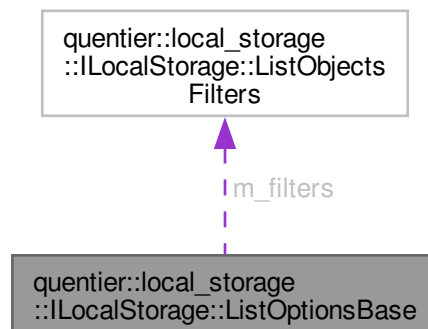
- std::optional< ListObjectsFilter > **m\_locallyModifiedFilter**
- std::optional< ListObjectsFilter > **m\_withGuidFilter**
- std::optional< ListObjectsFilter > **m\_localOnlyFilter**
- std::optional< ListObjectsFilter > **m\_locallyFavoritedFilter**

**5.57 quentier::local\_storage::ILocalStorage::ListOptionsBase Struct Reference**

Inheritance diagram for quentier::local\_storage::ILocalStorage::ListOptionsBase:



Collaboration diagram for quantier::local\_storage::ILocalStorage::ListOptionsBase:

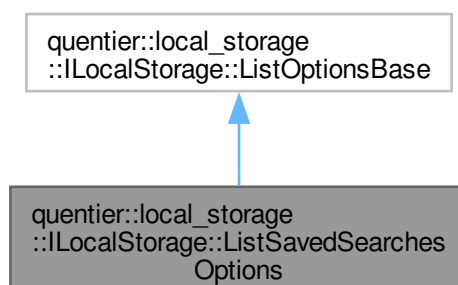


#### Public Attributes

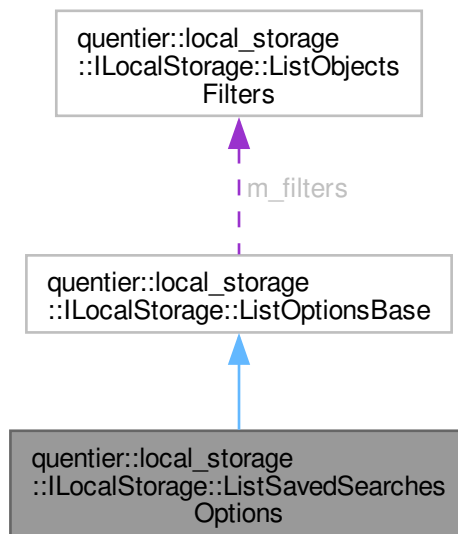
- [ListObjectsFilters](#) `m_filters` = {}
- quint64 `m_limit` = 0UL
- quint64 `m_offset` = 0UL
- OrderDirection `m_direction` = OrderDirection::Ascending

## 5.58 quantier::local\_storage::ILocalStorage::ListSavedSearchesOptions Struct Reference

Inheritance diagram for quantier::local\_storage::ILocalStorage::ListSavedSearchesOptions:



Collaboration diagram for `quentier::local_storage::ILocalStorage::ListSavedSearchesOptions`:



### Public Attributes

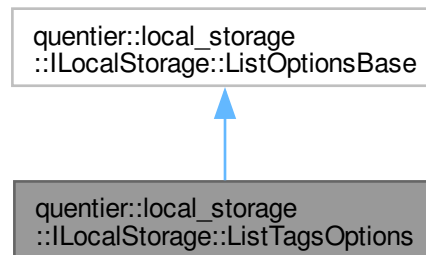
- ListSavedSearchesOrder **m\_order** = ListSavedSearchesOrder::NoOrder

### Public Attributes inherited from [quentier::local\\_storage::ILocalStorage::ListOptionsBase](#)

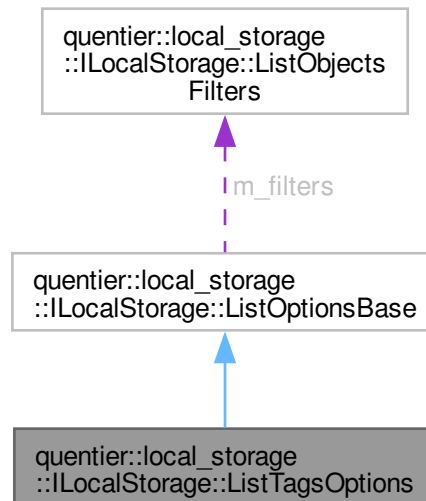
- [ListObjectsFilters](#) **m\_filters** = {}
- quint64 **m\_limit** = 0UL
- quint64 **m\_offset** = 0UL
- OrderDirection **m\_direction** = OrderDirection::Ascending

## 5.59 quantier::local\_storage::ILocalStorage::ListTagsOptions Struct Reference

Inheritance diagram for quantier::local\_storage::ILocalStorage::ListTagsOptions:



Collaboration diagram for quantier::local\_storage::ILocalStorage::ListTagsOptions:



### Public Attributes

- ListTagsOrder **m\_order** = ListTagsOrder::NoOrder
- [Affiliation](#) **m\_affiliation** = Affiliation::Any
- QList< qevercloud::Guid > **m\_linkedNotebookGuids**
- [TagNotesRelation](#) **m\_tagNotesRelation** = [TagNotesRelation::Any](#)

## Public Attributes inherited from [quentier::local\\_storage::ILocalStorage::ListOptionsBase](#)

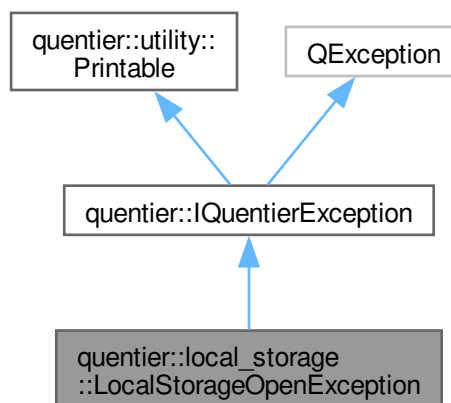
- [ListObjectsFilters](#) **m\_filters** = {}
- quint64 **m\_limit** = 0UL
- quint64 **m\_offset** = 0UL
- OrderDirection **m\_direction** = OrderDirection::Ascending

## 5.60 quentier::local\_storage::LocalStorageOpenException Class Reference

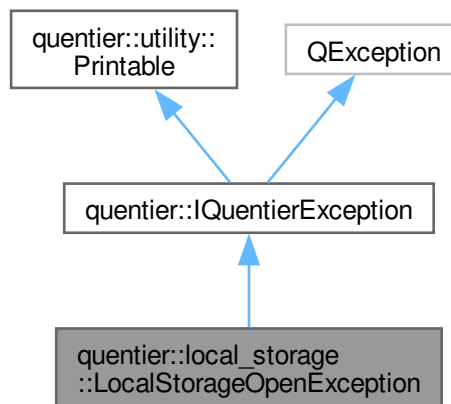
The [LocalStorageOpenException](#) is thrown on failure to open the local storage database.

```
#include <LocalStorageOpenException.h>
```

Inheritance diagram for quentier::local\_storage::LocalStorageOpenException:



Collaboration diagram for `quentier::local_storage::LocalStorageOpenException`:



### Public Member Functions

- **LocalStorageOpenException** (const [ErrorString](#) &message)
- LocalStorageOpenException \* **clone** () const override
- void **raise** () const override

### Public Member Functions inherited from [quentier::IQuentierException](#)

- [ErrorString](#) **errorMessage** () const
- QString **localizedErrorMessage** () const
- QString **nonLocalizedErrorMessage** () const
- const char \* **what** () const noexcept override
- QTextStream & [print](#) (QTextStream &strm) const override

### Public Member Functions inherited from [quentier::utility::Printable](#)

- QString **toString** () const

### Protected Member Functions

- QString [exceptionDisplayName](#) () const override

### Protected Member Functions inherited from [quentier::IQuentierException](#)

- **IQuentierException** ([ErrorString](#) message)
- **IQuentierException** (const IQuentierException &other)
- IQuentierException & **operator=** (const IQuentierException &other)

### 5.60.1 Detailed Description

The [LocalStorageOpenException](#) is thrown on failure to open the local storage database.

### 5.60.2 Member Function Documentation

#### 5.60.2.1 exceptionDisplayName()

```
QString quantier::local_storage::LocalStorageOpenException::exceptionDisplayName () const
[nodiscard], [override], [protected], [virtual]
```

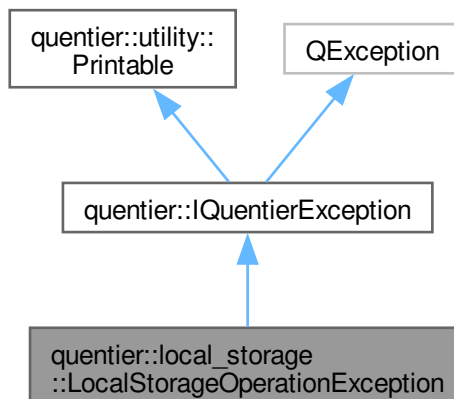
Implements [quantier::IQuantierException](#).

## 5.61 quantier::local\_storage::LocalStorageOperationException Class Reference

The [LocalStorageOperationException](#) is thrown when the local storage encounters some internal error during the attempt to process some operation.

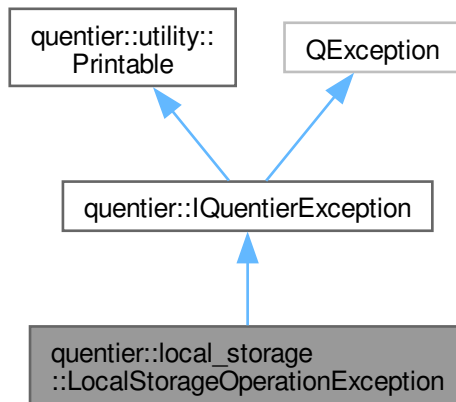
```
#include <LocalStorageOperationException.h>
```

Inheritance diagram for quantier::local\_storage::LocalStorageOperationException:





Collaboration diagram for `quentier::local_storage::LocalStorageOperationException`:



### Public Member Functions

- **LocalStorageOperationException** ([ErrorString](#) message)
- LocalStorageOperationException \* **clone** () const override
- void **raise** () const override

### Public Member Functions inherited from [quentier::IQuentierException](#)

- [ErrorString](#) **errorMessage** () const
- QString **localizedErrorMessage** () const
- QString **nonLocalizedErrorMessage** () const
- const char \* **what** () const noexcept override
- QTextStream & [print](#) (QTextStream &strm) const override

### Public Member Functions inherited from [quentier::utility::Printable](#)

- QString **toString** () const

### Protected Member Functions

- QString [exceptionDisplayName](#) () const override

### Protected Member Functions inherited from [quentier::IQuentierException](#)

- **IQuentierException** ([ErrorString](#) message)
- **IQuentierException** (const IQuentierException &other)
- IQuentierException & **operator=** (const IQuentierException &other)

### 5.61.1 Detailed Description

The [LocalStorageOperationException](#) is thrown when the local storage encounters some internal error during the attempt to process some operation.

### 5.61.2 Member Function Documentation

#### 5.61.2.1 exceptionDisplayName()

```
QString quentier::local_storage::LocalStorageOperationException::exceptionDisplayName () const
[nodiscard], [override], [protected], [virtual]
```

Implements [quentier::IQuentierException](#).

## 5.62 quentier::utility::LRUCache< Key, Value, Allocator > Class Template Reference

### Public Types

- using **key\_type** = Key
- using **mapped\_type** = Value
- using **allocator\_type** = Allocator
- using **value\_type** = std::pair<key\_type, mapped\_type>
- using **container\_type** = std::list<value\_type, allocator\_type>
- using **size\_type** = typename container\_type::size\_type
- using **difference\_type** = typename container\_type::difference\_type
- using **iterator** = typename container\_type::iterator
- using **const\_iterator** = typename container\_type::const\_iterator
- using **reverse\_iterator** = std::reverse\_iterator<iterator>
- using **const\_reverse\_iterator** = std::reverse\_iterator<const\_iterator>
- using **reference** = value\_type &
- using **const\_reference** = const value\_type &
- using **pointer** = typename std::allocator\_traits<allocator\_type>::pointer
- using [const\\_pointer](#)

### Public Member Functions

- **LRUCache** (const std::size\_t maxSize=100)
- iterator **begin** () noexcept
- const\_iterator **begin** () const noexcept
- reverse\_iterator **rbegin** () noexcept
- const\_reverse\_iterator **rbegin** () const noexcept
- iterator **end** () noexcept
- const\_iterator **end** () const noexcept
- reverse\_iterator **rend** () noexcept
- const\_reverse\_iterator **rend** () const noexcept
- bool **empty** () const noexcept
- std::size\_t **size** () const noexcept
- std::size\_t **max\_size** () const noexcept
- void **clear** ()
- void **put** (const key\_type &key, const mapped\_type &value)
- const mapped\_type \* **get** (const key\_type &key) const noexcept
- bool **exists** (const key\_type &key) const noexcept
- bool **remove** (const key\_type &key) noexcept
- void **setMaxSize** (const std::size\_t maxSize)

## 5.62.1 Member Typedef Documentation

### 5.62.1.1 `const_pointer`

```
template<class Key, class Value, class Allocator = std::allocator<std::pair<Key, Value>>>>
using quentier::utility::LRUCache< Key, Value, Allocator >::const_pointer
```

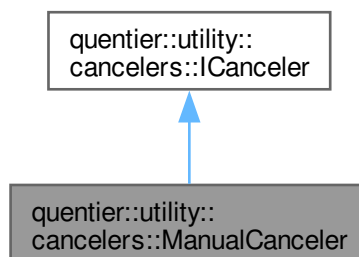
Initial value:

```
typename std::allocator_traits<allocator_type>::const_pointer
```

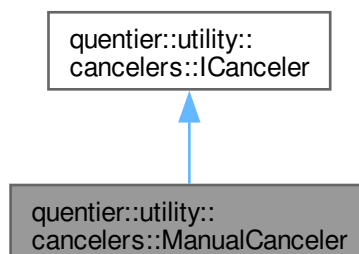
## 5.63 `quentier::utility::cancelers::ManualCanceler` Class Reference

```
#include <ManualCanceler.h>
```

Inheritance diagram for `quentier::utility::cancelers::ManualCanceler`:



Collaboration diagram for `quentier::utility::cancelers::ManualCanceler`:



## Public Member Functions

- **ManualCanceler** (ManualCanceler &&other) noexcept
- ManualCanceler & **operator=** (ManualCanceler &&other) noexcept
- void [cancel](#) () noexcept
- bool [isCanceled](#) () const noexcept override

### 5.63.1 Detailed Description

[ICanceler](#) which allows one to manually call cancel method to cancel some task

### 5.63.2 Member Function Documentation

#### 5.63.2.1 cancel()

```
void quantier::utility::cancelers::ManualCanceler::cancel () [noexcept]
```

Manually cancel a task

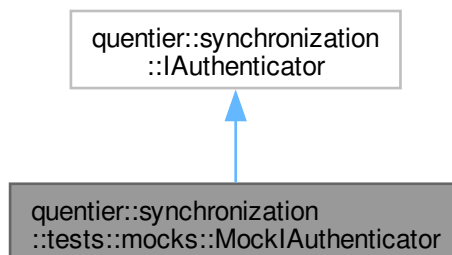
#### 5.63.2.2 isCanceled()

```
bool quantier::utility::cancelers::ManualCanceler::isCanceled () const [nodiscard], [override], [virtual], [noexcept]
```

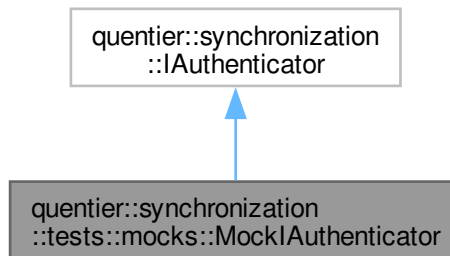
Implements [quantier::utility::cancelers::ICanceler](#).

## 5.64 quantier::synchronization::tests::mocks::MockIAuthenticator Class Reference

Inheritance diagram for quantier::synchronization::tests::mocks::MockIAuthenticator:



Collaboration diagram for `quentier::synchronization::tests::mocks::MockIAuthenticator`:



#### Public Member Functions

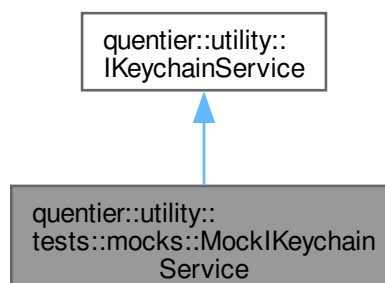
- **MOCK\_METHOD** (`QFuture< IAuthenticationInfoPtr >`, `authenticateNewAccount`, `()`, `(override)`)
- **MOCK\_METHOD** (`QFuture< IAuthenticationInfoPtr >`, `authenticateAccount`, `(Account account)`, `(override)`)

#### Public Member Functions inherited from `quentier::synchronization::IAuthenticator`

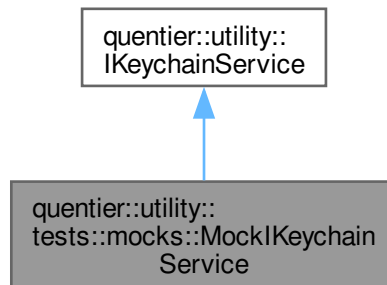
- virtual `QFuture< IAuthenticationInfoPtr >` **authenticateNewAccount** `()=0`
- virtual `QFuture< IAuthenticationInfoPtr >` **authenticateAccount** `(Account account)=0`

## 5.65 `quentier::utility::tests::mocks::MockIKeychainService` Class Reference

Inheritance diagram for `quentier::utility::tests::mocks::MockIKeychainService`:



Collaboration diagram for `quentier::utility::tests::mocks::MockIKeychainService`:



### Public Member Functions

- **MOCK\_METHOD** (`QFuture< void >`, [writePassword](#),(`QString` service, `QString` key, `QString` password),(`override`))
- **MOCK\_METHOD** (`QFuture< QString >`, [readPassword](#),(`QString` service, `QString` key),(`const`, `override`))
- **MOCK\_METHOD** (`QFuture< void >`, [deletePassword](#),(`QString` service, `QString` key),(`override`))

### Public Member Functions inherited from [quentier::utility::IKeychainService](#)

- virtual `QFuture< void >` [writePassword](#) (`QString` service, `QString` key, `QString` password)=0
- virtual `QFuture< QString >` [readPassword](#) (`QString` service, `QString` key) `const` =0
- virtual `QFuture< void >` [deletePassword](#) (`QString` service, `QString` key)=0

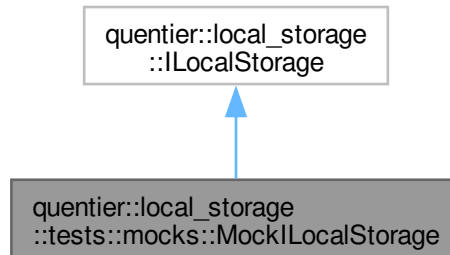
### Additional Inherited Members

### Public Types inherited from [quentier::utility::IKeychainService](#)

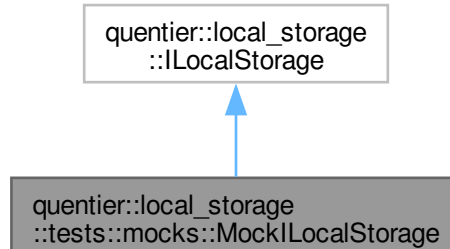
- enum class [ErrorCode](#) {  
[NoError](#) , [EntryNotFound](#) , [CouldNotDeleteEntry](#) , [AccessDeniedByUser](#) ,  
[AccessDenied](#) , [NoBackendAvailable](#) , [NotImplemented](#) , [OtherError](#) }

## 5.66 quantier::local\_storage::tests::mocks::MockLocalStorage Class Reference

Inheritance diagram for quantier::local\_storage::tests::mocks::MockLocalStorage:



Collaboration diagram for quantier::local\_storage::tests::mocks::MockLocalStorage:



### Public Member Functions

- **MOCK\_METHOD** (QFuture< bool >, isVersionTooHigh,(),(const, override))
- **MOCK\_METHOD** (QFuture< bool >, requiresUpgrade,(),(const, override))
- **MOCK\_METHOD** (QFuture< QList< IPatchPtr > >, requiredPatches,(),(const, override))
- **MOCK\_METHOD** (QFuture< quint32 >, version,(),(const, override))
- **MOCK\_METHOD** (QFuture< quint32 >, highestSupportedVersion,(),(const, override))
- **MOCK\_METHOD** (QFuture< quint32 >, userCount,(),(const, override))
- **MOCK\_METHOD** (QFuture< void >, putUser,(qevercloud::User user),(override))
- **MOCK\_METHOD** (QFuture< std::optional< qevercloud::User > >, findUserById,(qevercloud::UserID userId),(const, override))
- **MOCK\_METHOD** (QFuture< void >, expungeUserById,(qevercloud::UserID userId),(override))
- **MOCK\_METHOD** (QFuture< quint32 >, notebookCount,(),(const, override))
- **MOCK\_METHOD** (QFuture< void >, putNotebook,(qevercloud::Notebook notebook),(override))

- **MOCK\_METHOD** (QFuture< std::optional< qevercloud::Notebook > >, findNotebookByLocalId,(QString localId),(const, override))
- **MOCK\_METHOD** (QFuture< std::optional< qevercloud::Notebook > >, findNotebookByGuid,(qevercloud::Guid guid),(const, override))
- **MOCK\_METHOD** (QFuture< std::optional< qevercloud::Notebook > >, findNotebookByName,(QString name, std::optional< qevercloud::Guid > linkedNotebookGuid),(const, override))
- **MOCK\_METHOD** (QFuture< std::optional< qevercloud::Notebook > >, findDefaultNotebook,(),(const, override))
- **MOCK\_METHOD** (QFuture< void >, expungeNotebookByLocalId,(QString localId),(override))
- **MOCK\_METHOD** (QFuture< void >, expungeNotebookByGuid,(qevercloud::Guid guid),(override))
- **MOCK\_METHOD** (QFuture< void >, expungeNotebookByName,(QString name, std::optional< qevercloud::Guid > linkedNotebookGuid),(override))
- **MOCK\_METHOD** (QFuture< QList< qevercloud::Notebook > >, listNotebooks,(ListNotebooksOptions options),(const, override))
- **MOCK\_METHOD** (QFuture< QList< qevercloud::SharedNotebook > >, listSharedNotebooks,(qevercloud::Guid notebookGuid),(const, override))
- **MOCK\_METHOD** (QFuture< QSet< qevercloud::Guid > >, listNotebookGuids,(ListGuidsFilters filters, std::optional< qevercloud::Guid > linkedNotebookGuid),(const, override))
- **MOCK\_METHOD** (QFuture< quint32 >, linkedNotebookCount,(),(const, override))
- **MOCK\_METHOD** (QFuture< void >, putLinkedNotebook,(qevercloud::LinkedNotebook linkedNotebook),(override))
- **MOCK\_METHOD** (QFuture< std::optional< qevercloud::LinkedNotebook > >, findLinkedNotebookByGuid,(qevercloud::Guid guid),(const, override))
- **MOCK\_METHOD** (QFuture< void >, expungeLinkedNotebookByGuid,(qevercloud::Guid guid),(override))
- **MOCK\_METHOD** (QFuture< QList< qevercloud::LinkedNotebook > >, listLinkedNotebooks,(ListLinkedNotebooksOptions options),(const, override))
- **MOCK\_METHOD** (QFuture< quint32 >, noteCount,(NoteCountOptions options),(const, override))
- **MOCK\_METHOD** (QFuture< quint32 >, noteCountPerNotebookLocalId,(QString notebookLocalId, NoteCountOptions options),(const, override))
- **MOCK\_METHOD** (QFuture< quint32 >, noteCountPerTagLocalId,(QString tagLocalId, NoteCountOptions options),(const, override))
- **MOCK\_METHOD** ((QFuture< QHash< QString, quint32 > >), noteCountsPerTags,(ListTagsOptions listTagsOptions, NoteCountOptions options),(const, override))
- **MOCK\_METHOD** (QFuture< quint32 >, noteCountPerNotebookAndTagLocalIds,(QStringList notebookLocalIds, QStringList tagLocalIds, NoteCountOptions options),(const, override))
- **MOCK\_METHOD** (QFuture< void >, putNote,(qevercloud::Note note),(override))
- **MOCK\_METHOD** (QFuture< void >, updateNote,(qevercloud::Note note, UpdateNoteOptions options),(override))
- **MOCK\_METHOD** (QFuture< std::optional< qevercloud::Note > >, findNoteByLocalId,(QString localId, FetchNoteOptions options),(const, override))
- **MOCK\_METHOD** (QFuture< std::optional< qevercloud::Note > >, findNoteByGuid,(qevercloud::Guid guid, FetchNoteOptions options),(const, override))
- **MOCK\_METHOD** (QFuture< void >, expungeNoteByLocalId,(QString localId),(override))
- **MOCK\_METHOD** (QFuture< void >, expungeNoteByGuid,(qevercloud::Guid guid),(override))
- **MOCK\_METHOD** (QFuture< QList< qevercloud::Note > >, listNotes,(FetchNoteOptions fetchOptions, ListNotesOptions options),(const, override))
- **MOCK\_METHOD** (QFuture< QList< qevercloud::Note > >, listNotesPerNotebookLocalId,(QString notebookLocalId, FetchNoteOptions fetchOptions, ListNotesOptions options),(const, override))
- **MOCK\_METHOD** (QFuture< QList< qevercloud::Note > >, listNotesPerTagLocalId,(QString tagLocalId, FetchNoteOptions fetchOptions, ListNotesOptions options),(const, override))
- **MOCK\_METHOD** (QFuture< QList< qevercloud::Note > >, listNotesPerNotebookAndTagLocalIds,(QStringList notebookLocalIds, QStringList tagLocalIds, FetchNoteOptions fetchOptions, ListNotesOptions options),(const, override))
- **MOCK\_METHOD** (QFuture< QList< qevercloud::Note > >, listNotesByLocalIds,(QStringList noteLocalIds, FetchNoteOptions fetchOptions, ListNotesOptions options),(const, override))
- **MOCK\_METHOD** (QFuture< QSet< qevercloud::Guid > >, listNoteGuids,(ListGuidsFilters filters, std::optional< qevercloud::Guid > linkedNotebookGuid),(const, override))



- **MOCK\_METHOD** (QFuture< QList< qevercloud::Note > >, queryNotes,([NoteSearchQuery](#) query, Fetch←  
NoteOptions fetchOptions),(const, override))
- **MOCK\_METHOD** (QFuture< QStringList >, queryNoteLocalIds,([NoteSearchQuery](#) query),(const, override))
- **MOCK\_METHOD** (QFuture< quint32 >, tagCount,(),(const, override))
- **MOCK\_METHOD** (QFuture< void >, putTag,(qevercloud::Tag tag),(override))
- **MOCK\_METHOD** (QFuture< std::optional< qevercloud::Tag > >, findTagByLocalId,(QString tagLocal←  
Id),(const, override))
- **MOCK\_METHOD** (QFuture< std::optional< qevercloud::Tag > >, findTagByGuid,(qevercloud::Guid tag←  
Guid),(const, override))
- **MOCK\_METHOD** (QFuture< std::optional< qevercloud::Tag > >, findTagByName,(QString tagName, std←  
::optional< QString > linkedNotebookGuid),(const, override))
- **MOCK\_METHOD** (QFuture< QList< qevercloud::Tag > >, listTags,([ListTagsOptions](#) options),(const, over-  
ride))
- **MOCK\_METHOD** (QFuture< QList< qevercloud::Tag > >, listTagsPerNoteLocalId,(QString noteLocalId,  
[ListTagsOptions](#) options),(const, override))
- **MOCK\_METHOD** (QFuture< QSet< qevercloud::Guid > >, listTagGuids,([ListGuidsFilters](#) filters, std←  
::optional< qevercloud::Guid > linkedNotebookGuid),(const, override))
- **MOCK\_METHOD** (QFuture< void >, expungeTagByLocalId,(QString tagLocalId),(override))
- **MOCK\_METHOD** (QFuture< void >, expungeTagByGuid,(qevercloud::Guid tagGuid),(override))
- **MOCK\_METHOD** (QFuture< void >, expungeTagByName,(QString name, std::optional< qevercloud::Guid  
> linkedNotebookGuid),(override))
- **MOCK\_METHOD** (QFuture< quint32 >, resourceCount,(NoteCountOptions options),(const, override))
- **MOCK\_METHOD** (QFuture< quint32 >, resourceCountPerNoteLocalId,(QString noteLocalId),(const, over-  
ride))
- **MOCK\_METHOD** (QFuture< void >, putResource,(qevercloud::Resource resource),(override))
- **MOCK\_METHOD** (QFuture< std::optional< qevercloud::Resource > >, findResourceByLocalId,(QString  
resourceLocalId, FetchResourceOptions options),(const, override))
- **MOCK\_METHOD** (QFuture< std::optional< qevercloud::Resource > >, findResourceByGuid,(qevercloud←  
::Guid resourceGuid, FetchResourceOptions options),(const, override))
- **MOCK\_METHOD** (QFuture< void >, expungeResourceByLocalId,(QString resourceLocalId),(override))
- **MOCK\_METHOD** (QFuture< void >, expungeResourceByGuid,(qevercloud::Guid resourceGuid),(override))
- **MOCK\_METHOD** (QFuture< quint32 >, savedSearchCount,(),(const, override))
- **MOCK\_METHOD** (QFuture< void >, putSavedSearch,(qevercloud::SavedSearch search),(override))
- **MOCK\_METHOD** (QFuture< std::optional< qevercloud::SavedSearch > >, findSavedSearchByLocal←  
Id,(QString localId),(const, override))
- **MOCK\_METHOD** (QFuture< std::optional< qevercloud::SavedSearch > >, findSavedSearchBy←  
Guid,(qevercloud::Guid guid),(const, override))
- **MOCK\_METHOD** (QFuture< std::optional< qevercloud::SavedSearch > >, findSavedSearchBy←  
Name,(QString name),(const, override))
- **MOCK\_METHOD** (QFuture< QList< qevercloud::SavedSearch > >, listSavedSearches,([ListSavedSearchesOptions](#)  
options),(const, override))
- **MOCK\_METHOD** (QFuture< QSet< qevercloud::Guid > >, listSavedSearchGuids,([ListGuidsFilters](#) fil-  
ters),(const, override))
- **MOCK\_METHOD** (QFuture< void >, expungeSavedSearchByLocalId,(QString localId),(override))
- **MOCK\_METHOD** (QFuture< void >, expungeSavedSearchByGuid,(qevercloud::Guid guid),(override))
- **MOCK\_METHOD** (QFuture< qint32 >, highestUpdateSequenceNumber,(HighestUsnOption option),(const,  
override))
- **MOCK\_METHOD** (QFuture< qint32 >, highestUpdateSequenceNumber,(qevercloud::Guid linked←  
NotebookGuid),(const, override))
- **MOCK\_METHOD** (ILocalStorageNotifier \*, [notifier](#),(),(const, override))

## Public Member Functions inherited from [quentier::local\\_storage::ILocalStorage](#)

- **Q\_DECLARE\_FLAGS** (StartupOptions, StartupOption)
- virtual QFuture< bool > **isVersionTooHigh** () const =0
- virtual QFuture< bool > **requiresUpgrade** () const =0
- virtual QFuture< QList< IPatchPtr > > **requiredPatches** () const =0
- virtual QFuture< quint32 > **version** () const =0
- virtual QFuture< quint32 > **highestSupportedVersion** () const =0
- virtual QFuture< quint32 > **userCount** () const =0
- virtual QFuture< void > **putUser** (qevercloud::User user)=0
- virtual QFuture< std::optional< qevercloud::User > > **findUserById** (qevercloud::UserID userId) const =0
- virtual QFuture< void > **expungeUserById** (qevercloud::UserID userId)=0
- virtual QFuture< quint32 > **notebookCount** () const =0
- virtual QFuture< void > **putNotebook** (qevercloud::Notebook notebook)=0
- virtual QFuture< std::optional< qevercloud::Notebook > > **findNotebookByLocalId** (QString notebookLocalId) const =0
- virtual QFuture< std::optional< qevercloud::Notebook > > **findNotebookByGuid** (qevercloud::Guid guid) const =0
- virtual QFuture< std::optional< qevercloud::Notebook > > **findNotebookByName** (QString notebookName, std::optional< qevercloud::Guid > linkedNotebookGuid=std::nullopt) const =0
- virtual QFuture< std::optional< qevercloud::Notebook > > **findDefaultNotebook** () const =0
- virtual QFuture< void > **expungeNotebookByLocalId** (QString notebookLocalId)=0
- virtual QFuture< void > **expungeNotebookByGuid** (qevercloud::Guid notebookGuid)=0
- virtual QFuture< void > **expungeNotebookByName** (QString name, std::optional< qevercloud::Guid > linkedNotebookGuid=std::nullopt)=0
- virtual QFuture< QList< qevercloud::Notebook > > **listNotebooks** ([ListNotebooksOptions](#) options={}) const =0
- virtual QFuture< QList< qevercloud::SharedNotebook > > **listSharedNotebooks** (qevercloud::Guid notebookGuid={}) const =0
- virtual QFuture< QSet< qevercloud::Guid > > **listNotebookGuids** ([ListGuidsFilters](#) filters, std::optional< qevercloud::Guid > linkedNotebookGuid={}) const =0
- virtual QFuture< quint32 > **linkedNotebookCount** () const =0
- virtual QFuture< void > **putLinkedNotebook** (qevercloud::LinkedNotebook linkedNotebook)=0
- virtual QFuture< std::optional< qevercloud::LinkedNotebook > > **findLinkedNotebookByGuid** (qevercloud::Guid guid) const =0
- virtual QFuture< void > **expungeLinkedNotebookByGuid** (qevercloud::Guid guid)=0
- virtual QFuture< QList< qevercloud::LinkedNotebook > > **listLinkedNotebooks** ([ListLinkedNotebooksOptions](#) options={}) const =0
- virtual QFuture< quint32 > **noteCount** (NoteCountOptions options=NoteCountOptions(NoteCountOption::IncludeNonDeletedNotes)) const =0
- virtual QFuture< quint32 > **noteCountPerNotebookLocalId** (QString notebookLocalId, NoteCountOptions options=NoteCountOptions(NoteCountOption::IncludeNonDeletedNotes)) const =0
- virtual QFuture< quint32 > **noteCountPerTagLocalId** (QString tagLocalId, NoteCountOptions options=NoteCountOptions(NoteCountOption::IncludeNonDeletedNotes)) const =0
- virtual QFuture< QHash< QString, quint32 > > **noteCountsPerTags** ([ListTagsOptions](#) listTagsOptions={}, NoteCountOptions options=NoteCountOptions(NoteCountOption::IncludeNonDeletedNotes)) const =0
- virtual QFuture< quint32 > **noteCountPerNotebookAndTagLocalIds** (QStringList notebookLocalIds, QStringList tagLocalIds, NoteCountOptions options=NoteCountOptions(NoteCountOption::IncludeNonDeletedNotes)) const =0
- virtual QFuture< void > **putNote** (qevercloud::Note note)=0
- virtual QFuture< void > **updateNote** (qevercloud::Note note, UpdateNoteOptions options)=0
- virtual QFuture< std::optional< qevercloud::Note > > **findNoteByLocalId** (QString noteLocalId, FetchNoteOptions options) const =0
- virtual QFuture< std::optional< qevercloud::Note > > **findNoteByGuid** (qevercloud::Guid noteGuid, FetchNoteOptions options) const =0

- virtual `QFuture< QList< qevercloud::Note > >` **listNotes** (`FetchNoteOptions` fetchOptions, [ListNotesOptions](#) listOptions={}) const =0
- virtual `QFuture< QList< qevercloud::Note > >` **listNotesPerNotebookLocalId** (`QString` notebookLocalId, `FetchNoteOptions` fetchOptions, [ListNotesOptions](#) listOptions={}) const =0
- virtual `QFuture< QList< qevercloud::Note > >` **listNotesPerTagLocalId** (`QString` tagLocalId, `FetchNoteOptions` fetchOptions, [ListNotesOptions](#) listOptions={}) const =0
- virtual `QFuture< QList< qevercloud::Note > >` **listNotesPerNotebookAndTagLocalIds** (`QStringList` notebookLocalIds, `QStringList` tagLocalIds, `FetchNoteOptions` fetchOptions, [ListNotesOptions](#) listOptions={}) const =0
- virtual `QFuture< QList< qevercloud::Note > >` **listNotesByLocalIds** (`QStringList` noteLocalIds, `FetchNoteOptions` fetchOptions, [ListNotesOptions](#) listOptions={}) const =0
- virtual `QFuture< QSet< qevercloud::Guid > >` **listNoteGuids** ([ListGuidsFilters](#) filters, `std::optional< qevercloud::Guid >` linkedNotebookGuid={}) const =0
- virtual `QFuture< QList< qevercloud::Note > >` **queryNotes** ([NoteSearchQuery](#) query, `FetchNoteOptions` fetchOptions) const =0
- virtual `QFuture< QStringList >` **queryNoteLocalIds** ([NoteSearchQuery](#) query) const =0
- virtual `QFuture< void >` **expungeNoteByLocalId** (`QString` noteLocalId)=0
- virtual `QFuture< void >` **expungeNoteByGuid** (`qevercloud::Guid` noteGuid)=0
- virtual `QFuture< quint32 >` **tagCount** () const =0
- virtual `QFuture< void >` **putTag** (`qevercloud::Tag` tag)=0
- virtual `QFuture< std::optional< qevercloud::Tag > >` **findTagByLocalId** (`QString` tagLocalId) const =0
- virtual `QFuture< std::optional< qevercloud::Tag > >` **findTagByGuid** (`qevercloud::Guid` tagGuid) const =0
- virtual `QFuture< std::optional< qevercloud::Tag > >` **findTagByName** (`QString` tagName, `std::optional< qevercloud::Guid >` linkedNotebookGuid=`std::nullopt`) const =0
- virtual `QFuture< QList< qevercloud::Tag > >` **listTags** ([ListTagsOptions](#) options={}) const =0
- virtual `QFuture< QList< qevercloud::Tag > >` **listTagsPerNoteLocalId** (`QString` noteLocalId, [ListTagsOptions](#) options={}) const =0
- virtual `QFuture< QSet< qevercloud::Guid > >` **listTagGuids** ([ListGuidsFilters](#) filters, `std::optional< qevercloud::Guid >` linkedNotebookGuid={}) const =0
- virtual `QFuture< void >` **expungeTagByLocalId** (`QString` tagLocalId)=0
- virtual `QFuture< void >` **expungeTagByGuid** (`qevercloud::Guid` tagGuid)=0
- virtual `QFuture< void >` **expungeTagByName** (`QString` name, `std::optional< qevercloud::Guid >` linkedNotebookGuid=`std::nullopt`)=0
- virtual `QFuture< quint32 >` **resourceCount** (`NoteCountOptions` options=`NoteCountOptions`(`NoteCountOptions::IncludeNonDeletedNotes`)) const =0
- virtual `QFuture< quint32 >` **resourceCountPerNoteLocalId** (`QString` noteLocalId) const =0
- virtual `QFuture< void >` **putResource** (`qevercloud::Resource` resource)=0
- virtual `QFuture< std::optional< qevercloud::Resource > >` **findResourceByLocalId** (`QString` resourceLocalId, `FetchResourceOptions` options={}) const =0
- virtual `QFuture< std::optional< qevercloud::Resource > >` **findResourceByGuid** (`qevercloud::Guid` resourceGuid, `FetchResourceOptions` options={}) const =0
- virtual `QFuture< void >` **expungeResourceByLocalId** (`QString` resourceLocalId)=0
- virtual `QFuture< void >` **expungeResourceByGuid** (`qevercloud::Guid` resourceGuid)=0
- virtual `QFuture< quint32 >` **savedSearchCount** () const =0
- virtual `QFuture< void >` **putSavedSearch** (`qevercloud::SavedSearch` search)=0
- virtual `QFuture< std::optional< qevercloud::SavedSearch > >` **findSavedSearchByLocalId** (`QString` savedSearchLocalId) const =0
- virtual `QFuture< std::optional< qevercloud::SavedSearch > >` **findSavedSearchByGuid** (`qevercloud::Guid` guid) const =0
- virtual `QFuture< std::optional< qevercloud::SavedSearch > >` **findSavedSearchByName** (`QString` name) const =0
- virtual `QFuture< QList< qevercloud::SavedSearch > >` **listSavedSearches** ([ListSavedSearchesOptions](#) options={}) const =0
- virtual `QFuture< QSet< qevercloud::Guid > >` **listSavedSearchGuids** ([ListGuidsFilters](#) filters) const =0
- virtual `QFuture< void >` **expungeSavedSearchByLocalId** (`QString` savedSearchLocalId)=0
- virtual `QFuture< void >` **expungeSavedSearchByGuid** (`qevercloud::Guid` guid)=0

- virtual QFuture< qint32 > **highestUpdateSequenceNumber** (HighestUsnOption option) const =0
- virtual QFuture< qint32 > **highestUpdateSequenceNumber** (qevercloud::Guid linkedNotebookGuid) const =0
- virtual [ILocalStorageNotifier](#) \* **notifier** () const =0

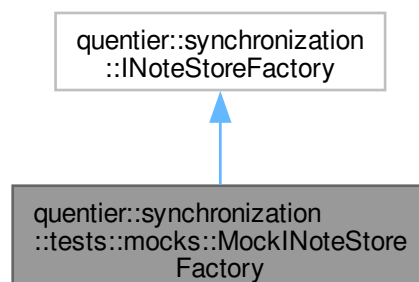
### Additional Inherited Members

### Public Types inherited from [quentier::local\\_storage::ILocalStorage](#)

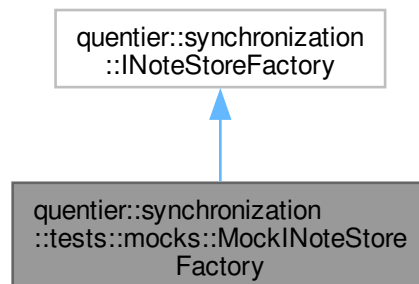
- enum class **StartupOption** { **ClearDatabase** = 1 << 1 , **OverrideLock** = 1 << 2 }
- enum class **ListObjectsFilter** { **Include** , **Exclude** }
- enum class **OrderDirection** { **Ascending** , **Descending** }
- enum class **ListNotebooksOrder** { **NoOrder** , **ByUpdateSequenceNumber** , **ByNotebookName** , **ByCreationTimestamp** , **ByModificationTimestamp** }
- enum class **ListLinkedNotebooksOrder** { **NoOrder** , **ByUpdateSequenceNumber** , **ByShareName** , **ByUsername** }
- enum class **ListTagsOrder** { **NoOrder** , **ByUpdateSequenceNumber** , **ByName** }
- enum class **ListNotesOrder** { **NoOrder** , **ByUpdateSequenceNumber** , **ByTitle** , **ByCreationTimestamp** , **ByModificationTimestamp** , **ByDeletionTimestamp** , **ByAuthor** , **BySource** , **BySourceApplication** , **ByReminderTime** , **ByPlaceName** }
- enum class **ListSavedSearchesOrder** { **NoOrder** , **ByUpdateSequenceNumber** , **ByName** , **ByFormat** }
- enum class **Affiliation** { **Any** , **User** , **AnyLinkedNotebook** , **ParticularLinkedNotebooks** }
- enum class **TagNotesRelation** { **Any** , **WithNotes** , **WithoutNotes** }
- enum class **NoteCountOption** { **IncludeNonDeletedNotes** = 1 << 1 , **IncludeDeletedNotes** = 1 << 2 }
- enum class **UpdateNoteOption** { **UpdateResourceMetadata** = 1 << 1 , **UpdateResourceBinaryData** = 1 << 2 , **UpdateTags** = 1 << 3 }
- enum class **FetchNoteOption** { **WithResourceMetadata** = 1 << 1 , **WithResourceBinaryData** = 1 << 2 }
- enum class **FetchResourceOption** { **WithBinaryData** = 1 << 1 }
- enum class **HighestUsnOption** { **WithinUserOwnContent** , **WithinUserOwnContentAndLinkedNotebooks** }

## 5.67 quentier::synchronization::tests::mocks::MockINoteStoreFactory Class Reference

Inheritance diagram for quentier::synchronization::tests::mocks::MockINoteStoreFactory:



Collaboration diagram for `quentier::synchronization::tests::mocks::MockINoteStoreFactory`:



### Public Member Functions

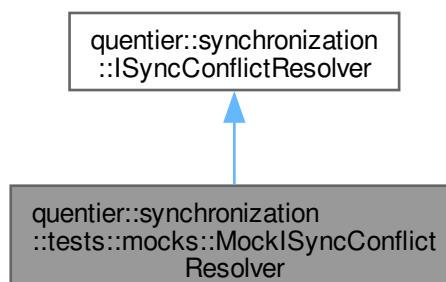
- **MOCK\_METHOD** (`::qevercloud::INoteStorePtr`, `createNoteStore`, (`QString` `noteStoreUrl`, `std::optional<`  
`::qevercloud::Guid` `>` `linkedNotebookGuid`, `::qevercloud::IRequestContextPtr` `ctx`, `::qevercloud::IRetry`  
`PolicyPtr` `retryPolicy`), (`override`))

### Public Member Functions inherited from `quentier::synchronization::INoteStoreFactory`

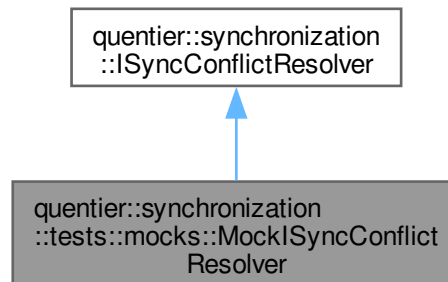
- virtual `qevercloud::INoteStorePtr` **createNoteStore** (`QString` `noteStoreUrl`=`{}`, `std::optional<` `qevercloud::`  
`Guid` `>` `linkedNotebookGuid`=`{}`, `qevercloud::IRequestContextPtr` `ctx`=`{}`, `qevercloud::IRetryPolicyPtr` `retry`  
`Policy`=`{}`)=0

## 5.68 `quentier::synchronization::tests::mocks::MockISyncConflictResolver` Class Reference

Inheritance diagram for `quentier::synchronization::tests::mocks::MockISyncConflictResolver`:



Collaboration diagram for `quentier::synchronization::tests::mocks::MockISyncConflictResolver`:



### Public Member Functions

- **MOCK\_METHOD** (`QFuture< NotebookConflictResolution >`, `resolveNotebookConflict`, (`::qevercloud::Notebook theirs`, `::qevercloud::Notebook mine`), (`override`))
- **MOCK\_METHOD** (`QFuture< NoteConflictResolution >`, `resolveNoteConflict`, (`::qevercloud::Note theirs`, `::qevercloud::Note mine`), (`override`))
- **MOCK\_METHOD** (`QFuture< SavedSearchConflictResolution >`, `resolveSavedSearchConflict`, (`::qevercloud::SavedSearch theirs`, `::qevercloud::SavedSearch mine`), (`override`))
- **MOCK\_METHOD** (`QFuture< TagConflictResolution >`, `resolveTagConflict`, (`::qevercloud::Tag theirs`, `::qevercloud::Tag mine`), (`override`))

### Public Member Functions inherited from [quentier::synchronization::ISyncConflictResolver](#)

- virtual `QFuture< NotebookConflictResolution >` **resolveNotebookConflict** (`qevercloud::Notebook theirs`, `qevercloud::Notebook mine`)=0
- virtual `QFuture< NoteConflictResolution >` **resolveNoteConflict** (`qevercloud::Note theirs`, `qevercloud::Note mine`)=0
- virtual `QFuture< SavedSearchConflictResolution >` **resolveSavedSearchConflict** (`qevercloud::SavedSearch theirs`, `qevercloud::SavedSearch mine`)=0
- virtual `QFuture< TagConflictResolution >` **resolveTagConflict** (`qevercloud::Tag theirs`, `qevercloud::Tag mine`)=0

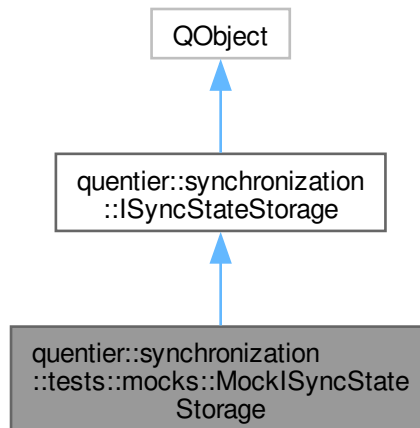
### Additional Inherited Members

### Public Types inherited from [quentier::synchronization::ISyncConflictResolver](#)

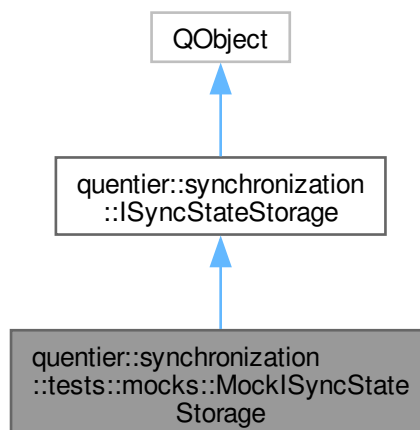
- using [NotebookConflictResolution](#)
- using [NoteConflictResolution](#)
- using [SavedSearchConflictResolution](#)
- using [TagConflictResolution](#)

## 5.69 quantier::synchronization::tests::mocks::MockISyncStateStorage Class Reference

Inheritance diagram for quantier::synchronization::tests::mocks::MockISyncStateStorage:



Collaboration diagram for quantier::synchronization::tests::mocks::MockISyncStateStorage:



### Public Member Functions

- **MOCK\_METHOD** (ISyncStatePtr, getSyncState,(const Account &account),(override))
- **MOCK\_METHOD** (void, setSyncState,(const Account &account, ISyncStatePtr syncState),(override))

## Public Member Functions inherited from [quentier::synchronization::ISyncStateStorage](#)

- virtual `ISyncStatePtr` **getSyncState** (const [Account](#) &account)=0
- virtual void **setSyncState** (const [Account](#) &account, `ISyncStatePtr` syncState)=0

## Additional Inherited Members

## Signals inherited from [quentier::synchronization::ISyncStateStorage](#)

- void [notifySyncStateUpdated](#) ([Account](#) account, `ISyncStatePtr` syncState)

## Protected Member Functions inherited from [quentier::synchronization::ISyncStateStorage](#)

- `ISyncStateStorage` (`QObject` \*parent=nullptr)

## 5.70 [quentier::synchronization::ISyncConflictResolver::ConflictResolution::MoveMine](#)< T > Struct Template Reference

The [MoveMine](#) conflict resolution means "before using theirs version change mine version as specified". Note: the data item inside this conflict resolution might refer to something different than mine version passed to the conflict resolution function. It can be that way because the actual conflict might be with another local data item instead of the passed one.

```
#include <ISyncConflictResolver.h>
```

### Public Types

- using `value_type` = T

### Public Attributes

- T [mine](#)

### 5.70.1 Detailed Description

```
template<class T>
struct quentier::synchronization::ISyncConflictResolver::ConflictResolution::MoveMine< T >
```

The [MoveMine](#) conflict resolution means "before using theirs version change mine version as specified". Note: the data item inside this conflict resolution might refer to something different than mine version passed to the conflict resolution function. It can be that way because the actual conflict might be with another local data item instead of the passed one.



## 5.70.2 Member Data Documentation

### 5.70.2.1 mine

```
template<class T>
T quantier::synchronization::ISyncConflictResolver::ConflictResolution::MoveMine< T >::mine
```

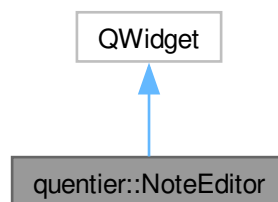
The changed value of mine data item.

## 5.71 quantier::NoteEditor Class Reference

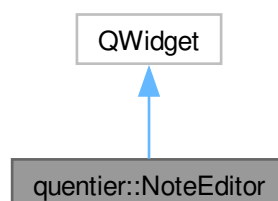
The [NoteEditor](#) class is a widget encapsulating all the functionality necessary for showing and editing notes.

```
#include <NoteEditor.h>
```

Inheritance diagram for quantier::NoteEditor:



Collaboration diagram for quantier::NoteEditor:



## Public Slots

- void [convertToNote](#) ()
- void [saveNoteToLocalStorage](#) ()
- void [setNoteTitle](#) (const QString &noteTitle)
- void [setTagIds](#) (const QStringList &tagLocalIds, const QStringList &tagGuids)
- void **undo** ()
- void **redo** ()
- void **cut** ()
- void **copy** ()
- void **paste** ()
- void **pasteUnformatted** ()
- void **selectAll** ()
- void **formatSelectionAsSourceCode** ()
- void **fontMenu** ()
- void **textBold** ()
- void **textItalic** ()
- void **textUnderline** ()
- void **textStrikethrough** ()
- void **textHighlight** ()
- void **alignLeft** ()
- void **alignCenter** ()
- void **alignRight** ()
- void **alignFull** ()
- void **findNext** (const QString &text, bool matchCase) const
- void **findPrevious** (const QString &text, bool matchCase) const
- void **replace** (const QString &textToReplace, const QString &replacementText, bool matchCase)
- void **replaceAll** (const QString &textToReplace, const QString &replacementText, bool matchCase)
- void **insertToDoCheckbox** ()
- void **insertInAppNoteLink** (const QString &userId, const QString &shardId, const QString &noteGuid, const QString &linkText)
- void **setSpellcheck** (bool enabled)
- void **setFont** (const QFont &font)
- void **setFontHeight** (int height)
- void **setFontColor** (const QColor &color)
- void **setBackgroundColor** (const QColor &color)
- void [setDefaultPalette](#) (const QPalette &pal)
- void [setDefaultFont](#) (const QFont &font)
- void **insertHorizontalLine** ()
- void **increaseFontSize** ()
- void **decreaseFontSize** ()
- void **increaseIndentation** ()
- void **decreaseIndentation** ()
- void **insertBulletedList** ()
- void **insertNumberedList** ()
- void **insertTableDialog** ()
- void **insertFixedWidthTable** (int rows, int columns, int widthInPixels)
- void **insertRelativeWidthTable** (int rows, int columns, double relativeWidth)
- void **insertTableRow** ()
- void **insertTableColumn** ()
- void **removeTableRow** ()
- void **removeTableColumn** ()
- void **addAttachmentDialog** ()
- void **saveAttachmentDialog** (const QByteArray &resourceHash)
- void **saveAttachmentUnderCursor** ()

- void **openAttachment** (const QByteArray &resourceHash)
- void **openAttachmentUnderCursor** ()
- void **copyAttachment** (const QByteArray &resourceHash)
- void **copyAttachmentUnderCursor** ()
- void **encryptSelectedText** ()
- void **decryptEncryptedTextUnderCursor** ()
- void **editHyperlinkDialog** ()
- void **copyHyperlink** ()
- void **removeHyperlink** ()
- void **onNoteLoadCancelled** ()

## Signals

- void **contentChanged** ()  
*contentChanged signal is emitted when the note's content (text) gets modified via manual editing (i.e. not any action like paste or cut)*
- void **noteAndNotebookFoundInLocalStorage** (qevercloud::Note note, qevercloud::Notebook notebook)  
*noteAndNotebookFoundInLocalStorage signal is emitted when note and its corresponding notebook were found within the local storage right before the note editor starts to load the note into the editor*
- void **noteNotFound** (QString noteLocalId)  
*noteNotFound signal is emitted when the note could not be found within the local storage by the provided local id*
- void **noteDeleted** (QString noteLocalId)  
*noteDeleted signal is emitted when the note displayed within the note editor is deleted. The note editor stops displaying the note in this case shortly after emitting this signal*
- void **noteModified** ()  
*noteModified signal is emitted when the note's content within the editor gets modified via some way - either via manual editing or via some action (like paste or cut)*
- void **notifyError** ([ErrorString](#) error)  
*notifyError signal is emitted when [NoteEditor](#) encounters some problem worth letting the user to know about*
- void **inAppNoteLinkClicked** (QString userId, QString shardId, QString noteGuid)  
*inAppNoteLinkClicked signal is emitted when the in-app note link is clicked within the note editor*
- void **inAppNoteLinkPasteRequested** (QString url, QString userId, QString shardId, QString noteGuid)
- void **convertedToNote** (qevercloud::Note note)
- void **cantConvertToNote** ([ErrorString](#) error)
- void **noteEditorHtmlUpdated** (QString html)
- void **currentNoteChanged** (qevercloud::Note note)
- void **spellCheckerNotReady** ()
- void **spellCheckerReady** ()
- void **noteLoaded** ()
- void **noteSavedToLocalStorage** (QString noteLocalId)  
*noteSavedToLocalStorage signal is emitted when the note has been saved within the local storage. [NoteEditor](#) doesn't do this on its own unless it's explicitly asked to do this via invoking its `saveNoteToLocalStorage` slot*
- void **failedToSaveNoteToLocalStorage** ([ErrorString](#) errorDescription, QString noteLocalId)  
*failedToSaveNoteToLocalStorage signal is emitted in case of failure to save the note to local storage*
- void **textBoldState** (bool state)
- void **textItalicState** (bool state)
- void **textUnderlineState** (bool state)
- void **textStrikethroughState** (bool state)
- void **textAlignLeftState** (bool state)
- void **textAlignCenterState** (bool state)
- void **textAlignRightState** (bool state)
- void **textAlignFullState** (bool state)
- void **textInsideOrderedListState** (bool state)

- void **textInsideUnorderedListState** (bool state)
- void **textInsideTableState** (bool state)
- void **textFontFamilyChanged** (QString fontFamily)
- void **textFontSizeChanged** (int fontSize)
- void **insertTableDialogRequested** ()

## Public Member Functions

- **NoteEditor** (QWidget \*parent=nullptr, Qt::WindowFlags flags={})
- void **initialize** (local\_storage::ILocalStoragePtr localStorage, [SpellChecker](#) &spellChecker, const [Account](#) &account, QThread \*backgroundJobsThread=nullptr, enml::IDecryptedTextCachePtr decryptedTextCache=nullptr)
- [INoteEditorBackend](#) \* **backend** () noexcept
- void **setBackend** ([INoteEditorBackend](#) \*backend)
- void **setAccount** (const [Account](#) &account)
- const QUndoStack \* **undoStack** () const noexcept
- void **setUndoStack** (QUndoStack \*pUndoStack)
- void **setInitialPageHtml** (const QString &html)
- void **setNoteNotFoundPageHtml** (const QString &html)
- void **setNoteDeletedPageHtml** (const QString &html)
- void **setNoteLoadingPageHtml** (const QString &html)
- QString **currentNoteLocalId** () const
- void **setCurrentNoteLocalId** (const QString &noteLocalId)
- void **clear** ()
- bool **isModified** () const noexcept
- bool **isEditorPageModified** () const noexcept
- bool **isNoteLoaded** () const noexcept
- qint64 **idleTime** () const noexcept
- void **setFocus** ()
- QString **selectedText** () const noexcept
- bool **hasSelection** () const noexcept
- bool **spellCheckEnabled** () const noexcept
- bool **print** (QPrinter &printer, [ErrorString](#) &errorDescription)
- bool **exportToPdf** (const QString &absoluteFilePath, [ErrorString](#) &errorDescription)
- bool **exportToEnex** (const QStringList &tagNames, QString &enex, [ErrorString](#) &errorDescription)
- QPalette **defaultPalette** () const
- const QFont \* **defaultFont** () const

## Protected Member Functions

- void **dragMoveEvent** (QDragMoveEvent \*pEvent) override
- void **dropEvent** (QDropEvent \*pEvent) override

### 5.71.1 Detailed Description

The [NoteEditor](#) class is a widget encapsulating all the functionality necessary for showing and editing notes.

## 5.71.2 Member Function Documentation

### 5.71.2.1 backend()

```
InNoteEditorBackend * quentier::NoteEditor::backend () [nodiscard], [noexcept]
```

#### Returns

the pointer to the note editor's backend

### 5.71.2.2 clear()

```
void quentier::NoteEditor::clear ()
```

Clear the contents of the note editor

### 5.71.2.3 convertToNote

```
void quentier::NoteEditor::convertToNote () [slot]
```

Invoke this slot to launch the asynchronous procedure of converting the current contents of the note editor to note; the convertedToNote signal would be emitted in response when the conversion is done

### 5.71.2.4 currentNoteLocalId()

```
QString quentier::NoteEditor::currentNoteLocalId () const [nodiscard]
```

Get the local id of the note currently set to the note editor

### 5.71.2.5 defaultFont()

```
const QFont * quentier::NoteEditor::defaultFont () const [nodiscard]
```

#### Returns

pointer to the default font used by the note editor; if no such font was set to the editor previously, returns null pointer

### 5.71.2.6 defaultPalette()

```
QPalette quentier::NoteEditor::defaultPalette () const [nodiscard]
```

#### Returns

palette containing default colors used by the editor; the palette is composed of colors from note editor widget's native palette but some of them might be overridden by colors from the palette specified previously via set↔DefaultPalette method: those colors from the specified palette which were valid

### 5.71.2.7 idleTime()

```
qint64 quentier::NoteEditor::idleTime () const [nodiscard], [noexcept]
```

#### Returns

the number of milliseconds since the last user's interaction with the note editor or -1 if there was no interaction or if no note is loaded at the moment

### 5.71.2.8 inAppNoteLinkPasteRequested

```
void quentier::NoteEditor::inAppNoteLinkPasteRequested (
    QString url,
    QString userId,
    QString shardId,
    QString noteGuid) [signal]
```

`inAppNoteLinkPasteRequested` signal is emitted when the note editor detects the attempt to paste the in-app note link into the note editor; the link would not be inserted right away, instead this signal would be emitted. Whatever party managing the note editor is expected to connect some slot to this signal and provide the optionally amended link information to the note editor by sending the signal connected to its `insertInAppNoteLink` slot - this slot accepts both the URL of the link and the link text and performs the actual link insertion into the note. If the link text is empty, the URL itself is used as the link text.

### 5.71.2.9 initialize()

```
void quentier::NoteEditor::initialize (
    local_storage::ILocalStoragePtr localStorage,
    SpellChecker & spellChecker,
    const Account & account,
    QThread * backgroundJobsThread = nullptr,
    enml::IDecryptedTextCachePtr decryptedTextCache = nullptr)
```

`NoteEditor` requires `LocalStorageManagerAsync`, `SpellChecker` and `Account` for its work but due to the particularities of Qt's .ui files processing these can't be passed right inside the constructor, hence here's a special initialization method

#### Parameters

|                             |                                                                                                                                                                                    |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>localStorage</i>         | Local storage                                                                                                                                                                      |
| <i>spellChecker</i>         | Spell checker to be used by note editor                                                                                                                                            |
| <i>account</i>              | Current account                                                                                                                                                                    |
| <i>backgroundJobsThread</i> | Pointer to the thread to be used for scheduling of background jobs of <code>NoteEditor</code> ; if null, <code>NoteEditor</code> 's background jobs would take place in GUI thread |
| <i>decryptedTextCache</i>   | Decrypted text cache to be used for note rendering and text decryption. If null, a new instance would be created and used.                                                         |

#### 5.71.2.10 isEditorPageModified()

```
bool quantier::NoteEditor::isEditorPageModified () const [nodiscard], [noexcept]
```

##### Returns

true if there's content within the editor not yet converted to note, false otherwise

#### 5.71.2.11 isModified()

```
bool quantier::NoteEditor::isModified () const [nodiscard], [noexcept]
```

##### Returns

true if there's content within the editor not yet converted to note or not saved to local storage, false otherwise

#### 5.71.2.12 isNoteLoaded()

```
bool quantier::NoteEditor::isNoteLoaded () const [nodiscard], [noexcept]
```

##### Returns

true if the note last set to the editor has been fully loaded already, false otherwise

#### 5.71.2.13 saveNoteToLocalStorage

```
void quantier::NoteEditor::saveNoteToLocalStorage () [slot]
```

Invoke this slot to launch the asynchronous procedure of saving the modified current note back to the local storage. If no note is set to the editor or if the note is not modified, no action would be performed. Otherwise noteSaved↔ToLocalStorage signal would be emitted in case of successful saving or failedToSaveNoteToLocalStorage would be emitted otherwise

#### 5.71.2.14 setAccount()

```
void quantier::NoteEditor::setAccount (
    const Account & account)
```

Set the current account to the note editor

#### 5.71.2.15 setBackend()

```
void quantier::NoteEditor::setBackend (
    INoteEditorBackend * backend)
```

This method can be used to set the backend to the note editor; the note editor has the default backend so this method is not obligatory to be called

### 5.71.2.16 setCurrentNoteLocalId()

```
void quentier::NoteEditor::setCurrentNoteLocalId (  
    const QString & noteLocalId)
```

Set note local id to the note editor. The note is being searched for within the local storage, in case of no note being found `noteNotFound` signal is emitted. Otherwise note editor page starts loading.

#### Parameters

|                          |                      |
|--------------------------|----------------------|
| <i>note↔<br/>LocalId</i> | The local id of note |
|--------------------------|----------------------|

### 5.71.2.17 setDefaultFont

```
void quentier::NoteEditor::setDefaultFont (  
    const QFont & font) [slot]
```

Sets the font which would be used by the editor by default

#### Parameters

|             |                                              |
|-------------|----------------------------------------------|
| <i>font</i> | The font to be used by the editor by default |
|-------------|----------------------------------------------|

### 5.71.2.18 setDefaultPalette

```
void quentier::NoteEditor::setDefaultPalette (  
    const QPalette & pal) [slot]
```

Sets the palette with colors to be used by the editor. New colors are applied after the note is fully loaded. If no note is set to the editor, the palette is simply remembered for the next note to be loaded into it.

Colors within the palette and their usage:

1. WindowText - used as default font color
2. Base - used as default background color
3. HighlightedText - used as font color for selected text
4. Highlight - used as background color for selected text

#### Parameters

|            |                                                                                                             |
|------------|-------------------------------------------------------------------------------------------------------------|
| <i>pal</i> | The palette to be set. Invalid colors from it are substituted by colors from widget's palette by the editor |
|------------|-------------------------------------------------------------------------------------------------------------|



#### 5.71.2.19 setFocus()

```
void quotient::NoteEditor::setFocus ()
```

Sets the focus to the backend note editor widget

#### 5.71.2.20 setInitialPageHtml()

```
void quotient::NoteEditor::setInitialPageHtml (  
    const QString & html)
```

Set the html to be displayed when the note is not set to the editor

#### 5.71.2.21 setNoteDeletedPageHtml()

```
void quotient::NoteEditor::setNoteDeletedPageHtml (  
    const QString & html)
```

Set the html to be displayed when the note set to the editor was deleted from the local storage (either marked as deleted or deleted permanently i.e. expunged)

#### 5.71.2.22 setNoteLoadingPageHtml()

```
void quotient::NoteEditor::setNoteLoadingPageHtml (  
    const QString & html)
```

Set the html to be displayed when the note set to the editor is being loaded into it

#### 5.71.2.23 setNoteNotFoundPageHtml()

```
void quotient::NoteEditor::setNoteNotFoundPageHtml (  
    const QString & html)
```

Set the html to be displayed when the note attempted to be set to the editor was not found within the local storage

#### 5.71.2.24 setNoteTitle

```
void quotient::NoteEditor::setNoteTitle (  
    const QString & noteTitle) [slot]
```

Invoke this slot to set the title to the note displayed via the note editor. The note editor itself doesn't manage the note title in any way so any external code using the note editor can set the title to the note editor's note which would be considered modified if the title is new and then eventually the note would be saved to local storage

#### Parameters

---

|                  |                       |
|------------------|-----------------------|
| <i>noteTitle</i> | The title of the note |
|------------------|-----------------------|

### 5.71.2.25 setTagIds

```
void quantier::NoteEditor::setTagIds (
    const QStringList & tagLocalIds,
    const QStringList & tagGuids) [slot]
```

Invoke this slot to set tag local ids and/or tag guids to the note displayed via the note editor. The note editor itself doesn't manage the note tags in any way so any external code using the note editor can set the tag ids to the note editor's internal note which would be considered modified if the tag ids are new and then eventually the note would be saved to local storage

#### Parameters

|                    |                                        |
|--------------------|----------------------------------------|
| <i>tagLocalIds</i> | The list of tag local ids for the note |
| <i>tagGuids</i>    | The list of tag guids for the note     |

### 5.71.2.26 setUndoStack()

```
void quantier::NoteEditor::setUndoStack (
    QUndoStack * pUndoStack)
```

Set the undo stack for the note editor to use

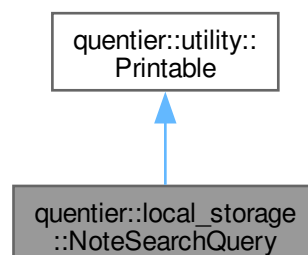
### 5.71.2.27 undoStack()

```
const QUndoStack * quantier::NoteEditor::undoStack () const [nodiscard], [noexcept]
```

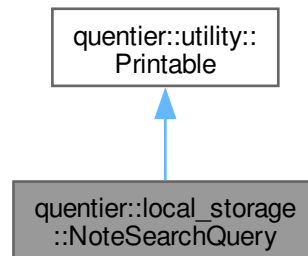
Get the undo stack serving to the note editor

## 5.72 quantier::local\_storage::NoteSearchQuery Class Reference

Inheritance diagram for quantier::local\_storage::NoteSearchQuery:



Collaboration diagram for `quentier::local_storage::NoteSearchQuery`:



### Public Member Functions

- **NoteSearchQuery** (const NoteSearchQuery &other)
- **NoteSearchQuery** (NoteSearchQuery &&other) noexcept
- NoteSearchQuery & **operator=** (const NoteSearchQuery &other)
- NoteSearchQuery & **operator=** (NoteSearchQuery &&other) noexcept
- bool **isEmpty** () const
- void **clear** ()
- QString **queryString** () const
- bool **setQueryString** (const QString &queryString, [ErrorString](#) &error)
- QString **notebookModifier** () const
- bool **hasAnyModifier** () const
- const QStringList & **tagNames** () const
- const QStringList & **negatedTagNames** () const
- bool **hasAnyTag** () const
- bool **hasNegatedAnyTag** () const
- const QStringList & **titleNames** () const
- const QStringList & **negatedTitleNames** () const
- bool **hasAnyTitleName** () const
- bool **hasNegatedAnyTitleName** () const
- const QList< qint64 > & **creationTimestamps** () const
- const QList< qint64 > & **negatedCreationTimestamps** () const
- bool **hasAnyCreationTimestamp** () const
- bool **hasNegatedAnyCreationTimestamp** () const
- const QList< qint64 > & **modificationTimestamps** () const
- const QList< qint64 > & **negatedModificationTimestamps** () const
- bool **hasAnyModificationTimestamp** () const
- bool **hasNegatedAnyModificationTimestamp** () const
- const QStringList & **resourceMimeTypes** () const
- const QStringList & **negatedResourceMimeTypes** () const
- bool **hasAnyResourceMimeType** () const
- bool **hasNegatedAnyResourceMimeType** () const
- const QList< qint64 > & **subjectDateTimestamps** () const
- const QList< qint64 > & **negatedSubjectDateTimestamps** () const
- bool **hasAnySubjectDateTimestamp** () const
- bool **hasNegatedAnySubjectDateTimestamp** () const

- `const QList< double > & latitudes () const`
- `const QList< double > & negatedLatitudes () const`
- `bool hasAnyLatitude () const`
- `bool hasNegatedAnyLatitude () const`
- `const QList< double > & longitudes () const`
- `const QList< double > & negatedLongitudes () const`
- `bool hasAnyLongitude () const`
- `bool hasNegatedAnyLongitude () const`
- `const QList< double > & altitudes () const`
- `const QList< double > & negatedAltitudes () const`
- `bool hasAnyAltitude () const`
- `bool hasNegatedAnyAltitude () const`
- `const QStringList & authors () const`
- `const QStringList & negatedAuthors () const`
- `bool hasAnyAuthor () const`
- `bool hasNegatedAnyAuthor () const`
- `const QStringList & sources () const`
- `const QStringList & negatedSources () const`
- `bool hasAnySource () const`
- `bool hasNegatedAnySource () const`
- `const QStringList & sourceApplications () const`
- `const QStringList & negatedSourceApplications () const`
- `bool hasAnySourceApplication () const`
- `bool hasNegatedAnySourceApplication () const`
- `const QStringList & contentClasses () const`
- `const QStringList & negatedContentClasses () const`
- `bool hasAnyContentClass () const`
- `bool hasNegatedAnyContentClass () const`
- `const QStringList & placeNames () const`
- `const QStringList & negatedPlaceNames () const`
- `bool hasAnyPlaceName () const`
- `bool hasNegatedAnyPlaceName () const`
- `const QStringList & applicationData () const`
- `const QStringList & negatedApplicationData () const`
- `bool hasAnyApplicationData () const`
- `bool hasNegatedAnyApplicationData () const`
- `const QList< quint64 > & reminderOrders () const`
- `const QList< quint64 > & negatedReminderOrders () const`
- `bool hasAnyReminderOrder () const`
- `bool hasNegatedAnyReminderOrder () const`
- `const QList< quint64 > & reminderTimes () const`
- `const QList< quint64 > & negatedReminderTimes () const`
- `bool hasAnyReminderTime () const`
- `bool hasNegatedAnyReminderTime () const`
- `const QList< quint64 > & reminderDoneTimes () const`
- `const QList< quint64 > & negatedReminderDoneTimes () const`
- `bool hasAnyReminderDoneTime () const`
- `bool hasNegatedAnyReminderDoneTime () const`
- `bool hasUnfinishedToDo () const`
- `bool hasNegatedUnfinishedToDo () const`
- `bool hasFinishedToDo () const`
- `bool hasNegatedFinishedToDo () const`
- `bool hasAnyToDo () const`
- `bool hasNegatedAnyToDo () const`
- `bool hasEncryption () const`

- `bool hasNegatedEncryption () const`
- `const QStringList & contentSearchTerms () const`
- `const QStringList & negatedContentSearchTerms () const`
- `bool hasAnyContentSearchTerms () const`
- `bool isMatcheable () const`
- `QTextStream & print (QTextStream &strm) const` override

## Public Member Functions inherited from `quentier::utility::Printable`

- `QString toString () const`

### 5.72.1 Member Function Documentation

#### 5.72.1.1 `notebookModifier()`

```
QString quentier::local_storage::NoteSearchQuery::notebookModifier () const [nodiscard]
```

If query string has "notebook:<notebook name>" scope modifier, this method returns the name of the notebook, otherwise it returns empty string

#### 5.72.1.2 `print()`

```
QTextStream & quentier::local_storage::NoteSearchQuery::print (  
    QTextStream & strm) const [override], [virtual]
```

Implements `quentier::utility::Printable`.

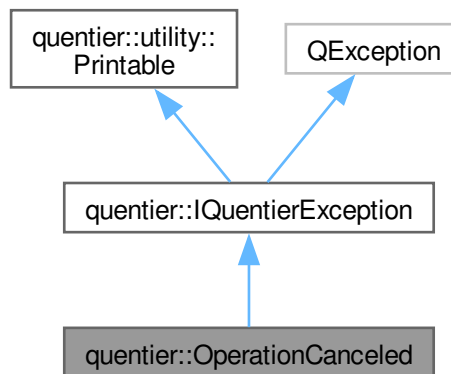
#### 5.72.1.3 `queryString()`

```
QString quentier::local_storage::NoteSearchQuery::queryString () const [nodiscard]
```

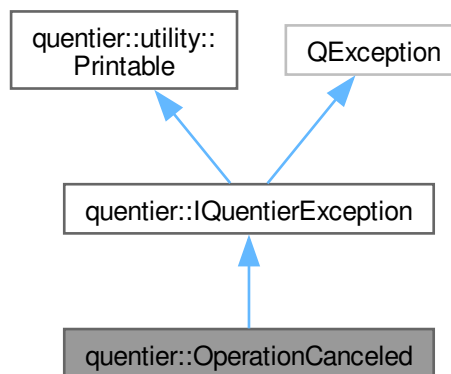
Returns the original non-parsed query string

## 5.73 `quentier::OperationCanceled` Class Reference

Inheritance diagram for `quentier::OperationCanceled`:



Collaboration diagram for `quentier::OperationCanceled`:



### Public Member Functions

- `OperationCanceled * clone ()` const override
- `void raise ()` const override

### Public Member Functions inherited from `quentier::IQuentierException`

- `ErrorString errorMessage ()` const
- `QString localizedErrorMessage ()` const
- `QString nonLocalizedErrorMessage ()` const
- `const char * what ()` const noexcept override
- `QTextStream & print (QTextStream &strm)` const override

## Public Member Functions inherited from `quentier::utility::Printable`

- `QString toString () const`

## Protected Member Functions

- `QString exceptionDisplayName () const override`

## Protected Member Functions inherited from `quentier::IQuentierException`

- `IQuentierException (ErrorString message)`
- `IQuentierException (const IQuentierException &other)`
- `IQuentierException & operator= (const IQuentierException &other)`

### 5.73.1 Member Function Documentation

#### 5.73.1.1 `exceptionDisplayName()`

```
QString quentier::OperationCanceled::exceptionDisplayName () const [nodiscard], [override],  
[protected], [virtual]
```

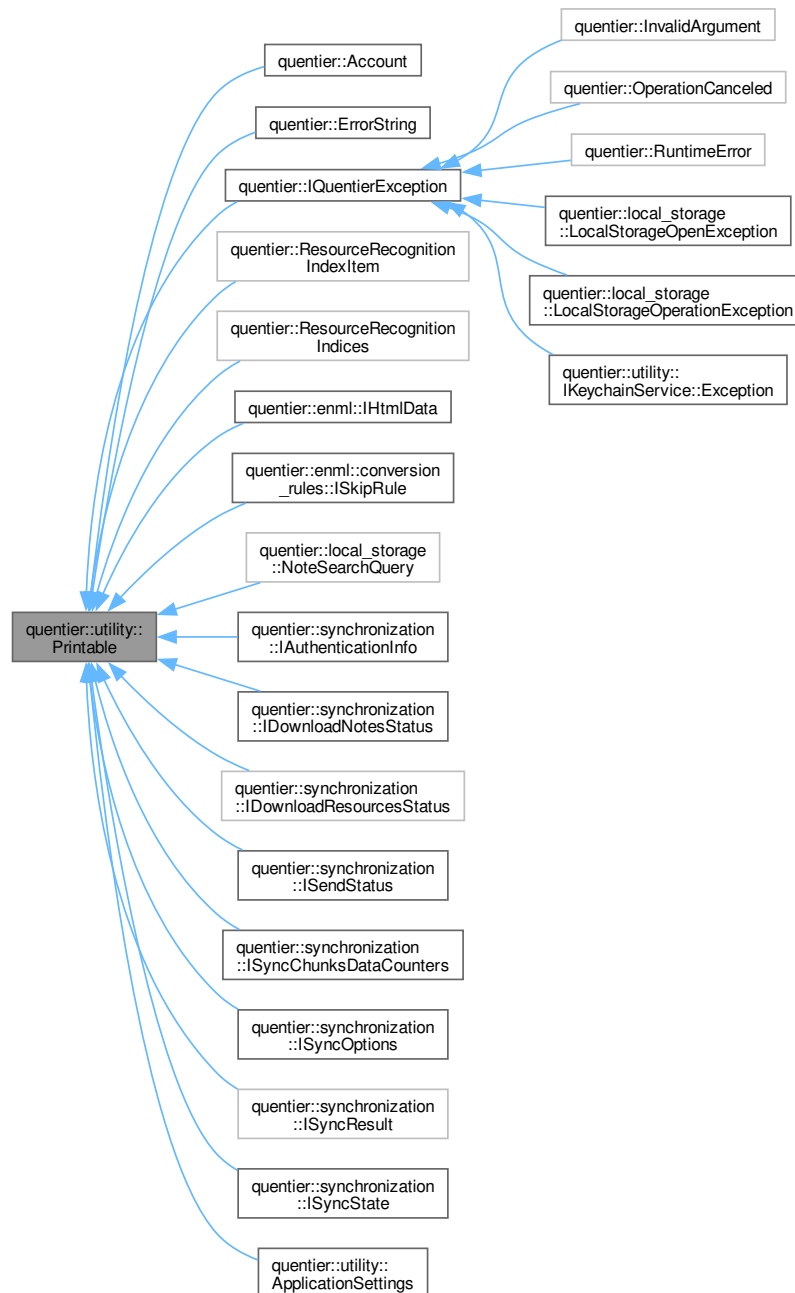
Implements `quentier::IQuentierException`.

## 5.74 `quentier::utility::Printable` Class Reference

The `Printable` class is the interface for Quentier's internal classes which should be able to write themselves into `QTextStream` and/or convert to `QString`.

```
#include <Printable.h>
```

Inheritance diagram for `quentier::utility::Printable`:



### Public Member Functions

- virtual QTextStream & **print** (QTextStream &strm) const =0
- QString **toString** () const

### Friends

- QUENTIER\_EXPORT QTextStream & **operator**<< (QTextStream &strm, const Printable &printable)
- QUENTIER\_EXPORT QDebug & **operator**<< (QDebug &debug, const Printable &printable)



### 5.74.1 Detailed Description

The [Printable](#) class is the interface for Quentier's internal classes which should be able to write themselves into QTextStream and/or convert to QString.

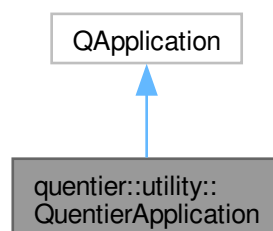
## 5.75 QPromise< T > Class Template Reference

### Public Member Functions

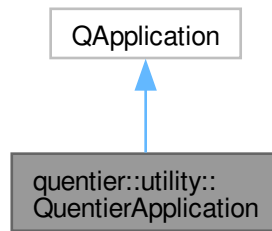
- **QPromise** ([QPromise](#)< T > &&other) noexcept
- **QPromise** (QFutureInterface< T > &other)
- [QPromise](#) & **operator=** ([QPromise](#)< T > &&other) noexcept
- QFuture< T > **future** () const
- template<typename U, typename = std::enable\_if\_t< std::is\_same\_v<U, T> || std::is\_convertible\_v<U, T>>>> void **addResult** (U &&result, int index=-1)
- void **setException** (const QException &e)
- void **start** ()
- void **finish** ()
- void **suspendIfRequested** ()
- bool **isCanceled** () const
- void **setProgressRange** (int minimum, int maximum)
- void **setProgressValue** (int progressValue)
- void **setProgressValueAndText** (int progressValue, const QString &progressText)
- void **swap** ([QPromise](#)< T > &other) noexcept

## 5.76 quentier::utility::QuentierApplication Class Reference

Inheritance diagram for quentier::utility::QuentierApplication:



Collaboration diagram for `quentier::utility::QuentierApplication`:



### Public Member Functions

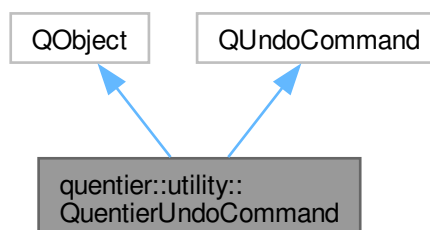
- **QuentierApplication** (int &argc, char \*argv[])
- bool **notify** (QObject \*object, QEvent \*event) override
- bool **event** (QEvent \*event) override

## 5.77 quentier::utility::QuentierUndoCommand Class Reference

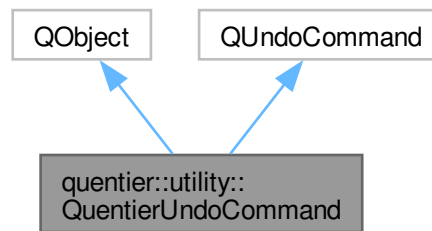
The [QuentierUndoCommand](#) class has the sole purpose of working around one quirky aspect of Qt's undo/redo framework: when you push `QUndoCommand` to `QUndoStack`, it calls "redo" method of that command. This class offers subclasses to implement their own methods for actual "undo" and "redo" commands while ignoring the attempts to "redo" anything if there were no previous "undo" call prior to that.

```
#include <QuentierUndoCommand.h>
```

Inheritance diagram for `quentier::utility::QuentierUndoCommand`:



Collaboration diagram for `quentier::utility::QuentierUndoCommand`:



## Signals

- void **notifyError** ([ErrorString](#) error)

## Public Member Functions

- **QuentierUndoCommand** (QUndoCommand \*parent=nullptr)
- **QuentierUndoCommand** (const QString &text, QUndoCommand \*parent=nullptr)
- void **undo** () final
- void **redo** () final
- bool **onceUndoExecuted** () const noexcept

## Protected Member Functions

- virtual void **undoImpl** ()=0
- virtual void **redoImpl** ()=0

### 5.77.1 Detailed Description

The [QuentierUndoCommand](#) class has the sole purpose of working around one quirky aspect of Qt's undo/redo framework: when you push QUndoCommand to QUndoStack, it calls "redo" method of that command. This class offers subclasses to implement their own methods for actual "undo" and "redo" commands while ignoring the attempts to "redo" anything if there were no previous "undo" call prior to that.

The rationale behind the current behaviour seems to be the compliance with "command pattern behaviour" when you create the command to execute the action instead of just executing it immediately. This design is enforced by Qt's undo/redo framework, there's no option to choose not to call "redo" when pushing to the stack.

One thing which this design fails to see is the fact that the command may be already executed externally by the moment the QUndoCommand can be created. Suppose we can get the information about how to undo (and then again redo) that command. We create the corresponding QUndoCommand, set up the stuff for its undo/redo methods and push it to QUndoStack for future use... But at the same time QUndoStack calls "redo" method of the command. Really not the behaviour you'd like to have.

[QuentierUndoCommand](#) is also QObject, it is for error reporting via notifyError signal

## 5.78 `quentier::synchronization::RateLimitReachedError` Struct Reference

```
#include <Errors.h>
```

### Public Attributes

- `std::optional<qint32>` [`rateLimitDurationSec`](#)

### 5.78.1 Detailed Description

Information about "API rate limit reached" error which Evernote servers might return if too much of their API calls were made recently. In case of such error synchronization should be repeated later, after some time passes.

### 5.78.2 Member Data Documentation

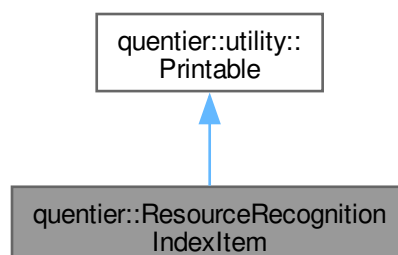
#### 5.78.2.1 `rateLimitDurationSec`

```
std::optional<qint32> quentier::synchronization::RateLimitReachedError::rateLimitDurationSec
```

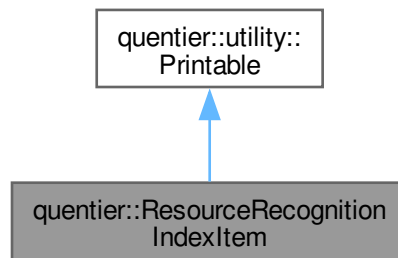
Number of seconds during which since the current moment during which any call to Evernote API would again result in "API rate limit reached" error i.e. the number of seconds to wait for before the next attempt to run synchronization

## 5.79 `quentier::ResourceRecognitionIndexItem` Class Reference

Inheritance diagram for `quentier::ResourceRecognitionIndexItem`:



Collaboration diagram for `quentier::ResourceRecognitionIndexItem`:



## Classes

- struct [ITextItem](#)
- struct [IObjectItem](#)
- struct [IShapeItem](#)
- struct [IBarcodeItem](#)

## Public Types

- using **ITextItemPtr** = `std::shared_ptr<ITextItem>`
- using **IObjectItemPtr** = `std::shared_ptr<IObjectItem>`
- using **IShapeItemPtr** = `std::shared_ptr<IShapeItem>`
- using **IBarcodeItemPtr** = `std::shared_ptr<IBarcodeItem>`

## Public Member Functions

- **ResourceRecognitionIndexItem** (`const ResourceRecognitionIndexItem &other`)
- **ResourceRecognitionIndexItem** (`ResourceRecognitionIndexItem &&other`) `noexcept`
- `ResourceRecognitionIndexItem & operator=` (`const ResourceRecognitionIndexItem &other`)
- `ResourceRecognitionIndexItem & operator=` (`ResourceRecognitionIndexItem &&other`) `noexcept`
- `bool isValid` () `const`
- `int x` () `const`
- `void setX` (`int x`)
- `int y` () `const`
- `void setY` (`int y`)
- `int h` () `const`
- `void setH` (`int h`)
- `int w` () `const`
- `void setW` (`int w`)
- `int offset` () `const`
- `void setOffset` (`int offset`)
- `int duration` () `const`
- `void setDuration` (`int duration`)
- `QList< int > strokes` () `const`
- `void setStrokes` (`QList< int > strokes`)

- `QList< ITextItemPtr > textItems () const`
- `void setTextItems (QList< ITextItemPtr > textItems)`
- `QList< IObjectItemPtr > objectItems () const`
- `void setObjectItems (QList< IObjectItemPtr > objectItems)`
- `QList< IShapeItemPtr > shapeItems () const`
- `void setShapeItems (QList< IShapeItemPtr > shapeItems)`
- `QList< IBarcodeItemPtr > barcodeItems () const`
- `void setBarcodeItems (QList< IBarcodeItemPtr > barcodeItems)`
- `QTextStream & print (QTextStream &strm) const override`

### Public Member Functions inherited from [quentier::utility::Printable](#)

- `QString toString () const`

## 5.79.1 Member Function Documentation

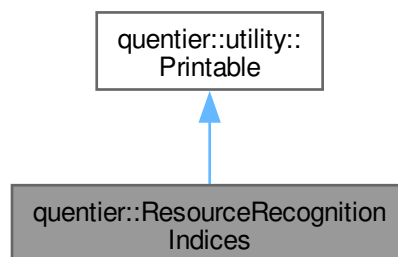
### 5.79.1.1 `print()`

```
QTextStream & quentier::ResourceRecognitionIndexItem::print (
    QTextStream & strm) const    [override], [virtual]
```

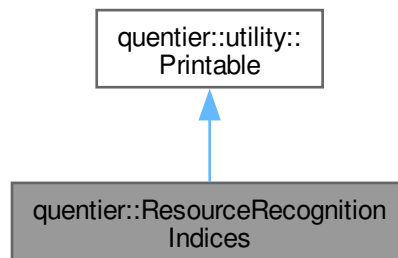
Implements [quentier::utility::Printable](#).

## 5.80 `quentier::ResourceRecognitionIndices` Class Reference

Inheritance diagram for `quentier::ResourceRecognitionIndices`:



Collaboration diagram for `quentier::ResourceRecognitionIndices`:



### Public Member Functions

- **ResourceRecognitionIndices** (const QByteArray &rawRecognitionIndicesData)
- **ResourceRecognitionIndices** (const ResourceRecognitionIndices &other)
- **ResourceRecognitionIndices** (ResourceRecognitionIndices &&other) noexcept
- ResourceRecognitionIndices & **operator=** (const ResourceRecognitionIndices &other)
- ResourceRecognitionIndices & **operator=** (ResourceRecognitionIndices &&other) noexcept
- bool **isNull** () const
- bool **isValid** () const
- QString **objectId** () const
- QString **objectType** () const
- QString **recoType** () const
- QString **engineVersion** () const
- QString **docType** () const
- QString **lang** () const
- int **objectHeight** () const
- int **objectWidth** () const
- QVector< [ResourceRecognitionIndexItem](#) > **items** () const
- bool **setData** (const QByteArray &rawRecognitionIndicesData)
- QTextStream & [print](#) (QTextStream &strm) const override

### Public Member Functions inherited from [quentier::utility::Printable](#)

- QString **toString** () const

## 5.80.1 Member Function Documentation

### 5.80.1.1 `print()`

```
QTextStream & quentier::ResourceRecognitionIndices::print (
    QTextStream & strm) const [override], [virtual]
```

Implements [quentier::utility::Printable](#).

## 5.81 `quantier::Result< ValueType, ErrorType, typename >` Class Template Reference

### Public Member Functions

- `template<typename T1 = ValueType, typename std::enable_if_t<!std::is_void_v< std::decay_t< T1 > > > * = nullptr> Result (T1 t)`
- `Result (ErrorType error)`
- `Result (const Result< ValueType, ErrorType > &other)`
- `Result (Result< ValueType, ErrorType > &&other)`
- `Result & operator= (const Result< ValueType, ErrorType > &other)`
- `Result & operator= (Result< ValueType, ErrorType > &&other)`
- `bool isValid () const noexcept`
- `operator bool () const noexcept`
- `template<typename T1 = ValueType, typename std::enable_if_t<!std::is_void_v< std::decay_t< T1 > > > * = nullptr> T1 & get ()`
- `template<typename T1 = ValueType, typename std::enable_if_t<!std::is_void_v< std::decay_t< T1 > > > * = nullptr> const T1 & get () const`
- `template<typename T1 = ValueType, typename std::enable_if_t<!std::is_void_v< std::decay_t< T1 > > > * = nullptr> T1 & operator* ()`
- `template<typename T1 = ValueType, typename std::enable_if_t<!std::is_void_v< std::decay_t< T1 > > > * = nullptr> const T1 & operator* () const`
- `const ErrorType & error () const`
- `ErrorType & error ()`

### 5.81.1 Member Function Documentation

#### 5.81.1.1 `isValid()`

```
template<class ValueType, class ErrorType, typename = typename std::enable_if_t<!std::is_↵
void_v<std::decay_t<ErrorType>>>>
bool quantier::Result< ValueType, ErrorType, typename >::isValid () const [inline], [nodiscard],
[noexcept]
```

#### Returns

boolean value indicating whether the result contains a value

## 5.82 `quantier::threading::detail::ResultTypeHelper< F, Arg, Enable >` Struct Template Reference

## 5.83 `quantier::threading::detail::ResultTypeHelper< F, Arg, typename std::enable_if_t< !std::is_invocable_v< std::decay_t< F >, QFuture< Arg > > > >` Struct Template Reference

### Public Types

- using `ResultType = std::invoke_result_t<std::decay_t<F>, std::decay_t<Arg>>`



## 5.84 `quentier::threading::detail::ResultTypeHelper< F, Arg, typename std::enable_if_t< std::is_invocable_v< std::decay_t< F >, QFuture< Arg > > > > Struct Template Reference`

### Public Types

- using **ResultType** = `std::invoke_result_t<std::decay_t<F>, QFuture<Arg>>`

## 5.85 `quentier::threading::detail::ResultTypeHelper< F, void, typename std::enable_if_t< !std::is_invocable_v< std::decay_t< F >, QFuture< void > > > > Struct Template Reference`

### Public Types

- using **ResultType** = `std::invoke_result_t<std::decay_t<F>>`

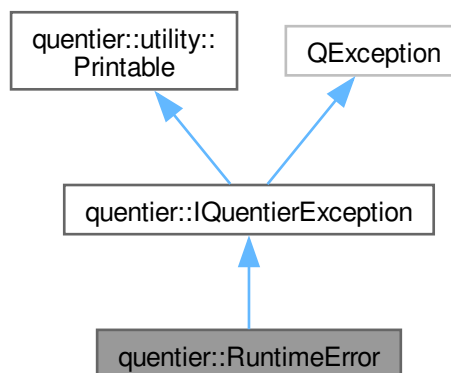
## 5.86 `quentier::threading::detail::ResultTypeHelper< F, void, typename std::enable_if_t< std::is_invocable_v< std::decay_t< F >, QFuture< void > > > > Struct Template Reference`

### Public Types

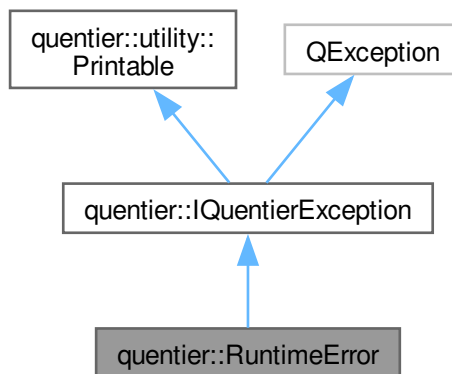
- using **ResultType** = `std::invoke_result_t<std::decay_t<F>, QFuture<void>>`

## 5.87 `quentier::RuntimeError` Class Reference

Inheritance diagram for `quentier::RuntimeError`:



Collaboration diagram for `quentier::RuntimeError`:



### Public Member Functions

- **RuntimeError** ([ErrorString](#) message)
- `RuntimeError * clone ()` const override
- `void raise ()` const override

### Public Member Functions inherited from [quentier::IQuentierException](#)

- [ErrorString](#) **errorMessage** () const
- `QString localizedErrorMessage ()` const
- `QString nonLocalizedErrorMessage ()` const
- `const char * what ()` const noexcept override
- `QTextStream & print (QTextStream &strm)` const override

### Public Member Functions inherited from [quentier::utility::Printable](#)

- `QString toString ()` const

### Protected Member Functions

- `QString exceptionDisplayName ()` const override

### Protected Member Functions inherited from [quentier::IQuentierException](#)

- **IQuentierException** ([ErrorString](#) message)
- **IQuentierException** (const IQuentierException &other)
- IQuentierException & **operator=** (const IQuentierException &other)

### 5.87.1 Member Function Documentation

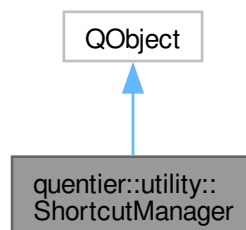
#### 5.87.1.1 exceptionDisplayName()

```
QString quantier::RuntimeError::exceptionDisplayName () const [nodiscard], [override], [protected], [virtual]
```

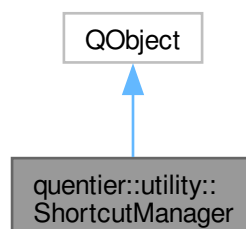
Implements [quantier::IQuantierException](#).

## 5.88 quantier::utility::ShortcutManager Class Reference

Inheritance diagram for quantier::utility::ShortcutManager:



Collaboration diagram for quantier::utility::ShortcutManager:



## Public Types

- enum **QuentierShortcutKey** {  
**NewNote** = 5000 , **NewTag** , **NewNotebook** , **NewSavedSearch** ,  
**AddAttachment** , **SaveAttachment** , **OpenAttachment** , **CopyAttachment** ,  
**CutAttachment** , **RemoveAttachment** , **RenameAttachment** , **AddAccount** ,  
**ExitAccount** , **SwitchAccount** , **AccountInfo** , **NoteSearch** ,  
**NewNoteSearch** , **ShowNotes** , **ShowNotebooks** , **ShowTags** ,  
**ShowSavedSearches** , **ShowDeletedNotes** , **ShowStatusBar** , **ShowToolBar** ,  
**PasteUnformatted** , **Font** , **UpperIndex** , **LowerIndex** ,  
**AlignLeft** , **AlignCenter** , **AlignRight** , **AlignFull** ,  
**IncreaseIndentation** , **DecreaseIndentation** , **IncreaseFontSize** , **DecreaseFontSize** ,  
**InsertNumberedList** , **InsertBulletedList** , **Strikethrough** , **Highlight** ,  
**InsertTable** , **InsertRow** , **InsertColumn** , **RemoveRow** ,  
**RemoveColumn** , **InsertHorizontalLine** , **InsertToDoTag** , **EditHyperlink** ,  
**CopyHyperlink** , **RemoveHyperlink** , **Encrypt** , **Decrypt** ,  
**DecryptPermanently** , **BackupLocalStorage** , **RestoreLocalStorage** , **UpgradeLocalStorage** ,  
**LocalStorageStatus** , **SpellCheck** , **SpellCheckIgnoreWord** , **SpellCheckAddWordToUserDictionary** ,  
**SavImage** , **AnnotateImage** , **ImageRotateClockwise** , **ImageRotateCounterClockwise** ,  
**Synchronize** , **FullSync** , **ImportFolders** , **Preferences** ,  
**ReleaseNotes** , **ViewLogs** , **About** , **UnknownKey** = 100000 }

## Public Slots

- void **setUserShortcut** (int key, const QKeySequence &[shortcut](#), const [Account](#) &account, QString context={})
- void **setNonStandardUserShortcut** (QString nonStandardKey, const QKeySequence &[shortcut](#), const [Account](#) &account, QString context={})
- void **setDefaultShortcut** (int key, const QKeySequence &[shortcut](#), const [Account](#) &account, QString context={})
- void **setNonStandardDefaultShortcut** (QString nonStandardKey, const QKeySequence &[shortcut](#), const [Account](#) &account, QString context={})

## Signals

- void **shortcutChanged** (int key, QKeySequence [shortcut](#), const [Account](#) &account, QString context)
- void **nonStandardShortcutChanged** (QString nonStandardKey, QKeySequence [shortcut](#), const [Account](#) &account, QString context)

## Public Member Functions

- **ShortcutManager** (QObject \*parent=nullptr)
- QKeySequence [shortcut](#) (int key, const [Account](#) &account, const QString &context={}) const
- QKeySequence [shortcut](#) (const QString &nonStandardKey, const [Account](#) &account, const QString &context={}) const
- QKeySequence [defaultShortcut](#) (int key, const [Account](#) &account, const QString &context={}) const
- QKeySequence [defaultShortcut](#) (const QString &nonStandardKey, const [Account](#) &account, const QString &context={}) const
- QKeySequence [userShortcut](#) (int key, const [Account](#) &account, const QString &context={}) const
- QKeySequence [userShortcut](#) (const QString &nonStandardKey, const [Account](#) &account, const QString &context={}) const

## 5.88.1 Member Function Documentation

### 5.88.1.1 defaultShortcut() [1/2]

```
QKeySequence quentier::utility::ShortcutManager::defaultShortcut (
    const QString & nonStandardKey,
    const Account & account,
    const QString & context = {}) const [nodiscard]
```

#### Returns

Default shortcut for the non-standard key if present, otherwise empty key sequence

### 5.88.1.2 defaultShortcut() [2/2]

```
QKeySequence quentier::utility::ShortcutManager::defaultShortcut (
    int key,
    const Account & account,
    const QString & context = {}) const [nodiscard]
```

#### Returns

Default shortcut for the standard key if present, otherwise empty key sequence

### 5.88.1.3 shortcut() [1/2]

```
QKeySequence quentier::utility::ShortcutManager::shortcut (
    const QString & nonStandardKey,
    const Account & account,
    const QString & context = {}) const [nodiscard]
```

#### Returns

Active shortcut for the non-standard key - either the user defined shortcut (if present) or the default one (if present as well)

### 5.88.1.4 shortcut() [2/2]

```
QKeySequence quentier::utility::ShortcutManager::shortcut (
    int key,
    const Account & account,
    const QString & context = {}) const [nodiscard]
```

#### Returns

Active shortcut for the standard key - either the user defined shortcut (if present) or the default one (if present as well)

#### 5.88.1.5 userShortcut() [1/2]

```
QKeySequence quantier::utility::ShortcutManager::userShortcut (  
    const QString & nonStandardKey,  
    const Account & account,  
    const QString & context = {}) const [nodiscard]
```

##### Returns

User defined shortcut for the non-standard key if present, otherwise empty key sequence

#### 5.88.1.6 userShortcut() [2/2]

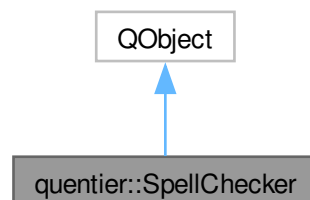
```
QKeySequence quantier::utility::ShortcutManager::userShortcut (  
    int key,  
    const Account & account,  
    const QString & context = {}) const [nodiscard]
```

##### Returns

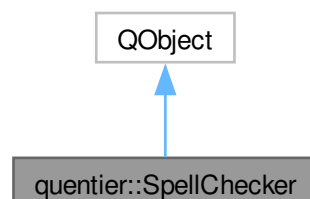
User defined shortcut for the standard key if present, otherwise empty key sequence

## 5.89 quantier::SpellChecker Class Reference

Inheritance diagram for quantier::SpellChecker:



Collaboration diagram for quantier::SpellChecker:



## Signals

- void **ready** ()

## Public Member Functions

- **SpellChecker** (`utility::FileIOProcessorAsync` \*fileIOProcessorAsync, `Account` account, `QObject` \*parent=nullptr, const `QString` &userDictionaryPath={})
- `QList< std::pair< QString, bool > >` **listAvailableDictionaries** () const
- void **setAccount** (const `Account` &account)
- void **enableDictionary** (const `QString` &language)
- void **disableDictionary** (const `QString` &language)
- bool **checkSpell** (const `QString` &word) const
- `QStringList` **spellCorrectionSuggestions** (const `QString` &misSpelledWord) const
- void **addToUserWordlist** (const `QString` &word)
- void **removeFromUserWordList** (const `QString` &word)
- void **ignoreWord** (const `QString` &word)
- void **removeWord** (const `QString` &word)
- bool **isReady** () const noexcept

## 5.90 `quentier::utility::StringUtils` Class Reference

### Public Member Functions

- void **removePunctuation** (`QString` &str, const `QList< QChar >` &charactersToPreserve={}) const
- void **removeDiacritics** (`QString` &str) const
- void **removeNewlines** (`QString` &str) const

## 5.91 `quentier::utility::SysInfo` Class Reference

### Public Member Functions

- qint64 **pageSize** ()
- qint64 **totalMemory** ()
- qint64 **freeMemory** ()
- `QString` **stackTrace** ()
- `QString` **platformName** ()

## 5.92 `quentier::threading::TrackedTask< LockableObject, Function >` Class Template Reference

```
#include <TrackedTask.h>
```

## Public Member Functions

- `template<typename SomeLockableObject, typename SomeFunction>`  
`constexpr TrackedTask (SomeLockableObject &&someLockableObject, SomeFunction &&function)`
- `template<typename... Arguments, typename = std::enable_if_t< std::is_invocable_v<Function, Arguments...> || std::is_member_↵`  
`function_pointer_v<Function>>>`  
`constexpr void operator() (Arguments &&... arguments)`
- `template<typename... Arguments, typename = std::enable_if_t< std::is_invocable_v<Function, Arguments...> || std::is_member_↵`  
`function_pointer_v<Function>>>`  
`constexpr void operator() (Arguments &&... arguments) const`

### 5.92.1 Detailed Description

`template<typename LockableObject, typename Function>`  
**class** `quentier::threading::TrackedTask< LockableObject, Function >`

Wrapper class which automates checking for the state of a lockable object. With this class code like this

```
auto task = [selfWeak = weak_from_this()] { auto self = selfWeak.lock(); if (!self) { return; } // otherwise do something
};
```

can be written like this:

```
auto task = threading::TrackedTask{weak_from_this(), &MyClass::someMethod};
```

## 5.93 quentier::utility::UuidGenerator Class Reference

### Static Public Member Functions

- static QString **generate** ()
- static QString **uidToString** (const QUuid &uid)

## 5.94 quentier::synchronization::ISyncConflictResolver::Conflict↵ Resolution::UseMine Struct Reference

The [UseMine](#) conflict resolution means "override theirs version with mine version".

```
#include <ISyncConflictResolver.h>
```

### 5.94.1 Detailed Description

The [UseMine](#) conflict resolution means "override theirs version with mine version".

## 5.95 quentier::synchronization::ISyncConflictResolver::Conflict↵ Resolution::UseTheirs Struct Reference

The [UseTheirs](#) conflict resolution means "override mine version with theirs version".

```
#include <ISyncConflictResolver.h>
```

### 5.95.1 Detailed Description

The [UseTheirs](#) conflict resolution means "override mine version with theirs version".



## Chapter 6

# File Documentation

### 6.1 ISkipRule.h

```
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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/enml/conversion_rules/MatchMode.h>
00022 #include <quentier/utility/Printable.h>
00023
00024 #include <QtGlobal>
00025
00026 namespace quentier::enml::conversion_rules {
00027
00028     class ISkipRule : public utility::Printable
00029     {
00030     public:
00031         ~ISkipRule() override;
00032
00033         enum class Target
00034         {
00035             Element,
00036             AttributeName,
00037             AttributeValue
00038         };
00039
00040         friend QUENTIER_EXPORT QTextStream & operator<<(
00041             QTextStream & strm, Target target);
00042
00043         friend QUENTIER_EXPORT QDebug & operator<<(QDebug & dbg, Target target);
00044
00045         [[nodiscard]] virtual Target target() const = 0;
00046
00047         [[nodiscard]] virtual QString value() const = 0;
00048
00049         [[nodiscard]] virtual MatchMode matchMode() const = 0;
00050
00051         [[nodiscard]] virtual bool includeContents() const = 0;
00052
00053         [[nodiscard]] virtual Qt::CaseSensitivity caseSensitivity() const = 0;
00054
00055     public: // utility::Printable
00056         QTextStream & print(QTextStream & strm) const override;
00057     };
00058 } // namespace quentier::enml::conversion_rules
```

## 6.2 ISkipRuleBuilder.h

```

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00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/enml/conversion_rules/Fwd.h>
00022 #include <quentier/enml/conversion_rules/ISkipRule.h>
00023 #include <quentier/utility/Linkage.h>
00024
00025 namespace quentier::enml::conversion_rules {
00026
00027     class QUENTIER_EXPORT ISkipRuleBuilder
00028     {
00029     public:
00030         virtual ~ISkipRuleBuilder();
00031
00032         virtual ISkipRuleBuilder & setTarget(ISkipRule::Target target) = 0;
00033         virtual ISkipRuleBuilder & setValue(QString value) = 0;
00034         virtual ISkipRuleBuilder & setMatchMode(MatchMode matchMode) = 0;
00035         virtual ISkipRuleBuilder & setIncludeContents(bool includeContents) = 0;
00036         virtual ISkipRuleBuilder & setCaseSensitivity(
00037             Qt::CaseSensitivity caseSensitivity) = 0;
00038
00039         [[nodiscard]] virtual ISkipRulePtr build() = 0;
00040     };
00041
00042 } // namespace quentier::enml::conversion_rules

```

## 6.3 MatchMode.h

```

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00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/Linkage.h>
00022
00023 class QDebug;
00024 class QTextStream;
00025
00026 namespace quentier::enml::conversion_rules {
00027
00028     enum class MatchMode
00029     {
00030         Equals,
00031         StartsWith,
00032         EndsWith,
00033         Contains
00034     };
00035
00036 };
00037
00038
00039
00040
00041
00042
00043
00044
00045
00046
00047
00048
00049
00050

```

```

00051 QUENTIER_EXPORT QTextStream & operator«(
00052     QTextStream & strm, MatchMode matchMode);
00053
00054 QUENTIER_EXPORT QDebug & operator«(QDebug & dbg, MatchMode matchMode);
00055
00056 } // namespace quentier::enml::conversion_rules

```

## 6.4 HtmlUtils.h

```

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00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/types/ErrorMessage.h>
00022 #include <quentier/types/Result.h>
00023 #include <quentier/utility/Linkage.h>
00024
00025 #include <QFlags>
00026
00027 #include <memory>
00028
00029 namespace quentier::enml::utils {
00030
00031 [[nodiscard]] Result<QString, ErrorMessage> QUENTIER_EXPORT
00032     convertHtmlToXml(const QString & html);
00033
00034 [[nodiscard]] Result<QString, ErrorMessage> QUENTIER_EXPORT
00035     convertHtmlToXhtml(const QString & html);
00036
00037 [[nodiscard]] Result<QString, ErrorMessage> QUENTIER_EXPORT
00038     cleanupHtml(const QString & html);
00039
00040 enum class EscapeStringOption
00041 {
00042     Simplify = 1 « 0,
00043 };
00044
00045 Q_DECLARE_FLAGS(EscapeStringOptions, EscapeStringOption);
00046
00047 [[nodiscard]] QString QUENTIER_EXPORT htmlEscapeString(
00048     QString str, EscapeStringOptions options = EscapeStringOptions{});
00049
00050 } // namespace quentier::enml::utils

```

## 6.5 IConverter.h

```

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```

```

00017  */
00018
00019  #pragma once
00020
00021  #include <quentier/enml/Fwd.h>
00022  #include <quentier/enml/conversion_rules/Fwd.h>
00023  #include <quentier/types/ErrorMessage.h>
00024  #include <quentier/types/Result.h>
00025  #include <quentier/utility/Linkage.h>
00026
00027  #include <QList>
00028  #include <QStringList>
00029  #include <QTextDocument>
00030
00031  #include <qevercloud/types/Note.h>
00032
00033  namespace quentier::enml {
00034
00035  class QUENTIER_EXPORT IConverter
00036  {
00037  public:
00038      virtual ~IConverter();
00039
00040      [[nodiscard]] virtual Result<QString, ErrorMessage> convertHtmlToEnml(
00041          const QString & html, IDecryptedTextCache & decryptedTextCache,
00042          const QList<conversion_rules::ISkipRulePtr> & skipRules = {}) const = 0;
00043
00044      [[nodiscard]] virtual Result<void, ErrorMessage> convertHtmlToDoc(
00045          const QString & html, QTextDocument & doc,
00046          const QList<conversion_rules::ISkipRulePtr> & skipRules = {}) const = 0;
00047
00048      [[nodiscard]] virtual Result<QString, ErrorMessage> convertHtmlToXml(
00049          const QString & html) const = 0;
00050
00051      [[nodiscard]] virtual Result<QString, ErrorMessage> convertHtmlToXhtml(
00052          const QString & html) const = 0;
00053
00054      [[nodiscard]] virtual Result<IHtmlDataPtr, ErrorMessage> convertEnmlToHtml(
00055          const QString & enml,
00056          IDecryptedTextCache & decryptedTextCache) const = 0;
00057
00058      [[nodiscard]] virtual Result<QString, ErrorMessage> convertEnmlToPlainText(
00059          const QString & enml) const = 0;
00060
00061      [[nodiscard]] virtual Result<QStringList, ErrorMessage>
00062          convertEnmlToWordsList(const QString & enml) const = 0;
00063
00064      [[nodiscard]] virtual QStringList convertPlainTextToWordsList(
00065          const QString & plainText) const = 0;
00066
00067      [[nodiscard]] virtual Result<void, ErrorMessage> validateEnml(
00068          const QString & enml) const = 0;
00069
00070      [[nodiscard]] virtual Result<QString, ErrorMessage> validateAndFixupEnml(
00071          const QString & enml) const = 0;
00072
00073      enum class EnexExportTags
00074      {
00075          Yes = 0,
00076          No
00077      };
00078
00079      [[nodiscard]] virtual Result<QString, ErrorMessage> exportNotesToEnex(
00080          const QList<qevercloud::Note> & notes,
00081          const QHash<QString, QString> & tagNameByTagLocalIds,
00082          EnexExportTags exportTagsOption,
00083          const QString & version = {}) const = 0;
00084
00085      [[nodiscard]] virtual Result<QList<qevercloud::Note>, ErrorMessage>
00086          importEnex(const QString & enex) const = 0;
00087  };
00088
00089  } // namespace quentier::enml

```

## 6.6 IDecryptedTextCache.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/IEncryptor.h>
00022 #include <quentier/utility/Linkage.h>
00023
00024 #include <QString>
00025
00026 #include <optional>
00027 #include <utility>
00028
00029 class QDebug;
00030 class QTextStream;
00031
00032 namespace quentier::enml {
00033
00034 class QUENTIER_EXPORT IDecryptedTextCache
00035 {
00036 public:
00037     virtual ~IDecryptedTextCache();
00038
00039     enum class RememberForSession
00040     {
00041         Yes,
00042         No
00043     };
00044
00045     friend QUENTIER_EXPORT QDebug & operator«(
00046         QDebug & dbg, RememberForSession rememberForSession);
00047
00048     friend QUENTIER_EXPORT QTextStream & operator«(
00049         QTextStream & strm, RememberForSession rememberForSession);
00050
00051     virtual void addDecryptexTextInfo(
00052         const QString & encryptedText, const QString & decryptedText,
00053         const QString & passphrase, utility::IEncryptor::Cipher cipher,
00054         RememberForSession rememberForSession) = 0;
00055
00056     [[nodiscard]] virtual std::optional<std::pair<QString, RememberForSession>»
00057         findDecryptedTextInfo(const QString & encryptedText) const = 0;
00058
00059     [[nodiscard]] virtual std::optional<QString> updateDecryptedTextInfo(
00060         const QString & originalEncryptedText,
00061         const QString & newDecryptedText) = 0;
00062
00063     [[nodiscard]] virtual bool containsRememberedForSessionEntries() const = 0;
00064
00065     virtual void removeDecryptedTextInfo(const QString & encryptedText) = 0;
00066     virtual void clearNonRememberedForSessionEntries() = 0;
00067 };
00068
00069 } // namespace quentier::enml

```

## 6.7 IENMLTagsConverter.h

```

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00017  */
00018

```

```

00019 #pragma once
00020
00021 #include <quentier/types/ErrorMessage.h>
00022 #include <quentier/types/Result.h>
00023 #include <quentier/utility/IEncryptor.h>
00024 #include <quentier/utility/Linkage.h>
00025
00026 #include <qevercloud/types/Fwd.h>
00027
00028 #include <QString>
00029 #include <QtGlobal>
00030
00031 namespace quentier::enml {
00032
00033 class QUENTIER_EXPORT IENMLTagsConverter
00034 {
00035 public:
00036     virtual ~IENMLTagsConverter();
00037
00038     [[nodiscard]] virtual QString convertEnToDo(
00039         bool checked, quint32 index) const = 0;
00040
00041     [[nodiscard]] virtual QString convertEncryptedText(
00042         const QString & encryptedText, const QString & hint,
00043         utility::IEncryptor::Cipher cipher, quint32 index) const = 0;
00044
00045     [[nodiscard]] virtual QString convertDecryptedText(
00046         const QString & decryptedText, const QString & encryptedText,
00047         const QString & hint, utility::IEncryptor::Cipher cipher,
00048         quint32 index) const = 0;
00049
00050     [[nodiscard]] virtual Result<QString, ErrorMessage> convertResource(
00051         const qevercloud::Resource & resource) const = 0;
00052 };
00053
00054 } // namespace quentier::enml

```

## 6.8 IHtmlData.h

```

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00014  *
00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/Linkage.h>
00022 #include <quentier/utility/Printable.h>
00023
00024 #include <QString>
00025 #include <QtGlobal>
00026
00027 namespace quentier::enml {
00028
00029 struct QUENTIER_EXPORT IHtmlData : public utility::Printable
00030 {
00031     [[nodiscard]] virtual QString html() const = 0;
00032
00033     [[nodiscard]] virtual quint32 numEnToDoNodes() const = 0;
00034
00035     [[nodiscard]] virtual quint32 numHyperlinkNodes() const = 0;
00036
00037     [[nodiscard]] virtual quint32 numEncryptNodes() const = 0;
00038
00039     [[nodiscard]] virtual quint32 numDecryptNodes() const = 0;
00040
00041 public: // utility::Printable
00042     QTextStream & print(QTextStream & strm) const override;
00043 };
00044
00045 } // namespace quentier::enml

```

## 6.9 InvalidArgument.h

```

00001 /*
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00003  *
00004  * This file is part of libquentier
00005  *
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00009  *
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00014  *
00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/exception/IQuentierException.h>
00022
00023 namespace quentier {
00024
00025 class QUENTIER_EXPORT InvalidArgument : public IQuentierException
00026 {
00027 public:
00028     explicit InvalidArgument(ErrorString message);
00029
00030     [[nodiscard]] InvalidArgument * clone() const override;
00031     void raise() const override;
00032
00033 protected:
00034     [[nodiscard]] QString exceptionDisplayName() const override;
00035 };
00036
00037 } // namespace quentier

```

## 6.10 IQuentierException.h

```

00001 /*
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00003  *
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00005  *
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00009  *
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00013  * GNU Lesser General Public License for more details.
00014  *
00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/types/ErrorString.h>
00022 #include <quentier/utility/Printable.h>
00023
00024 #include <QException>
00025
00026 namespace quentier {
00027
00028 class QUENTIER_EXPORT IQuentierException :
00029     public utility::Printable,
00030     public QException
00031 {
00032 public:
00033     ~IQuentierException() noexcept override;
00034
00035     [[nodiscard]] ErrorString errorMessage() const;
00036     [[nodiscard]] QString localizedErrorMessage() const;
00037     [[nodiscard]] QString nonLocalizedErrorMessage() const;
00038
00039     // std::exception
00040     [[nodiscard]] const char * what() const noexcept override;

```

```

00049
00050     // utility::Printable
00051     QTextStream & print(QTextStream & strm) const override;
00052
00053 protected:
00054     explicit IQuentierException(ErrorString message);
00055     IQuentierException(const IQuentierException & other);
00056     IQuentierException & operator=(const IQuentierException & other);
00057
00058     [[nodiscard]] virtual QString exceptionDisplayName() const = 0;
00059
00060 private:
00061     ErrorString m_message;
00062     char * m_whatMessage = nullptr;
00063 };
00064
00065 } // namespace quentier

```

## 6.11 OperationCanceled.h

```

00001 /*
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00003  *
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00005  *
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00014  *
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00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/exception/IQuentierException.h>
00022
00023 namespace quentier {
00024
00025     class QUENTIER_EXPORT OperationCanceled : public IQuentierException
00026     {
00027     public:
00028         explicit OperationCanceled();
00029
00030         [[nodiscard]] OperationCanceled * clone() const override;
00031         void raise() const override;
00032
00033     protected:
00034         [[nodiscard]] QString exceptionDisplayName() const override;
00035     };
00036
00037 } // namespace quentier

```

## 6.12 RuntimeError.h

```

00001 /*
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00003  *
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00009  *
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00013  * GNU Lesser General Public License for more details.
00014  *
00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018

```



```

00019 #pragma once
00020
00021 #include <quentier/exception/IQuentierException.h>
00022
00023 namespace quentier {
00024
00025 class QUENTIER_EXPORT RuntimeError : public IQuentierException
00026 {
00027 public:
00028     explicit RuntimeError(ErrorString message);
00029     ~RuntimeError() noexcept override;
00030
00031     [[nodiscard]] RuntimeError * clone() const override;
00032     void raise() const override;
00033
00034 protected:
00035     [[nodiscard]] QString exceptionDisplayName() const override;
00036 };
00037
00038 } // namespace quentier

```

## 6.13 ILocalStorage.h

```

00001 /*
00002  * Copyright 2020–2023 Dmitry Ivanov
00003  *
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00005  *
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00009  *
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00011  * but WITHOUT ANY WARRANTY; without even the implied warranty of
00012  * MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
00013  * GNU Lesser General Public License for more details.
00014  *
00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/local_storage/Fwd.h>
00022 #include <quentier/local_storage/NoteSearchQuery.h>
00023 #include <quentier/types/Fwd.h>
00024 #include <quentier/utility/Linkage.h>
00025
00026 #include <qevercloud/types/LinkedNotebook.h>
00027 #include <qevercloud/types/Note.h>
00028 #include <qevercloud/types/Notebook.h>
00029 #include <qevercloud/types/Resource.h>
00030 #include <qevercloud/types/SavedSearch.h>
00031 #include <qevercloud/types/SharedNotebook.h>
00032 #include <qevercloud/types/Tag.h>
00033 #include <qevercloud/types/User.h>
00034
00035 #include <QFlags>
00036 #include <QFuture>
00037 #include <QHash>
00038 #include <QList>
00039 #include <QStringList>
00040 #include <QThreadPool>
00041
00042 #include <optional>
00043 #include <utility>
00044
00045 class QDebug;
00046 class QTextStream;
00047 class QThreadPool;
00048
00049 namespace quentier::local_storage {
00050
00051 class QUENTIER_EXPORT ILocalStorage
00052 {
00053 public:
00054     virtual ~ILocalStorage() = default;
00055
00056 public:
00057     enum class StartupOption
00058     {
00059         ClearDatabase = 1 « 1,
00060         OverrideLock = 1 « 2
00061     };

```

```

00061     };
00062     Q_DECLARE_FLAGS(StartupOptions, StartupOption);
00063
00064     friend QUINTIER_EXPORT QTextStream & operator<(
00065         QTextStream & strm, StartupOption option);
00066
00067     friend QUINTIER_EXPORT QDebug & operator<<(
00068         QDebug & dbg, StartupOption option);
00069
00070     friend QUINTIER_EXPORT QTextStream & operator<(
00071         QTextStream & strm, StartupOptions options);
00072
00073     friend QUINTIER_EXPORT QDebug & operator<<(
00074         QDebug & dbg, StartupOptions options);
00075
00076
00077
00078     enum class ListObjectsFilter
00079     {
00080         Include,
00081         Exclude
00082     };
00083
00084     friend QUINTIER_EXPORT QTextStream & operator<(
00085         QTextStream & strm, ListObjectsFilter filter);
00086
00087     friend QUINTIER_EXPORT QDebug & operator<<(
00088         QDebug & dbg, ListObjectsFilter filter);
00089
00090
00091
00092     struct QUINTIER_EXPORT ListObjectsFilters
00093     {
00094         std::optional<ListObjectsFilter> m_locallyModifiedFilter;
00095         std::optional<ListObjectsFilter> m_withGuidFilter;
00096         std::optional<ListObjectsFilter> m_localOnlyFilter;
00097         std::optional<ListObjectsFilter> m_locallyFavoritedFilter;
00098     };
00099
00100     friend QUINTIER_EXPORT QTextStream & operator<(
00101         QTextStream & strm, const ListObjectsFilters & filters);
00102
00103     friend QUINTIER_EXPORT QDebug & operator<<(
00104         QDebug & dbg, const ListObjectsFilters & filters);
00105
00106
00107
00108     struct QUINTIER_EXPORT ListGuidsFilters
00109     {
00110         std::optional<ListObjectsFilter> m_locallyModifiedFilter;
00111         std::optional<ListObjectsFilter> m_locallyFavoritedFilter;
00112     };
00113
00114     friend QUINTIER_EXPORT QTextStream & operator<(
00115         QTextStream & strm, const ListGuidsFilters & filters);
00116
00117     friend QUINTIER_EXPORT QDebug & operator<<(
00118         QDebug & dbg, const ListGuidsFilters & filters);
00119
00120
00121
00122     enum class OrderDirection
00123     {
00124         Ascending,
00125         Descending
00126     };
00127
00128     friend QUINTIER_EXPORT QTextStream & operator<(
00129         QTextStream & strm, OrderDirection orderDirection);
00130
00131     friend QUINTIER_EXPORT QDebug & operator<<(
00132         QDebug & dbg, OrderDirection orderDirection);
00133
00134
00135
00136     enum class ListNotebooksOrder
00137     {
00138         NoOrder,
00139         ByUpdateSequenceNumber,
00140         ByNotebookName,
00141         ByCreationTimestamp,
00142         ByModificationTimestamp
00143     };
00144
00145     friend QUINTIER_EXPORT QTextStream & operator<(
00146         QTextStream & strm, ListNotebooksOrder order);
00147
00148     friend QUINTIER_EXPORT QDebug & operator<<(
00149         QDebug & dbg, ListNotebooksOrder order);
00150
00151
00152
00153     enum class ListLinkedNotebooksOrder

```

```

00154     {
00155         NoOrder,
00156         ByUpdateSequenceNumber,
00157         ByShareName,
00158         ByUsername,
00159     };
00160
00161     friend QUINTIER_EXPORT QTextStream & operator<<(
00162         QTextStream & strm, ListLinkedNotebooksOrder order);
00163
00164     friend QUINTIER_EXPORT QDebug & operator<<(
00165         QDebug & dbg, ListLinkedNotebooksOrder order);
00166
00168     enum class ListTagsOrder
00169     {
00170     {
00171         NoOrder,
00172         ByUpdateSequenceNumber,
00173         ByName
00174     };
00175
00176     friend QUINTIER_EXPORT QTextStream & operator<<(
00177         QTextStream & strm, ListTagsOrder order);
00178
00179     friend QUINTIER_EXPORT QDebug & operator<<(
00180         QDebug & dbg, ListTagsOrder order);
00181
00183     enum class ListNotesOrder
00184     {
00185     {
00186         NoOrder,
00187         ByUpdateSequenceNumber,
00188         ByTitle,
00189         ByCreationTimestamp,
00190         ByModificationTimestamp,
00191         ByDeletionTimestamp,
00192         ByAuthor,
00193         BySource,
00194         BySourceApplication,
00195         ByReminderTime,
00196         ByPlaceName
00197     };
00198
00199     friend QUINTIER_EXPORT QTextStream & operator<<(
00200         QTextStream & strm, ListNotesOrder order);
00201
00202     friend QUINTIER_EXPORT QDebug & operator<<(
00203         QDebug & dbg, ListNotesOrder order);
00204
00206     enum class ListSavedSearchesOrder
00207     {
00208     {
00209         NoOrder,
00210         ByUpdateSequenceNumber,
00211         ByName,
00212         ByFormat
00213     };
00214
00215     friend QUINTIER_EXPORT QTextStream & operator<<(
00216         QTextStream & strm, ListSavedSearchesOrder order);
00217
00218     friend QUINTIER_EXPORT QDebug & operator<<(
00219         QDebug & dbg, ListSavedSearchesOrder order);
00220
00222     enum class Affiliation
00223     {
00224     {
00227         Any,
00228         User,
00229         AnyLinkedNotebook,
00230         ParticularLinkedNotebooks
00231     };
00232
00233     friend QUINTIER_EXPORT QTextStream & operator<<(
00234         QTextStream & strm, Affiliation affiliation);
00235
00236     friend QUINTIER_EXPORT QDebug & operator<<(
00237         QDebug & dbg, Affiliation affiliation);
00238
00240     struct QUINTIER_EXPORT ListOptionsBase
00241     {
00242     {
00243         ListOptionsBase() noexcept {}; // NOLINT
00244
00245         ListObjectsFilters m_filters = {};
00246         quint64 m_limit = 0UL;
00247         quint64 m_offset = 0UL;

```

```

00248         OrderDirection m_direction = OrderDirection::Ascending;
00249     };
00250
00251     struct QUINTIER_EXPORT ListNotebooksOptions : public ListOptionsBase
00252     {
00253         ListNotebooksOptions() noexcept {}; // NOLINT
00254
00255         ListNotebooksOrder m_order = ListNotebooksOrder::NoOrder;
00256         Affiliation m_affiliation = Affiliation::Any;
00257         QList<qevercloud::Guid> m_linkedNotebookGuids;
00258     };
00259
00260     friend QUINTIER_EXPORT QTextStream & operator<<(
00261         QTextStream & strm, const ListNotebooksOptions & options);
00262
00263     friend QUINTIER_EXPORT QDebug & operator<<(
00264         QDebug & dbg, const ListNotebooksOptions & options);
00265
00266     struct QUINTIER_EXPORT ListLinkedNotebooksOptions : public ListOptionsBase
00267     {
00268         ListLinkedNotebooksOptions() noexcept {}; // NOLINT
00269
00270         ListLinkedNotebooksOrder m_order = ListLinkedNotebooksOrder::NoOrder;
00271     };
00272
00273     friend QUINTIER_EXPORT QTextStream & operator<<(
00274         QTextStream & strm, const ListLinkedNotebooksOptions & options);
00275
00276     friend QUINTIER_EXPORT QDebug & operator<<(
00277         QDebug & dbg, const ListLinkedNotebooksOptions & options);
00278
00279     struct QUINTIER_EXPORT ListSavedSearchesOptions : public ListOptionsBase
00280     {
00281         ListSavedSearchesOptions() noexcept {}; // NOLINT
00282
00283         ListSavedSearchesOrder m_order = ListSavedSearchesOrder::NoOrder;
00284     };
00285
00286     friend QUINTIER_EXPORT QTextStream & operator<<(
00287         QTextStream & strm, const ListSavedSearchesOptions & options);
00288
00289     friend QUINTIER_EXPORT QDebug & operator<<(
00290         QDebug & dbg, const ListSavedSearchesOptions & options);
00291
00292     struct QUINTIER_EXPORT ListNotesOptions : public ListOptionsBase
00293     {
00294         ListNotesOptions() noexcept {}; // NOLINT
00295
00296         ListNotesOrder m_order = ListNotesOrder::NoOrder;
00297     };
00298
00299     friend QUINTIER_EXPORT QTextStream & operator<<(
00300         QTextStream & strm, const ListNotesOptions & options);
00301
00302     friend QUINTIER_EXPORT QDebug & operator<<(
00303         QDebug & dbg, const ListNotesOptions & options);
00304
00305     enum class TagNotesRelation
00306     {
00307         Any,
00308         WithNotes,
00309         WithoutNotes
00310     };
00311
00312     struct QUINTIER_EXPORT ListTagsOptions : public ListOptionsBase
00313     {
00314         ListTagsOptions() noexcept {}; // NOLINT
00315
00316         ListTagsOrder m_order = ListTagsOrder::NoOrder;
00317         Affiliation m_affiliation = Affiliation::Any;
00318         QList<qevercloud::Guid> m_linkedNotebookGuids;
00319         TagNotesRelation m_tagNotesRelation = TagNotesRelation::Any;
00320     };
00321
00322     friend QUINTIER_EXPORT QTextStream & operator<<(
00323         QTextStream & strm, const ListTagsOptions & options);
00324
00325     friend QUINTIER_EXPORT QDebug & operator<<(
00326         QDebug & dbg, const ListTagsOptions & options);
00327
00328     enum class NoteCountOption
00329     {
00330         IncludeNonDeletedNotes = 1 << 1,
00331         IncludeDeletedNotes = 1 << 2
00332     };
00333
00334     Q_DECLARE_FLAGS(NoteCountOptions, NoteCountOption)

```

```

00341
00342     friend QUENTIER_EXPORT QTextStream & operator«(
00343         QTextStream & strm, NoteCountOption option);
00344
00345     friend QUENTIER_EXPORT QDebug & operator«(
00346         QDebug & dbg, NoteCountOption option);
00347
00348     friend QUENTIER_EXPORT QTextStream & operator«(
00349         QTextStream & strm, NoteCountOptions options);
00350
00351     friend QUENTIER_EXPORT QDebug & operator«(
00352         QDebug & dbg, NoteCountOptions options);
00353
00354
00355
00356     enum class UpdateNoteOption
00357     {
00358         UpdateResourceMetadata = 1 « 1,
00359         UpdateResourceBinaryData = 1 « 2,
00360         UpdateTags = 1 « 3
00361     };
00362     Q_DECLARE_FLAGS(UpdateNoteOptions, UpdateNoteOption)
00363
00364     friend QUENTIER_EXPORT QTextStream & operator«(
00365         QTextStream & strm, UpdateNoteOption option);
00366
00367     friend QUENTIER_EXPORT QDebug & operator«(
00368         QDebug & dbg, UpdateNoteOption option);
00369
00370     friend QUENTIER_EXPORT QTextStream & operator«(
00371         QTextStream & strm, UpdateNoteOptions options);
00372
00373     friend QUENTIER_EXPORT QDebug & operator«(
00374         QDebug & dbg, UpdateNoteOptions options);
00375
00376
00377
00378     enum class FetchNoteOption
00379     {
00380         WithResourceMetadata = 1 « 1,
00381         WithResourceBinaryData = 1 « 2
00382     };
00383     Q_DECLARE_FLAGS(FetchNoteOptions, FetchNoteOption)
00384
00385     friend QUENTIER_EXPORT QTextStream & operator«(
00386         QTextStream & strm, FetchNoteOption option);
00387
00388     friend QUENTIER_EXPORT QDebug & operator«(
00389         QDebug & dbg, FetchNoteOption option);
00390
00391     friend QUENTIER_EXPORT QTextStream & operator«(
00392         QTextStream & strm, FetchNoteOptions options);
00393
00394     friend QUENTIER_EXPORT QDebug & operator«(
00395         QDebug & dbg, FetchNoteOptions options);
00396
00397
00398
00399     enum class FetchResourceOption
00400     {
00401         WithBinaryData = 1 « 1
00402     };
00403     Q_DECLARE_FLAGS(FetchResourceOptions, FetchResourceOption)
00404
00405     friend QUENTIER_EXPORT QTextStream & operator«(
00406         QTextStream & strm, FetchResourceOption option);
00407
00408     friend QUENTIER_EXPORT QDebug & operator«(
00409         QDebug & dbg, FetchResourceOption option);
00410
00411     friend QUENTIER_EXPORT QTextStream & operator«(
00412         QTextStream & strm, FetchResourceOptions options);
00413
00414     friend QUENTIER_EXPORT QDebug & operator«(
00415         QDebug & dbg, FetchResourceOptions options);
00416
00417
00418
00419     enum class HighestUsnOption
00420     {
00421         WithinUserOwnContent,
00422         WithinUserOwnContentAndLinkedNotebooks
00423     };
00424
00425     friend QUENTIER_EXPORT QTextStream & operator«(
00426         QTextStream & strm, HighestUsnOption option);
00427
00428     friend QUENTIER_EXPORT QDebug & operator«(
00429         QDebug & dbg, HighestUsnOption option);
00430
00431 public:

```

```

00432 // Versions/upgrade API
00433 [[nodiscard]] virtual QFuture<bool> isVersionTooHigh() const = 0;
00434 [[nodiscard]] virtual QFuture<bool> requiresUpgrade() const = 0;
00435 [[nodiscard]] virtual QFuture<QList<IPatchPtr>> requiredPatches() const = 0;
00436 [[nodiscard]] virtual QFuture<qint32> version() const = 0;
00437 [[nodiscard]] virtual QFuture<qint32> highestSupportedVersion() const = 0;
00438
00439 // Users API
00440 [[nodiscard]] virtual QFuture<quint32> userCount() const = 0;
00441 [[nodiscard]] virtual QFuture<void> putUser(qevercloud::User user) = 0;
00442
00443 [[nodiscard]] virtual QFuture<std::optional<qevercloud::User>> findUserById(
00444     qevercloud::UserID userId) const = 0;
00445
00446 [[nodiscard]] virtual QFuture<void> expungeUserById(
00447     qevercloud::UserID userId) = 0;
00448
00449 // Notebooks API
00450 [[nodiscard]] virtual QFuture<quint32> notebookCount() const = 0;
00451
00452 [[nodiscard]] virtual QFuture<void> putNotebook(
00453     qevercloud::Notebook notebook) = 0;
00454
00455 [[nodiscard]] virtual QFuture<std::optional<qevercloud::Notebook>>
00456     findNotebookByLocalId(QString notebookLocalId) const = 0;
00457
00458 [[nodiscard]] virtual QFuture<std::optional<qevercloud::Notebook>>
00459     findNotebookByGuid(qevercloud::Guid guid) const = 0;
00460
00461 [[nodiscard]] virtual QFuture<std::optional<qevercloud::Notebook>>
00462     findNotebookByName(
00463         QString notebookName,
00464         std::optional<qevercloud::Guid> linkedNotebookGuid =
00465             std::nullopt) const = 0;
00466
00467 [[nodiscard]] virtual QFuture<std::optional<qevercloud::Notebook>>
00468     findDefaultNotebook() const = 0;
00469
00470 [[nodiscard]] virtual QFuture<void> expungeNotebookByLocalId(
00471     QString notebookLocalId) = 0;
00472
00473 [[nodiscard]] virtual QFuture<void> expungeNotebookByGuid(
00474     qevercloud::Guid notebookGuid) = 0;
00475
00476 [[nodiscard]] virtual QFuture<void> expungeNotebookByName(
00477     QString name,
00478     std::optional<qevercloud::Guid> linkedNotebookGuid = std::nullopt) = 0;
00479
00480 [[nodiscard]] virtual QFuture<QList<qevercloud::Notebook>> listNotebooks(
00481     ListNotebooksOptions options = {}) const = 0;
00482
00483 [[nodiscard]] virtual QFuture<QList<qevercloud::SharedNotebook>>
00484     listSharedNotebooks(qevercloud::Guid notebookGuid = {}) const = 0;
00485
00486 [[nodiscard]] virtual QFuture<QSet<qevercloud::Guid>> listNotebookGuids(
00487     ListGuidsFilters filters,
00488     std::optional<qevercloud::Guid> linkedNotebookGuid = {}) const = 0;
00489
00490 // Linked notebooks API
00491 [[nodiscard]] virtual QFuture<quint32> linkedNotebookCount() const = 0;
00492
00493 [[nodiscard]] virtual QFuture<void> putLinkedNotebook(
00494     qevercloud::LinkedNotebook linkedNotebook) = 0;
00495
00496 [[nodiscard]] virtual QFuture<std::optional<qevercloud::LinkedNotebook>>
00497     findLinkedNotebookByGuid(qevercloud::Guid guid) const = 0;
00498
00499 [[nodiscard]] virtual QFuture<void> expungeLinkedNotebookByGuid(
00500     qevercloud::Guid guid) = 0;
00501
00502 [[nodiscard]] virtual QFuture<QList<qevercloud::LinkedNotebook>>
00503     listLinkedNotebooks(ListLinkedNotebooksOptions options = {}) const = 0;
00504
00505 // Notes API
00506 [[nodiscard]] virtual QFuture<quint32> noteCount(
00507     NoteCountOptions options = NoteCountOptions(
00508         NoteCountOption::IncludeNonDeletedNotes)) const = 0;
00509
00510 [[nodiscard]] virtual QFuture<quint32> noteCountPerNotebookLocalId(
00511     QString notebookLocalId,
00512     NoteCountOptions options = NoteCountOptions(
00513         NoteCountOption::IncludeNonDeletedNotes)) const = 0;
00514
00515 [[nodiscard]] virtual QFuture<quint32> noteCountPerTagLocalId(
00516     QString tagLocalId,
00517     NoteCountOptions options = NoteCountOptions(
00518         NoteCountOption::IncludeNonDeletedNotes)) const = 0;

```

```

00519
00520 [[nodiscard]] virtual QFuture<QHash<QString, quint32> noteCountsPerTags(
00521     ListTagsOptions listTagsOptions = {},
00522     NoteCountOptions options = NoteCountOptions(
00523         NoteCountOption::IncludeNonDeletedNotes)) const = 0;
00524
00525 [[nodiscard]] virtual QFuture<quint32> noteCountPerNotebookAndTagLocalIds(
00526     QStringList notebookLocalIds, QStringList tagLocalIds,
00527     NoteCountOptions options = NoteCountOptions(
00528         NoteCountOption::IncludeNonDeletedNotes)) const = 0;
00529
00530 [[nodiscard]] virtual QFuture<void> putNote(qevercloud::Note note) = 0;
00531
00532 [[nodiscard]] virtual QFuture<void> updateNote(
00533     qevercloud::Note note, UpdateNoteOptions options) = 0;
00534
00535 [[nodiscard]] virtual QFuture<std::optional<qevercloud::Note>
00536     findNoteByLocalId(
00537         QString noteLocalId, FetchNoteOptions options) const = 0;
00538
00539 [[nodiscard]] virtual QFuture<std::optional<qevercloud::Note>
00540     findNoteByGuid(
00541         qevercloud::Guid noteGuid, FetchNoteOptions options) const = 0;
00542
00543 [[nodiscard]] virtual QFuture<QList<qevercloud::Note> listNotes(
00544     FetchNoteOptions fetchOptions,
00545     ListNotesOptions listOptions = {}) const = 0;
00546
00547 [[nodiscard]] virtual QFuture<QList<qevercloud::Note>
00548     listNotesPerNotebookLocalId(
00549         QString notebookLocalId, FetchNoteOptions fetchOptions,
00550         ListNotesOptions listOptions = {}) const = 0;
00551
00552 [[nodiscard]] virtual QFuture<QList<qevercloud::Note>
00553     listNotesPerTagLocalId(
00554         QString tagLocalId, FetchNoteOptions fetchOptions,
00555         ListNotesOptions listOptions = {}) const = 0;
00556
00557 [[nodiscard]] virtual QFuture<QList<qevercloud::Note>
00558     listNotesPerNotebookAndTagLocalIds(
00559         QStringList notebookLocalIds, QStringList tagLocalIds,
00560         FetchNoteOptions fetchOptions,
00561         ListNotesOptions listOptions = {}) const = 0;
00562
00563 [[nodiscard]] virtual QFuture<QList<qevercloud::Note> listNotesByLocalIds(
00564     QStringList noteLocalIds, FetchNoteOptions fetchOptions,
00565     ListNotesOptions listOptions = {}) const = 0;
00566
00567 [[nodiscard]] virtual QFuture<QSet<qevercloud::Guid> listNoteGuids(
00568     ListGuidsFilters filters,
00569     std::optional<qevercloud::Guid> linkedNotebookGuid = {}) const = 0;
00570
00571 [[nodiscard]] virtual QFuture<QList<qevercloud::Note> queryNotes(
00572     NoteSearchQuery query, FetchNoteOptions fetchOptions) const = 0;
00573
00574 [[nodiscard]] virtual QFuture<QStringList> queryNoteLocalIds(
00575     NoteSearchQuery query) const = 0;
00576
00577 [[nodiscard]] virtual QFuture<void> expungeNoteByLocalId(
00578     QString noteLocalId) = 0;
00579
00580 [[nodiscard]] virtual QFuture<void> expungeNoteByGuid(
00581     qevercloud::Guid noteGuid) = 0;
00582
00583 // Tags API
00584 [[nodiscard]] virtual QFuture<quint32> tagCount() const = 0;
00585 [[nodiscard]] virtual QFuture<void> putTag(qevercloud::Tag tag) = 0;
00586
00587 [[nodiscard]] virtual QFuture<std::optional<qevercloud::Tag>
00588     findTagByLocalId(QString tagLocalId) const = 0;
00589
00590 [[nodiscard]] virtual QFuture<std::optional<qevercloud::Tag> findTagByGuid(
00591     qevercloud::Guid tagGuid) const = 0;
00592
00593 [[nodiscard]] virtual QFuture<std::optional<qevercloud::Tag> findTagByName(
00594     QString tagName,
00595     std::optional<qevercloud::Guid> linkedNotebookGuid =
00596         std::nullopt) const = 0;
00597
00598 [[nodiscard]] virtual QFuture<QList<qevercloud::Tag> listTags(
00599     ListTagsOptions options = {}) const = 0;
00600
00601 [[nodiscard]] virtual QFuture<QList<qevercloud::Tag>
00602     listTagsPerNoteLocalId(
00603         QString noteLocalId, ListTagsOptions options = {}) const = 0;
00604
00605 [[nodiscard]] virtual QFuture<QSet<qevercloud::Guid> listTagGuids(

```

```

00606         ListGuidsFilters filters,
00607         std::optional<qevercloud::Guid> linkedNotebookGuid = {}) const = 0;
00608
00609 [[nodiscard]] virtual QFuture<void> expungeTagByLocalId(
00610     QString tagLocalId) = 0;
00611
00612 [[nodiscard]] virtual QFuture<void> expungeTagByGuid(
00613     qevercloud::Guid tagGuid) = 0;
00614
00615 [[nodiscard]] virtual QFuture<void> expungeTagByName(
00616     QString name,
00617     std::optional<qevercloud::Guid> linkedNotebookGuid = std::nullopt) = 0;
00618
00619 // Resources API
00620 [[nodiscard]] virtual QFuture<quint32> resourceCount(
00621     NoteCountOptions options = NoteCountOptions(
00622         NoteCountOption::IncludeNonDeletedNotes)) const = 0;
00623
00624 [[nodiscard]] virtual QFuture<quint32> resourceCountPerNoteLocalId(
00625     QString noteLocalId) const = 0;
00626
00627 [[nodiscard]] virtual QFuture<void> putResource(
00628     qevercloud::Resource resource) = 0;
00629
00630 [[nodiscard]] virtual QFuture<std::optional<qevercloud::Resource>
00631     findResourceByLocalId(
00632         QString resourceLocalId,
00633         FetchResourceOptions options = {}) const = 0;
00634
00635 [[nodiscard]] virtual QFuture<std::optional<qevercloud::Resource>
00636     findResourceByGuid(
00637         qevercloud::Guid resourceGuid,
00638         FetchResourceOptions options = {}) const = 0;
00639
00640 [[nodiscard]] virtual QFuture<void> expungeResourceByLocalId(
00641     QString resourceLocalId) = 0;
00642
00643 [[nodiscard]] virtual QFuture<void> expungeResourceByGuid(
00644     qevercloud::Guid resourceGuid) = 0;
00645
00646 // Saved searches API
00647 [[nodiscard]] virtual QFuture<quint32> savedSearchCount() const = 0;
00648
00649 [[nodiscard]] virtual QFuture<void> putSavedSearch(
00650     qevercloud::SavedSearch search) = 0;
00651
00652 [[nodiscard]] virtual QFuture<std::optional<qevercloud::SavedSearch>
00653     findSavedSearchByLocalId(QString savedSearchLocalId) const = 0;
00654
00655 [[nodiscard]] virtual QFuture<std::optional<qevercloud::SavedSearch>
00656     findSavedSearchByGuid(qevercloud::Guid guid) const = 0;
00657
00658 [[nodiscard]] virtual QFuture<std::optional<qevercloud::SavedSearch>
00659     findSavedSearchByName(QString name) const = 0;
00660
00661 [[nodiscard]] virtual QFuture<QList<qevercloud::SavedSearch>
00662     listSavedSearches(ListSavedSearchesOptions options = {}) const = 0;
00663
00664 [[nodiscard]] virtual QFuture<QSet<qevercloud::Guid> listSavedSearchGuids(
00665     ListGuidsFilters filters) const = 0;
00666
00667 [[nodiscard]] virtual QFuture<void> expungeSavedSearchByLocalId(
00668     QString savedSearchLocalId) = 0;
00669
00670 [[nodiscard]] virtual QFuture<void> expungeSavedSearchByGuid(
00671     qevercloud::Guid guid) = 0;
00672
00673 // Synchronization API
00674 [[nodiscard]] virtual QFuture<qint32> highestUpdateSequenceNumber(
00675     HighestUsnOption option) const = 0;
00676
00677 [[nodiscard]] virtual QFuture<qint32> highestUpdateSequenceNumber(
00678     qevercloud::Guid linkedNotebookGuid) const = 0;
00679
00680 [[nodiscard]] virtual ILocalStorageNotifier * notifier() const = 0;
00681 };
00682
00683 [[nodiscard]] QUINTIER_EXPORT bool operator==(
00684     const ILocalStorage::ListObjectsFilters & lhs,
00685     const ILocalStorage::ListObjectsFilters & rhs) noexcept;
00686
00687 [[nodiscard]] QUINTIER_EXPORT bool operator==(
00688     const ILocalStorage::ListOptionsBase & lhs,
00689     const ILocalStorage::ListOptionsBase & rhs) noexcept;
00690
00691 [[nodiscard]] QUINTIER_EXPORT bool operator!=(
00692     const ILocalStorage::ListOptionsBase & lhs,

```



```

00699     const ILocalStorage::ListOptionsBase & rhs) noexcept;
00700
00701 [[nodiscard]] QUENTIER_EXPORT bool operator==(
00702     const ILocalStorage::ListNotebooksOptions & lhs,
00703     const ILocalStorage::ListNotebooksOptions & rhs) noexcept;
00704
00705 [[nodiscard]] QUENTIER_EXPORT bool operator!=(
00706     const ILocalStorage::ListNotebooksOptions & lhs,
00707     const ILocalStorage::ListNotebooksOptions & rhs) noexcept;
00708
00709 [[nodiscard]] QUENTIER_EXPORT bool operator==(
00710     const ILocalStorage::ListLinkedNotebooksOptions & lhs,
00711     const ILocalStorage::ListLinkedNotebooksOptions & rhs) noexcept;
00712
00713 [[nodiscard]] QUENTIER_EXPORT bool operator!=(
00714     const ILocalStorage::ListLinkedNotebooksOptions & lhs,
00715     const ILocalStorage::ListLinkedNotebooksOptions & rhs) noexcept;
00716
00717 [[nodiscard]] QUENTIER_EXPORT bool operator==(
00718     const ILocalStorage::ListSavedSearchesOptions & lhs,
00719     const ILocalStorage::ListSavedSearchesOptions & rhs) noexcept;
00720
00721 [[nodiscard]] QUENTIER_EXPORT bool operator!=(
00722     const ILocalStorage::ListSavedSearchesOptions & lhs,
00723     const ILocalStorage::ListSavedSearchesOptions & rhs) noexcept;
00724
00725 [[nodiscard]] QUENTIER_EXPORT bool operator==(
00726     const ILocalStorage::ListNotesOptions & lhs,
00727     const ILocalStorage::ListNotesOptions & rhs) noexcept;
00728
00729 [[nodiscard]] QUENTIER_EXPORT bool operator!=(
00730     const ILocalStorage::ListNotesOptions & lhs,
00731     const ILocalStorage::ListNotesOptions & rhs) noexcept;
00732
00733 [[nodiscard]] QUENTIER_EXPORT bool operator==(
00734     const ILocalStorage::ListTagsOptions & lhs,
00735     const ILocalStorage::ListTagsOptions & rhs) noexcept;
00736
00737 [[nodiscard]] QUENTIER_EXPORT bool operator!=(
00738     const ILocalStorage::ListTagsOptions & lhs,
00739     const ILocalStorage::ListTagsOptions & rhs) noexcept;
00740
00741 [[nodiscard]] QUENTIER_EXPORT bool operator==(
00742     const ILocalStorage::ListGuidsFilters & lhs,
00743     const ILocalStorage::ListGuidsFilters & rhs) noexcept;
00744
00745 [[nodiscard]] QUENTIER_EXPORT bool operator!=(
00746     const ILocalStorage::ListGuidsFilters & lhs,
00747     const ILocalStorage::ListGuidsFilters & rhs) noexcept;
00748
00749 } // namespace quentier::local_storage

```

## 6.14 ILocalStorageNotifier.h

```

00001 /*
00002  * Copyright 2020-2024 Dmitry Ivanov
00003  *
00004  * This file is part of libquentier
00005  *
00006  * libquentier is free software; you can redistribute it and/or modify
00007  * it under the terms of the GNU Lesser General Public License as published by
00008  * the Free Software Foundation, version 3 of the License.
00009  *
00010  * libquentier is distributed in the hope that it will be useful,
00011  * but WITHOUT ANY WARRANTY; without even the implied warranty of
00012  * MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
00013  * GNU Lesser General Public License for more details.
00014  *
00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/local_storage/ILocalStorage.h>
00022
00023 #include <QObject>
00024
00025 namespace quentier::local_storage {
00026
00027 class QUENTIER_EXPORT ILocalStorageNotifier : public QObject
00028 {
00029     Q_OBJECT

```

```

00030 protected:
00031     explicit ILocalStorageNotifier(QObject * parent = nullptr);
00032
00033 public:
00034     ~ILocalStorageNotifier() override;
00035
00036 Q_SIGNALS:
00037     // Notifications about user related events
00038     void userPut(qevercloud::User user);
00039     void userExpunged(qevercloud::UserID userId);
00040
00041     // Notifications about notebook related events
00042     void notebookPut(qevercloud::Notebook notebook);
00043     void notebookExpunged(QString notebookLocalId);
00044
00045     // Notifications about linked notebooks
00046     void linkedNotebookPut(qevercloud::LinkedNotebook linkedNotebook);
00047     void linkedNotebookExpunged(qevercloud::Guid linkedNotebookGuid);
00048
00049     // Notifications about note related events
00050     void notePut(qevercloud::Note note);
00051
00052     void noteUpdated(
00053         qevercloud::Note note, ILocalStorage::UpdateNoteOptions options);
00054
00055     void noteExpunged(QString noteLocalId);
00056
00057     // Notifications about tag related events
00058     void tagPut(qevercloud::Tag tag);
00059
00060     void tagExpunged(QString tagLocalId, QStringList expungedChildTagLocalIds);
00061
00062     // Notifications about resource related events
00063     void resourcePut(qevercloud::Resource resource);
00064     void resourceMetadataPut(qevercloud::Resource resource);
00065     void resourceExpunged(QString resourceLocalId);
00066
00067     // Notifications about saved search related events
00068     void savedSearchPut(qevercloud::SavedSearch savedSearch);
00069     void savedSearchExpunged(QString savedSearchLocalId);
00070 };
00071
00072 } // namespace quantier::local_storage

```

## 6.15 IPatch.h

```

00001 /*
00002  * Copyright 2021-2022 Dmitry Ivanov
00003  *
00004  * This file is part of libquantier
00005  *
00006  * libquantier is free software; you can redistribute it and/or modify
00007  * it under the terms of the GNU Lesser General Public License as published by
00008  * the Free Software Foundation, version 3 of the License.
00009  *
00010  * libquantier is distributed in the hope that it will be useful,
00011  * but WITHOUT ANY WARRANTY; without even the implied warranty of
00012  * MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
00013  * GNU Lesser General Public License for more details.
00014  *
00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquantier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quantier/utility/Linkage.h>
00022
00023 #include <QFuture>
00024
00025 namespace quantier::local_storage {
00026
00027 class QUENTIER_EXPORT IPatch
00028 {
00029 public:
00030     virtual ~IPatch() noexcept;
00031
00032     [[nodiscard]] virtual int fromVersion() const noexcept = 0;
00033
00034     [[nodiscard]] virtual int toVersion() const noexcept = 0;
00035
00036     [[nodiscard]] virtual QString patchShortDescription() const = 0;
00037
00038 };
00039
00040 }

```

```

00058     [[nodiscard]] virtual QString patchLongDescription() const = 0;
00059
00069     [[nodiscard]] virtual QFuture<void> backupLocalStorage() = 0;
00070
00080     [[nodiscard]] virtual QFuture<void> restoreLocalStorageFromBackup() = 0;
00081
00092     [[nodiscard]] virtual QFuture<void> removeLocalStorageBackup() = 0;
00093
00101     [[nodiscard]] virtual QFuture<void> apply() = 0;
00102 };
00103
00104 } // namespace quantier::local_storage

```

## 6.16 LocalStorageOpenException.h

```

00001 /*
00002  * Copyright 2016-2024 Dmitry Ivanov
00003  *
00004  * This file is part of libquantier
00005  *
00006  * libquantier is free software; you can redistribute it and/or modify
00007  * it under the terms of the GNU Lesser General Public License as published by
00008  * the Free Software Foundation, version 3 of the License.
00009  *
00010  * libquantier is distributed in the hope that it will be useful,
00011  * but WITHOUT ANY WARRANTY; without even the implied warranty of
00012  * MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
00013  * GNU Lesser General Public License for more details.
00014  *
00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquantier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quantier/exception/IQuantierException.h>
00022
00023 namespace quantier::local_storage {
00024
00029 class QUANTIER_EXPORT LocalStorageOpenException : public IQuantierException
00030 {
00031 public:
00032     explicit LocalStorageOpenException(const ErrorString & message);
00033
00034     [[nodiscard]] LocalStorageOpenException * clone() const override;
00035     void raise() const override;
00036
00037 protected:
00038     [[nodiscard]] QString exceptionDisplayName() const override;
00039 };
00040
00041 } // namespace quantier::local_storage

```

## 6.17 LocalStorageOperationException.h

```

00001 /*
00002  * Copyright 2016-2024 Dmitry Ivanov
00003  *
00004  * This file is part of libquantier
00005  *
00006  * libquantier is free software; you can redistribute it and/or modify
00007  * it under the terms of the GNU Lesser General Public License as published by
00008  * the Free Software Foundation, version 3 of the License.
00009  *
00010  * libquantier is distributed in the hope that it will be useful,
00011  * but WITHOUT ANY WARRANTY; without even the implied warranty of
00012  * MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
00013  * GNU Lesser General Public License for more details.
00014  *
00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquantier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quantier/exception/IQuantierException.h>
00022
00023 namespace quantier::local_storage {

```

```

00024
00029 class QUENTIER_EXPORT LocalStorageOperationException : public IQuentierException
00030 {
00031 public:
00032     explicit LocalStorageOperationException(ErrorString message);
00033
00034     [[nodiscard]] LocalStorageOperationException * clone() const override;
00035     void raise() const override;
00036
00037 protected:
00038     [[nodiscard]] QString exceptionDisplayName() const override;
00039 };
00040
00041 } // namespace quentier::local_storage

```

## 6.18 NoteSearchQuery.h

```

00001 /*
00002  * Copyright 2016-2025 Dmitry Ivanov
00003  *
00004  * This file is part of libquentier
00005  *
00006  * libquentier is free software; you can redistribute it and/or modify
00007  * it under the terms of the GNU Lesser General Public License as published by
00008  * the Free Software Foundation, version 3 of the License.
00009  *
00010  * libquentier is distributed in the hope that it will be useful,
00011  * but WITHOUT ANY WARRANTY; without even the implied warranty of
00012  * MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
00013  * GNU Lesser General Public License for more details.
00014  *
00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/types/ErrorString.h>
00022
00023 #include <QList>
00024 #include <QSharedDataPointer>
00025
00026 namespace quentier::local_storage {
00027
00028 class QUENTIER_EXPORT NoteSearchQuery : public utility::Printable
00029 {
00030 public:
00031     explicit NoteSearchQuery();
00032
00033     NoteSearchQuery(const NoteSearchQuery & other);
00034     NoteSearchQuery(NoteSearchQuery && other) noexcept;
00035
00036     NoteSearchQuery & operator=(const NoteSearchQuery & other);
00037     NoteSearchQuery & operator=(NoteSearchQuery && other) noexcept;
00038
00039     ~NoteSearchQuery() override;
00040
00041     [[nodiscard]] bool isEmpty() const;
00042
00043     void clear();
00044
00045     [[nodiscard]] QString queryString() const;
00046
00047     [[nodiscard]] bool setQueryString(
00048         const QString & queryString, ErrorString & error);
00049
00050     [[nodiscard]] QString notebookModifier() const;
00051
00052     [[nodiscard]] bool hasAnyModifier() const;
00053
00054     [[nodiscard]] const QStringList & tagNames() const;
00055     [[nodiscard]] const QStringList & negatedTagNames() const;
00056     [[nodiscard]] bool hasAnyTag() const;
00057     [[nodiscard]] bool hasNegatedAnyTag() const;
00058
00059     [[nodiscard]] const QStringList & titleNames() const;
00060     [[nodiscard]] const QStringList & negatedTitleNames() const;
00061     [[nodiscard]] bool hasAnyTitleName() const;
00062     [[nodiscard]] bool hasNegatedAnyTitleName() const;
00063
00064     [[nodiscard]] const QList<qint64> & creationTimestamps() const;
00065     [[nodiscard]] const QList<qint64> & negatedCreationTimestamps() const;
00066     [[nodiscard]] bool hasAnyCreationTimestamp() const;

```

```
00075 [[nodiscard]] bool hasNegatedAnyCreationTimestamp() const;
00076
00077 [[nodiscard]] const QList<qint64> & modificationTimestamps() const;
00078 [[nodiscard]] const QList<qint64> & negatedModificationTimestamps() const;
00079 [[nodiscard]] bool hasAnyModificationTimestamp() const;
00080 [[nodiscard]] bool hasNegatedAnyModificationTimestamp() const;
00081
00082 [[nodiscard]] const QStringList & resourceMimeTypes() const;
00083 [[nodiscard]] const QStringList & negatedResourceMimeTypes() const;
00084 [[nodiscard]] bool hasAnyResourceMimeType() const;
00085 [[nodiscard]] bool hasNegatedAnyResourceMimeType() const;
00086
00087 [[nodiscard]] const QList<qint64> & subjectDateTimestamps() const;
00088 [[nodiscard]] const QList<qint64> & negatedSubjectDateTimestamps() const;
00089 [[nodiscard]] bool hasAnySubjectDateTimestamp() const;
00090 [[nodiscard]] bool hasNegatedAnySubjectDateTimestamp() const;
00091
00092 [[nodiscard]] const QList<double> & latitudes() const;
00093 [[nodiscard]] const QList<double> & negatedLatitudes() const;
00094 [[nodiscard]] bool hasAnyLatitude() const;
00095 [[nodiscard]] bool hasNegatedAnyLatitude() const;
00096
00097 [[nodiscard]] const QList<double> & longitudes() const;
00098 [[nodiscard]] const QList<double> & negatedLongitudes() const;
00099 [[nodiscard]] bool hasAnyLongitude() const;
00100 [[nodiscard]] bool hasNegatedAnyLongitude() const;
00101
00102 [[nodiscard]] const QList<double> & altitudes() const;
00103 [[nodiscard]] const QList<double> & negatedAltitudes() const;
00104 [[nodiscard]] bool hasAnyAltitude() const;
00105 [[nodiscard]] bool hasNegatedAnyAltitude() const;
00106
00107 [[nodiscard]] const QStringList & authors() const;
00108 [[nodiscard]] const QStringList & negatedAuthors() const;
00109 [[nodiscard]] bool hasAnyAuthor() const;
00110 [[nodiscard]] bool hasNegatedAnyAuthor() const;
00111
00112 [[nodiscard]] const QStringList & sources() const;
00113 [[nodiscard]] const QStringList & negatedSources() const;
00114 [[nodiscard]] bool hasAnySource() const;
00115 [[nodiscard]] bool hasNegatedAnySource() const;
00116
00117 [[nodiscard]] const QStringList & sourceApplications() const;
00118 [[nodiscard]] const QStringList & negatedSourceApplications() const;
00119 [[nodiscard]] bool hasAnySourceApplication() const;
00120 [[nodiscard]] bool hasNegatedAnySourceApplication() const;
00121
00122 [[nodiscard]] const QStringList & contentClasses() const;
00123 [[nodiscard]] const QStringList & negatedContentClasses() const;
00124 [[nodiscard]] bool hasAnyContentClass() const;
00125 [[nodiscard]] bool hasNegatedAnyContentClass() const;
00126
00127 [[nodiscard]] const QStringList & placeNames() const;
00128 [[nodiscard]] const QStringList & negatedPlaceNames() const;
00129 [[nodiscard]] bool hasAnyPlaceName() const;
00130 [[nodiscard]] bool hasNegatedAnyPlaceName() const;
00131
00132 [[nodiscard]] const QStringList & applicationData() const;
00133 [[nodiscard]] const QStringList & negatedApplicationData() const;
00134 [[nodiscard]] bool hasAnyApplicationData() const;
00135 [[nodiscard]] bool hasNegatedAnyApplicationData() const;
00136
00137 [[nodiscard]] const QList<qint64> & reminderOrders() const;
00138 [[nodiscard]] const QList<qint64> & negatedReminderOrders() const;
00139 [[nodiscard]] bool hasAnyReminderOrder() const;
00140 [[nodiscard]] bool hasNegatedAnyReminderOrder() const;
00141
00142 [[nodiscard]] const QList<qint64> & reminderTimes() const;
00143 [[nodiscard]] const QList<qint64> & negatedReminderTimes() const;
00144 [[nodiscard]] bool hasAnyReminderTime() const;
00145 [[nodiscard]] bool hasNegatedAnyReminderTime() const;
00146
00147 [[nodiscard]] const QList<qint64> & reminderDoneTimes() const;
00148 [[nodiscard]] const QList<qint64> & negatedReminderDoneTimes() const;
00149 [[nodiscard]] bool hasAnyReminderDoneTime() const;
00150 [[nodiscard]] bool hasNegatedAnyReminderDoneTime() const;
00151
00152 [[nodiscard]] bool hasUnfinishedToDo() const;
00153 [[nodiscard]] bool hasNegatedUnfinishedToDo() const;
00154
00155 [[nodiscard]] bool hasFinishedToDo() const;
00156 [[nodiscard]] bool hasNegatedFinishedToDo() const;
00157
00158 [[nodiscard]] bool hasAnyToDo() const;
00159 [[nodiscard]] bool hasNegatedAnyToDo() const;
00160
00161 [[nodiscard]] bool hasEncryption() const;
```

```

00162     [[nodiscard]] bool hasNegatedEncryption() const;
00163
00164     [[nodiscard]] const QStringList & contentSearchTerms() const;
00165     [[nodiscard]] const QStringList & negatedContentSearchTerms() const;
00166     [[nodiscard]] bool hasAnyContentSearchTerms() const;
00167
00168     [[nodiscard]] bool isMatcheable() const;
00169
00170     // utility::Printable
00171     QTextStream & print(QTextStream & strm) const override;
00172
00173 private:
00174     class Data;
00175     QSharedDataPointer<Data> d;
00176 };
00177
00178 [[nodiscard]] QUENTIER_EXPORT bool operator==(
00179     const NoteSearchQuery & lhs, const NoteSearchQuery & rhs) noexcept;
00180
00181 [[nodiscard]] QUENTIER_EXPORT bool operator!=(
00182     const NoteSearchQuery & lhs, const NoteSearchQuery & rhs) noexcept;
00183
00184 } // namespace quentier::local_storage

```

## 6.19 MockLocalStorage.h

```

00001 /*
00002  * Copyright 2021-2024 Dmitry Ivanov
00003  *
00004  * This file is part of libquentier
00005  *
00006  * libquentier is free software; you can redistribute it and/or modify
00007  * it under the terms of the GNU Lesser General Public License as published by
00008  * the Free Software Foundation, version 3 of the License.
00009  *
00010  * libquentier is distributed in the hope that it will be useful,
00011  * but WITHOUT ANY WARRANTY; without even the implied warranty of
00012  * MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
00013  * GNU Lesser General Public License for more details.
00014  *
00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/local_storage/ILocalStorage.h>
00022
00023 #include <gmock/gmock.h>
00024
00025 namespace quentier::local_storage::tests::mocks {
00026
00027 class MockILocalStorage : public ILocalStorage
00028 {
00029 public:
00030     MOCK_METHOD(QFuture<bool>, isVersionTooHigh, (), (const, override));
00031     MOCK_METHOD(QFuture<bool>, requiresUpgrade, (), (const, override));
00032
00033     MOCK_METHOD(
00034         QFuture<QList<IPatchPtr>, requiredPatches, (), (const, override));
00035
00036     MOCK_METHOD(QFuture<qint32>, version, (), (const, override));
00037
00038     MOCK_METHOD(
00039         QFuture<qint32>, highestSupportedVersion, (), (const, override));
00040
00041     MOCK_METHOD(QFuture<quint32>, userCount, (), (const, override));
00042     MOCK_METHOD(QFuture<void>, putUser, (qevercloud::User user), (override));
00043
00044     MOCK_METHOD(
00045         QFuture<std::optional<qevercloud::User>, findUserById,
00046         (qevercloud::UserID userId), (const, override));
00047
00048     MOCK_METHOD(
00049         QFuture<void>, expungeUserById, (qevercloud::UserID userId),
00050         (override));
00051
00052     MOCK_METHOD(QFuture<quint32>, notebookCount, (), (const, override));
00053
00054     MOCK_METHOD(
00055         QFuture<void>, putNotebook, (qevercloud::Notebook notebook),
00056         (override));
00057

```

```

00058     MOCK_METHOD (
00059         QFuture<std::optional<qevercloud::Notebook>, findNotebookByLocalId,
00060         (QString localId), (const, override));
00061
00062     MOCK_METHOD (
00063         QFuture<std::optional<qevercloud::Notebook>, findNotebookByGuid,
00064         (qevercloud::Guid guid), (const, override));
00065
00066     MOCK_METHOD (
00067         QFuture<std::optional<qevercloud::Notebook>, findNotebookByName,
00068         (QString name, std::optional<qevercloud::Guid> linkedNotebookGuid),
00069         (const, override));
00070
00071     MOCK_METHOD (
00072         QFuture<std::optional<qevercloud::Notebook>, findDefaultNotebook, (),
00073         (const, override));
00074
00075     MOCK_METHOD (
00076         QFuture<void>, expungeNotebookByLocalId, (QString localId), (override));
00077
00078     MOCK_METHOD (
00079         QFuture<void>, expungeNotebookByGuid, (qevercloud::Guid guid),
00080         (override));
00081
00082     MOCK_METHOD (
00083         QFuture<void>, expungeNotebookByName,
00084         (QString name, std::optional<qevercloud::Guid> linkedNotebookGuid),
00085         (override));
00086
00087     MOCK_METHOD (
00088         QFuture<QList<qevercloud::Notebook>, listNotebooks,
00089         (ListNotebooksOptions options), (const, override));
00090
00091     MOCK_METHOD (
00092         QFuture<QList<qevercloud::SharedNotebook>, listSharedNotebooks,
00093         (qevercloud::Guid notebookGuid), (const, override));
00094
00095     MOCK_METHOD (
00096         QFuture<QSet<qevercloud::Guid>, listNotebookGuids,
00097         (ListGuidsFilters filters,
00098         std::optional<qevercloud::Guid> linkedNotebookGuid),
00099         (const, override));
00100
00101     MOCK_METHOD (QFuture<quint32>, linkedNotebookCount, (), (const, override));
00102
00103     MOCK_METHOD (
00104         QFuture<void>, putLinkedNotebook,
00105         (qevercloud::LinkedNotebook linkedNotebook), (override));
00106
00107     MOCK_METHOD (
00108         QFuture<std::optional<qevercloud::LinkedNotebook>,
00109         findLinkedNotebookByGuid, (qevercloud::Guid guid), (const, override));
00110
00111     MOCK_METHOD (
00112         QFuture<void>, expungeLinkedNotebookByGuid, (qevercloud::Guid guid),
00113         (override));
00114
00115     MOCK_METHOD (
00116         QFuture<QList<qevercloud::LinkedNotebook>, listLinkedNotebooks,
00117         (ListLinkedNotebooksOptions options), (const, override));
00118
00119     MOCK_METHOD (
00120         QFuture<quint32>, noteCount, (NoteCountOptions options),
00121         (const, override));
00122
00123     MOCK_METHOD (
00124         QFuture<quint32>, noteCountPerNotebookLocalId,
00125         (QString notebookLocalId, NoteCountOptions options), (const, override));
00126
00127     MOCK_METHOD (
00128         QFuture<quint32>, noteCountPerTagLocalId,
00129         (QString tagLocalId, NoteCountOptions options), (const, override));
00130
00131     MOCK_METHOD (
00132         (QFuture<QHash<QString, quint32>), noteCountsPerTags,
00133         (ListTagsOptions listTagsOptions, NoteCountOptions options),
00134         (const, override));
00135
00136     MOCK_METHOD (
00137         QFuture<quint32>, noteCountPerNotebookAndTagLocalIds,
00138         (QStringList notebookLocalIds, QStringList tagLocalIds,
00139         NoteCountOptions options),
00140         (const, override));
00141
00142     MOCK_METHOD (QFuture<void>, putNote, (qevercloud::Note note), (override));
00143
00144     MOCK_METHOD (

```

```

00145         QFuture<void>, updateNote,
00146         (qevercloud::Note note, UpdateNoteOptions options), (override));
00147
00148     MOCK_METHOD (
00149         QFuture<std::optional<qevercloud::Note>, findNoteByLocalId,
00150         (QString localId, FetchNoteOptions options), (const, override));
00151
00152     MOCK_METHOD (
00153         QFuture<std::optional<qevercloud::Note>, findNoteByGuid,
00154         (qevercloud::Guid guid, FetchNoteOptions options), (const, override));
00155
00156     MOCK_METHOD (
00157         QFuture<void>, expungeNoteByLocalId, (QString localId), (override));
00158
00159     MOCK_METHOD (
00160         QFuture<void>, expungeNoteByGuid, (qevercloud::Guid guid), (override));
00161
00162     MOCK_METHOD (
00163         QFuture<QList<qevercloud::Note>, listNotes,
00164         (FetchNoteOptions fetchOptions, ListNotesOptions options),
00165         (const, override));
00166
00167     MOCK_METHOD (
00168         QFuture<QList<qevercloud::Note>, listNotesPerNotebookLocalId,
00169         (QString notebookLocalId, FetchNoteOptions fetchOptions,
00170         ListNotesOptions options),
00171         (const, override));
00172
00173     MOCK_METHOD (
00174         QFuture<QList<qevercloud::Note>, listNotesPerTagLocalId,
00175         (QString tagLocalId, FetchNoteOptions fetchOptions,
00176         ListNotesOptions options),
00177         (const, override));
00178
00179     MOCK_METHOD (
00180         QFuture<QList<qevercloud::Note>, listNotesPerNotebookAndTagLocalIds,
00181         (QStringList notebookLocalIds, QStringList tagLocalIds,
00182         FetchNoteOptions fetchOptions, ListNotesOptions options),
00183         (const, override));
00184
00185     MOCK_METHOD (
00186         QFuture<QList<qevercloud::Note>, listNotesByLocalIds,
00187         (QStringList noteLocalIds, FetchNoteOptions fetchOptions,
00188         ListNotesOptions options),
00189         (const, override));
00190
00191     MOCK_METHOD (
00192         QFuture<QSet<qevercloud::Guid>, listNoteGuids,
00193         (ListGuidsFilters filters,
00194         std::optional<qevercloud::Guid> linkedNotebookGuid),
00195         (const, override));
00196
00197     MOCK_METHOD (
00198         QFuture<QList<qevercloud::Note>, queryNotes,
00199         (NoteSearchQuery query, FetchNoteOptions fetchOptions),
00200         (const, override));
00201
00202     MOCK_METHOD (
00203         QFuture<QStringList>, queryNoteLocalIds, (NoteSearchQuery query),
00204         (const, override));
00205
00206     MOCK_METHOD (QFuture<quint32>, tagCount, (), (const, override));
00207     MOCK_METHOD (QFuture<void>, putTag, (qevercloud::Tag tag), (override));
00208
00209     MOCK_METHOD (
00210         QFuture<std::optional<qevercloud::Tag>, findTagByLocalId,
00211         (QString tagLocalId), (const, override));
00212
00213     MOCK_METHOD (
00214         QFuture<std::optional<qevercloud::Tag>, findTagByGuid,
00215         (qevercloud::Guid tagGuid), (const, override));
00216
00217     MOCK_METHOD (
00218         QFuture<std::optional<qevercloud::Tag>, findTagByName,
00219         (QString tagName, std::optional<QString> linkedNotebookGuid),
00220         (const, override));
00221
00222     MOCK_METHOD (
00223         QFuture<QList<qevercloud::Tag>, listTags, (ListTagsOptions options),
00224         (const, override));
00225
00226     MOCK_METHOD (
00227         QFuture<QList<qevercloud::Tag>, listTagsPerNoteLocalId,
00228         (QString noteLocalId, ListTagsOptions options), (const, override));
00229
00230     MOCK_METHOD (
00231         QFuture<QSet<qevercloud::Guid>, listTagGuids,

```



```
00232         (ListGuidsFilters filters,
00233          std::optional<qevercloud::Guid> linkedNotebookGuid),
00234         (const, override));
00235
00236     MOCK_METHOD (
00237         QFuture<void>, expungeTagByLocalId, (QString tagLocalId), (override));
00238
00239     MOCK_METHOD (
00240         QFuture<void>, expungeTagByGuid, (qevercloud::Guid tagGuid),
00241         (override));
00242
00243     MOCK_METHOD (
00244         QFuture<void>, expungeTagByName,
00245         (QString name, std::optional<qevercloud::Guid> linkedNotebookGuid),
00246         (override));
00247
00248     MOCK_METHOD (
00249         QFuture<quint32>, resourceCount, (NoteCountOptions options),
00250         (const, override));
00251
00252     MOCK_METHOD (
00253         QFuture<quint32>, resourceCountPerNoteLocalId, (QString noteLocalId),
00254         (const, override));
00255
00256     MOCK_METHOD (
00257         QFuture<void>, putResource, (qevercloud::Resource resource),
00258         (override));
00259
00260     MOCK_METHOD (
00261         QFuture<std::optional<qevercloud::Resource>, findResourceByLocalId,
00262         (QString resourceLocalId, FetchResourceOptions options),
00263         (const, override));
00264
00265     MOCK_METHOD (
00266         QFuture<std::optional<qevercloud::Resource>, findResourceByGuid,
00267         (qevercloud::Guid resourceGuid, FetchResourceOptions options),
00268         (const, override));
00269
00270     MOCK_METHOD (
00271         QFuture<void>, expungeResourceByLocalId, (QString resourceLocalId),
00272         (override));
00273
00274     MOCK_METHOD (
00275         QFuture<void>, expungeResourceByGuid, (qevercloud::Guid resourceGuid),
00276         (override));
00277
00278     MOCK_METHOD (QFuture<quint32>, savedSearchCount, (), (const, override));
00279
00280     MOCK_METHOD (
00281         QFuture<void>, putSavedSearch, (qevercloud::SavedSearch search),
00282         (override));
00283
00284     MOCK_METHOD (
00285         QFuture<std::optional<qevercloud::SavedSearch>,
00286         findSavedSearchByLocalId, (QString localId), (const, override));
00287
00288     MOCK_METHOD (
00289         QFuture<std::optional<qevercloud::SavedSearch>, findSavedSearchByGuid,
00290         (qevercloud::Guid guid), (const, override));
00291
00292     MOCK_METHOD (
00293         QFuture<std::optional<qevercloud::SavedSearch>, findSavedSearchByName,
00294         (QString name), (const, override));
00295
00296     MOCK_METHOD (
00297         QFuture<QList<qevercloud::SavedSearch>, listSavedSearches,
00298         (ListSavedSearchesOptions options), (const, override));
00299
00300     MOCK_METHOD (
00301         QFuture<QSet<qevercloud::Guid>, listSavedSearchGuids,
00302         (ListGuidsFilters filters), (const, override));
00303
00304     MOCK_METHOD (
00305         QFuture<void>, expungeSavedSearchByLocalId, (QString localId),
00306         (override));
00307
00308     MOCK_METHOD (
00309         QFuture<void>, expungeSavedSearchByGuid, (qevercloud::Guid guid),
00310         (override));
00311
00312     MOCK_METHOD (
00313         QFuture<qint32>, highestUpdateSequenceNumber, (HighestUsnOption option),
00314         (const, override));
00315
00316     MOCK_METHOD (
00317         QFuture<qint32>, highestUpdateSequenceNumber,
00318         (qevercloud::Guid linkedNotebookGuid), (const, override));
```

```

00319
00320     MOCK_METHOD (ILocalStorageNotifier *, notifier, (), (const, override));
00321 };
00322
00323 } // namespace quantier::local_storage::tests::mocks

```

## 6.20 QuantierLogger.h

```

00001 /*
00002  * Copyright 2016-2024 Dmitry Ivanov
00003  *
00004  * This file is part of libquantier
00005  *
00006  * libquantier is free software; you can redistribute it and/or modify
00007  * it under the terms of the GNU Lesser General Public License as published by
00008  * the Free Software Foundation, version 3 of the License.
00009  *
00010  * libquantier is distributed in the hope that it will be useful,
00011  * but WITHOUT ANY WARRANTY; without even the implied warranty of
00012  * MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
00013  * GNU Lesser General Public License for more details.
00014  *
00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquantier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quantier/utility/Linkage.h>
00022
00023 #include <QDebug>
00024 #include <QRegularExpression>
00025 #include <QString>
00026 #include <QTextStream>
00027
00028 namespace quantier {
00029
00034     enum class LogLevel
00035     {
00036         Trace,
00037         Debug,
00038         Info,
00039         Warning,
00040         Error
00041     };
00042
00043     QUENTIER_EXPORT QDebug & operator<<(QDebug & dbg, LogLevel logLevel);
00044
00045     QUENTIER_EXPORT QTextStream & operator<<(QTextStream & strm, LogLevel logLevel);
00046
00054     void QUENTIER_EXPORT QuantierInitializeLogging();
00055
00059     void QUENTIER_EXPORT QuantierAddLogEntry(
00060         const QString & sourceFileName, int sourceFileLineNumber,
00061         const QString & component, const QString & message, LogLevel logLevel);
00062
00068     LogLevel QUENTIER_EXPORT QuantierMinLogLevel();
00069
00073     void QUENTIER_EXPORT QuantierSetMinLogLevel(LogLevel logLevel);
00074
00079     void QUENTIER_EXPORT QuantierAddStdOutLogDestination();
00080
00085     [[nodiscard]] bool QUENTIER_EXPORT QuantierIsLogLevelActive(LogLevel logLevel);
00086
00090     [[nodiscard]] QString QUENTIER_EXPORT QuantierLogFilesDirPath();
00091
00095     void QUENTIER_EXPORT QuantierRestartLogging();
00096
00100     [[nodiscard]] QRegularExpression QUENTIER_EXPORT QuantierLogComponentFilter();
00101
00105     void QUENTIER_EXPORT
00106         QuantierSetLogComponentFilter(const QRegularExpression & filter);
00107
00108 } // namespace quantier
00109
00110 #define QNLOG_PRIVATE_BASE(component, message, level) \
00111     if (quantier::QuantierIsLogLevelActive(quantier::LogLevel::level)) { \
00112         QString msg; \
00113         QDebug dbg(&msg); \
00114         dbg.nospace(); \
00115         dbg.noquote(); \
00116         dbg << message; \
00117         quantier::QuantierAddLogEntry(

```

```

00118         QStringLiteral(__FILE__), __LINE__, QString::fromUtf8(component), \
00119         msg, quentier::LogLevel::level); \
00120     } \
00121     // QNLOG_PRIVATE_BASE \
00122 \
00123 #define QNTRACE(component, message) \
00124     QNLOG_PRIVATE_BASE(component, message, Trace) \
00125     // QNTRACE \
00126 \
00127 #define QNDEBUG(component, message) \
00128     QNLOG_PRIVATE_BASE(component, message, Debug) \
00129     // QNDEBUG \
00130 \
00131 #define QNINFO(component, message) \
00132     QNLOG_PRIVATE_BASE(component, message, Info) \
00133     // QNINFO \
00134 \
00135 #define QNWARNING(component, message) \
00136     QNLOG_PRIVATE_BASE(component, message, Warning) \
00137     // QNWARNING \
00138 \
00139 #define QNERROR(component, message) \
00140     QNLOG_PRIVATE_BASE(component, message, Error) \
00141     // QNERROR \
00142 \
00143 #define QUENTIER_SET_MIN_LOG_LEVEL(level) \
00144     quentier::QuentierSetMinLogLevel(quentier::LogLevel::level) \
00145     // QUENTIER_SET_MIN_LOG_LEVEL \
00146 \
00147 #define QUENTIER_INITIALIZE_LOGGING() quentier::QuentierInitializeLogging() \
00148     // QUENTIER_INITIALIZE_LOGGING \
00149 \
00150 // clang-format off \
00151 #define QUENTIER_ADD_STDOUT_LOG_DESTINATION() \
00152     quentier::QuentierAddStdOutLogDestination() \
00153     // QUENTIER_ADD_STDOUT_LOG_DESTINATION \
00154 // clang-format on \
00155 \
00156 #define QNLOG_FILE_LINENUMBER_DELIMITER ":"

```

## 6.21 INoteEditorBackend.h

```

00001 /*
00002  * Copyright 2016-2025 Dmitry Ivanov
00003  *
00004  * This file is part of libquentier
00005  *
00006  * libquentier is free software; you can redistribute it and/or modify
00007  * it under the terms of the GNU Lesser General Public License as published by
00008  * the Free Software Foundation, version 3 of the License.
00009  *
00010  * libquentier is distributed in the hope that it will be useful,
00011  * but WITHOUT ANY WARRANTY; without even the implied warranty of
00012  * MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
00013  * GNU Lesser General Public License for more details.
00014  *
00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/enml/Fwd.h>
00022 #include <quentier/local_storage/Fwd.h>
00023 #include <quentier/utility/Linkage.h>
00024
00025 #include <QPalette>
00026 #include <QPrinter>
00027 #include <QStringList>
00028 #include <QThread>
00029 #include <QWidget>
00030
00031 class QTextStream;
00032 class QUndoStack;
00033
00034 namespace quentier {
00035
00036     class Account;
00037     class ErrorString;
00038     class NoteEditor;
00039     class SpellChecker;
00040
00041     class QUENTIER_EXPORT INoteEditorBackend

```

```

00042 {
00043 public:
00044     virtual ~INoteEditorBackend() noexcept;
00045
00046     virtual void initialize(
00047         local_storage::ILocalStoragePtr localStorage,
00048         SpellChecker & spellChecker, const Account & account,
00049         QThread * backgroundJobsThread,
00050         enml::IDecryptedTextCachePtr decryptedTextCache) = 0;
00051
00052     [[nodiscard]] virtual QObject * object() = 0; // provide QObject interface
00053     [[nodiscard]] virtual QWidget * widget() = 0; // provide QWidget interface
00054
00055     virtual void setAccount(const Account & account) = 0;
00056     virtual void setUndoStack(QUndoStack * pUndoStack) = 0;
00057
00058     virtual void setInitialPageHtml(const QString & html) = 0;
00059     virtual void setNoteNotFoundPageHtml(const QString & html) = 0;
00060     virtual void setNoteDeletedPageHtml(const QString & html) = 0;
00061     virtual void setNoteLoadingPageHtml(const QString & html) = 0;
00062
00063     [[nodiscard]] virtual bool isNoteLoaded() const = 0;
00064     [[nodiscard]] virtual qint64 idleTime() const = 0;
00065
00066     virtual void convertToNote() = 0;
00067     virtual void saveNoteToLocalStorage() = 0;
00068     virtual void setNoteTitle(const QString & noteTitle) = 0;
00069
00070     virtual void setTagIds(
00071         const QStringList & tagLocalUids, const QStringList & tagGuids) = 0;
00072
00073     virtual void undo() = 0;
00074     virtual void redo() = 0;
00075     virtual void cut() = 0;
00076     virtual void copy() = 0;
00077     virtual void paste() = 0;
00078     virtual void pasteUnformatted() = 0;
00079     virtual void selectAll() = 0;
00080
00081     virtual void formatSelectionAsSourceCode() = 0;
00082
00083     virtual void fontMenu() = 0;
00084     virtual void textBold() = 0;
00085     virtual void textItalic() = 0;
00086     virtual void textUnderline() = 0;
00087     virtual void textStrikethrough() = 0;
00088     virtual void textHighlight() = 0;
00089
00090     virtual void alignLeft() = 0;
00091     virtual void alignCenter() = 0;
00092     virtual void alignRight() = 0;
00093     virtual void alignFull() = 0;
00094
00095     [[nodiscard]] virtual QString selectedText() const = 0;
00096     [[nodiscard]] virtual bool hasSelection() const = 0;
00097
00098     virtual void findNext(const QString & text, bool matchCase) const = 0;
00099
00100     virtual void findPrevious(const QString & text, bool matchCase) const = 0;
00101
00102     virtual void replace(
00103         const QString & textToReplace, const QString & replacementText,
00104         bool matchCase) = 0;
00105
00106     virtual void replaceAll(
00107         const QString & textToReplace, const QString & replacementText,
00108         bool matchCase) = 0;
00109
00110     virtual void insertToDoCheckbox() = 0;
00111
00112     virtual void insertInAppNoteLink(
00113         const QString & userId, const QString & shardId,
00114         const QString & noteGuid, const QString & linkText) = 0;
00115
00116     virtual void setSpellcheck(bool enabled) = 0;
00117     [[nodiscard]] virtual bool spellCheckEnabled() const = 0;
00118
00119     virtual void setFont(const QFont & font) = 0;
00120     virtual void setFontHeight(int height) = 0;
00121     virtual void setFontColor(const QColor & color) = 0;
00122     virtual void setBackgroundColor(const QColor & color) = 0;
00123
00124     [[nodiscard]] virtual QPalette defaultPalette() const = 0;
00125     virtual void setDefaultPalette(const QPalette & pal) = 0;
00126
00127     [[nodiscard]] virtual const QFont * defaultFont() const = 0;
00128     virtual void setDefaultFont(const QFont & font) = 0;

```

```

00129
00130     virtual void insertHorizontalLine() = 0;
00131
00132     virtual void increaseFontSize() = 0;
00133     virtual void decreaseFontSize() = 0;
00134
00135     virtual void increaseIndentation() = 0;
00136     virtual void decreaseIndentation() = 0;
00137
00138     virtual void insertBulletedList() = 0;
00139     virtual void insertNumberedList() = 0;
00140
00141     virtual void insertTableDialog() = 0;
00142
00143     virtual void insertFixedWidthTable(
00144         int rows, int columns, int widthInPixels) = 0;
00145
00146     virtual void insertRelativeWidthTable(
00147         int rows, int columns, double relativeWidth) = 0;
00148
00149     virtual void insertTableRow() = 0;
00150     virtual void insertTableColumn() = 0;
00151     virtual void removeTableRow() = 0;
00152     virtual void removeTableColumn() = 0;
00153
00154     virtual void addAttachmentDialog() = 0;
00155     virtual void saveAttachmentDialog(const QByteArray & resourceHash) = 0;
00156     virtual void saveAttachmentUnderCursor() = 0;
00157     virtual void openAttachment(const QByteArray & resourceHash) = 0;
00158     virtual void openAttachmentUnderCursor() = 0;
00159     virtual void copyAttachment(const QByteArray & resourceHash) = 0;
00160     virtual void copyAttachmentUnderCursor() = 0;
00161     virtual void removeAttachment(const QByteArray & resourceHash) = 0;
00162     virtual void removeAttachmentUnderCursor() = 0;
00163     virtual void renameAttachment(const QByteArray & resourceHash) = 0;
00164     virtual void renameAttachmentUnderCursor() = 0;
00165
00166     enum class Rotation
00167     {
00168         Clockwise,
00169         Counterclockwise
00170     };
00171
00172     friend QUINTIER_EXPORT QTextStream & operator<<(
00173         QTextStream & strm, Rotation rotation);
00174
00175     friend QUINTIER_EXPORT QDebug & operator<<(QDebug & dbg, Rotation rotation);
00176
00177     virtual void rotateImageAttachment(
00178         const QByteArray & resourceHash, Rotation rotationDirection) = 0;
00179
00180     virtual void rotateImageAttachmentUnderCursor(
00181         Rotation rotationDirection) = 0;
00182
00183     virtual void encryptSelectedText() = 0;
00184
00185     virtual void decryptEncryptedTextUnderCursor() = 0;
00186
00187     virtual void decryptEncryptedText(
00188         QString encryptedText, QString cipher, QString hint,
00189         QString enCryptIndex) = 0;
00190
00191     virtual void hideDecryptedTextUnderCursor() = 0;
00192
00193     virtual void hideDecryptedText(
00194         QString encryptedText, QString decryptedText, QString cipher,
00195         QString hint, QString enDecryptedIndex) = 0;
00196
00197     virtual void editHyperlinkDialog() = 0;
00198     virtual void copyHyperlink() = 0;
00199     virtual void removeHyperlink() = 0;
00200
00201     virtual void onNoteLoadCancelled() = 0;
00202
00203     [[nodiscard]] virtual bool print(
00204         QPrinter & printer, ErrorString & errorDescription) = 0;
00205
00206     [[nodiscard]] virtual bool exportToPdf(
00207         const QString & absoluteFilePath, ErrorString & errorDescription) = 0;
00208
00209     [[nodiscard]] virtual bool exportToEnex(
00210         const QStringList & tagNames, QString & enex,
00211         ErrorString & errorDescription) = 0;
00212
00213     [[nodiscard]] virtual QString currentNoteLocalId() const = 0;
00214     virtual void setCurrentNoteLocalId(const QString & noteLocalUid) = 0;
00215

```

```

00216     virtual void clear() = 0;
00217
00218     [[nodiscard]] virtual bool isModified() const = 0;
00219     [[nodiscard]] virtual bool isEditorPageModified() const = 0;
00220
00221     virtual void setFocusToEditor() = 0;
00222
00223 protected:
00224     INoteEditorBackend(NoteEditor * parent);
00225     NoteEditor * m_pNoteEditor;
00226 };
00227
00228 } // namespace quantier

```

## 6.22 NoteEditor.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quantier/enml/Fwd.h>
00022 #include <quantier/local_storage/Fwd.h>
00023 #include <quantier/types/ErrorMessage.h>
00024 #include <quantier/utility/Linkage.h>
00025
00026 #include <qevercloud/types/Note.h>
00027 #include <qevercloud/types/Notebook.h>
00028
00029 #include <QPrinter>
00030 #include <QStringList>
00031 #include <QThread>
00032 #include <QWidget>
00033
00034 class QUndoStack;
00035
00036 namespace quantier {
00037
00038     class Account;
00039     class INoteEditorBackend;
00040     class SpellChecker;
00041
00042     class QUINTIER_EXPORT NoteEditor : public QWidget
00043     {
00044     public:
00045         explicit NoteEditor(
00046             QWidget * parent = nullptr,
00047             #if QT_VERSION >= QT_VERSION_CHECK(5, 15, 0)
00048             Qt::WindowFlags flags = {});
00049         #else
00050             Qt::WindowFlags flags = 0); // NOLINT
00051         #endif
00052
00053         ~NoteEditor() noexcept override;
00054
00055         void initialize(
00056             local_storage::ILocalStoragePtr localStorage,
00057             SpellChecker & spellChecker, const Account & account,
00058             QThread * backgroundJobsThread = nullptr,
00059             enml::IDecryptedTextCachePtr decryptedTextCache = nullptr);
00060
00061         [[nodiscard]] INoteEditorBackend * backend() noexcept;
00062
00063         void setBackend(INoteEditorBackend * backend);
00064
00065         void setAccount(const Account & account);
00066
00067     };
00068
00069 }
00070
00071 #endif

```

```

00106     [[nodiscard]] const QUndoStack * undoStack() const noexcept;
00107
00111     void setUndoStack(QUndoStack * pUndoStack);
00112
00116     void setInitialPageHtml(const QString & html);
00117
00122     void setNoteNotFoundPageHtml(const QString & html);
00123
00129     void setNoteDeletedPageHtml(const QString & html);
00130
00135     void setNoteLoadingPageHtml(const QString & html);
00136
00140     [[nodiscard]] QString currentNoteLocalId() const;
00141
00149     void setCurrentNoteLocalId(const QString & noteLocalId);
00150
00154     void clear();
00155
00160     [[nodiscard]] bool isModified() const noexcept;
00161
00166     [[nodiscard]] bool isEditorPageModified() const noexcept;
00167
00172     [[nodiscard]] bool isNoteLoaded() const noexcept;
00173
00179     [[nodiscard]] qint64 idleTime() const noexcept;
00180
00184     void setFocus();
00185
00186     [[nodiscard]] QString selectedText() const noexcept;
00187     [[nodiscard]] bool hasSelection() const noexcept;
00188
00189     [[nodiscard]] bool spellCheckEnabled() const noexcept;
00190
00191     [[nodiscard]] bool print(
00192         QPrinter & printer, ErrorString & errorDescription);
00193
00194     [[nodiscard]] bool exportToPdf(
00195         const QString & absoluteFilePath, ErrorString & errorDescription);
00196
00197     [[nodiscard]] bool exportToEnex(
00198         const QStringList & tagNames, QString & enex,
00199         ErrorString & errorDescription);
00200
00208     [[nodiscard]] QPalette defaultPalette() const;
00209
00214     [[nodiscard]] const QFont * defaultFont() const;
00215
00216     Q_SIGNALS:
00221     void contentChanged();
00222
00228     void noteAndNotebookFoundInLocalStorage(
00229         qevercloud::Note note, qevercloud::Notebook notebook);
00230
00235     void noteNotFound(QString noteLocalId);
00236
00242     void noteDeleted(QString noteLocalId);
00243
00249     void noteModified();
00250
00255     void notifyError(ErrorString error);
00256
00261     void inAppNoteLinkClicked(
00262         QString userId, QString shardId, QString noteGuid);
00263
00275     void inAppNoteLinkPasteRequested(
00276         QString url, QString userId, QString shardId, QString noteGuid);
00277
00278     void convertedToNote(qevercloud::Note note);
00279     void cantConvertToNote(ErrorString error);
00280
00281     void noteEditorHtmlUpdated(QString html);
00282
00283     void currentNoteChanged(qevercloud::Note note);
00284
00285     void spellCheckerNotReady();
00286     void spellCheckerReady();
00287
00288     void noteLoaded();
00289
00296     void noteSavedToLocalStorage(QString noteLocalId);
00297
00302     void failedToSaveNoteToLocalStorage(
00303         ErrorString errorDescription, QString noteLocalId);
00304
00305     // Signals to notify anyone interested of the formatting at the current
00306     // cursor position
00307     void textBoldState(bool state);

```

```

00308     void textItalicState(bool state);
00309     void textUnderlineState(bool state);
00310     void textStrikethroughState(bool state);
00311     void textAlignLeftState(bool state);
00312     void textAlignCenterState(bool state);
00313     void textAlignRightState(bool state);
00314     void textAlignFullState(bool state);
00315     void textInsideOrderedListState(bool state);
00316     void textInsideUnorderedListState(bool state);
00317     void textInsideTableState(bool state);
00318
00319     void textFontFamilyChanged(QString fontFamily);
00320     void textFontSizeChanged(int fontSize);
00321
00322     void insertTableDialogRequested();
00323
00324 public Q_SLOTS:
00325     void convertToNote();
00326
00327     void saveNoteToLocalStorage();
00328
00329     void setNoteTitle(const QString & noteTitle);
00330
00331     void setTagIds(
00332         const QStringList & tagLocalIds, const QStringList & tagGuids);
00333
00334     void undo();
00335     void redo();
00336     void cut();
00337     void copy();
00338     void paste();
00339     void pasteUnformatted();
00340     void selectAll();
00341
00342     void formatSelectionAsSourceCode();
00343
00344     void fontMenu();
00345     void textBold();
00346     void textItalic();
00347     void textUnderline();
00348     void textStrikethrough();
00349     void textHighlight();
00350
00351     void alignLeft();
00352     void alignCenter();
00353     void alignRight();
00354     void alignFull();
00355
00356     void findNext(const QString & text, bool matchCase) const;
00357     void findPrevious(const QString & text, bool matchCase) const;
00358
00359     void replace(
00360         const QString & textToReplace, const QString & replacementText,
00361         bool matchCase);
00362
00363     void replaceAll(
00364         const QString & textToReplace, const QString & replacementText,
00365         bool matchCase);
00366
00367     void insertToDoCheckbox();
00368
00369     void insertInAppNoteLink(
00370         const QString & userId, const QString & shardId,
00371         const QString & noteGuid, const QString & linkText);
00372
00373     void setSpellcheck(bool enabled);
00374
00375     void setFont(const QFont & font);
00376     void setFontHeight(int height);
00377     void setFontColor(const QColor & color);
00378     void setBackgroundColor(const QColor & color);
00379
00380     void setDefaultPalette(const QPalette & pal);
00381
00382     void setDefaultFont(const QFont & font);
00383
00384     void insertHorizontalLine();
00385
00386     void increaseFontSize();
00387     void decreaseFontSize();
00388
00389     void increaseIndentation();
00390     void decreaseIndentation();
00391
00392     void insertBulletedList();
00393     void insertNumberedList();
00394
00395
00396
00397
00398
00399
00400
00401
00402
00403
00404
00405
00406
00407
00408
00409
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```



```

00448     void insertTableDialog();
00449
00450     void insertFixedWidthTable(int rows, int columns, int widthInPixels);
00451
00452     void insertRelativeWidthTable(int rows, int columns, double relativeWidth);
00453
00454     void insertTableRow();
00455     void insertTableColumn();
00456     void removeTableRow();
00457     void removeTableColumn();
00458
00459     void addAttachmentDialog();
00460     void saveAttachmentDialog(const QByteArray & resourceHash);
00461     void saveAttachmentUnderCursor();
00462     void openAttachment(const QByteArray & resourceHash);
00463     void openAttachmentUnderCursor();
00464     void copyAttachment(const QByteArray & resourceHash);
00465     void copyAttachmentUnderCursor();
00466
00467     void encryptSelectedText();
00468     void decryptEncryptedTextUnderCursor();
00469
00470     void editHyperlinkDialog();
00471     void copyHyperlink();
00472     void removeHyperlink();
00473
00474     void onNoteLoadCancelled();
00475
00476 protected:
00477     void dragMoveEvent(QDragMoveEvent * pEvent) override;
00478     void dropEvent(QDropEvent * pEvent) override;
00479
00480 private:
00481     INoteEditorBackend * m_backend;
00482 };
00483
00484 } // namespace quantier

```

## 6.23 SpellChecker.h

```

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00016  * along with libquantier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quantier/utility/Fwd.h>
00022 #include <quantier/utility/Linkage.h>
00023
00024 #include <QList>
00025 #include <QObject>
00026
00027 #include <utility>
00028
00029 namespace quantier {
00030
00031     class Account;
00032     class FileIOProcessorAsync;
00033     class SpellCheckerPrivate;
00034
00035     class QUENTIER_EXPORT SpellChecker : public QObject
00036     {
00037     Q_OBJECT
00038     public:
00039         SpellChecker(
00040             utility::FileIOProcessorAsync * fileIOProcessorAsync, Account account,
00041             QObject * parent = nullptr, const QString & userDictionaryPath = {});
00042
00043         // The second bool in the pair indicates whether the dictionary

```

```

00044     // is enabled or disabled
00045     [[nodiscard]] QList<std::pair<QString, bool> listAvailableDictionaries()
00046         const;
00047
00048     void setAccount(const Account & account);
00049
00050     void enableDictionary(const QString & language);
00051     void disableDictionary(const QString & language);
00052
00053     [[nodiscard]] bool checkSpell(const QString & word) const;
00054
00055     [[nodiscard]] QStringList spellCorrectionSuggestions(
00056         const QString & misspelledWord) const;
00057
00058     void addToUserWordlist(const QString & word);
00059     void removeFromUserWordList(const QString & word);
00060     void ignoreWord(const QString & word);
00061     void removeWord(const QString & word);
00062
00063     [[nodiscard]] bool isReady() const noexcept;
00064
00065     Q_SIGNALS:
00066         void ready();
00067
00068     private:
00069         SpellCheckerPrivate * const d_ptr;
00070         Q_DECLARE_PRIVATE(SpellChecker)
00071     };
00072
00073 } // namespace quantier

```

## 6.24 enml/conversion\_rules/Factory.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quantier/enml/conversion_rules/Fwd.h>
00022 #include <quantier/utility/Linkage.h>
00023
00024 namespace quantier::enml::conversion_rules {
00025
00026     [[nodiscard]] QUANTIER_EXPORT ISkipRuleBuilderPtr createSkipRuleBuilder();
00027
00028 } // namespace quantier::enml::conversion_rules

```

## 6.25 enml/Factory.h

```

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00014  *

```

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/enml/Fwd.h>
00022 #include <quentier/utility/Fwd.h>
00023 #include <quentier/utility/Linkage.h>
00024
00025 namespace quentier::enml {
00026
00033 [[nodiscard]] QUENTIER_EXPORT IDecryptedTextCachePtr
00034     createDecryptedTextCache(utility::IEncryptorPtr encryptor = nullptr);
00035
00039 [[nodiscard]] QUENTIER_EXPORT IENMLTagsConverterPtr createEnmlTagsConverter();
00040
00048 [[nodiscard]] QUENTIER_EXPORT IConverterPtr
00049     createConverter(IENMLTagsConverterPtr enmlTagsConverter = nullptr);
00050
00051 } // namespace quentier::enml

```

## 6.26 local\_storage/Factory.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/local_storage/Fwd.h>
00022 #include <quentier/threading/Fwd.h>
00023 #include <quentier/types/Fwd.h>
00024 #include <quentier/utility/Linkage.h>
00025
00026 #include <QtGlobal>
00027
00028 class QDir;
00029
00030 namespace quentier::local_storage {
00031
00032 [[nodiscard]] QUENTIER_EXPORT ILocalStoragePtr createSqliteLocalStorage(
00033     const Account & account, const QDir & localStorageDir,
00034     threading::QThreadPtr thread = {});
00035
00036 } // namespace quentier::local_storage

```

## 6.27 synchronization/Factory.h

```

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```

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/local_storage/Fwd.h>
00022 #include <quentier/synchronization/Fwd.h>
00023 #include <quentier/threading/Fwd.h>
00024 #include <quentier/utility/Fwd.h>
00025 #include <quentier/utility/Linkage.h>
00026
00027 #include <qevercloud/Fwd.h>
00028
00029 #include <QString>
00030 #include <QUrl>
00031 #include <QtGlobal>
00032
00033 class QWidget;
00034
00035 namespace quentier::synchronization {
00036
00037 [[nodiscard]] QUINTIER_EXPORT IAuthenticatorPtr createQEverCloudAuthenticator(
00038     QString consumerKey, QString consumerSecret, QUrl serverUrl,
00039     threading::QThreadPtr uiThread, QWidget * parentWidget = nullptr);
00040
00041 [[nodiscard]] QUINTIER_EXPORT ISynchronizerPtr createSynchronizer(
00042     const QUrl & userStoreUrl, IAuthenticatorPtr authenticator,
00043     ISyncStateStoragePtr syncStateStorage = nullptr,
00044     utility::IKeychainServicePtr keychainService = nullptr,
00045     INoteStoreFactoryPtr noteStoreFactory = nullptr,
00046     IUserStoreFactoryPtr userStoreFactory = nullptr,
00047     qevercloud::IRequestContextPtr ctx = nullptr,
00048     qevercloud::IRetryPolicyPtr retryPolicy = nullptr);
00049
00050 [[nodiscard]] QUINTIER_EXPORT ISyncConflictResolverPtr
00051     createSimpleSyncConflictResolver(
00052         local_storage::ILocalStoragePtr localStorage);
00053
00054 [[nodiscard]] QUINTIER_EXPORT ISyncStateStoragePtr
00055     createSyncStateStorage(QObject * parent = nullptr);
00056
00057 } // namespace quentier::synchronization

```

## 6.28 threading/Factory.h

```

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00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/threading/Fwd.h>
00022 #include <quentier/utility/Linkage.h>
00023
00024 namespace quentier::threading {
00025
00029 [[nodiscard]] QUINTIER_EXPORT QThreadPoolPtr globalThreadPool();
00030
00031 } // namespace quentier::threading

```

## 6.29 utility/Factory.h

```

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```

```

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00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/Fwd.h>
00022 #include <quentier/utility/Linkage.h>
00023
00024 #include <QString>
00025
00026 namespace quentier::utility {
00027
00032 [[nodiscard]] QUENTIER_EXPORT IEncryptorPtr createOpenSslEncryptor();
00033
00037 [[nodiscard]] QUENTIER_EXPORT IKeychainServicePtr newQtKeychainService();
00038
00043 [[nodiscard]] QUENTIER_EXPORT IKeychainServicePtr
00044     newObfuscatingKeychainService();
00045
00055 [[nodiscard]] QUENTIER_EXPORT IKeychainServicePtr newCompositeKeychainService(
00056     QString name, IKeychainServicePtr primaryKeychain,
00057     IKeychainServicePtr secondaryKeychain);
00058
00069 [[nodiscard]] QUENTIER_EXPORT IKeychainServicePtr newMigratingKeychainService(
00070     IKeychainServicePtr sourceKeychain, IKeychainServicePtr sinkKeychain);
00071
00072 } // namespace quentier::utility

```

## 6.30 enml/conversion\_rules/Fwd.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <memory>
00022
00023 namespace quentier::enml::conversion_rules {
00024
00025 class ISkipRule;
00026 using ISkipRulePtr = std::shared_ptr<ISkipRule>;
00027
00028 class ISkipRuleBuilder;
00029 using ISkipRuleBuilderPtr = std::shared_ptr<ISkipRuleBuilder>;
00030
00031 } // namespace quentier::enml::conversion_rules

```

## 6.31 enml/Fwd.h

```

00001 /*

```

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <memory>
00022
00023 namespace quentier::enml {
00024
00025     class IConverter;
00026     using IConverterPtr = std::shared_ptr<IConverter>;
00027
00028     class IDecryptedTextCache;
00029     using IDecryptedTextCachePtr = std::shared_ptr<IDecryptedTextCache>;
00030
00031     class IENMLTagsConverter;
00032     using IENMLTagsConverterPtr = std::shared_ptr<IENMLTagsConverter>;
00033
00034     struct IHtmlData;
00035     using IHtmlDataPtr = std::shared_ptr<IHtmlData>;
00036
00037 } // namespace quentier::enml

```

## 6.32 local\_storage/Fwd.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <memory>
00022
00023 namespace quentier::local_storage {
00024
00025     class ILocalStorage;
00026     using ILocalStoragePtr = std::shared_ptr<ILocalStorage>;
00027
00028     class ILocalStorageNotifier;
00029
00030     class IPatch;
00031     using IPatchPtr = std::shared_ptr<IPatch>;
00032
00033     class NoteSearchQuery;
00034
00035 } // namespace quentier::local_storage

```

## 6.33 synchronization/Fwd.h

```

00001  /*

```

```

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00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <memory>
00022
00023 namespace quentier::synchronization {
00024
00025     class IAuthenticator;
00026     using IAuthenticatorPtr = std::shared_ptr<IAuthenticator>;
00027
00028     class INoteStoreFactory;
00029     using INoteStoreFactoryPtr = std::shared_ptr<INoteStoreFactory>;
00030
00031     class ISyncConflictResolver;
00032     using ISyncConflictResolverPtr = std::shared_ptr<ISyncConflictResolver>;
00033
00034     class ISynchronizer;
00035     using ISynchronizerPtr = std::shared_ptr<ISynchronizer>;
00036
00037     class ISyncEventsNotifier;
00038
00039     class ISyncOptions;
00040     using ISyncOptionsPtr = std::shared_ptr<ISyncOptions>;
00041
00042     class ISyncStateStorage;
00043     using ISyncStateStoragePtr = std::shared_ptr<ISyncStateStorage>;
00044
00045     class IUserStoreFactory;
00046     using IUserStoreFactoryPtr = std::shared_ptr<IUserStoreFactory>;
00047
00048 } // namespace quentier::synchronization

```

## 6.34 synchronization/types/Fwd.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <memory>
00022
00023 namespace quentier::synchronization {
00024
00025     class IAuthenticationInfo;
00026     using IAuthenticationInfoPtr = std::shared_ptr<IAuthenticationInfo>;
00027
00028     class IAuthenticationInfoBuilder;
00029     using IAuthenticationInfoBuilderPtr =
00030         std::shared_ptr<IAuthenticationInfoBuilder>;
00031
00032     class IDownloadNotesStatus;
00033     using IDownloadNotesStatusPtr = std::shared_ptr<IDownloadNotesStatus>;

```

```

00034
00035 class IDownloadResourcesStatus;
00036 using IDownloadResourcesStatusPtr = std::shared_ptr<IDownloadResourcesStatus>;
00037
00038 class ISendStatus;
00039 using ISendStatusPtr = std::shared_ptr<ISendStatus>;
00040
00041 struct ISyncChunksDataCounters;
00042 using ISyncChunksDataCountersPtr = std::shared_ptr<ISyncChunksDataCounters>;
00043
00044 class ISyncOptions;
00045 using ISyncOptionsPtr = std::shared_ptr<ISyncOptions>;
00046
00047 class ISyncOptionsBuilder;
00048 using ISyncOptionsBuilderPtr = std::shared_ptr<ISyncOptionsBuilder>;
00049
00050 class ISyncResult;
00051 using ISyncResultPtr = std::shared_ptr<ISyncResult>;
00052
00053 class ISyncState;
00054 using ISyncStatePtr = std::shared_ptr<ISyncState>;
00055
00056 class ISyncStateBuilder;
00057 using ISyncStateBuilderPtr = std::shared_ptr<ISyncStateBuilder>;
00058
00059 } // namespace quantier::synchronization

```

## 6.35 threading/Fwd.h

```

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00016  * along with libquantier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <memory>
00022
00023 class QMutex;
00024 class QThread;
00025 class QThreadPool;
00026
00027 namespace quantier::threading {
00028
00029 using QMutexPtr = std::shared_ptr<QMutex>;
00030 using QThreadPtr = std::shared_ptr<QThread>;
00031 using QThreadPoolPtr = std::shared_ptr<QThreadPool>;
00032
00033 } // namespace quantier::threading

```

## 6.36 types/Fwd.h

```

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```



```

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00017  */
00018
00019 #pragma once
00020
00021 namespace quentier {
00022
00023 class Account;
00024 class ErrorString;
00025 class ResourceRecognitionIndexItem;
00026 class ResourceRecognitionIndices;
00027
00028 } // namespace quentier

```

## 6.37 utility/cancelers/Fwd.h

```

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00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <memory>
00022
00023 namespace quentier::utility::cancelers {
00024
00025 class AnyOfCanceler;
00026 using AnyOfCancelerPtr = std::shared_ptr<AnyOfCanceler>;
00027
00028 class ICanceler;
00029 using ICancelerPtr = std::shared_ptr<ICanceler>;
00030
00031 class ManualCanceler;
00032 using ManualCancelerPtr = std::shared_ptr<ManualCanceler>;
00033
00034 } // namespace quentier::utility::cancelers

```

## 6.38 utility/Fwd.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <memory>
00022
00023 namespace quentier::utility {

```

```

00024
00025 class ApplicationSettings;
00026 class FileIOProcessorAsync;
00027 class QuentierApplication;
00028
00029 struct IEncryptor;
00030 using IEncryptorPtr = std::shared_ptr<IEncryptor>;
00031
00032 class IKeychainService;
00033 using IKeychainServicePtr = std::shared_ptr<IKeychainService>;
00034
00035 } // namespace quentier::utility

```

## 6.39 IAuthenticator.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/synchronization/types/Fwd.h>
00022 #include <quentier/types/Account.h>
00023 #include <quentier/utility/Linkage.h>
00024
00025 #include <QFuture>
00026
00027 namespace quentier::synchronization {
00028
00029 class QUENTIER_EXPORT IAuthenticator
00030 {
00031 public:
00032     virtual ~IAuthenticator() noexcept;
00033
00034     [[nodiscard]] virtual QFuture<IAuthenticationInfoPtr>
00035         authenticateNewAccount() = 0;
00036
00037     [[nodiscard]] virtual QFuture<IAuthenticationInfoPtr> authenticateAccount(
00038         Account account) = 0;
00039 };
00040
00041 } // namespace quentier::synchronization

```

## 6.40 INoteStoreFactory.h

```

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00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once

```

```

00020
00021 #include <quentier/utility/Linkage.h>
00022
00023 #include <qevercloud/Fwd.h>
00024 #include <qevercloud/services/Fwd.h>
00025 #include <qevercloud/types/TypeAliases.h>
00026
00027 #include <optional>
00028
00029 namespace quentier::synchronization {
00030
00031 class QUINTIER_EXPORT INoteStoreFactory
00032 {
00033 public:
00034     virtual ~INoteStoreFactory();
00035
00036     [[nodiscard]] virtual qevercloud::INoteStorePtr createNoteStore(
00037         QString noteStoreUrl = {},
00038         std::optional<qevercloud::Guid> linkedNotebookGuid = {},
00039         qevercloud::IRequestContextPtr ctx = {},
00040         qevercloud::IRetryPolicyPtr retryPolicy = {}) = 0;
00041 };
00042
00043 } // namespace quentier::synchronization

```

## 6.41 ISyncConflictResolver.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/Linkage.h>
00022
00023 #include <qevercloud/types/Note.h>
00024 #include <qevercloud/types/Notebook.h>
00025 #include <qevercloud/types/SavedSearch.h>
00026 #include <qevercloud/types/Tag.h>
00027
00028 #include <QFuture>
00029
00030 #include <variant>
00031
00032 class QDebug;
00033 class QTextStream;
00034
00035 namespace quentier::synchronization {
00036
00037 class QUINTIER_EXPORT ISyncConflictResolver
00038 {
00039 public:
00040     struct QUINTIER_EXPORT ConflictResolution
00041     {
00042         struct QUINTIER_EXPORT UseTheirs
00043         {};
00044
00045         struct QUINTIER_EXPORT UseMine
00046         {};
00047
00048         struct QUINTIER_EXPORT IgnoreMine
00049         {};
00050
00051         template <class T>
00052         struct MoveMine
00053         {
00054             using value_type = T;
00055
00056             T mine;
00057         };
00058     };
00059 };

```

```

00089     };
00090 };
00091
00092 using NotebookConflictResolution = std::variant<
00093     ConflictResolution::UseTheirs, ConflictResolution::UseMine,
00094     ConflictResolution::IgnoreMine,
00095     ConflictResolution::MoveMine<qevercloud::Notebook>>;
00096
00097 using NoteConflictResolution = std::variant<
00098     ConflictResolution::UseTheirs, ConflictResolution::UseMine,
00099     ConflictResolution::IgnoreMine,
00100     ConflictResolution::MoveMine<qevercloud::Note>>;
00101
00102 using SavedSearchConflictResolution = std::variant<
00103     ConflictResolution::UseTheirs, ConflictResolution::UseMine,
00104     ConflictResolution::IgnoreMine,
00105     ConflictResolution::MoveMine<qevercloud::SavedSearch>>;
00106
00107 using TagConflictResolution = std::variant<
00108     ConflictResolution::IgnoreMine, ConflictResolution::UseTheirs,
00109     ConflictResolution::UseMine,
00110     ConflictResolution::MoveMine<qevercloud::Tag>>;
00111
00112 public:
00113     virtual ~ISyncConflictResolver() noexcept;
00114
00115     [[nodiscard]] virtual QFuture<NotebookConflictResolution>
00116         resolveNotebookConflict(
00117             qevercloud::Notebook theirs, qevercloud::Notebook mine) = 0;
00118
00119     [[nodiscard]] virtual QFuture<NoteConflictResolution> resolveNoteConflict(
00120         qevercloud::Note theirs, qevercloud::Note mine) = 0;
00121
00122     [[nodiscard]] virtual QFuture<SavedSearchConflictResolution>
00123         resolveSavedSearchConflict(
00124             qevercloud::SavedSearch theirs, qevercloud::SavedSearch mine) = 0;
00125
00126     [[nodiscard]] virtual QFuture<TagConflictResolution> resolveTagConflict(
00127         qevercloud::Tag theirs, qevercloud::Tag mine) = 0;
00128 };
00129
00130 QUENTIER_EXPORT QTextStream & operator<<(
00131     QTextStream & strm,
00132     const ISyncConflictResolver::NotebookConflictResolution & resolution);
00133
00134 QUENTIER_EXPORT QDebug & operator<<(
00135     QDebug & dbg,
00136     const ISyncConflictResolver::NotebookConflictResolution & resolution);
00137
00138 QUENTIER_EXPORT QTextStream & operator<<(
00139     QTextStream & strm,
00140     const ISyncConflictResolver::NoteConflictResolution & resolution);
00141
00142 QUENTIER_EXPORT QDebug & operator<<(
00143     QDebug & dbg,
00144     const ISyncConflictResolver::NoteConflictResolution & resolution);
00145
00146 QUENTIER_EXPORT QTextStream & operator<<(
00147     QTextStream & strm,
00148     const ISyncConflictResolver::SavedSearchConflictResolution & resolution);
00149
00150 QUENTIER_EXPORT QDebug & operator<<(
00151     QDebug & dbg,
00152     const ISyncConflictResolver::SavedSearchConflictResolution & resolution);
00153
00154 QUENTIER_EXPORT QTextStream & operator<<(
00155     QTextStream & strm,
00156     const ISyncConflictResolver::TagConflictResolution & resolution);
00157
00158 QUENTIER_EXPORT QDebug & operator<<(
00159     QDebug & dbg,
00160     const ISyncConflictResolver::TagConflictResolution & resolution);
00161
00162 } // namespace quentier::synchronization

```

## 6.42 ISyncEventsNotifier.h

```

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00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/synchronization/Fwd.h>
00022 #include <quentier/synchronization/types/Fwd.h>
00023 #include <quentier/utility/Linkage.h>
00024
00025 #include <qevercloud/types/LinkedNotebook.h>
00026
00027 #include <QList>
00028 #include <QObject>
00029
00030 namespace quentier::synchronization {
00031
00032 class QUENTIER_EXPORT ISyncEventsNotifier : public QObject
00033 {
00034     Q_OBJECT
00035 protected:
00036     explicit ISyncEventsNotifier(QObject * parent = nullptr);
00037
00038 public:
00039     ~ISyncEventsNotifier() override;
00040
00041     Q_SIGNALS:
00042     void syncChunksDownloadProgress(
00043         qint32 highestDownloadedUsn, qint32 highestServerUsn,
00044         qint32 lastPreviousUsn);
00045
00046     void syncChunksDownloaded();
00047
00048     void syncChunksDataProcessingProgress(ISyncChunksDataCountersPtr counters);
00049
00050     void startLinkedNotebooksDataDownloading(
00051         const QList<qevercloud::LinkedNotebook> & linkedNotebooks);
00052
00053     void linkedNotebookSyncChunksDownloadProgress(
00054         qint32 highestDownloadedUsn, qint32 highestServerUsn,
00055         qint32 lastPreviousUsn,
00056         const qevercloud::LinkedNotebook & linkedNotebook);
00057
00058     void linkedNotebookSyncChunksDownloaded(
00059         const qevercloud::LinkedNotebook & linkedNotebook);
00060
00061     void linkedNotebookSyncChunksDataProcessingProgress(
00062         ISyncChunksDataCountersPtr counters,
00063         const qevercloud::LinkedNotebook & linkedNotebook);
00064
00065     void notesDownloadProgress(
00066         quint32 notesDownloaded, quint32 totalNotesToDownload);
00067
00068     void linkedNotebookNotesDownloadProgress(
00069         quint32 notesDownloaded, quint32 totalNotesToDownload,
00070         const qevercloud::LinkedNotebook & linkedNotebook);
00071
00072     void resourcesDownloadProgress(
00073         quint32 resourcesDownloaded, quint32 totalResourcesToDownload);
00074
00075     void linkedNotebookResourcesDownloadProgress(
00076         quint32 resourcesDownloaded, quint32 totalResourcesToDownload,
00077         const qevercloud::LinkedNotebook & linkedNotebook);
00078
00079     void downloadFinished(bool dataDownloaded);
00080
00081     void userOwnSendStatusUpdate(ISendStatusPtr sendStatus);
00082
00083     void linkedNotebookSendStatusUpdate(
00084         const qevercloud::Guid & linkedNotebookGuid, ISendStatusPtr sendStatus);
00085 };
00086
00087 } // namespace quentier::synchronization

```

## 6.43 ISynchronizer.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/local_storage/Fwd.h>
00022 #include <quentier/synchronization/Fwd.h>
00023 #include <quentier/synchronization/types/Fwd.h>
00024 #include <quentier/types/Account.h>
00025 #include <quentier/utility/Linkage.h>
00026 #include <quentier/utility/cancelers/Fwd.h>
00027
00028 #include <qevercloud/types/TypeAliases.h>
00029
00030 #include <QFuture>
00031
00032 #include <memory>
00033 #include <utility>
00034
00035 namespace quentier {
00036
00037 class Account;
00038
00039 } // namespace quentier
00040
00041 namespace quentier::synchronization {
00042
00043 class QUENTIER_EXPORT ISynchronizer
00044 {
00045 public:
00046     virtual ~ISynchronizer() noexcept;
00047
00048     [[nodiscard]] virtual QFuture<std::pair<Account, IAuthenticationInfoPtr>>
00049         authenticateNewAccount() = 0;
00050
00051     [[nodiscard]] virtual QFuture<IAuthenticationInfoPtr> authenticateAccount(
00052         Account account) = 0;
00053
00054     using SyncResult =
00055         std::pair<QFuture<ISyncResultPtr>, ISyncEventsNotifier *>;
00056
00057     [[nodiscard]] virtual SyncResult synchronizeAccount(
00058         Account account, local_storage::ILocalStoragePtr localStorage,
00059         utility::cancelers::ICancelerPtr canceler,
00060         ISyncOptionsPtr options = nullptr,
00061         ISyncConflictResolverPtr syncConflictResolver = nullptr) = 0;
00062
00063     virtual void revokeAuthentication(qevercloud::UserID userId) = 0;
00064 };
00065
00066 } // namespace quentier::synchronization

```

## 6.44 ISyncStateStorage.h

```

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```

```

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00016  * along with libquentier.  If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/synchronization/types/Fwd.h>
00022 #include <quentier/types/Account.h>
00023 #include <quentier/utility/Linkage.h>
00024
00025 #include <QObject>
00026
00027 namespace quentier::synchronization {
00028
00029 class QUENTIER_EXPORT ISyncStateStorage : public QObject
00030 {
00031     Q_OBJECT
00032 protected:
00033     explicit ISyncStateStorage(QObject * parent = nullptr);
00034
00035 public:
00036     ~ISyncStateStorage() override;
00037
00038     [[nodiscard]] virtual ISyncStatePtr getSyncState(
00039         const Account & account) = 0;
00040
00041     virtual void setSyncState(
00042         const Account & account, ISyncStatePtr syncState) = 0;
00043
00044 Q_SIGNALS:
00045     void notifySyncStateUpdated(Account account, ISyncStatePtr syncState);
00046 };
00047
00048 } // namespace quentier::synchronization

```

## 6.45 IUserStoreFactory.h

```

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00014  *
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00016  * along with libquentier.  If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/Linkage.h>
00022
00023 #include <qevercloud/Fwd.h>
00024 #include <qevercloud/services/Fwd.h>
00025
00026 #include <QString>
00027
00028 namespace quentier::synchronization {
00029
00030 class QUENTIER_EXPORT IUserStoreFactory
00031 {
00032 public:
00033     virtual ~IUserStoreFactory();
00034
00035     [[nodiscard]] virtual qevercloud::IUserStorePtr createUserStore(
00036         QString userStoreUrl = {}, qevercloud::IRequestContextPtr ctx = {},
00037         qevercloud::IRetryPolicyPtr retryPolicy = {}) = 0;
00038 };
00039
00040 } // namespace quentier::synchronization

```

## 6.46 MockIAuthenticator.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/synchronization/IAuthenticator.h>
00022
00023 #include <gmock/gmock.h>
00024
00025 namespace quentier::synchronization::tests::mocks {
00026
00027 class MockIAuthenticator : public IAuthenticator
00028 {
00029 public:
00030     MOCK_METHOD(
00031         QFuture<IAuthenticationInfoPtr>, authenticateNewAccount, (),
00032         (override));
00033
00034     MOCK_METHOD(
00035         QFuture<IAuthenticationInfoPtr>, authenticateAccount, (Account account),
00036         (override));
00037 };
00038
00039 } // namespace quentier::synchronization::tests::mocks

```

## 6.47 MockINoteStoreFactory.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/synchronization/INoteStoreFactory.h>
00022
00023 #include <gmock/gmock.h>
00024
00025 namespace quentier::synchronization::tests::mocks {
00026
00027 class MockINoteStoreFactory : public INoteStoreFactory
00028 {
00029 public:
00030     MOCK_METHOD(
00031         ::qevercloud::INoteStorePtr, createNoteStore,
00032         (QString noteStoreUrl,
00033          std::optional<::qevercloud::Guid> linkedNotebookGuid,
00034          ::qevercloud::IRequestContextPtr ctx,
00035          ::qevercloud::IRetryPolicyPtr retryPolicy),
00036         (override));
00037 };
00038
00039 } // namespace quentier::synchronization::tests::mocks

```



## 6.48 MockISyncConflictResolver.h

```

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00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/synchronization/ISyncConflictResolver.h>
00022
00023 #include <gmock/gmock.h>
00024
00025 namespace quentier::synchronization::tests::mocks {
00026
00027 class MockISyncConflictResolver : public ISyncConflictResolver
00028 {
00029 public:
00030     MOCK_METHOD(
00031         QFuture<NotebookConflictResolution>, resolveNotebookConflict,
00032         (::qevercloud::Notebook theirs, ::qevercloud::Notebook mine),
00033         (override));
00034
00035     MOCK_METHOD(
00036         QFuture<NoteConflictResolution>, resolveNoteConflict,
00037         (::qevercloud::Note theirs, ::qevercloud::Note mine), (override));
00038
00039     MOCK_METHOD(
00040         QFuture<SavedSearchConflictResolution>, resolveSavedSearchConflict,
00041         (::qevercloud::SavedSearch theirs, ::qevercloud::SavedSearch mine),
00042         (override));
00043
00044     MOCK_METHOD(
00045         QFuture<TagConflictResolution>, resolveTagConflict,
00046         (::qevercloud::Tag theirs, ::qevercloud::Tag mine), (override));
00047 };
00048
00049 } // namespace quentier::synchronization::tests::mocks

```

## 6.49 MockISyncStateStorage.h

```

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00014  *
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00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/synchronization/ISyncStateStorage.h>
00022
00023 #include <gmock/gmock.h>
00024
00025 namespace quentier::synchronization::tests::mocks {
00026
00027 class MockISyncStateStorage : public ISyncStateStorage
00028 {

```

```

00029     Q_OBJECT
00030 public:
00031     MOCK_METHOD(
00032         ISyncStatePtr, getSyncState, (const Account & account), (override));
00033
00034     MOCK_METHOD(
00035         void, setSyncState, (const Account & account, ISyncStatePtr syncState),
00036         (override));
00037 };
00038
00039 } // namespace quantier::synchronization::tests::mocks

```

## 6.50 Errors.h

```

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00014  *
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00016  * along with libquantier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quantier/utility/Linkage.h>
00022
00023 #include <QtGlobal>
00024
00025 #include <optional>
00026 #include <variant>
00027
00028 namespace quantier::synchronization {
00029
00030 struct QUENTIER_EXPORT RateLimitReachedError
00031 {
00032     std::optional<qint32> rateLimitDurationSec;
00033 };
00034
00035 [[nodiscard]] QUENTIER_EXPORT bool operator==(
00036     const RateLimitReachedError & lhs,
00037     const RateLimitReachedError & rhs) noexcept;
00038
00039 [[nodiscard]] QUENTIER_EXPORT bool operator!=(
00040     const RateLimitReachedError & lhs,
00041     const RateLimitReachedError & rhs) noexcept;
00042
00043 struct QUENTIER_EXPORT AuthenticationExpiredError
00044 {};
00045
00046 [[nodiscard]] QUENTIER_EXPORT bool operator==(
00047     const AuthenticationExpiredError & lhs,
00048     const AuthenticationExpiredError & rhs) noexcept;
00049
00050 [[nodiscard]] QUENTIER_EXPORT bool operator!=(
00051     const AuthenticationExpiredError & lhs,
00052     const AuthenticationExpiredError & rhs) noexcept;
00053
00054 using StopSynchronizationError = std::variant<
00055     RateLimitReachedError, AuthenticationExpiredError, std::monostate>;
00056
00057 } // namespace quantier::synchronization

```

## 6.51 IAuthenticationInfo.h

```

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```

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/synchronization/types/Fwd.h>
00022 #include <quentier/utility/Linkage.h>
00023 #include <quentier/utility/Printable.h>
00024
00025 #include <qevercloud/types/TypeAliases.h>
00026
00027 #include <QList>
00028 #include <QNetworkCookie>
00029 #include <QString>
00030
00031 namespace quentier::synchronization {
00032
00037 class QUENTIER_EXPORT IAuthenticationInfo : public utility::Printable
00038 {
00039 public:
00043     [[nodiscard]] virtual qevercloud::UserID userId() const = 0;
00044
00048     [[nodiscard]] virtual QString authToken() const = 0;
00049
00053     [[nodiscard]] virtual qevercloud::Timestamp authTokenExpirationTime()
00054         const = 0;
00055
00059     [[nodiscard]] virtual qevercloud::Timestamp authenticationTime() const = 0;
00060
00065     [[nodiscard]] virtual QString shardId() const = 0;
00066
00070     [[nodiscard]] virtual QString noteStoreUrl() const = 0;
00071
00076     [[nodiscard]] virtual QString webApiUrlPrefix() const = 0;
00077
00084     [[nodiscard]] virtual QList<QNetworkCookie> userStoreCookies() const = 0;
00085 };
00086
00087 } // namespace quentier::synchronization

```

## 6.52 IAuthenticationInfoBuilder.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/synchronization/types/Fwd.h>
00022 #include <quentier/utility/Linkage.h>
00023
00024 #include <qevercloud/types/TypeAliases.h>
00025
00026 #include <QList>
00027 #include <QNetworkCookie>
00028 #include <QString>
00029
00030 namespace quentier::synchronization {

```

```

00031
00032 class QUENTIER_EXPORT IAuthenticationInfoBuilder
00033 {
00034 public:
00035     virtual ~IAuthenticationInfoBuilder() noexcept;
00036
00037     virtual IAuthenticationInfoBuilder & setUserId(
00038         qevercloud::UserID userId) = 0;
00039
00040     virtual IAuthenticationInfoBuilder & setAuthToken(QString token) = 0;
00041
00042     virtual IAuthenticationInfoBuilder & setAuthTokenExpirationTime(
00043         qevercloud::Timestamp expirationTime) = 0;
00044
00045     virtual IAuthenticationInfoBuilder & setAuthenticationTime(
00046         qevercloud::Timestamp authenticationTime) = 0;
00047
00048     virtual IAuthenticationInfoBuilder & setShardId(QString shardId) = 0;
00049
00050     virtual IAuthenticationInfoBuilder & setNoteStoreUrl(
00051         QString noteStoreUrl) = 0;
00052
00053     virtual IAuthenticationInfoBuilder & setWebApiUrlPrefix(
00054         QString webApiUrlPrefix) = 0;
00055
00056     virtual IAuthenticationInfoBuilder & setUserStoreCookies(
00057         QList<QNetworkCookie> cookies) = 0;
00058
00059     [[nodiscard]] virtual IAuthenticationInfoPtr build() = 0;
00060 };
00061
00062 [[nodiscard]] QUENTIER_EXPORT IAuthenticationInfoBuilderPtr
00063     createAuthenticationInfoBuilder();
00064
00065 } // namespace quantier::synchronization

```

## 6.53 IDownloadNotesStatus.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quantier/synchronization/types/Errors.h>
00022 #include <quantier/synchronization/types/Fwd.h>
00023 #include <quantier/utility/Linkage.h>
00024 #include <quantier/utility/Printable.h>
00025
00026 #include <qevercloud/types/Note.h>
00027 #include <qevercloud/types/TypeAliases.h>
00028
00029 #include <QException>
00030 #include <QList>
00031
00032 #include <memory>
00033 #include <utility>
00034
00035 namespace quantier::synchronization {
00036
00041 class QUENTIER_EXPORT IDownloadNotesStatus : public utility::Printable
00042 {
00043 public:
00044     using QExceptionPtr = std::shared_ptr<QException>;
00045     using NoteWithException = std::pair<qevercloud::Note, QExceptionPtr>;
00046     using GuidWithException = std::pair<qevercloud::Guid, QExceptionPtr>;
00047     using UpdateSequenceNumbersByGuid = QHash<qevercloud::Guid, quint32>;
00048
00049     [[nodiscard]] virtual quint64 totalNewNotes() const = 0;

```

```

00050     [[nodiscard]] virtual quint64 totalUpdatedNotes() const = 0;
00051     [[nodiscard]] virtual quint64 totalExpungedNotes() const = 0;
00052
00053     [[nodiscard]] virtual QList<NoteWithException> notesWhichFailedToDownload()
00054         const = 0;
00055
00056     [[nodiscard]] virtual QList<NoteWithException> notesWhichFailedToProcess()
00057         const = 0;
00058
00059     [[nodiscard]] virtual QList<GuidWithException>
00060         noteGuidsWhichFailedToExpunge() const = 0;
00061
00062     [[nodiscard]] virtual UpdateSequenceNumbersByGuid
00063         processedNoteGuidsAndUsns() const = 0;
00064
00065     [[nodiscard]] virtual UpdateSequenceNumbersByGuid
00066         cancelledNoteGuidsAndUsns() const = 0;
00067
00068     [[nodiscard]] virtual QList<qevercloud::Guid> expungedNoteGuids() const = 0;
00069
00070     [[nodiscard]] virtual StopSynchronizationError stopSynchronizationError()
00071         const = 0;
00072 };
00073
00074 } // namespace quantier::synchronization

```

## 6.54 IDownloadResourcesStatus.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quantier/synchronization/types/Errors.h>
00022 #include <quantier/utility/Linkage.h>
00023 #include <quantier/utility/Printable.h>
00024
00025 #include <qevercloud/types/Resource.h>
00026 #include <qevercloud/types/TypeAliases.h>
00027
00028 #include <QException>
00029
00030 #include <memory>
00031 #include <utility>
00032
00033 namespace quantier::synchronization {
00034
00035     class QUENTIER_EXPORT IDownloadResourcesStatus : public utility::Printable
00036     {
00037     public:
00038         ~IDownloadResourcesStatus() noexcept override;
00039
00040         using QExceptionPtr = std::shared_ptr<QException>;
00041
00042         using ResourceWithException =
00043             std::pair<qevercloud::Resource, QExceptionPtr>;
00044
00045         using UpdateSequenceNumbersByGuid = QHash<qevercloud::Guid, qint32>;
00046
00047         [[nodiscard]] virtual quint64 totalNewResources() const = 0;
00048         [[nodiscard]] virtual quint64 totalUpdatedResources() const = 0;
00049
00050         [[nodiscard]] virtual QList<ResourceWithException>
00051             resourcesWhichFailedToDownload() const = 0;
00052
00053         [[nodiscard]] virtual QList<ResourceWithException>
00054             resourcesWhichFailedToProcess() const = 0;
00055

```

```

00056     [[nodiscard]] virtual UpdateSequenceNumbersByGuid
00057         processedResourceGuidsAndUsns() const = 0;
00058
00059     [[nodiscard]] virtual UpdateSequenceNumbersByGuid
00060         cancelledResourceGuidsAndUsns() const = 0;
00061
00062     [[nodiscard]] virtual StopSynchronizationError stopSynchronizationError()
00063         const = 0;
00064 };
00065
00066 } // namespace quantier::synchronization

```

## 6.55 ISendStatus.h

```

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00016  * along with libquantier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quantier/synchronization/types/Errors.h>
00022 #include <quantier/utility/Linkage.h>
00023 #include <quantier/utility/Printable.h>
00024
00025 #include <qevercloud/types/Note.h>
00026 #include <qevercloud/types/Notebook.h>
00027 #include <qevercloud/types/SavedSearch.h>
00028 #include <qevercloud/types/Tag.h>
00029 #include <qevercloud/types/TypeAliases.h>
00030
00031 #include <QException>
00032 #include <QList>
00033
00034 #include <memory>
00035 #include <utility>
00036
00037 namespace quantier::synchronization {
00038
00044 class QUENTIER_EXPORT ISendStatus : public utility::Printable
00045 {
00046 public:
00047     using QExceptionPtr = std::shared_ptr<QException>;
00048
00049     using NoteWithException = std::pair<qevercloud::Note, QExceptionPtr>;
00050
00051     using NotebookWithException =
00052         std::pair<qevercloud::Notebook, QExceptionPtr>;
00053
00054     using SavedSearchWithException =
00055         std::pair<qevercloud::SavedSearch, QExceptionPtr>;
00056
00057     using TagWithException = std::pair<qevercloud::Tag, QExceptionPtr>;
00058
00059 public:
00060     // Total
00061
00065     [[nodiscard]] virtual quint64 totalAttemptedToSendNotes() const = 0;
00066
00070     [[nodiscard]] virtual quint64 totalAttemptedToSendNotebooks() const = 0;
00071
00075     [[nodiscard]] virtual quint64 totalAttemptedToSendSavedSearches() const = 0;
00076
00080     [[nodiscard]] virtual quint64 totalAttemptedToSendTags() const = 0;
00081
00082     // Notes
00083
00087     [[nodiscard]] virtual quint64 totalSuccessfullySentNotes() const = 0;
00088
00093     [[nodiscard]] virtual QList<NoteWithException> failedToSendNotes()

```

```

00094         const = 0;
00095
00096     // Notebooks
00097
00101     [[nodiscard]] virtual quint64 totalSuccessfullySentNotebooks() const = 0;
00102
00107     [[nodiscard]] virtual QList<NotebookWithException> failedToSendNotebooks()
00108         const = 0;
00109
00110     // Saved searches
00111
00115     [[nodiscard]] virtual quint64 totalSuccessfullySentSavedSearches()
00116         const = 0;
00117
00122     [[nodiscard]] virtual QList<SavedSearchWithException>
00123         failedToSendSavedSearches() const = 0;
00124
00125     // Tags
00126
00130     [[nodiscard]] virtual quint64 totalSuccessfullySentTags() const = 0;
00131
00136     [[nodiscard]] virtual QList<TagWithException> failedToSendTags() const = 0;
00137
00138     // General
00139
00145     [[nodiscard]] virtual StopSynchronizationError stopSynchronizationError()
00146         const = 0;
00147
00154     [[nodiscard]] virtual bool needToRepeatIncrementalSync() const = 0;
00155 };
00156
00157 } // namespace quantier::synchronization

```

## 6.56 ISyncChunksDataCounters.h

```

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00014  *
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00016  * along with libquantier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quantier/utility/Linkage.h>
00022 #include <quantier/utility/Printable.h>
00023
00024 #include <QtGlobal>
00025
00026 namespace quantier::synchronization {
00027
00033 struct QUENTIER_EXPORT ISyncChunksDataCounters : public utility::Printable
00034 {
00035     // ===== Saved searches =====
00036
00040     [[nodiscard]] virtual quint64 totalSavedSearches() const noexcept = 0;
00041
00045     [[nodiscard]] virtual quint64 totalExpungedSavedSearches()
00046         const noexcept = 0;
00047
00052     [[nodiscard]] virtual quint64 addedSavedSearches() const noexcept = 0;
00053
00058     [[nodiscard]] virtual quint64 updatedSavedSearches() const noexcept = 0;
00059
00064     [[nodiscard]] virtual quint64 expungedSavedSearches() const noexcept = 0;
00065
00066     // ===== Tags =====
00067
00071     [[nodiscard]] virtual quint64 totalTags() const noexcept = 0;
00072
00076     [[nodiscard]] virtual quint64 totalExpungedTags() const noexcept = 0;
00077

```

```

00081     [[nodiscard]] virtual quint64 addedTags() const noexcept = 0;
00082
00086     [[nodiscard]] virtual quint64 updatedTags() const noexcept = 0;
00087
00091     [[nodiscard]] virtual quint64 expungedTags() const noexcept = 0;
00092
00093     // ===== Linked notebooks =====
00094
00098     [[nodiscard]] virtual quint64 totalLinkedNotebooks() const noexcept = 0;
00099
00103     [[nodiscard]] virtual quint64 totalExpungedLinkedNotebooks()
00104         const noexcept = 0;
00105
00110     [[nodiscard]] virtual quint64 addedLinkedNotebooks() const noexcept = 0;
00111
00116     [[nodiscard]] virtual quint64 updatedLinkedNotebooks() const noexcept = 0;
00117
00122     [[nodiscard]] virtual quint64 expungedLinkedNotebooks() const noexcept = 0;
00123
00124     // ===== Notebooks =====
00125
00129     [[nodiscard]] virtual quint64 totalNotebooks() const noexcept = 0;
00130
00134     [[nodiscard]] virtual quint64 totalExpungedNotebooks() const noexcept = 0;
00135
00139     [[nodiscard]] virtual quint64 addedNotebooks() const noexcept = 0;
00140
00144     [[nodiscard]] virtual quint64 updatedNotebooks() const noexcept = 0;
00145
00150     [[nodiscard]] virtual quint64 expungedNotebooks() const noexcept = 0;
00151 };
00152
00153 } // namespace quentier::synchronization

```

## 6.57 ISyncOptions.h

```

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00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/Linkage.h>
00022 #include <quentier/utility/Printable.h>
00023
00024 #include <qevercloud/Fwd.h>
00025
00026 #include <QDir>
00027 #include <QtGlobal>
00028
00029 #include <optional>
00030
00031 namespace quentier::synchronization {
00032
00036 class QUENTIER_EXPORT ISyncOptions : public utility::Printable
00037 {
00038 public:
00039     ~ISyncOptions() noexcept override;
00040
00046     [[nodiscard]] virtual bool downloadNoteThumbnails() const = 0;
00047
00062     [[nodiscard]] virtual std::optional<QDir> inkNoteImagesStorageDir()
00063         const = 0;
00064
00069     [[nodiscard]] virtual qevercloud::IRequestContextPtr requestContext()
00070         const = 0;
00071
00076     [[nodiscard]] virtual qevercloud::IRetryPolicyPtr retryPolicy() const = 0;
00077

```



```

00084     [[nodiscard]] virtual std::optional<quint32> maxConcurrentNoteDownloads()
00085         const = 0;
00086
00093     [[nodiscard]] virtual std::optional<quint32>
00094         maxConcurrentResourceDownloads() const = 0;
00095 };
00096
00097 } // namespace quantier::synchronization

```

## 6.58 ISyncOptionsBuilder.h

```

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00016  * along with libquantier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quantier/synchronization/types/Fwd.h>
00022 #include <quantier/utility/Linkage.h>
00023
00024 #include <qevercloud/Fwd.h>
00025
00026 #include <QDir>
00027
00028 #include <optional>
00029
00030 namespace quantier::synchronization {
00031
00032 class QUENTIER_EXPORT ISyncOptionsBuilder
00033 {
00034 public:
00035     virtual ~ISyncOptionsBuilder() noexcept;
00036
00037     virtual ISyncOptionsBuilder & setDownloadNoteThumbnails(bool value) = 0;
00038
00039     virtual ISyncOptionsBuilder & setInkNoteImagesStorageDir(
00040         std::optional<QDir> dir) = 0;
00041
00042     virtual ISyncOptionsBuilder & setRequestContext(
00043         qevercloud::IRequestContextPtr ctx) = 0;
00044
00045     virtual ISyncOptionsBuilder & setRetryPolicy(
00046         qevercloud::IRetryPolicyPtr retryPolicy) = 0;
00047
00048     virtual ISyncOptionsBuilder & setMaxConcurrentNoteDownloads(
00049         std::optional<quint32> maxConcurrentNoteDownloads) = 0;
00050
00051     virtual ISyncOptionsBuilder & setMaxConcurrentResourceDownloads(
00052         std::optional<quint32> maxConcurrentResourceDownloads) = 0;
00053
00054     [[nodiscard]] virtual ISyncOptionsPtr build() = 0;
00055 };
00056
00057 [[nodiscard]] QUENTIER_EXPORT ISyncOptionsBuilderPtr createSyncOptionsBuilder();
00058
00059 } // namespace quantier::synchronization

```

## 6.59 ISyncResult.h

```

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```

```

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00013  * GNU Lesser General Public License for more details.
00014  *
00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/synchronization/Fwd.h>
00022 #include <quentier/synchronization/types/Errors.h>
00023 #include <quentier/synchronization/types/Fwd.h>
00024 #include <quentier/utility/Linkage.h>
00025 #include <quentier/utility/Printable.h>
00026
00027 #include <qevercloud/types/TypeAliases.h>
00028
00029 #include <QHash>
00030 #include <QSet>
00031
00032 namespace quentier::synchronization {
00033
00034 class QUENTIER_EXPORT ISyncResult : public utility::Printable
00035 {
00036 public:
00037     [[nodiscard]] virtual ISyncStatePtr syncState() const = 0;
00038
00039     [[nodiscard]] virtual ISyncChunksDataCountersPtr
00040         userAccountSyncChunksDataCounters() const = 0;
00041
00042     [[nodiscard]] virtual QHash<qevercloud::Guid, ISyncChunksDataCountersPtr>
00043         linkedNotebookSyncChunksDataCounters() const = 0;
00044
00045     [[nodiscard]] virtual bool userAccountSyncChunksDownloaded() const = 0;
00046
00047     [[nodiscard]] virtual QSet<qevercloud::Guid>
00048         linkedNotebookGuidsWithSyncChunksDownloaded() const = 0;
00049
00050     [[nodiscard]] virtual IDownloadNotesStatusPtr
00051         userAccountDownloadNotesStatus() const = 0;
00052
00053     [[nodiscard]] virtual QHash<qevercloud::Guid, IDownloadNotesStatusPtr>
00054         linkedNotebookDownloadNotesStatuses() const = 0;
00055
00056     [[nodiscard]] virtual IDownloadResourcesStatusPtr
00057         userAccountDownloadResourcesStatus() const = 0;
00058
00059     [[nodiscard]] virtual QHash<qevercloud::Guid, IDownloadResourcesStatusPtr>
00060         linkedNotebookDownloadResourcesStatuses() const = 0;
00061
00062     [[nodiscard]] virtual ISendStatusPtr userAccountSendStatus() const = 0;
00063
00064     [[nodiscard]] virtual QHash<qevercloud::Guid, ISendStatusPtr>
00065         linkedNotebookSendStatuses() const = 0;
00066
00067     [[nodiscard]] virtual StopSynchronizationError stopSynchronizationError()
00068         const = 0;
00069 };
00070
00071 } // namespace quentier::synchronization

```

## 6.60 ISyncState.h

```

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00014  *

```

```

00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/Linkage.h>
00022 #include <quentier/utility/Printable.h>
00023
00024 #include <qevercloud/types/TypeAliases.h>
00025
00026 #include <QHash>
00027 #include <QString>
00028
00029 namespace quentier::synchronization {
00030
00031     class QUENTIER_EXPORT ISyncState : public utility::Printable
00032     {
00033     public:
00034         [[nodiscard]] virtual qint32 userDataUpdateCount() const = 0;
00035
00036         [[nodiscard]] virtual qevercloud::Timestamp userDataLastSyncTime()
00037             const = 0;
00038
00039         [[nodiscard]] virtual QHash<qevercloud::Guid, qint32>
00040             linkedNotebookUpdateCounts() const = 0;
00041
00042         [[nodiscard]] virtual QHash<qevercloud::Guid, qevercloud::Timestamp>
00043             linkedNotebookLastSyncTimes() const = 0;
00044     };
00045
00046 } // namespace quentier::synchronization

```

## 6.61 ISyncStateBuilder.h

```

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00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/synchronization/types/Fwd.h>
00022 #include <quentier/utility/Linkage.h>
00023
00024 #include <qevercloud/types/TypeAliases.h>
00025
00026 #include <QHash>
00027
00028 namespace quentier::synchronization {
00029
00030     class QUENTIER_EXPORT ISyncStateBuilder
00031     {
00032     public:
00033         virtual ~ISyncStateBuilder() noexcept;
00034
00035         virtual ISyncStateBuilder & setUserDataUpdateCount(qint32 updateCount) = 0;
00036
00037         virtual ISyncStateBuilder & setUserDataLastSyncTime(
00038             qevercloud::Timestamp lastSyncTime) = 0;
00039
00040         virtual ISyncStateBuilder & setLinkedNotebookUpdateCounts(
00041             QHash<qevercloud::Guid, qint32> updateCounts) = 0;
00042
00043         virtual ISyncStateBuilder & setLinkedNotebookLastSyncTimes(
00044             QHash<qevercloud::Guid, qevercloud::Timestamp> lastSyncTimes) = 0;
00045
00046         [[nodiscard]] virtual ISyncStatePtr build() = 0;
00047     };
00048

```

```

00049 [[nodiscard]] QUINTIER_EXPORT ISyncStateBuilderPtr createSyncStateBuilder();
00050
00051 } // namespace quantier::synchronization

```

## 6.62 AuthenticationInfo.h

```

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00014  *
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00016  * along with libquantier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quantier/synchronization/types/Fwd.h>
00022 #include <quantier/utility/Linkage.h>
00023
00024 #include <QJsonObject>
00025
00026 namespace quantier::synchronization {
00027
00031 [[nodiscard]] QJsonObject QUINTIER_EXPORT
00032     serializeAuthenticationInfoToJson(const IAuthenticationInfo & info);
00033
00039 [[nodiscard]] IAuthenticationInfoPtr QUINTIER_EXPORT
00040     deserializeAuthenticationInfoFromJson(const QJsonObject & json);
00041
00042 } // namespace quantier::synchronization

```

## 6.63 DownloadNotesStatus.h

```

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00014  *
00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquantier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quantier/synchronization/types/Fwd.h>
00022 #include <quantier/utility/Linkage.h>
00023
00024 #include <QJsonObject>
00025
00026 namespace quantier::synchronization {
00027
00031 [[nodiscard]] QJsonObject QUINTIER_EXPORT
00032     serializeDownloadNotesStatusToJson(const IDownloadNotesStatus & status);
00033
00039 [[nodiscard]] IDownloadNotesStatusPtr QUINTIER_EXPORT
00040     deserializeDownloadNotesStatusFromJson(const QJsonObject & json);
00041
00042 } // namespace quantier::synchronization

```

## 6.64 DownloadResourcesStatus.h

```

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00014  *
00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/synchronization/types/Fwd.h>
00022 #include <quentier/utility/Linkage.h>
00023
00024 #include <QJsonObject>
00025
00026 namespace quentier::synchronization {
00027
00031 [[nodiscard]] QJsonObject QUENTIER_EXPORT
00032     serializeDownloadResourcesStatusToJson(
00033         const IDownloadResourcesStatus & status);
00034
00040 [[nodiscard]] IDownloadResourcesStatusPtr QUENTIER_EXPORT
00041     deserializeDownloadResourcesStatusFromJson(const QJsonObject & json);
00042
00043 } // namespace quentier::synchronization

```

## 6.65 SendStatus.h

```

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00014  *
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00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/synchronization/types/Fwd.h>
00022 #include <quentier/utility/Linkage.h>
00023
00024 #include <QJsonObject>
00025
00026 namespace quentier::synchronization {
00027
00031 [[nodiscard]] QJsonObject QUENTIER_EXPORT
00032     serializeSendStatusToJson(const ISendStatus & sendStatus);
00033
00039 [[nodiscard]] ISendStatusPtr QUENTIER_EXPORT
00040     deserializeSendStatusFromJson(const QJsonObject & json);
00041
00042 } // namespace quentier::synchronization

```

## 6.66 SyncChunksDataCounters.h

```

00001 /*

```

```

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00014  *
00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/synchronization/types/Fwd.h>
00022 #include <quentier/utility/Linkage.h>
00023
00024 #include <QJsonObject>
00025
00026 namespace quentier::synchronization {
00027
00031 [[nodiscard]] QJsonObject QUENTIER_EXPORT serializeSyncChunksDataCountersToJson(
00032     const ISyncChunksDataCounters & counters);
00033
00039 [[nodiscard]] ISyncChunksDataCountersPtr QUENTIER_EXPORT
00040     deserializeSyncChunksDataCountersFromJson(const QJsonObject & json);
00041
00042 } // namespace quentier::synchronization

```

## 6.67 SyncResult.h

```

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00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/synchronization/types/Fwd.h>
00022 #include <quentier/utility/Linkage.h>
00023
00024 #include <QJsonObject>
00025
00026 namespace quentier::synchronization {
00027
00031 [[nodiscard]] QJsonObject QUENTIER_EXPORT
00032     serializeSyncResultToJson(const ISyncResult & syncResult);
00033
00039 [[nodiscard]] ISyncResultPtr QUENTIER_EXPORT
00040     deserializeSyncResultFromJson(const QJsonObject & json);
00041
00042 } // namespace quentier::synchronization

```

## 6.68 SyncState.h

```

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00005  *

```

```

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00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/synchronization/types/Fwd.h>
00022 #include <quentier/utility/Linkage.h>
00023
00024 #include <QJsonObject>
00025
00026 namespace quentier::synchronization {
00027
00031 [[nodiscard]] QJsonObject QUENTIER_EXPORT
00032     serializeSyncStateToJson(const ISyncState & syncState);
00033
00039 [[nodiscard]] ISyncStatePtr QUENTIER_EXPORT
00040     deserializeSyncStateFromJson(const QJsonObject & json);
00041
00042 } // namespace quentier::synchronization

```

## 6.69 Future.h

```

00001 /*
00002  * Copyright 2021-2022 Dmitry Ivanov
00003  *
00004  * This file is part of libquentier
00005  *
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00009  *
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00013  * GNU Lesser General Public License for more details.
00014  *
00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/Linkage.h>
00022
00023 #include <QAbstractEventDispatcher>
00024 #include <QFuture>
00025 #include <QFutureWatcher>
00026 #include <QMutex>
00027 #include <QMutexLocker>
00028 #include <QObject>
00029 #include <QPointer>
00030
00031 #include <quentier/threading/QtFutureContinuations.h>
00032
00033 #if QT_VERSION >= QT_VERSION_CHECK(6, 0, 0)
00034 #include <QPromise>
00035 #include <exception>
00036 #else
00037 #include <quentier/threading/Qt5Promise.h>
00038 #endif
00039
00040 #include <algorithm>
00041 #include <cmath>
00042 #include <memory>
00043 #include <type_traits>
00044 #include <utility>
00045
00046 namespace quentier::threading {
00047
00051 template <class T>
00052 [[nodiscard]] std::enable_if_t<
00053     std::negation_v<std::is_same<std::decay_t<T>, void>>,
00054     QFuture<std::decay_t<T>>>

```

```

00055     makeReadyFuture(T t)
00056 {
00057     QPromise<std::decay_t<T>> promise;
00058     QFuture<std::decay_t<T>> future = promise.future();
00059
00060     promise.start();
00061     promise.addResult(std::move(t));
00062     promise.finish();
00063
00064     return future;
00065 }
00066
00067 [[nodiscard]] QFuture<void> QUINTIER_EXPORT makeReadyFuture();
00068
00073 template <class T, class E>
00074 [[nodiscard]] std::enable_if_t<std::is_base_of_v<QException, E>, QFuture<T>>
00075     makeExceptionalFuture(const E & e)
00076 {
00077     QPromise<std::decay_t<T>> promise;
00078     QFuture<std::decay_t<T>> future = promise.future();
00079
00080     promise.start();
00081     promise.setException(e);
00082     promise.finish();
00083
00084     return future;
00085 }
00086
00087 #if QT_VERSION >= QT_VERSION_CHECK(6, 0, 0)
00092 template <class T>
00093 [[nodiscard]] QFuture<T> makeExceptionalFuture(std::exception_ptr e)
00094 {
00095     QPromise<std::decay_t<T>> promise;
00096     QFuture<std::decay_t<T>> future = promise.future();
00097
00098     promise.start();
00099     promise.setException(std::move(e));
00100     promise.finish();
00101
00102     return future;
00103 }
00104 #endif // QT_VERSION
00105
00110 template <class T, class U>
00111 void bindCancellation(const QFuture<T> & from, QFuture<U> to)
00112 {
00113     auto watcher = std::make_unique<QFutureWatcher<T>>();
00114     auto * rawWatcher = watcher.get();
00115
00116     QObject::connect(
00117         rawWatcher, &QFutureWatcher<T>::canceled, rawWatcher,
00118         [rawWatcher, to]() mutable {
00119             to.cancel();
00120             rawWatcher->deleteLater();
00121         });
00122
00123     QObject::connect(
00124         rawWatcher, &QFutureWatcher<T>::finished, rawWatcher,
00125         [rawWatcher] { rawWatcher->deleteLater(); });
00126
00127     watcher->setFuture(from);
00128     Q_UNUSED(watcher.release());
00129 }
00130
00138 [[nodiscard]] QFuture<void> QUINTIER_EXPORT
00139     whenAll(QList<QFuture<void>> futures);
00140
00150 template <class T>
00151 [[nodiscard]] std::enable_if_t<
00152     !std::is_void_v<std::decay_t<T>>, QFuture<QList<std::decay_t<T>>>>
00153     whenAll(QList<QFuture<std::decay_t<T>>> futures)
00154 {
00155     if (Q_UNLIKELY(futures.isEmpty())) {
00156         return makeReadyFuture<QList<std::decay_t<T>>>({});
00157     }
00158
00159     auto promise = std::make_shared<QPromise<QList<std::decay_t<T>>>>();
00160     auto future = promise->future();
00161
00162     for (auto & f: futures) {
00163         threading::bindCancellation(future, f);
00164     }
00165
00166     const auto totalItemCount = futures.size();
00167     promise->setProgressRange(0, static_cast<int>(totalItemCount));
00168     promise->setProgressValue(0);
00169

```



```

00170     promise->start();
00171
00172     auto resultIndexedList =
00173         std::make_shared<QList<std::pair<int, std::decay_t<T>»>>();
00174
00175     auto processedItemsCount = std::make_shared<int>(0);
00176     auto exceptionFlag = std::make_shared<bool>(false);
00177     auto mutex = std::make_shared<QMutex>();
00178
00179     for (int i = 0; i < futures.size(); ++i) {
00180         auto & f = futures[i];
00181         auto thenFuture = then(
00182             std::move(f),
00183             [promise, processedItemsCount, totalItemCount, exceptionFlag, mutex,
00184              resultIndexedList, i](std::decay_t<T> result) {
00185                 if (promise->isCanceled()) {
00186                     return;
00187                 }
00188
00189                 int count = 0;
00190                 {
00191                     const QMutexLocker locker(mutex.get());
00192
00193                     if (*exceptionFlag) {
00194                         return;
00195                     }
00196
00197                     ++(*processedItemsCount);
00198                     count = *processedItemsCount;
00199                     promise->setProgressValue(count);
00200
00201                     resultIndexedList->append(
00202                         std::make_pair(i, std::move(result)));
00203                 }
00204
00205                 if (count == totalItemCount) {
00206                     std::sort(
00207                         resultIndexedList->begin(), resultIndexedList->end(),
00208                         [](const auto & lhs, const auto & rhs) {
00209                             return lhs.first < rhs.first;
00210                         });
00211
00212                     auto resultList =
00213                         std::make_shared<QList<std::decay_t<T>»>();
00214                     resultList->reserve(resultIndexedList->size());
00215                     for (auto & [i, v]: *resultIndexedList) {
00216                         resultList->append(std::move(v));
00217                     }
00218
00219                     promise->addResult(*resultList);
00220                     promise->finish();
00221                 }
00222             });
00223
00224     onFailed(
00225         std::move(thenFuture),
00226         [promise, mutex, exceptionFlag](const QException & e) {
00227             if (promise->isCanceled()) {
00228                 return;
00229             }
00230
00231             {
00232                 const QMutexLocker locker(mutex.get());
00233
00234                 if (*exceptionFlag) {
00235                     return;
00236                 }
00237
00238                 *exceptionFlag = true;
00239             }
00240
00241             promise->setException(e);
00242             promise->finish();
00243         });
00244 }
00245
00246 return future;
00247 }
00248
00254 template <class T, class U>
00255 void mapFutureProgress(
00256     const QFuture<T> & future, const std::shared_ptr<QPromise<U> & promise)
00257 {
00258     const auto futureProgressMinimum = future.progressMinimum();
00259     const auto futureProgressRange =
00260         future.progressMaximum() - futureProgressMinimum;
00261

```

```

00262     Q_ASSERT(futureProgressRange >= 0);
00263
00264     const auto promiseFuture = promise->future();
00265     const auto promiseProgressMinimum = promiseFuture.progressMinimum();
00266     const auto promiseProgressMaximum = promiseFuture.progressMaximum();
00267
00268     const auto promiseProgressRange =
00269         promiseProgressMaximum - promiseProgressMinimum;
00270
00271     Q_ASSERT(promiseProgressRange >= 0);
00272
00273     auto futureWatcher = std::make_unique<QFutureWatcher<T>>();
00274
00275     QObject::connect(
00276         futureWatcher.get(), &QFutureWatcher<T>::progressValueChanged,
00277         futureWatcher.get(),
00278         [promise, futureProgressMinimum, futureProgressRange,
00279          promiseProgressRange, promiseProgressMinimum,
00280          promiseProgressMaximum](int progressValue) {
00281             if (Q_UNLIKELY(futureProgressRange == 0)) {
00282                 promise->setProgressValue(0);
00283                 return;
00284             }
00285
00286             const auto progressPart =
00287                 static_cast<double>(progressValue - futureProgressMinimum) /
00288                 static_cast<double>(futureProgressRange);
00289
00290             const auto mappedProgressValue = static_cast<int>(
00291                 std::round(progressPart * promiseProgressRange));
00292
00293             promise->setProgressValue(std::clamp(
00294                 promiseProgressMinimum + mappedProgressValue,
00295                 promiseProgressMinimum, promiseProgressMaximum));
00296         });
00297
00298     QObject::connect(
00299         futureWatcher.get(), &QFutureWatcher<T>::finished, futureWatcher.get(),
00300         [futureWatcherWeak = QPointer<QFutureWatcher<T>>(futureWatcher.get())] {
00301             if (!futureWatcherWeak.isNull()) {
00302                 futureWatcherWeak->deleteLater();
00303             }
00304         });
00305
00306     QObject::connect(
00307         futureWatcher.get(), &QFutureWatcher<T>::canceled, futureWatcher.get(),
00308         [futureWatcherWeak = QPointer<QFutureWatcher<T>>(futureWatcher.get())] {
00309             if (!futureWatcherWeak.isNull()) {
00310                 futureWatcherWeak->deleteLater();
00311             }
00312         });
00313
00314     futureWatcher->setFuture(future);
00315     Q_UNUSED(futureWatcher.release());
00316 }
00317
00318 } // namespace quantier::threading

```

## 6.70 Post.h

```

00001 /*
00002  * Copyright 2021-2024 Dmitry Ivanov
00003  *
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00009  *
00010  * libquantier is distributed in the hope that it will be useful,
00011  * but WITHOUT ANY WARRANTY; without even the implied warranty of
00012  * MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
00013  * GNU Lesser General Public License for more details.
00014  *
00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquantier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <QAbstractEventDispatcher>
00022 #include <QMetaObject>
00023 #include <QObject>

```

```

00024
00025 #include <QThread>
00026
00027 #include <memory>
00028 #include <utility>
00029
00030 namespace quantier::threading {
00031
00032 template <typename Function>
00033 void postToObject(QObject * object, Function && function)
00034 {
00035     Q_ASSERT(object);
00036
00037     QMetaObject::invokeMethod(
00038         object, std::forward<Function>(function), Qt::QueuedConnection);
00039 }
00040
00041 template <typename Function>
00042 void postToThread(QThread * pThread, Function && function)
00043 {
00044     Q_ASSERT(pThread);
00045     Q_ASSERT(!pThread->isFinished());
00046
00047     QObject * pObject = QAbstractEventDispatcher::instance(pThread);
00048     if (!pObject) {
00049         // Thread's event loop has not been started yet. Create a dummy QObject,
00050         // move it to the target thread, set things up so that it would be
00051         // destroyed after the job is done and use postToObject.
00052         auto pDummyObj = std::make_unique<QObject>();
00053         pDummyObj->moveToThread(pThread);
00054         postToObject(
00055             pDummyObj.get(),
00056             [pObj = pDummyObj.get(),
00057              function = std::forward<Function>(function)]() mutable {
00058                 pObj->deleteLater();
00059                 function();
00060             });
00061         Q_UNUSED(pDummyObj.release()) // NOLINT
00062         return;
00063     }
00064
00065     if (pThread == QThread::currentThread()) {
00066         // Already on the target thread, executing the function right away
00067         function();
00068         return;
00069     }
00070
00071     QMetaObject::invokeMethod(pObject, std::forward<Function>(function));
00072 }
00073
00074 } // namespace quantier::threading

```

## 6.71 Qt5Promise.h

```

00001 /*
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00003  *
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00009  *
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00011  * but WITHOUT ANY WARRANTY; without even the implied warranty of
00012  * MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
00013  * GNU Lesser General Public License for more details.
00014  *
00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquantier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <QFutureInterface>
00022
00023 #include <type_traits>
00024
00025 // Partial backport of QPromise from Qt6 to Qt5
00026 template <typename T>
00027 class QPromise
00028 {
00029     static_assert(

```

```

00030         std::is_copy_constructible_v<T> || std::is_move_constructible_v<T> ||
00031         std::is_same_v<T, void>,
00032         "Type with copy or move constructors or type void is required");
00033
00034 public:
00035     QPromise() = default;
00036
00037     Q_DISABLE_COPY(QPromise)
00038
00039     QPromise(QPromise<T> && other) noexcept : d(other.d)
00040     {
00041         other.d = QFutureInterface<T>();
00042     }
00043
00044     QPromise(QFutureInterface<T> & other) : d(other) {}
00045
00046     QPromise & operator=(QPromise<T> && other) noexcept
00047     {
00048         QPromise<T> tmp(std::move(other));
00049         tmp.swap(*this);
00050         return *this;
00051     }
00052
00053     ~QPromise()
00054     {
00055         // If QFutureInterface has no state, there is nothing to be done
00056         if (d.queryState(QFutureInterfaceBase::State::NoState)) {
00057             return;
00058         }
00059
00060         // Otherwise, if computation is not finished at this point, cancel
00061         // potential waits
00062         if (!d.queryState(QFutureInterfaceBase::State::Finished)) {
00063             d.cancel();
00064             finish(); // required to finalize the state
00065         }
00066     }
00067
00068     // Core QPromise APIs
00069     QFuture<T> future() const
00070     {
00071         return d.future();
00072     }
00073
00074     template <
00075         typename U,
00076         typename = std::enable_if_t<
00077             std::is_same_v<U, T> || std::is_convertible_v<U, T>>
00078     > void addResult(U && result, int index = -1)
00079     {
00080         d.reportResult(std::forward<U>(result), index);
00081     }
00082
00083     void setException(const QException & e)
00084     {
00085         d.reportException(e);
00086     }
00087
00088     void start()
00089     {
00090         d.reportStarted();
00091     }
00092
00093     void finish()
00094     {
00095         d.reportFinished();
00096     }
00097
00098     void suspendIfRequested()
00099     {
00100         d.suspendIfRequested();
00101     }
00102
00103     bool isCanceled() const
00104     {
00105         return d.isCanceled();
00106     }
00107
00108     // Progress methods
00109     void setProgressRange(int minimum, int maximum)
00110     {
00111         d.setProgressRange(minimum, maximum);
00112     }
00113
00114     void setProgressValue(int progressValue)
00115     {
00116         d.setProgressValue(progressValue);
00117     }
00118
00119     void setProgressValueAndText(
00120         int progressValue, const QString & progressText)

```

```

00117     {
00118         d.setProgressValueAndText(progressValue, progressText);
00119     }
00120
00121     void swap(QPromise<T> & other) noexcept
00122     {
00123         qSwap(this->d, other.d);
00124     }
00125
00126 private:
00127     mutable QFutureInterface<T> d = QFutureInterface<T>();
00128 };
00129
00130 template <typename T>
00131 inline void swap(QPromise<T> & a, QPromise<T> & b) noexcept
00132 {
00133     a.swap(b);
00134 }

```

## 6.72 QtFutureContinuations.h

```

00001 /*
00002  * Copyright 2021-2024 Dmitry Ivanov
00003  *
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00012  * MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
00013  * GNU Lesser General Public License for more details.
00014  *
00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <QtGlobal>
00022
00023 #include <QFutureWatcher>
00024 #include <QRunnable>
00025 #include <QThreadPool>
00026 #include <quentier/exception/RuntimeException.h>
00027 #include <quentier/threading/Post.h>
00028 #include <quentier/threading/QtFutureHelpers.h>
00029
00030 #if QT_VERSION < QT_VERSION_CHECK(6, 0, 0)
00031 #include <quentier/threading/Qt5Promise.h>
00032 #endif // QT_VERSION
00033
00034 #include <quentier/threading/Runnable.h>
00035
00036 #include <boost/core/demangle.hpp>
00037
00038 #include <memory>
00039 #include <type_traits>
00040 #include <typeinfo>
00041
00042 namespace quentier::threading {
00043
00044 // NOTE: "native" implementation of continuations for Qt6 is currently disabled
00045 // due to bugs in their implementation, in particular (but not limited to)
00046 // https://bugreports.qt.io/browse/QTBUG-119579 and
00047 // https://bugreports.qt.io/browse/QTBUG-117918. It's a shame but it is what it
00048 // is.
00049 /*
00050 #if QT_VERSION >= QT_VERSION_CHECK(6, 0, 0)
00051
00052 template <class T, class Function>
00053 QFuture<typename QtPrivate::ResultTypeHelper<Function, T::ResultType>> then(
00054     QFuture<T> && future, Function && function)
00055 {
00056     return future.then(std::forward<decltype(function)>(function));
00057 }
00058
00059 template <class T, class Function>
00060 QFuture<typename QtPrivate::ResultTypeHelper<Function, T::ResultType>> then(
00061     QFuture<T> && future, QtFuture::Launch policy, Function && function)
00062 {

```

```

00063     return future.then(policy, std::forward<decltype(function)>(function));
00064 }
00065
00066 template <class T, class Function>
00067 QFuture<typename QtPrivate::ResultTypeHelper<Function, T>::ResultType> then(
00068     QFuture<T> && future, QThreadPool * pool, Function && function)
00069 {
00070     return future.then(pool, std::forward<decltype(function)>(function));
00071 }
00072
00073 template <class T, class Function>
00074 QFuture<typename QtPrivate::ResultTypeHelper<Function, T>::ResultType> then(
00075     QFuture<T> && future, QObject * context, Function && function)
00076 {
00077     return future.then(context, std::forward<decltype(function)>(function));
00078 }
00079
00080 template <class T, class Function>
00081 std::enable_if_t<!QtPrivate::ArgResolver<Function>::HasExtraArgs, QFuture<T>
00082     onFailed(QFuture<T> && future, Function && handler)
00083 {
00084     return future.onFailed(std::forward<decltype(handler)>(handler));
00085 }
00086
00087 template <class T, class Function>
00088 std::enable_if_t<!QtPrivate::ArgResolver<Function>::HasExtraArgs, QFuture<T>
00089     onFailed(QFuture<T> && future, QObject * context, Function && handler)
00090 {
00091     return future.onFailed(context, std::forward<decltype(handler)>(handler));
00092 }
00093
00094 #else // QT_VERSION
00095
00096 // implementation for Qt5
00097 */
00098
00099 namespace detail {
00100
00101 template <class T, class Function>
00102 void processParentFuture(
00103     std::shared_ptr<
00104         QPromise<typename ResultTypeHelper<Function, T>::ResultType>
00105         promise,
00106         QFuture<T> && future, Function && function)
00107 {
00108     Q_ASSERT(promise);
00109
00110     using ResultType = typename ResultTypeHelper<Function, T>::ResultType;
00111
00112     promise->start();
00113
00114     // If future contains exception, just forward it to the promise and
00115     // don't call the function at all
00116     try {
00117         future.waitForFinished();
00118     }
00119     catch (const QException & e) {
00120         promise->setException(e);
00121         promise->finish();
00122         return;
00123     }
00124     // NOTE: there cannot be other exception types in this context in Qt5
00125     // because exception store can only contain QExceptions
00126
00127     // Try to run the handler, in case of success forward the result to promise
00128     // (unless it is void), catch possible exceptions and if caught put them
00129     // to the promise
00130     try {
00131         if constexpr (std::is_void_v<ResultType>) {
00132             if constexpr (std::is_void_v<T>) {
00133                 function();
00134             }
00135             else {
00136                 if (future.resultCount() == 0) {
00137                     promise->setException(RuntimeError{ErrorString{
00138                         QString::fromUtf8(
00139                             "Invalid future continuation: detected future "
00140                             "without result for type %1")
00141                         .arg(QString::fromStdString(std::string{
00142                             boost::core::demangle(typeid(T).name())})});
00143                     promise->finish();
00144                     return;
00145                 }
00146             }
00147             function(future.result());
00148         }
00149     }

```

```

00150         else {
00151             if constexpr (std::is_void_v<T>) {
00152                 promise->addResult(function());
00153             }
00154             else {
00155                 promise->addResult(function(future.result()));
00156             }
00157         }
00158     }
00159     catch (const QException & e) {
00160         promise->setException(e);
00161     }
00162     catch (const std::exception & e) {
00163         ErrorString error{QT_TRANSLATE_NOOP(
00164             "utility", "Unknown std::exception in then future handler")};
00165         error.details() = QString::fromStdString(std::string{e.what()});
00166         promise->setException(RuntimeError{std::move(error)});
00167     }
00168     catch (...) {
00169         ErrorString error{QT_TRANSLATE_NOOP(
00170             "utility", "Unknown exception in then future handler")};
00171         promise->setException(RuntimeError{std::move(error)});
00172     }
00173 }
00174 promise->finish();
00175 }
00176
00177 } // namespace detail
00178
00179 template <class T, class Function>
00180 QFuture<typename detail::ResultTypeHelper<Function, T>::ResultType> then(
00181     QFuture<T> && future, Function && function)
00182 {
00183     using ResultType =
00184         typename detail::ResultTypeHelper<Function, T>::ResultType;
00185
00186     auto promise = std::make_shared<QPromise<ResultType>>();
00187     auto result = promise->future();
00188
00189     if (future.isFinished()) {
00190         detail::processParentFuture(
00191             std::move(promise), std::move(future),
00192             std::forward<decltype(function)>(function));
00193         return result;
00194     }
00195
00196     auto watcher = std::make_unique<QFutureWatcher<T>>();
00197     auto * rawWatcher = watcher.get();
00198     QObject::connect(
00199         rawWatcher, &QFutureWatcher<T>::finished, rawWatcher,
00200         [rawWatcher, function = std::forward<decltype(function)>(function),
00201             promise = std::move(promise)]() mutable {
00202             detail::processParentFuture(
00203                 std::move(promise), rawWatcher->future(),
00204                 std::forward<decltype(function)>(function));
00205             rawWatcher->deleteLater();
00206         });
00207
00208     QObject::connect(
00209         rawWatcher, &QFutureWatcher<T>::canceled, rawWatcher,
00210         [rawWatcher] { rawWatcher->deleteLater(); });
00211
00212     watcher->setFuture(std::move(future));
00213     Q_UNUSED(watcher.release());
00214
00215     return result;
00216 }
00217
00218 template <class T, class Function>
00219 QFuture<typename detail::ResultTypeHelper<Function, T>::ResultType> then(
00220     QFuture<T> && future, QtFuture::Launch policy, Function && function)
00221 {
00222     if (policy == QtFuture::Launch::Sync) {
00223         return then(
00224             std::move(future), std::forward<decltype(function)>(function));
00225     }
00226
00227     return then(
00228         std::move(future), QThreadPool::globalInstance(),
00229         std::forward<decltype(function)>(function));
00230 }
00231
00232 template <class T, class Function>
00233 QFuture<typename detail::ResultTypeHelper<Function, T>::ResultType> then(
00234     QFuture<T> && future, QThreadPool * pool, Function && function)
00235 {
00236     using ResultType =

```

```

00237         typename detail::ResultTypeHelper<Function, T>::ResultType;
00238
00239     auto promise = std::make_shared<QPromise<ResultType>>();
00240     auto result = promise->future();
00241
00242     if (future.isFinished()) {
00243         auto * runnable = createFunctionRunnable(
00244             [future = std::move(future), promise = std::move(promise),
00245              function = std::forward<decltype(function)>(function)]() mutable {
00246                 detail::processParentFuture(
00247                     std::move(promise), std::move(future),
00248                     std::forward<decltype(function)>(function));
00249             });
00250         runnable->setAutoDelete(true);
00251         pool->start(runnable);
00252         return result;
00253     }
00254
00255     auto watcher = std::make_unique<QFutureWatcher<T>>();
00256     auto * rawWatcher = watcher.get();
00257     QObject::connect(
00258         rawWatcher, &QFutureWatcher<T>::finished, rawWatcher,
00259         [rawWatcher, function = std::forward<decltype(function)>(function),
00260          promise = std::move(promise), pool]() mutable {
00261             auto * runnable = createFunctionRunnable(
00262                 [function = std::forward<decltype(function)>(function),
00263                  promise = std::move(promise),
00264                  future = rawWatcher->future()]() mutable {
00265                     detail::processParentFuture(
00266                         std::move(promise), std::move(future),
00267                         std::forward<decltype(function)>(function));
00268                 });
00269             runnable->setAutoDelete(true);
00270             pool->start(runnable);
00271             rawWatcher->deleteLater();
00272         });
00273
00274     QObject::connect(
00275         rawWatcher, &QFutureWatcher<T>::canceled, rawWatcher,
00276         [rawWatcher] { rawWatcher->deleteLater(); });
00277
00278     watcher->setFuture(std::move(future));
00279     Q_UNUSED(watcher.release());
00280
00281     return result;
00282 }
00283
00284 template <class T, class Function>
00285 QFuture<typename detail::ResultTypeHelper<Function, T>::ResultType> then(
00286     QFuture<T> && future, QObject * context, Function && function)
00287 {
00288     using ResultType =
00289         typename detail::ResultTypeHelper<Function, T>::ResultType;
00290
00291     auto promise = std::make_shared<QPromise<ResultType>>();
00292     auto result = promise->future();
00293
00294     if (future.isFinished()) {
00295         postToObject(
00296             context,
00297             [future = std::move(future), promise = std::move(promise),
00298              function = std::forward<decltype(function)>(function)]() mutable {
00299                 detail::processParentFuture(
00300                     std::move(promise), std::move(future),
00301                     std::forward<decltype(function)>(function));
00302             });
00303         return result;
00304     }
00305
00306     auto watcher = std::make_unique<QFutureWatcher<T>>();
00307     auto * rawWatcher = watcher.get();
00308
00309     QObject::connect(
00310         rawWatcher, &QFutureWatcher<T>::finished, context,
00311         [context, rawWatcher,
00312          function = std::forward<decltype(function)>(function),
00313          promise = std::move(promise)]() mutable {
00314             postToObject(
00315                 context,
00316                 [function = std::forward<decltype(function)>(function),
00317                  promise = std::move(promise),
00318                  future = rawWatcher->future()]() mutable {
00319                     detail::processParentFuture(
00320                         std::move(promise), std::move(future),
00321                         std::forward<decltype(function)>(function));
00322                 });
00323             rawWatcher->deleteLater();

```



```

00324     });
00325
00326     QObject::connect(
00327         rawWatcher, &QFutureWatcher<T>::canceled, rawWatcher,
00328         [rawWatcher] { rawWatcher->deleteLater(); });
00329
00330     watcher->setFuture(std::move(future));
00331     Q_UNUSED(watcher.release())
00332
00333     return result;
00334 }
00335
00336 namespace detail {
00337
00338     template <class T, class Function>
00339     std::enable_if_t<!QtPrivate::ArgResolver<Function>::HasExtraArgs, void>
00340     processPossibleFutureException(
00341         std::shared_ptr<QPromise<T>> promise, QFuture<T> && future,
00342         Function && handler)
00343     {
00344         Q_ASSERT(promise);
00345
00346         using ArgType = typename QtPrivate::ArgResolver<Function>::First;
00347         using ResultType =
00348             typename ResultTypeHelper<Function, std::decay_t<ArgType>>::ResultType;
00349         static_assert(std::is_convertible_v<ResultType, T>);
00350
00351         promise->start();
00352
00353         try {
00354             try {
00355                 future.waitForFinished();
00356             }
00357             catch (const ArgType & e) {
00358                 try {
00359                     if constexpr (std::is_void_v<ResultType>) {
00360                         handler(e);
00361                     }
00362                     else {
00363                         promise->addResult(handler(e));
00364                     }
00365                 }
00366                 catch (const QException & e) {
00367                     promise->setException(e);
00368                 }
00369                 catch (const std::exception & e) {
00370                     ErrorString error{QT_TRANSLATE_NOOP(
00371                         "utility",
00372                         "Unknown std::exception in onFailed future handler")};
00373                     error.details() = QString::fromStdString(std::string{e.what()});
00374                     promise->setException(RuntimeError{std::move(error)});
00375                 }
00376                 catch (...) {
00377                     ErrorString error{QT_TRANSLATE_NOOP(
00378                         "utility", "Unknown exception in onFailed future handler")};
00379                     promise->setException(RuntimeError{std::move(error)});
00380                 }
00381             }
00382         }
00383         // Exception doesn't match with handler's argument type, propagate
00384         // the exception to be handled later.
00385         catch (const QException & e) {
00386             promise->setException(e);
00387         }
00388         catch (const std::exception & e) {
00389             ErrorString error{QT_TRANSLATE_NOOP(
00390                 "utility",
00391                 "Unknown std::exception which did not match with onFailed "
00392                 "future handler")};
00393             error.details() = QString::fromStdString(std::string{e.what()});
00394             promise->setException(RuntimeError{std::move(error)});
00395         }
00396         catch (...) {
00397             ErrorString error{QT_TRANSLATE_NOOP(
00398                 "utility",
00399                 "Unknown which did not match with onFailed "
00400                 "future handler")};
00401             promise->setException(RuntimeError{std::move(error)});
00402         }
00403
00404         promise->finish();
00405     }
00406
00407 } // namespace detail
00408
00409 // WARNING! "Chaining" of onFailed calls would only work properly with Qt5 if
00410 // all involved exceptions subclass QException. It is due to the way exception

```

```

00411 // storage is implemented in Qt5. In Qt6 is was made to store std::exception_ptr
00412 // so there's no requirement to use QExceptions in Qt6.
00413
00414 template <class T, class Function>
00415 std::enable_if_t<!QtPrivate::ArgResolver<Function>::HasExtraArgs, QFuture<T>
00416     onFailed(QFuture<T> && future, Function && handler)
00417 {
00418     auto promise = std::make_shared<QPromise<T>>();
00419     auto result = promise->future();
00420
00421     if (future.isFinished()) {
00422         detail::processPossibleFutureException(
00423             std::move(promise), std::move(future),
00424             std::forward<decltype(handler)>(handler));
00425         return result;
00426     }
00427
00428     auto watcher = std::make_unique<QFutureWatcher<T>>();
00429     auto * rawWatcher = watcher.get();
00430     QObject::connect(
00431         rawWatcher, &QFutureWatcher<T>::finished, rawWatcher,
00432         [rawWatcher, promise = std::move(promise),
00433          handler = std::forward<decltype(handler)>(handler)]() mutable {
00434             auto future = rawWatcher->future();
00435             rawWatcher->deleteLater();
00436             detail::processPossibleFutureException(
00437                 std::move(promise), std::move(future),
00438                 std::forward<decltype(handler)>(handler));
00439         });
00440
00441     QObject::connect(
00442         rawWatcher, &QFutureWatcher<T>::canceled, rawWatcher,
00443         [rawWatcher] { rawWatcher->deleteLater(); });
00444
00445     watcher->setFuture(std::move(future));
00446     Q_UNUSED(watcher.release())
00447
00448     return result;
00449 }
00450
00451 template <class T, class Function>
00452 std::enable_if_t<!QtPrivate::ArgResolver<Function>::HasExtraArgs, QFuture<T>
00453     onFailed(QFuture<T> && future, QObject * context, Function && handler)
00454 {
00455     auto promise = std::make_shared<QPromise<T>>();
00456     auto result = promise->future();
00457
00458     if (future.isFinished()) {
00459         postToObject(
00460             context,
00461             [promise = std::move(promise), future = std::move(future),
00462              handler = std::forward<decltype(handler)>(handler)]() mutable {
00463                 detail::processPossibleFutureException(
00464                     std::move(promise), std::move(future),
00465                     std::forward<decltype(handler)>(handler));
00466             });
00467         return result;
00468     }
00469
00470     auto watcher = std::make_unique<QFutureWatcher<T>>();
00471     auto * rawWatcher = watcher.get();
00472     QObject::connect(
00473         rawWatcher, &QFutureWatcher<T>::finished, context,
00474         [context, rawWatcher, promise = std::move(promise),
00475          handler = std::forward<decltype(handler)>(handler)]() mutable {
00476             postToObject(
00477                 context,
00478                 [promise = std::move(promise), future = rawWatcher->future(),
00479                  handler = std::forward<decltype(handler)>(handler)]() mutable {
00480                     detail::processPossibleFutureException(
00481                         std::move(promise), std::move(future),
00482                         std::forward<decltype(handler)>(handler));
00483                 });
00484             rawWatcher->deleteLater();
00485         });
00486
00487     QObject::connect(
00488         rawWatcher, &QFutureWatcher<T>::canceled, rawWatcher,
00489         [rawWatcher] { rawWatcher->deleteLater(); });
00490
00491     watcher->setFuture(std::move(future));
00492     Q_UNUSED(watcher.release())
00493
00494     return result;
00495 }
00496
00497 // #endif // QT_VERSION

```

```

00498
00499 // Convenience functions for both Qt versions
00500
00501 template <class T, class U, class Function>
00502 void thenOrFailed(
00503     QFuture<T> && future, std::shared_ptr<QPromise<U> promise,
00504     Function && function)
00505 {
00506     auto thenFuture =
00507         then(std::move(future), std::forward<decltype(function)>(function));
00508
00509     onFailed(std::move(thenFuture), [promise](const QException & e) {
00510         promise->setException(e);
00511         promise->finish();
00512     });
00513 }
00514
00515 template <class T, class U, class Function>
00516 void thenOrFailed(
00517     QFuture<T> && future, QThread * thread,
00518     std::shared_ptr<QPromise<U> promise, Function && function)
00519 {
00520     auto thenFuture =
00521         then(std::move(future), thread, std::forward<Function>(function));
00522
00523     onFailed(std::move(thenFuture), thread, [promise](const QException & e) {
00524         promise->setException(e);
00525         promise->finish();
00526     });
00527 }
00528
00529 template <class T, class U>
00530 void thenOrFailed(QFuture<T> && future, std::shared_ptr<QPromise<U> promise)
00531 {
00532     thenOrFailed(std::move(future), promise, [promise] { promise->finish(); });
00533 }
00534
00535 template <class T, class U>
00536 void thenOrFailed(
00537     QFuture<T> && future, QThread * thread,
00538     std::shared_ptr<QPromise<U> promise)
00539 {
00540     thenOrFailed(
00541         std::move(future), thread, promise, [promise] { promise->finish(); });
00542 }
00543
00544 } // namespace quantier::threading

```

## 6.73 QtFutureHelpers.h

```

00001 /*
00002  * Copyright 2021-2024 Dmitry Ivanov
00003  *
00004  * This file is part of libquantier
00005  *
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00007  * it under the terms of the GNU Lesser General Public License as published by
00008  * the Free Software Foundation, version 3 of the License.
00009  *
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00011  * but WITHOUT ANY WARRANTY; without even the implied warranty of
00012  * MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
00013  * GNU Lesser General Public License for more details.
00014  *
00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquantier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <QFuture>
00022
00023 #if QT_VERSION < QT_VERSION_CHECK(6, 0, 0)
00024 #include "Qt5Promise.h"
00025 #endif
00026
00027 #include <type_traits>
00028
00029 #if QT_VERSION < QT_VERSION_CHECK(6, 0, 0)
00030 // Backports of some helpers for QFuture continuations from Qt6 to Qt5
00031 namespace QtFuture {
00032
00033 // Inherit option from Qt6 is not supported in Qt5

```

```

00034 enum class Launch
00035 {
00036     Sync,
00037     Async,
00038 };
00039
00040 } // namespace QtFuture
00041
00042 namespace QtPrivate {
00043     template <typename...>
00044     struct ArgsType;
00045
00046     template <typename Arg, typename... Args>
00047     struct ArgsType<Arg, Args...>
00048     {
00049         using First = Arg;
00050         using PromiseType = void;
00051         using IsPromise = std::false_type;
00052         static const bool HasExtraArgs = (sizeof...(Args) > 0);
00053
00054         template <class Class, class Callable>
00055         static const bool CanInvokeWithArgs =
00056             std::is_invocable_v<Callable, Class, Arg, Args...>;
00057     };
00058
00059     template <typename Arg, typename... Args>
00060     struct ArgsType<QPromise<Arg> &, Args...>
00061     {
00062         using First = QPromise<Arg> &;
00063         using PromiseType = Arg;
00064         using IsPromise = std::true_type;
00065         static const bool HasExtraArgs = (sizeof...(Args) > 0);
00066
00067         template <class Class, class Callable>
00068         static const bool CanInvokeWithArgs =
00069             std::is_invocable_v<Callable, Class, QPromise<Arg> &, Args...>;
00070     };
00071
00072     template <>
00073     struct ArgsType<>
00074     {
00075         using First = void;
00076         using PromiseType = void;
00077         using IsPromise = std::false_type;
00078         static const bool HasExtraArgs = false;
00079         using AllArgs = void;
00080
00081         template <class Class, class Callable>
00082         static const bool CanInvokeWithArgs = std::is_invocable_v<Callable, Class>;
00083     };
00084
00085     template <typename F>
00086     struct ArgResolver : ArgResolver<decltype(&std::decay_t<F>::operator()))>
00087     {};
00088
00089     template <typename F>
00090     struct ArgResolver<std::reference_wrapper<F> :
00091         ArgResolver<decltype(&std::decay_t<F>::operator()))>
00092     {};
00093
00094     template <typename R, typename... Args>
00095     struct ArgResolver<R(Args...)> : public ArgsType<Args...>
00096     {};
00097
00098     template <typename R, typename... Args>
00099     struct ArgResolver<R (*)(Args...)> : public ArgsType<Args...>
00100     {};
00101
00102     template <typename R, typename... Args>
00103     struct ArgResolver<R (&)(Args...)> : public ArgsType<Args...>
00104     {};
00105
00106     template <typename R, typename... Args>
00107     struct ArgResolver<R (*const)(Args...)> : public ArgsType<Args...>
00108     {};
00109
00110     template <typename R, typename... Args>
00111     struct ArgResolver<R (&)(Args...)> : public ArgsType<Args...>
00112     {};
00113
00114     template <typename Class, typename R, typename... Args>
00115     struct ArgResolver<R (Class::*)(Args...)> : public ArgsType<Args...>
00116     {};
00117
00118     template <typename Class, typename R, typename... Args>
00119     struct ArgResolver<R (Class::*)(Args...) noexcept> : public ArgsType<Args...>
00120

```

```

00121 {};
00122
00123 template <typename Class, typename R, typename... Args>
00124 struct ArgResolver<R (Class::*)(Args...) const> : public ArgsType<Args...>
00125 {};
00126
00127 template <typename Class, typename R, typename... Args>
00128 struct ArgResolver<R (Class::*)(Args...) const noexcept> :
00129     public ArgsType<Args...>
00130 {};
00131
00132 template <typename Class, typename R, typename... Args>
00133 struct ArgResolver<R (Class::*const)(Args...) const> : public ArgsType<Args...>
00134 {};
00135
00136 template <typename Class, typename R, typename... Args>
00137 struct ArgResolver<R (Class::*const)(Args...) const noexcept> :
00138     public ArgsType<Args...>
00139 {};
00140
00141 } // namespace QtPrivate
00142 #endif // QT_VERSION
00143
00144 namespace quantier::threading::detail {
00145
00146 template <typename F, typename Arg, typename Enable = void>
00147 struct ResultTypeHelper
00148 {};
00149
00150 // The callable takes an argument of type Arg
00151 template <typename F, typename Arg>
00152 struct ResultTypeHelper<
00153     F, Arg,
00154     typename std::enable_if_t<
00155         !std::is_invocable_v<std::decay_t<F>, QFuture<Arg>>
00156     {
00157         using ResultType = std::invoke_result_t<std::decay_t<F>, std::decay_t<Arg>;
00158     };
00159
00160 // The callable takes an argument of type QFuture<Arg>
00161 template <class F, class Arg>
00162 struct ResultTypeHelper<
00163     F, Arg,
00164     typename std::enable_if_t<
00165         std::is_invocable_v<std::decay_t<F>, QFuture<Arg>>
00166     {
00167         using ResultType = std::invoke_result_t<std::decay_t<F>, QFuture<Arg>;
00168     };
00169
00170 // The callable takes an argument of type QFuture<void>
00171 template <class F>
00172 struct ResultTypeHelper<
00173     F, void,
00174     typename std::enable_if_t<
00175         std::is_invocable_v<std::decay_t<F>, QFuture<void>>
00176     {
00177         using ResultType = std::invoke_result_t<std::decay_t<F>, QFuture<void>;
00178     };
00179
00180 // The callable doesn't take argument
00181 template <class F>
00182 struct ResultTypeHelper<
00183     F, void,
00184     typename std::enable_if_t<
00185         !std::is_invocable_v<std::decay_t<F>, QFuture<void>>
00186     {
00187         using ResultType = std::invoke_result_t<std::decay_t<F>;
00188     };
00189
00190 } // namespace quantier::threading::detail

```

## 6.74 Runnable.h

```

00001 /*
00002  * Copyright 2021 Dmitry Ivanov
00003  *
00004  * This file is part of libquantier
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```

```

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00013  * GNU Lesser General Public License for more details.
00014  *
00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/Linkage.h>
00022
00023 #include <functional>
00024
00025 class QRunnable;
00026
00027 namespace quentier::threading {
00028
00029 [[nodiscard]] auto QUINTIER_EXPORT
00030     createFunctionRunnable(std::function<void()> function) -> QRunnable *;
00031
00032 } // namespace quentier::threading

```

## 6.75 TrackedTask.h

```

00001  /*
00002  * Copyright 2022-2024 Dmitry Ivanov
00003  *
00004  * This file is part of libquentier
00005  *
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00014  *
00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <functional>
00022 #include <type_traits>
00023 #include <utility>
00024
00025 namespace quentier::threading {
00026
00027 namespace detail {
00028
00029 template <typename LockableObject, typename Function, typename... Arguments>
00030 constexpr std::enable_if_t<std::is_invocable_v<Function, Arguments...> &&
00031     LockableObject & lockableObject, Function & function,
00032     Arguments &&... arguments>
00033 {
00034     const auto lockedObject = lockableObject.lock();
00035     if (lockedObject) {
00036         std::invoke(function, std::forward<Arguments>(arguments)...);
00037     }
00038 }
00039
00040 template <typename LockableObject, typename Function, typename... Arguments>
00041 constexpr std::enable_if_t<
00042     !std::is_invocable_v<Function, Arguments...> &&
00043     std::is_member_function_pointer_v<Function>
00044     &&
00045     LockableObject & lockableObject, Function & function,
00046     Arguments &&... arguments>
00047 {
00048     const auto lockedObject = lockableObject.lock();
00049     if (lockedObject) {
00050         std::invoke(
00051             function, *lockedObject, std::forward<Arguments>(arguments)...);
00052     }
00053 }
00054
00055 } // namespace detail
00056
00057 template <typename LockableObject, typename Function>
00058 class TrackedTask

```

```

00075 {
00076 public:
00077     template <typename SomeLockableObject, typename SomeFunction>
00078     constexpr TrackedTask(
00079         SomeLockableObject && someLockableObject, SomeFunction && function) :
00080         m_lockableObject{std::forward<SomeLockableObject>(someLockableObject)},
00081         m_function{std::forward<SomeFunction>(function)}
00082     {}
00083
00084     template <
00085         typename... Arguments,
00086         typename = std::enable_if_t<
00087             std::is_invocable_v<Function, Arguments...> ||
00088             std::is_member_function_pointer_v<Function>>
00089     > constexpr void operator() (Arguments &&... arguments)
00090     {
00091         detail::invoke(
00092             m_lockableObject, m_function,
00093             std::forward<Arguments>(arguments)...);
00094     }
00095
00096     template <
00097         typename... Arguments,
00098         typename = std::enable_if_t<
00099             std::is_invocable_v<Function, Arguments...> ||
00100             std::is_member_function_pointer_v<Function>>
00101     > constexpr void operator() (Arguments &&... arguments) const
00102     {
00103         detail::invoke(
00104             m_lockableObject, m_function,
00105             std::forward<Arguments>(arguments)...);
00106     }
00107
00108 private:
00109     LockableObject m_lockableObject;
00110     Function m_function;
00111 };
00112
00113 template <typename LockableObject, typename Function>
00114 TrackedTask(LockableObject, Function) -> TrackedTask<LockableObject, Function>;
00115
00116 } // namespace quentier::threading

```

## 6.76 Account.h

```

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00014  *
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00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/Printable.h>
00022
00023 #include <qevercloud/QEverCloud.h>
00024
00025 #include <QSharedDataPointer>
00026 #include <QString>
00027
00028 namespace quentier {
00029
00030     class AccountData;
00031
00032     class QUINTIER_EXPORT Account : public utility::Printable
00033     {
00034     public:
00035         enum class Type
00036         {
00037             Local,
00038             Evernote
00039         };
00040     };
00041
00042 }

```

```

00044     };
00045
00046     friend QUENTIER_EXPORT QTextStream & operator<<
00047         QTextStream & strm, Type type);
00048
00049     friend QUENTIER_EXPORT QDebug & operator<<(QDebug & dbg, Type type);
00050
00051     enum class EvernoteAccountType
00052     {
00053         Free,
00054         Plus,
00055         Premium,
00056         Business
00057     };
00058
00059     friend QUENTIER_EXPORT QTextStream & operator<<
00060         QTextStream & strm, EvernoteAccountType type);
00061
00062     friend QUENTIER_EXPORT QDebug & operator<<
00063         QDebug & dbg, EvernoteAccountType type);
00064
00065 public:
00066     explicit Account();
00067
00068     explicit Account(
00069         QString name, Type type, qevercloud::UserID userId = -1,
00070         EvernoteAccountType evernoteAccountType = EvernoteAccountType::Free,
00071         QString evernoteHost = {}, QString shardId = {});
00072
00073     Account(const Account & other);
00074     Account(Account && other) noexcept;
00075
00076     Account & operator=(const Account & other);
00077     Account & operator=(Account && other) noexcept;
00078
00079     ~Account() noexcept override;
00080
00081     [[nodiscard]] bool operator==(const Account & other) const noexcept;
00082     [[nodiscard]] bool operator!=(const Account & other) const noexcept;
00083
00084     [[nodiscard]] bool isEmpty() const;
00085
00086     [[nodiscard]] QString name() const;
00087
00088     void setName(QString name);
00089
00090     [[nodiscard]] QString displayName() const;
00091
00092     void setDisplayName(QString displayName);
00093
00094     [[nodiscard]] Type type() const;
00095
00096     [[nodiscard]] qevercloud::UserID id() const;
00097
00098     [[nodiscard]] EvernoteAccountType evernoteAccountType() const;
00099
00100     [[nodiscard]] QString evernoteHost() const;
00101
00102     [[nodiscard]] QString shardId() const;
00103
00104     void setEvernoteAccountType(EvernoteAccountType evernoteAccountType);
00105     void setEvernoteHost(QString evernoteHost);
00106     void setShardId(QString shardId);
00107
00108     [[nodiscard]] quint32 mailLimitDaily() const;
00109     [[nodiscard]] quint64 noteSizeMax() const;
00110     [[nodiscard]] quint64 resourceSizeMax() const;
00111     [[nodiscard]] quint32 linkedNotebookMax() const;
00112     [[nodiscard]] quint32 noteCountMax() const;
00113     [[nodiscard]] quint32 notebookCountMax() const;
00114     [[nodiscard]] quint32 tagCountMax() const;
00115     [[nodiscard]] quint32 noteTagCountMax() const;
00116     [[nodiscard]] quint32 savedSearchCountMax() const;
00117     [[nodiscard]] quint32 noteResourceCountMax() const;
00118
00119     void setEvernoteAccountLimits(const qevercloud::AccountLimits & limits);
00120
00121     // utility::Printable
00122     QTextStream & print(QTextStream & strm) const override;
00123
00124 private:
00125     QSharedDataPointer<AccountData> d;
00126 };
00127
00128 } // namespace quentier

```



## 6.77 ErrorString.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/Printable.h>
00022
00023 #include <QSharedDataPointer>
00024
00025 namespace quentier {
00026
00027 class ErrorStringData;
00028
00042 class QUENTIER_EXPORT ErrorString : public utility::Printable
00043 {
00044 public:
00045     explicit ErrorString(const char * error = nullptr);
00046     explicit ErrorString(const QString & error);
00047
00048     ErrorString(const ErrorString & other);
00049     ErrorString(ErrorString && other) noexcept;
00050
00051     ErrorString & operator=(const ErrorString & other);
00052     ErrorString & operator=(ErrorString && other) noexcept;
00053
00054     ~ErrorString() override;
00055
00056     [[nodiscard]] const QString & base() const noexcept;
00057     [[nodiscard]] QString & base();
00058
00059     [[nodiscard]] const QStringList & additionalBases() const noexcept;
00060     [[nodiscard]] QStringList & additionalBases();
00061
00062     [[nodiscard]] const QString & details() const noexcept;
00063     [[nodiscard]] QString & details();
00064
00065     void setBase(QString error);
00066     void setBase(const char * error);
00067
00068     void appendBase(const QString & error);
00069     void appendBase(const QStringList & errors);
00070     void appendBase(const char * error);
00071
00072     void setDetails(const QString & error);
00073     void setDetails(const char * error);
00074
00075     [[nodiscard]] bool isEmpty() const;
00076     void clear();
00077
00078     [[nodiscard]] QString localizedString() const;
00079     [[nodiscard]] QString nonLocalizedString() const;
00080
00081     QTextStream & print(QTextStream & strm) const override;
00082
00083 private:
00084     QSharedDataPointer<ErrorStringData> d;
00085 };
00086
00087 [[nodiscard]] QUENTIER_EXPORT bool operator==(
00088     const ErrorString & lhs, const ErrorString & rhs) noexcept;
00089
00090 [[nodiscard]] QUENTIER_EXPORT bool operator!=(
00091     const ErrorString & lhs, const ErrorString & rhs) noexcept;
00092
00093 } // namespace quentier

```

## 6.78 NoteUtils.h

```

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00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/types/Fwd.h>
00022 #include <quentier/utility/Linkage.h>
00023
00024 #include <qevercloud/types/Fwd.h>
00025
00026 #include <QStringList>
00027
00028 #include <utility>
00029
00030 namespace quentier {
00031
00032 [[nodiscard]] QUENTIER_EXPORT bool isInkNote(const qevercloud::Note & note);
00033
00034 [[nodiscard]] QUENTIER_EXPORT bool noteContentContainsCheckedToDo(
00035     const QString & noteContent);
00036
00037 [[nodiscard]] QUENTIER_EXPORT bool noteContentContainsUncheckedToDo(
00038     const QString & noteContent);
00039
00040 [[nodiscard]] QUENTIER_EXPORT bool noteContentContainsToDo(
00041     const QString & noteContent);
00042
00043 [[nodiscard]] QUENTIER_EXPORT bool noteContentContainsEncryptedFragments(
00044     const QString & noteContent);
00045
00046 [[nodiscard]] QUENTIER_EXPORT QString noteContentToPlainText(
00047     const QString & noteContent, QString * errorDescription = nullptr);
00048
00049 [[nodiscard]] QUENTIER_EXPORT QStringList noteContentToListOfWords(
00050     const QString & noteContent, QString * errorDescription = nullptr);
00051
00052 [[nodiscard]] QUENTIER_EXPORT std::pair<QString, QStringList>
00053     noteContentToPlainTextAndListOfWords(
00054     const QString & noteContent, QString * errorDescription = nullptr);
00055
00056 } // namespace quentier

```

## 6.79 RegisterMetatypes.h

```

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00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/Linkage.h>

```

```

00022
00023 namespace quentier {
00024
00025 QUENTIER_EXPORT void registerMetatypes();
00026
00027 } // namespace quentier

```

## 6.80 ResourceRecognitionIndexItem.h

```

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00014  *
00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/Linkage.h>
00022 #include <quentier/utility/Printable.h>
00023
00024 #include <QByteArray>
00025 #include <QList>
00026 #include <QSharedDataPointer>
00027
00028 #include <memory>
00029
00030 namespace quentier {
00031
00032 class ResourceRecognitionIndexItemData;
00033
00034 class QUENTIER_EXPORT ResourceRecognitionIndexItem : public utility::Printable
00035 {
00036 public:
00037     explicit ResourceRecognitionIndexItem();
00038
00039     ResourceRecognitionIndexItem(const ResourceRecognitionIndexItem & other);
00040
00041     ResourceRecognitionIndexItem(
00042         ResourceRecognitionIndexItem && other) noexcept;
00043
00044     ResourceRecognitionIndexItem & operator=(
00045         const ResourceRecognitionIndexItem & other);
00046
00047     ResourceRecognitionIndexItem & operator=(
00048         ResourceRecognitionIndexItem && other) noexcept;
00049
00050     ~ResourceRecognitionIndexItem() override;
00051
00052     [[nodiscard]] bool isValid() const;
00053
00054     [[nodiscard]] int x() const;
00055     void setX(int x);
00056
00057     [[nodiscard]] int y() const;
00058     void setY(int y);
00059
00060     [[nodiscard]] int h() const;
00061     void setH(int h);
00062
00063     [[nodiscard]] int w() const;
00064     void setW(int w);
00065
00066     [[nodiscard]] int offset() const;
00067     void setOffset(int offset);
00068
00069     [[nodiscard]] int duration() const;
00070     void setDuration(int duration);
00071
00072     [[nodiscard]] QList<int> strokes() const;
00073     void setStrokes(QList<int> strokes);
00074

```

```

00075     struct QUENTIER_EXPORT ITextItem
00076     {
00077         virtual ~ITextItem();
00078
00079         [[nodiscard]] virtual QString text() const = 0;
00080         [[nodiscard]] virtual int weight() const = 0;
00081     };
00082
00083     using ITextItemPtr = std::shared_ptr<ITextItem>;
00084
00085     [[nodiscard]] QList<ITextItemPtr> textItems() const;
00086     void setTextItems(QList<ITextItemPtr> textItems);
00087
00088     struct QUENTIER_EXPORT IObjectItem
00089     {
00090         virtual ~IObjectItem();
00091
00092         [[nodiscard]] virtual QString objectType() const = 0;
00093         [[nodiscard]] virtual int weight() const = 0;
00094     };
00095
00096     using IObjectItemPtr = std::shared_ptr<IObjectItem>;
00097
00098     [[nodiscard]] QList<IObjectItemPtr> objectItems() const;
00099     void setObjectItems(QList<IObjectItemPtr> objectItems);
00100
00101     struct QUENTIER_EXPORT IShapeItem
00102     {
00103         virtual ~IShapeItem();
00104
00105         [[nodiscard]] virtual QString shape() const = 0;
00106         [[nodiscard]] virtual int weight() const = 0;
00107     };
00108
00109     using IShapeItemPtr = std::shared_ptr<IShapeItem>;
00110
00111     [[nodiscard]] QList<IShapeItemPtr> shapeItems() const;
00112     void setShapeItems(QList<IShapeItemPtr> shapeItems);
00113
00114     struct QUENTIER_EXPORT IBarcodeItem
00115     {
00116         virtual ~IBarcodeItem();
00117
00118         [[nodiscard]] virtual QString barcode() const = 0;
00119         [[nodiscard]] virtual int weight() const = 0;
00120     };
00121
00122     using IBarcodeItemPtr = std::shared_ptr<IBarcodeItem>;
00123
00124     [[nodiscard]] QList<IBarcodeItemPtr> barcodeItems() const;
00125     void setBarcodeItems(QList<IBarcodeItemPtr> barcodeItems);
00126
00127     // utility::Printable
00128     QTextStream & print(QTextStream & strm) const override;
00129
00130 private:
00131     QSharedDataPointer<ResourceRecognitionIndexItemData> d;
00132 };
00133
00134 } // namespace quentier

```

## 6.81 ResourceRecognitionIndices.h

```

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00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020

```

```

00021 #include <quentier/types/ResourceRecognitionIndexItem.h>
00022
00023 #include <QByteArray>
00024 #include <QSharedDataPointer>
00025 #include <QVector>
00026
00027 namespace quentier {
00028
00029 class ResourceRecognitionIndicesData;
00030
00031 class QUENTIER_EXPORT ResourceRecognitionIndices : public utility::Printable
00032 {
00033 public:
00034     explicit ResourceRecognitionIndices();
00035
00036     explicit ResourceRecognitionIndices(
00037         const QByteArray & rawRecognitionIndicesData);
00038
00039     ResourceRecognitionIndices(const ResourceRecognitionIndices & other);
00040     ResourceRecognitionIndices(ResourceRecognitionIndices && other) noexcept;
00041
00042     ResourceRecognitionIndices & operator=(
00043         const ResourceRecognitionIndices & other);
00044
00045     ResourceRecognitionIndices & operator=(
00046         ResourceRecognitionIndices && other) noexcept;
00047
00048     ~ResourceRecognitionIndices() override;
00049
00050     [[nodiscard]] bool isNull() const;
00051     [[nodiscard]] bool isValid() const;
00052
00053     [[nodiscard]] QString objectId() const;
00054     [[nodiscard]] QString objectType() const;
00055     [[nodiscard]] QString recoType() const;
00056     [[nodiscard]] QString engineVersion() const;
00057     [[nodiscard]] QString docType() const;
00058     [[nodiscard]] QString lang() const;
00059
00060     [[nodiscard]] int objectHeight() const;
00061     [[nodiscard]] int objectWidth() const;
00062
00063     [[nodiscard]] QVector<ResourceRecognitionIndexItem> items() const;
00064
00065     bool setData(const QByteArray & rawRecognitionIndicesData);
00066
00067     // utility::Printable
00068     QTextStream & print(QTextStream & strm) const override;
00069
00070 private:
00071     QSharedDataPointer<ResourceRecognitionIndicesData> d;
00072 };
00073
00074 } // namespace quentier

```

## 6.82 ResourceUtils.h

```

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00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/Linkage.h>
00022
00023 #include <qevercloud/types/Fwd.h>
00024
00025 #include <QString>
00026

```

```

00027 namespace quentier {
00028
00029 [[nodiscard]] QUENTIER_EXPORT QString
00030     resourceDisplayName(const qevercloud::Resource & resource);
00031
00032 [[nodiscard]] QUENTIER_EXPORT QString
00033     preferredFileSuffix(const qevercloud::Resource & resource);
00034
00035 } // namespace quentier

```

## 6.83 Result.h

```

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00013  * GNU Lesser General Public License for more details.
00014  *
00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/exception/RuntimeError.h>
00022 #include <quentier/types/ErrorMessage.h>
00023
00024 #include <type_traits>
00025 #include <variant>
00026
00027 namespace quentier {
00028
00029 template <
00030     class ValueType, class ErrorType,
00031     typename =
00032         typename std::enable_if_t<!std::is_void_v<std::decay_t<ErrorType>>>
00033 class Result
00034 {
00035 private:
00036     template <typename T>
00037     struct ValueWrapper
00038     {
00039         T value;
00040     };
00041
00042     using ValueWrapperInnerType = std::conditional_t<
00043         std::is_void_v<std::decay_t<ValueType>>, std::nullptr_t,
00044         std::decay_t<ValueType>>;
00045
00046 public:
00047     template <
00048         typename T1 = ValueType,
00049         typename std::enable_if_t<!std::is_void_v<std::decay_t<T1>>> * =
00050             nullptr>
00051     explicit Result(T1 t) :
00052         m_valueOrError{ValueWrapper<std::decay_t<ValueType>>{std::move(t)}}
00053     {}
00054
00055     template <
00056         typename T1 = ValueType,
00057         typename std::enable_if_t<std::is_void_v<std::decay_t<T1>>> * = nullptr>
00058     explicit Result() : m_valueOrError{ValueWrapper<std::nullptr_t>{}}
00059     {}
00060
00061     explicit Result(ErrorType error) : m_valueOrError{std::move(error)} {}
00062
00063     Result(const Result<ValueType, ErrorType> & other) :
00064         m_valueOrError{other.m_valueOrError}
00065     {}
00066
00067     Result(Result<ValueType, ErrorType> && other) :
00068         m_valueOrError{std::move(other.m_valueOrError)}
00069     {}
00070
00071     Result & operator=(const Result<ValueType, ErrorType> & other)

```

```

00072     {
00073         if (this != &other) {
00074             m_valueOrError = other.m_valueOrError;
00075         }
00076
00077         return *this;
00078     }
00079
00080     Result & operator=(Result<ValueType, ErrorType> && other)
00081     {
00082         if (this != &other) {
00083             m_valueOrError = std::move(other.m_valueOrError);
00084         }
00085
00086         return *this;
00087     }
00088
00092     [[nodiscard]] bool isValid() const noexcept
00093     {
00094         return std::holds_alternative<ValueWrapper<ValueWrapperInnerType>(
00095             m_valueOrError);
00096     }
00097
00098     operator bool() const noexcept
00099     {
00100         return isValid();
00101     }
00102
00103     template <
00104         typename T1 = ValueType,
00105         typename std::enable_if_t<!std::is_void_v<std::decay_t<T1>>> * =
00106             nullptr>
00107     [[nodiscard]] T1 & get()
00108     {
00109         // NOTE: std::get also performs the check of what is stored inside the
00110         // variant but it throws std::bad_variant_access which doesn't implement
00111         // QException so this exception is not representable inside QFuture
00112         // in Qt5. Due to this for Qt5 also performing another check and using
00113         // another exception type
00114         #if QT_VERSION < QT_VERSION_CHECK(6, 0, 0)
00115             if (Q_UNLIKELY(!isValid())) {
00116                 throw RuntimeError{
00117                     ErrorString{"Detected attempt to get value from empty Result"}};
00118             }
00119         #endif
00120
00121         return std::get<ValueWrapper<std::decay_t<ValueType>>>(m_valueOrError)
00122             .value;
00123     }
00124
00125     template <
00126         typename T1 = ValueType,
00127         typename std::enable_if_t<!std::is_void_v<std::decay_t<T1>>> * =
00128             nullptr>
00129     [[nodiscard]] const T1 & get() const
00130     {
00131         // NOTE: std::get also performs the check of what is stored inside the
00132         // variant but it throws std::bad_variant_access which doesn't implement
00133         // QException so this exception is not representable inside QFuture
00134         // in Qt5. Due to this for Qt5 also performing another check and using
00135         // another exception type
00136         #if QT_VERSION < QT_VERSION_CHECK(6, 0, 0)
00137             if (Q_UNLIKELY(!isValid())) {
00138                 throw RuntimeError{
00139                     ErrorString{"Detected attempt to get value from empty Result"}};
00140             }
00141         #endif
00142
00143         return std::get<ValueWrapper<std::decay_t<ValueType>>>(m_valueOrError)
00144             .value;
00145     }
00146
00147     template <
00148         typename T1 = ValueType,
00149         typename std::enable_if_t<!std::is_void_v<std::decay_t<T1>>> * =
00150             nullptr>
00151     [[nodiscard]] T1 & operator*()
00152     {
00153         return get();
00154     }
00155
00156     template <
00157         typename T1 = ValueType,
00158         typename std::enable_if_t<!std::is_void_v<std::decay_t<T1>>> * =
00159             nullptr>
00160     [[nodiscard]] const T1 & operator*() const
00161     {

```

```

00162         return get();
00163     }
00164
00165     [[nodiscard]] const ErrorType & error() const
00166     {
00167         // NOTE: std::get also performs the check of what is stored inside the
00168         // variant but it throws std::bad_variant_access which doesn't implement
00169         // QException so this exception is not representable inside QFuture
00170         // in Qt5. Due to this for Qt5 also performing another check and using
00171         // another exception type
00172 #if QT_VERSION < QT_VERSION_CHECK(6, 0, 0)
00173         if (Q_UNLIKELY(isValid())) {
00174             throw RuntimeError{ErrorString{
00175                 "Detected attempt to get error from non-empty Result"}};
00176         }
00177 #endif
00178         return std::get<ErrorType>(m_valueOrError);
00179     }
00180
00181     [[nodiscard]] ErrorType & error()
00182     {
00183         // NOTE: std::get also performs the check of what is stored inside the
00184         // variant but it throws std::bad_variant_access which doesn't implement
00185         // QException so this exception is not representable inside QFuture
00186         // in Qt5. Due to this for Qt5 also performing another check and using
00187         // another exception type
00188 #if QT_VERSION < QT_VERSION_CHECK(6, 0, 0)
00189         if (Q_UNLIKELY(isValid())) {
00190             throw RuntimeError{ErrorString{
00191                 "Detected attempt to get error from non-empty Result"}};
00192         }
00193 #endif
00194         return std::get<ErrorType>(m_valueOrError);
00195     }
00196
00197 private:
00198     std::variant<ValueWrapper<ValueWrapperInnerType>, ErrorType> m_valueOrError;
00199 };
00200
00201 // namespace quentier
00202
00203 }

```

## 6.84 Validation.h

```

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00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/types/Fwd.h>
00022 #include <quentier/utility/Linkage.h>
00023
00024 class QString;
00025
00026 namespace quentier {
00027
00028 [[nodiscard]] QUENTIER_EXPORT bool validateNoteTitle(
00029     const QString & noteTitle,
00030     ErrorString * errorDescription = nullptr) noexcept;
00031
00032 [[nodiscard]] QUENTIER_EXPORT bool validateNotebookName(
00033     const QString & notebookName,
00034     ErrorString * errorDescription = nullptr) noexcept;
00035
00036 [[nodiscard]] QUENTIER_EXPORT bool validateSavedSearchName(
00037     const QString & savedSearchName,
00038     ErrorString * errorDescription = nullptr) noexcept;

```



```

00070
00081 [[nodiscard]] QUINTIER_EXPORT bool validateTagName(
00082     const QString & tagName, ErrorMessage * errorDescription = nullptr) noexcept;
00083
00084 } // namespace quentier

```

## 6.85 ApplicationSettings.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/types/Account.h>
00022
00023 #include <QSettings>
00024
00025 #include <string_view>
00026
00027 namespace quentier::utility {
00028
00034 class QUINTIER_EXPORT ApplicationSettings :
00035     public QSettings,
00036     public utility::Printable
00037 {
00038     Q_OBJECT
00039 public:
00049     explicit ApplicationSettings(const QString & settingsName = {});
00050
00062     explicit ApplicationSettings(
00063         const Account & account, const QString & settingsName = {});
00064
00081     ApplicationSettings(
00082         const Account & account, const char * settingsName,
00083         int settingsNameSize = -1);
00084
00098     ApplicationSettings(const Account & account, std::string_view settingsName);
00099
00103     ~ApplicationSettings() override;
00104
00109     struct ArrayCloser
00110     {
00111         ArrayCloser(ApplicationSettings & settings) : m_settings(settings) {}
00112
00113         ~ArrayCloser()
00114         {
00115             m_settings.endArray();
00116             m_settings.sync();
00117         }
00118
00119         ApplicationSettings & m_settings;
00120     };
00121
00126     struct GroupCloser
00127     {
00128         GroupCloser(ApplicationSettings & settings) : m_settings(settings) {}
00129
00130         ~GroupCloser()
00131         {
00132             m_settings.endGroup();
00133             m_settings.sync();
00134         }
00135
00136         ApplicationSettings & m_settings;
00137     };
00138
00145     void beginGroup(const QString & prefix);
00146

```

```

00157     void beginGroup(const char * prefix, int size = -1);
00158
00168     void beginGroup(std::string_view prefix);
00169
00177     [[nodiscard]] int beginReadArray(const QString & prefix);
00178
00189     [[nodiscard]] int beginReadArray(const char * prefix, int size = -1);
00190
00198     [[nodiscard]] int beginReadArray(std::string_view prefix);
00199
00210     void beginWriteArray(const QString & prefix, int arraySize = -1);
00211
00226     void beginWriteArray(
00227         const char * prefix, int arraySize = -1, int prefixSize = -1);
00228
00240     void beginWriteArray(std::string_view prefix, int arraySize = -1);
00241
00249     [[nodiscard]] bool contains(const QString & key) const;
00250
00262     [[nodiscard]] bool contains(const char * key, int size = -1) const;
00263
00272     [[nodiscard]] bool contains(std::string_view key) const;
00273
00280     void remove(const QString & key);
00281
00292     void remove(const char * key, int size = -1);
00293
00301     void remove(std::string_view key);
00302
00310     void setValue(const QString & key, const QVariant & value);
00311
00323     void setValue(const char * key, const QVariant & value, int keySize = -1);
00324
00333     void setValue(std::string_view key, const QVariant & value);
00334
00345     [[nodiscard]] QVariant value(
00346         const QString & key, const QVariant & defaultValue = {}) const;
00347
00362     [[nodiscard]] QVariant value(
00363         const char * key, const QVariant & defaultValue = {},
00364         int keySize = -1) const;
00365
00377     [[nodiscard]] QVariant value(
00378         std::string_view key, const QVariant & defaultValue = {}) const;
00379
00380     // utility::Printable
00381     QTextStream & print(QTextStream & strm) const override;
00382
00383 private:
00384     Q_DISABLE_COPY(ApplicationSettings)
00385 };
00386
00387 } // namespace quantier::utility

```

## 6.86 AnyOfCanceler.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quantier/utility/cancelers/Fwd.h>
00022 #include <quantier/utility/cancelers/ICanceler.h>
00023
00024 #include <QList>
00025
00026 namespace quantier::utility::cancelers {
00027

```

```

00028 class QUENTIER_EXPORT AnyOfCanceler : public ICanceler
00029 {
00030 public:
00031     explicit AnyOfCanceler(QList<ICancelerPtr> cancelers);
00032     AnyOfCanceler(AnyOfCanceler && other) noexcept;
00033     AnyOfCanceler & operator=(AnyOfCanceler && other) noexcept;
00034     ~AnyOfCanceler() noexcept override;
00035
00036     [[nodiscard]] bool isCanceled() const noexcept override;
00037
00038 private:
00039     class Impl;
00040     std::unique_ptr<Impl> m_impl;
00041 };
00042
00043 } // namespace quentier::utility::cancelers

```

## 6.87 FutureCanceler.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/cancelers/ICanceler.h>
00022
00023 #include <QFuture>
00024
00025 namespace quentier::utility::cancelers {
00026
00030 template <class T>
00031 class FutureCanceler : public ICanceler
00032 {
00033 public:
00034     explicit FutureCanceler(QFuture<T> future) : m_future{std::move(future)} {}
00035
00036     [[nodiscard]] bool isCanceled() const noexcept override
00037     {
00038         return m_future.isCanceled();
00039     }
00040
00041 private:
00042     QFuture<T> m_future;
00043 };
00044
00045 } // namespace quentier::utility::cancelers

```

## 6.88 ICanceler.h

```

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00014  *

```

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/Linkage.h>
00022
00023 namespace quentier::utility::cancelers {
00024
00025     class QUENTIER_EXPORT ICanceler
00026     {
00027     public:
00028         virtual ~ICanceler() = default;
00029
00030         [[nodiscard]] virtual bool isCanceled() const = 0;
00031     };
00032
00033 } // namespace quentier::utility::cancelers

```

## 6.89 ManualCanceler.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/cancelers/ICanceler.h>
00022
00023 #include <atomic>
00024 #include <memory>
00025
00026 namespace quentier::utility::cancelers {
00027
00028     class QUENTIER_EXPORT ManualCanceler : public ICanceler
00029     {
00030     public:
00031         ManualCanceler();
00032         ManualCanceler(ManualCanceler && other) noexcept;
00033         ManualCanceler & operator=(ManualCanceler && other) noexcept;
00034         ~ManualCanceler() noexcept override;
00035
00036         void cancel() noexcept;
00037
00038         [[nodiscard]] bool isCanceled() const noexcept override;
00039
00040     private:
00041         class Impl;
00042         std::unique_ptr<Impl> m_impl;
00043     };
00044
00045 } // namespace quentier::utility::cancelers

```

## 6.90 Compat.h

```

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```

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <QHash>
00022 #include <QString>
00023 #include <QtGlobal>
00024
00025 // Compatibility with boost parts which require to take a hash of QString
00026
00027 inline std::size_t hash_value(const QString & x) noexcept
00028 {
00029     return qHash(x);
00030 }

```

## 6.91 DateTime.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/Linkage.h>
00022
00023 #include <QFlags>
00024
00025 namespace quentier::utility {
00026
00027 [[nodiscard]] constexpr int secondsToMilliseconds(int seconds) noexcept
00028 {
00029     return seconds * 1000;
00030 }
00031
00032 enum class DateTimePrintOption
00033 {
00041     IncludeNumericTimestamp = 1 « 1,
00045     IncludeMilliseconds = 1 « 2,
00051     IncludeTimezone = 1 « 3
00052 };
00053
00054 Q_DECLARE_FLAGS(DateTimePrintOptions, DateTimePrintOption)
00055 Q_DECLARE_OPERATORS_FOR_FLAGS(DateTimePrintOptions)
00056
00057 [[nodiscard]] QString QUINTIER_EXPORT printableDateTimeFromTimestamp(
00075     qint64 timestamp,
00076     DateTimePrintOptions options = DateTimePrintOptions(
00077         DateTimePrintOption::IncludeNumericTimestamp |
00078         DateTimePrintOption::IncludeMilliseconds |
00079         DateTimePrintOption::IncludeTimezone),
00080     const char * customFormat = nullptr);
00081
00082 } // namespace quentier::utility

```

## 6.92 EventLoopWithExitStatus.h

```

00001 /*

```

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/types/ErrorMessage.h>
00022 #include <quentier/utility/Linkage.h>
00023
00024 #include <QEventLoop>
00025
00026 class QDebug;
00027 class QTextStream;
00028
00029 namespace quentier::utility {
00030
00031 class QUENTIER_EXPORT EventLoopWithExitStatus : public QEventLoop
00032 {
00033     Q_OBJECT
00034 public:
00035     explicit EventLoopWithExitStatus(QObject * parent = nullptr);
00036
00037     enum class ExitStatus
00038     {
00039         Success,
00040         Failure,
00041         Timeout
00042     };
00043
00044     friend QDebug & operator<<(QDebug & dbg, ExitStatus status);
00045     friend QTextStream & operator<<(QTextStream & strm, ExitStatus status);
00046
00047     [[nodiscard]] ExitStatus exitStatus() const;
00048     [[nodiscard]] const ErrorMessage & errorDescription() const;
00049
00050 public Q_SLOTS:
00051     void exitAsSuccess();
00052     void exitAsFailure();
00053     void exitAsFailureWithError(QString errorDescription);
00054     void exitAsFailureWithError(ErrorMessage errorDescription);
00055     void exitAsTimeout();
00056
00057 private:
00058     ExitStatus m_exitStatus;
00059     ErrorMessage m_errorDescription;
00060 };
00061
00062 } // namespace quentier::utility

```

## 6.93 FileIOProcessorAsync.h

```

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00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once

```

```

00020
00021 #include <quentier/types/ErrorMessage.h>
00022 #include <quentier/utility/Linkage.h>
00023
00024 #include <QByteArray>
00025 #include <QIODevice>
00026 #include <QObject>
00027 #include <QString>
00028 #include <QUuid>
00029
00030 namespace quentier::utility {
00031
00032 class FileIOProcessorAsyncPrivate;
00033
00034 class QUINTIER_EXPORT FileIOProcessorAsync : public QObject
00035 {
00036     Q_OBJECT
00037 public:
00038     explicit FileIOProcessorAsync(QObject * parent = nullptr);
00039
00040     void setIdleTimePeriod(qint32 seconds);
00041
00042 Q_SIGNALS:
00043     void readyForIO();
00044
00045     void writeFileRequestProcessed(
00046         bool success, ErrorMessage errorDescription, QUuid requestId);
00047
00048     void readFileRequestProcessed(
00049         bool success, ErrorMessage errorDescription, QByteArray data,
00050         QUuid requestId);
00051
00052 public Q_SLOTS:
00053     void onWriteFileRequest(
00054         QString absoluteFilePath, QByteArray data, QUuid requestId,
00055         bool append);
00056
00057     void onReadFileRequest(QString absoluteFilePath, QUuid requestId);
00058
00059 private:
00060     FileIOProcessorAsyncPrivate * const d_ptr;
00061     Q_DECLARE_PRIVATE(FileIOProcessorAsync)
00062 };
00063
00064 } // namespace quentier::utility

```

## 6.94 FileSystem.h

```

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00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/types/Fwd.h>
00022 #include <quentier/utility/Linkage.h>
00023
00024 #include <QString>
00025
00026 namespace quentier::utility {
00027
00028 [[nodiscard]] QString QUINTIER_EXPORT relativePathFromAbsolutePath(
00029     const QString & absolutePath, const QString & relativePathRootFolderPath);
00030
00031 [[nodiscard]] bool QUINTIER_EXPORT removeFile(const QString & filePath);
00032
00033 [[nodiscard]] bool QUINTIER_EXPORT removeDir(const QString & dirPath);
00034
00035 [[nodiscard]] QByteArray QUINTIER_EXPORT

```

```

00078     readFileContents(const QString & filePath, ErrorString & errorDescription);
00079
00094 [[nodiscard]] bool QUENTIER_EXPORT renameFile(
00095     const QString & from, const QString & to, ErrorString & errorDescription);
00096
00097 } // namespace quentier::utility

```

## 6.95 FileSystemWatcher.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/Linkage.h>
00022
00023 #include <QObject>
00024 #include <QStringList>
00025
00026 namespace quentier::utility {
00027
00028 class QUENTIER_EXPORT FileSystemWatcher : public QObject
00029 {
00030     Q_OBJECT
00031 public:
00032     explicit FileSystemWatcher(
00033         int removalTimeoutMSec = 500, QObject * parent = nullptr);
00034
00035     explicit FileSystemWatcher(
00036         const QStringList & paths, int removalTimeoutMSec = 500,
00037         QObject * parent = nullptr);
00038
00039     ~FileSystemWatcher() override;
00040
00041     void addPath(const QString & path);
00042     void addPaths(const QStringList & paths);
00043
00044     [[nodiscard]] QStringList directories() const;
00045     [[nodiscard]] QStringList files() const;
00046
00047     void removePath(const QString & path);
00048     void removePaths(const QStringList & paths);
00049
00050     Q_SIGNALS:
00051         void directoryChanged(const QString & path);
00052         void directoryRemoved(const QString & path);
00053
00054         void fileChanged(const QString & path);
00055         void fileRemoved(const QString & path);
00056
00057 private:
00058     Q_DISABLE_COPY(FileSystemWatcher)
00059
00060 private:
00061     class FileSystemWatcherPrivate;
00062
00063     FileSystemWatcherPrivate * d_ptr;
00064     Q_DECLARE_PRIVATE(FileSystemWatcher)
00065 };
00066
00067 } // namespace quentier::utility

```

## 6.96 IEncryptor.h

```

00001 /*

```



```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/types/ErrorMessage.h>
00022 #include <quentier/types/Result.h>
00023 #include <quentier/utility/Linkage.h>
00024
00025 #include <QString>
00026
00027 class QDebug;
00028 class QTextStream;
00029
00030 namespace quentier::utility {
00031
00032 struct QUENTIER_EXPORT IEncryptor
00033 {
00034     virtual ~IEncryptor() noexcept;
00035
00036     enum class Cipher
00037     {
00038         RC2,
00039         AES
00040     };
00041
00042     friend QUENTIER_EXPORT QDebug & operator<<(QDebug & dbg, Cipher cipher);
00043
00044     friend QUENTIER_EXPORT QTextStream & operator<<(
00045         QTextStream & strm, Cipher cipher);
00046
00047     [[nodiscard]] virtual Result<QString, ErrorMessage> encrypt(
00048         const QString & text, const QString & passphrase) = 0;
00049
00050     [[nodiscard]] virtual Result<QString, ErrorMessage> decrypt(
00051         const QString & encryptedText, const QString & passphrase,
00052         Cipher cipher) = 0;
00053 };
00054
00055 } // namespace quentier::utility

```

## 6.97 IKeychainService.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/exception/IQuentierException.h>
00022 #include <quentier/types/ErrorMessage.h>
00023
00024 #include <quentier/utility/Fwd.h>
00025 #include <quentier/utility/Linkage.h>
00026

```

```

00027 #include <QFuture>
00028
00029 class QDebug;
00030
00031 namespace quantier::utility {
00032
00037 class QUENTIER_EXPORT IKeychainService
00038 {
00039 public:
00040     virtual ~IKeychainService() noexcept;
00041
00045     enum class ErrorCode
00046     {
00050         NoError,
00054         EntryNotFound,
00058         CouldNotDeleteEntry,
00062         AccessDeniedByUser,
00066         AccessDenied,
00070         NoBackendAvailable,
00074         NotImplemented,
00078         OtherError
00079     };
00080
00081     friend QUENTIER_EXPORT QTextStream & operator<<(
00082         QTextStream & strm, ErrorCode errorCode);
00083
00084     friend QUENTIER_EXPORT QDebug & operator<<(
00085         QDebug & dbg, ErrorCode errorCode);
00086
00091     class QUENTIER_EXPORT Exception : public IQuantierException
00092     {
00093     public:
00094         explicit Exception(ErrorCode errorCode) noexcept;
00095
00096         explicit Exception(
00097             ErrorCode errorCode, ErrorString errorDescription) noexcept;
00098
00099         [[nodiscard]] ErrorCode errorCode() const noexcept;
00100         [[nodiscard]] QString exceptionDisplayName() const override;
00101
00102         void raise() const override;
00103         [[nodiscard]] Exception * clone() const override;
00104
00105     private:
00106         const ErrorCode m_errorCode;
00107     };
00108
00109 public:
00123     [[nodiscard]] virtual QFuture<void> writePassword(
00124         QString service, QString key, QString password) = 0;
00125
00139     [[nodiscard]] virtual QFuture<QString> readPassword(
00140         QString service, QString key) const = 0;
00141
00154     [[nodiscard]] virtual QFuture<void> deletePassword(
00155         QString service, QString key) = 0;
00156 };
00157
00158 } // namespace quantier::utility

```

## 6.98 Initialize.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quantier/utility/Linkage.h>

```

```

00022
00023 namespace quentier::utility {
00024
00029 void QUENTIER_EXPORT initializeLibquentier();
00030
00031 } // namespace quentier::utility

```

## 6.99 LRUCache.hpp

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <QHash>
00022
00023 #include <cstdint>
00024 #include <list>
00025
00026 namespace quentier::utility {
00027
00028 template <
00029     class Key, class Value,
00030     class Allocator = std::allocator<std::pair<Key, Value>>
00031 class LRUCache
00032 {
00033 public:
00034     explicit LRUCache(const std::size_t maxSize = 100) : m_maxSize{maxSize} {}
00035
00036     using key_type = Key;
00037     using mapped_type = Value;
00038     using allocator_type = Allocator;
00039     using value_type = std::pair<key_type, mapped_type>;
00040     using container_type = std::list<value_type, allocator_type>;
00041     using size_type = typename container_type::size_type;
00042     using difference_type = typename container_type::difference_type;
00043     using iterator = typename container_type::iterator;
00044     using const_iterator = typename container_type::const_iterator;
00045     using reverse_iterator = std::reverse_iterator<iterator>;
00046     using const_reverse_iterator = std::reverse_iterator<const_iterator>;
00047
00048     using reference = value_type &;
00049     using const_reference = const value_type &;
00050     using pointer = typename std::allocator_traits<allocator_type>::pointer;
00051
00052     using const_pointer =
00053         typename std::allocator_traits<allocator_type>::const_pointer;
00054
00055     [[nodiscard]] iterator begin() noexcept
00056     {
00057         return m_container.begin();
00058     }
00059
00060     [[nodiscard]] const_iterator begin() const noexcept
00061     {
00062         return m_container.begin();
00063     }
00064
00065     [[nodiscard]] reverse_iterator rbegin() noexcept
00066     {
00067         return m_container.rbegin();
00068     }
00069
00070     [[nodiscard]] const_reverse_iterator rbegin() const noexcept
00071     {
00072         return m_container.rbegin();
00073     }
00074

```

```

00075     [[nodiscard]] iterator end() noexcept
00076     {
00077         return m_container.end();
00078     }
00079
00080     [[nodiscard]] const_iterator end() const noexcept
00081     {
00082         return m_container.end();
00083     }
00084
00085     [[nodiscard]] reverse_iterator rend() noexcept
00086     {
00087         return m_container.rend();
00088     }
00089
00090     [[nodiscard]] const_reverse_iterator rend() const noexcept
00091     {
00092         return m_container.rend();
00093     }
00094
00095     [[nodiscard]] bool empty() const noexcept
00096     {
00097         return m_container.empty();
00098     }
00099
00100     [[nodiscard]] std::size_t size() const noexcept
00101     {
00102         return m_currentSize;
00103     }
00104
00105     [[nodiscard]] std::size_t max_size() const noexcept
00106     {
00107         return m_maxSize;
00108     }
00109
00110     void clear()
00111     {
00112         m_container.clear();
00113         m_mapper.clear();
00114         m_currentSize = 0;
00115     }
00116
00117     void put(const key_type & key, const mapped_type & value)
00118     {
00119         Q_UNUSED(remove(key))
00120
00121         m_container.push_front(value_type(key, value));
00122         m_mapper[key] = m_container.begin();
00123         ++m_currentSize;
00124
00125         fixupSize();
00126     }
00127
00128     [[nodiscard]] const mapped_type * get(const key_type & key) const noexcept
00129     {
00130         auto mapperIt = m_mapper.find(key);
00131         if (mapperIt == m_mapper.end()) {
00132             return nullptr;
00133         }
00134
00135         auto it = mapperIt.value();
00136         if (it == m_container.end()) {
00137             return nullptr;
00138         }
00139
00140         m_container.splice(m_container.begin(), m_container, it);
00141         mapperIt.value() = m_container.begin();
00142         return &(mapperIt.value()->second);
00143     }
00144
00145     [[nodiscard]] bool exists(const key_type & key) const noexcept
00146     {
00147         const auto mapperIt = m_mapper.find(key);
00148         if (mapperIt == m_mapper.end()) {
00149             return false;
00150         }
00151
00152         const auto it = mapperIt.value();
00153         return (it != m_container.end());
00154     }
00155
00156     bool remove(const key_type & key) noexcept
00157     {
00158         const auto mapperIt = m_mapper.find(key);
00159         if (mapperIt == m_mapper.end()) {
00160             return false;
00161         }

```

```

00162
00163     const auto it = mapperIt.value();
00164     Q_UNUSED(m_container.erase(it))
00165     Q_UNUSED(m_mapper.erase(mapperIt))
00166
00167     if (m_currentSize != 0) {
00168         --m_currentSize;
00169     }
00170
00171     return true;
00172 }
00173
00174 void setMaxSize(const std::size_t maxSize)
00175 {
00176     if (maxSize >= m_maxSize) {
00177         m_maxSize = maxSize;
00178         return;
00179     }
00180
00181     std::size_t diff = m_maxSize - maxSize;
00182     for (std::size_t i = 0; (i < diff) && !m_container.empty(); ++i) {
00183         auto lastIt = m_container.end();
00184         --lastIt;
00185
00186         const key_type & lastElementKey = lastIt->first;
00187         Q_UNUSED(m_mapper.remove(lastElementKey))
00188         Q_UNUSED(m_container.erase(lastIt))
00189
00190         if (m_currentSize != 0) {
00191             --m_currentSize;
00192         }
00193     }
00194 }
00195
00196 private:
00197     void fixupSize()
00198     {
00199         if (m_currentSize <= m_maxSize) {
00200             return;
00201         }
00202
00203         if (Q_UNLIKELY(m_container.empty())) {
00204             return;
00205         }
00206
00207         auto lastIt = m_container.end();
00208         --lastIt;
00209
00210         const key_type & lastElementKey = lastIt->first;
00211
00212         Q_UNUSED(m_mapper.remove(lastElementKey))
00213         Q_UNUSED(m_container.erase(lastIt))
00214
00215         if (m_currentSize != 0) {
00216             --m_currentSize;
00217         }
00218     }
00219
00220 private:
00221     mutable container_type m_container;
00222     std::size_t m_currentSize = 0;
00223     std::size_t m_maxSize;
00224
00225     mutable QHash<Key, iterator> m_mapper;
00226 };
00227
00228 } // namespace quentier::utility

```

## 6.100 MessageBox.h

```

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```

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/Linkage.h>
00022
00023 #include <QMessageBox>
00024
00025 namespace quentier::utility {
00026
00027 int QUENTIER_EXPORT genericMessageBox(
00028     QWidget * parent, const QString & title, const QString & briefText,
00029     const QString & detailedText = {},
00030     QMessageBox::StandardButtons standardButtons = QMessageBox::Ok);
00031
00032 int QUENTIER_EXPORT informationMessageBox(
00033     QWidget * parent, const QString & title, const QString & briefText,
00034     const QString & detailedText = {},
00035     QMessageBox::StandardButtons standardButtons = QMessageBox::Ok);
00036
00037 int QUENTIER_EXPORT warningMessageBox(
00038     QWidget * parent, const QString & title, const QString & briefText,
00039     const QString & detailedText = {},
00040     QMessageBox::StandardButtons standardButtons = QMessageBox::Ok);
00041
00042 int QUENTIER_EXPORT criticalMessageBox(
00043     QWidget * parent, const QString & title, const QString & briefText,
00044     const QString & detailedText = {},
00045     QMessageBox::StandardButtons standardButtons = QMessageBox::Ok);
00046
00047 [[nodiscard]] int QUENTIER_EXPORT questionMessageBox(
00048     QWidget * parent, const QString & title, const QString & briefText,
00049     const QString & detailedText = {},
00050     QMessageBox::StandardButtons standardButtons = QMessageBox::Ok |
00051     QMessageBox::Cancel);
00052
00053 void QUENTIER_EXPORT
00054     internalErrorMessageBox(QWidget * parent, QString detailedText = {});
00055
00056 } // namespace quentier::utility

```

## 6.101 PlatformUtils.h

```

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00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/Linkage.h>
00022
00023 #include <QString>
00024 #include <QUrl>
00025
00026 namespace quentier::utility {
00027
00031 [[nodiscard]] QString QUENTIER_EXPORT getCurrentUserName();
00032
00036 [[nodiscard]] QString QUENTIER_EXPORT getCurrentUserFullName();
00037
00041 void QUENTIER_EXPORT openUrl(const QUrl & url);
00042
00043 } // namespace quentier::utility

```

## 6.102 Printable.h

```

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00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/Linkage.h>
00022
00023 #include <QDebug>
00024 #include <QHash>
00025 #include <QIODevice>
00026 #include <QSet>
00027 #include <QString>
00028 #include <QTextStream>
00029
00030 namespace quentier::utility {
00031
00032     class QUINTIER_EXPORT Printable
00033     {
00034     public:
00035         virtual ~Printable() noexcept;
00036
00037         virtual QTextStream & print(QTextStream & strm) const = 0;
00038
00039         [[nodiscard]] QString toString() const;
00040
00041         friend QUINTIER_EXPORT QTextStream & operator<<(
00042             QTextStream & strm, const Printable & printable);
00043
00044         friend QUINTIER_EXPORT QDebug & operator<<(
00045             QDebug & debug, const Printable & printable);
00046     };
00047
00048 } // namespace quentier::utility
00049
00050 // printing operators for existing classes not inheriting from Printable
00051
00052 template <class T>
00053 [[nodiscard]] QString ToString(const T & object)
00054 {
00055     QString str;
00056     QTextStream strm(&str, QIODevice::WriteOnly);
00057     strm << object;
00058     return str;
00059 }
00060
00061 template <class TKey, class TValue>
00062 [[nodiscard]] QString ToString(const QHash<TKey, TValue> & object)
00063 {
00064     QString str;
00065     QTextStream strm(&str, QIODevice::WriteOnly);
00066     strm << QStringLiteral("QHash: \n");
00067
00068     using CIter = typename QHash<TKey, TValue>::const_iterator;
00069     CIter hashEnd = object.end();
00070     for (CIter it = object.begin(); it != hashEnd; ++it) {
00071         strm << QStringLiteral("[") << it.key() << QStringLiteral(" = ")
00072             << it.value() << QStringLiteral("; \n");
00073     }
00074     return str;
00075 }
00076
00077 template <class T>
00078 [[nodiscard]] QString ToString(const QSet<T> & object)
00079 {
00080     QString str;
00081     QTextStream strm(&str, QIODevice::WriteOnly);
00082     strm << QStringLiteral("QSet: \n");
00083
00084     using CIter = typename QSet<T>::const_iterator;

```

```

00090     CIter setEnd = object.end();
00091     for (CIter it = object.begin(); it != setEnd; ++it) {
00092         strm « QStringLiteral("[") « *it « QStringLiteral("];\n");
00093     }
00094     return str;
00095 }
00096
00097 #define QUENTIER_DECLARE_PRINTABLE(type, ...)
00098     QUENTIER_EXPORT QTextStream & operator<(
00099         QTextStream & strm, const type & obj);
00100     inline QDebug & operator<(QDebug & debug, const type & obj)
00101     {
00102         debug « ToString<type, #__VA_ARGS__>(obj);
00103         return debug;
00104     }
00105     // QUENTIER_DECLARE_PRINTABLE

```

## 6.103 QuentierApplication.h

```

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00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/Linkage.h>
00022
00023 #include <QApplication>
00024
00025 namespace quentier::utility {
00026
00027 class QUENTIER_EXPORT QuentierApplication : public QApplication
00028 {
00029     Q_OBJECT
00030 public:
00031     QuentierApplication(int & argc, char * argv[]); // NOLINT
00032     ~QuentierApplication() noexcept override;
00033
00034     [[nodiscard]] bool notify(QObject * object, QEvent * event) override;
00035     [[nodiscard]] bool event(QEvent * event) override;
00036 };
00037
00038 } // namespace quentier::utility

```

## 6.104 QuentierUndoCommand.h

```

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00017  */
00018

```



```

00019 #pragma once
00020
00021 #include <quentier/types/ErrorMessage.h>
00022
00023 #include <QObject>
00024 #include <QUndoCommand>
00025
00026 namespace quentier::utility {
00027
00053 class QuentierUndoCommand : public QObject, public QUndoCommand
00054 {
00055     Q_OBJECT
00056 public:
00057     QuentierUndoCommand(QUndoCommand * parent = nullptr);
00058     QuentierUndoCommand(const QString & text, QUndoCommand * parent = nullptr);
00059     ~QuentierUndoCommand() noexcept override;
00060
00061     void undo() final;
00062     void redo() final;
00063
00064     [[nodiscard]] bool onceUndoExecuted() const noexcept
00065     {
00066         return m_onceUndoExecuted;
00067     }
00068
00069 Q_SIGNALS:
00070     void notifyError(ErrorMessage error);
00071
00072 protected:
00073     virtual void undoImpl() = 0;
00074     virtual void redoImpl() = 0;
00075
00076 private:
00077     bool m_onceUndoExecuted = false;
00078 };
00079
00080 } // namespace quentier::utility

```

## 6.105 ShortcutManager.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/types/Account.h>
00022 #include <quentier/utility/Linkage.h>
00023
00024 #include <QKeySequence>
00025 #include <QObject>
00026
00027 namespace quentier::utility {
00028
00029 class QUENTIER_EXPORT ShortcutManager : public QObject
00030 {
00031     Q_OBJECT
00032 public:
00033     explicit ShortcutManager(QObject * parent = nullptr);
00034
00035     enum QuentierShortcutKey
00036     {
00037         NewNote = 5000,
00038         NewTag,
00039         NewNotebook,
00040         NewSavedSearch,
00041         AddAttachment,
00042         SaveAttachment,
00043         OpenAttachment,

```

```

00044     CopyAttachment,
00045     CutAttachment,
00046     RemoveAttachment,
00047     RenameAttachment,
00048     AddAccount,
00049     ExitAccount,
00050     SwitchAccount,
00051     AccountInfo,
00052     NoteSearch,
00053     NewNoteSearch,
00054     ShowNotes,
00055     ShowNotebooks,
00056     ShowTags,
00057     ShowSavedSearches,
00058     ShowDeletedNotes,
00059     ShowStatusBar,
00060     ShowToolBar,
00061     PasteUnformatted,
00062     Font,
00063     UpperIndex,
00064     LowerIndex,
00065     AlignLeft,
00066     AlignCenter,
00067     AlignRight,
00068     AlignFull,
00069     IncreaseIndentation,
00070     DecreaseIndentation,
00071     IncreaseFontSize,
00072     DecreaseFontSize,
00073     InsertNumberedList,
00074     InsertBulletedList,
00075     Strikethrough,
00076     Highlight,
00077     InsertTable,
00078     InsertRow,
00079     InsertColumn,
00080     RemoveRow,
00081     RemoveColumn,
00082     InsertHorizontalLine,
00083     InsertToDoTag,
00084     EditHyperlink,
00085     CopyHyperlink,
00086     RemoveHyperlink,
00087     Encrypt,
00088     Decrypt,
00089     DecryptPermanently,
00090     BackupLocalStorage,
00091     RestoreLocalStorage,
00092     UpgradeLocalStorage,
00093     LocalStorageStatus,
00094     SpellCheck,
00095     SpellCheckIgnoreWord,
00096     SpellCheckAddWordToUserDictionary,
00097     SaveImage,
00098     AnnotateImage,
00099     ImageRotateClockwise,
00100     ImageRotateCounterClockwise,
00101     Synchronize,
00102     FullSync,
00103     ImportFolders,
00104     Preferences,
00105     ReleaseNotes,
00106     ViewLogs,
00107     About,
00108     UnknownKey = 100000
00109 };
00110
00116 [[nodiscard]] QKeySequence shortcut(
00117     int key, const Account & account, const QString & context = {}) const;
00118
00124 [[nodiscard]] QKeySequence shortcut(
00125     const QString & nonStandardKey, const Account & account,
00126     const QString & context = {}) const;
00127
00132 [[nodiscard]] QKeySequence defaultShortcut(
00133     int key, const Account & account, const QString & context = {}) const;
00134
00139 [[nodiscard]] QKeySequence defaultShortcut(
00140     const QString & nonStandardKey, const Account & account,
00141     const QString & context = {}) const;
00142
00147 [[nodiscard]] QKeySequence userShortcut(
00148     int key, const Account & account, const QString & context = {}) const;
00149
00154 [[nodiscard]] QKeySequence userShortcut(
00155     const QString & nonStandardKey, const Account & account,
00156     const QString & context = {}) const;

```

```

00157
00158 Q_SIGNALS:
00159     void shortcutChanged(
00160         int key, QKeySequence shortcut, const Account & account,
00161         QString context);
00162
00163     void nonStandardShortcutChanged(
00164         QString nonStandardKey, QKeySequence shortcut, const Account & account,
00165         QString context);
00166
00167 public Q_SLOTS:
00168     void setUserShortcut(
00169         int key, const QKeySequence & shortcut, const Account & account,
00170         QString context = {});
00171
00172     void setNonStandardUserShortcut(
00173         QString nonStandardKey, const QKeySequence & shortcut,
00174         const Account & account, QString context = {});
00175
00176     void setDefaultShortcut(
00177         int key, const QKeySequence & shortcut, const Account & account,
00178         QString context = {});
00179
00180     void setNonStandardDefaultShortcut(
00181         QString nonStandardKey, const QKeySequence & shortcut,
00182         const Account & account, QString context = {});
00183
00184 private:
00185     class ShortcutManagerPrivate;
00186
00187     ShortcutManagerPrivate * const d_ptr;
00188     Q_DECLARE_PRIVATE(ShortcutManager)
00189 };
00190
00191 } // namespace quantier::utility

```

## 6.106 Size.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quantier/utility/Linkage.h>
00022
00023 #include <QString>
00024
00025 namespace quantier::utility {
00026
00036 [[nodiscard]] QString QUENTIER_EXPORT humanReadableSize(quint64 bytes);
00037
00038 } // namespace quantier::utility

```

## 6.107 StandardPaths.h

```

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00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/types/Account.h>
00022 #include <quentier/utility/Linkage.h>
00023
00028 #define LIBQUENTIER_PERSISTENCE_STORAGE_PATH \
00029     "LIBQUENTIER_PERSISTENCE_STORAGE_PATH"
00030
00031 namespace quentier::utility {
00032
00033 constexpr const char * gLibquentierPersistenceStoragePath =
00034     "LIBQUENTIER_PERSISTENCE_STORAGE_PATH";
00035
00044 [[nodiscard]] QString QUENTIER_EXPORT
00045     applicationPersistentStoragePath(bool * nonStandardLocation = nullptr);
00046
00056 [[nodiscard]] QString QUENTIER_EXPORT
00057     accountPersistentStoragePath(const Account & account);
00058
00063 [[nodiscard]] QString QUENTIER_EXPORT applicationTemporaryStoragePath();
00064
00070 [[nodiscard]] QString QUENTIER_EXPORT homePath();
00071
00075 [[nodiscard]] QString QUENTIER_EXPORT documentsPath();
00076
00077 } // namespace quentier::utility

```

## 6.108 StringUtils.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/Linkage.h>
00022
00023 #include <QList>
00024 #include <QSet>
00025 #include <QString>
00026
00027 namespace quentier::utility {
00028
00029 class QUENTIER_EXPORT StringUtils
00030 {
00031 public:
00032     StringUtils();
00033     ~StringUtils() noexcept;
00034
00035     void removePunctuation(
00036         QString & str, const QList<QChar> & charactersToPreserve = {}) const;
00037
00038     void removeDiacritics(QString & str) const;
00039     void removeNewlines(QString & str) const;
00040
00041 private:
00042     class StringUtilsPrivate;
00043     StringUtilsPrivate * const d_ptr;
00044     Q_DECLARE_PRIVATE(StringUtils);

```

```
00045 };
00046
00047 } // namespace quantier::utility
```

## 6.109 SuppressWarnings.h

```
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00017  */
00018
00019 #pragma once
00020
00022 // Common macros
00024
00025 #define STRINGIFY(a) #a
00026
00027 // Define empty macros doing nothing for supported compilers, they would be used
00028 // as fallback when any of these compilers are not actually used
00029
00030 #define SAVE_WARNINGS
00031
00032 #define CLANG_SUPPRESS_WARNING(warning)
00033 #define GCC_SUPPRESS_WARNING(warning)
00034 #define MSVC_SUPPRESS_WARNING(warning)
00035
00036 #define RESTORE_WARNINGS
00037
00039 // Clang implementation
00041
00042 #if defined(__clang__)
00043
00044 #undef CLANG_SUPPRESS_WARNING
00045
00046 #define CLANG_SUPPRESS_WARNING(warning) \
00047     _Pragma(Stringify(clang diagnostic ignored #warning))
00048
00049 #undef SAVE_WARNINGS
00050
00051 #define SAVE_WARNINGS _Pragma("clang diagnostic push")
00052
00053 #undef RESTORE_WARNINGS
00054
00055 #define RESTORE_WARNINGS _Pragma("clang diagnostic pop")
00056
00057 #endif // clang
00058
00060 // GCC implementation
00062
00063 // Clang can mimic gcc so need to ensure it's indeed gcc
00064 #if defined(__GNUC__) && !defined(__clang__)
00065
00066 #undef GCC_SUPPRESS_WARNING
00067
00068 #define GCC_SUPPRESS_WARNING(warning) \
00069     _Pragma(Stringify(GCC diagnostic ignored #warning))
00070
00071 #undef SAVE_WARNINGS
00072
00073 #define SAVE_WARNINGS _Pragma("GCC diagnostic push")
00074
00075 #undef RESTORE_WARNINGS
00076
00077 #define RESTORE_WARNINGS _Pragma("GCC diagnostic pop")
00078
00079 #endif // GCC
00080
00082 // MSVC implementation
00084
00085 #if defined(_MSC_VER)
```

```

00086
00087 #undef MSVC_SUPPRESS_WARNING
00088
00089 #define MSVC_SUPPRESS_WARNING(number) __pragma(warning(disable : number))
00090
00091 #undef SAVE_WARNINGS
00092
00093 #define SAVE_WARNINGS __pragma(warning(push))
00094
00095 #undef RESTORE_WARNINGS
00096
00097 #define RESTORE_WARNINGS __pragma(warning(pop))
00098
00099 #endif // MSVC

```

## 6.110 SysInfo.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/Linkage.h>
00022
00023 #include <QString>
00024
00025 namespace quentier::utility {
00026
00027 class QUINTIER_EXPORT SysInfo
00028 {
00029 public:
00030     SysInfo();
00031     ~SysInfo() noexcept;
00032
00033     [[nodiscard]] quint64 pageSize();
00034     [[nodiscard]] quint64 totalMemory();
00035     [[nodiscard]] quint64 freeMemory();
00036
00037     [[nodiscard]] QString stackTrace();
00038
00039     [[nodiscard]] QString platformName();
00040
00041 private:
00042     Q_DISABLE_COPY(SysInfo)
00043
00044 private:
00045     class SysInfoPrivate;
00046     SysInfoPrivate * const d_ptr;
00047     Q_DECLARE_PRIVATE(SysInfo)
00048 };
00049
00050 } // namespace quentier::utility

```

## 6.111 TagSortByParentChildRelations.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/types/Fwd.h>
00022 #include <quentier/utility/Linkage.h>
00023
00024 #include <qevercloud/types/Fwd.h>
00025
00026 #include <QList>
00027
00028 namespace quentier::utility {
00029
00041 bool QUENTIER_EXPORT sortTagsByParentChildRelations(
00042     QList<qevercloud::Tag> & tagList, ErrorString & errorDescription);
00043
00044 } // namespace quentier::utility

```

## 6.112 MockIKeychainService.h

```

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00017  */
00018
00019 #include <quentier/utility/IKeychainService.h>
00020
00021 #include <gmock/gmock.h>
00022
00023 namespace quentier::utility::tests::mocks {
00024
00025 class MockIKeychainService : public IKeychainService
00026 {
00027 public:
00028     MOCK_METHOD(
00029         QFuture<void>, writePassword,
00030         (QString service, QString key, QString password), (override));
00031
00032     MOCK_METHOD(
00033         QFuture<QString>, readPassword, (QString service, QString key),
00034         (const, override));
00035
00036     MOCK_METHOD(
00037         QFuture<void>, deletePassword, (QString service, QString key),
00038         (override));
00039 };
00040
00041 } // namespace quentier::utility::tests::mocks

```

## 6.113 UidGenerator.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/Linkage.h>
00022
00023 #include <QString>
00024 #include <QUuid>
00025
00026 namespace quentier::utility {
00027
00028 class QUENTIER_EXPORT UidGenerator
00029 {
00030 public:
00031     [[nodiscard]] static QString generate();
00032     [[nodiscard]] static QString uidToString(const QUuid & uid);
00033 };
00034
00035 } // namespace quentier::utility

```

## 6.114 Unreachable.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <QtGlobal>
00022
00023 #ifdef _MSC_VER
00024 #define UNREACHABLE
00025     do {
00026         Q_ASSERT(false);
00027         __assume(0);
00028     } while (false)
00029 #else
00030 #define UNREACHABLE
00031     do {
00032         Q_ASSERT(false);
00033         __builtin_unreachable();
00034     } while (false)
00035 #endif

```



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