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# PyQModManager Documentation

*Release 1.0.0-beta1*

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**Sep 09, 2020**



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A kind of archive manager for easy handling of game modules.

Works on Python 3.7+.



## 1.1 PyQModManager

Simple tool to manage a set of archives. Written to manage mods available for the game [Lilith's Throne](#).

- Track the state of the different files bundled with each archives
- Unpack into a designated directory

### 1.1.1 Installation and Requirements

#### Windows

If you are running windows, a self contained binary is provided at each release. Please check the [releases](#) page to download the archive. Running the application is as simple as double clicking the .exe file present in the archive.

#### Linux

You'll need to install python3 with whatever package manager your distribution provides you. This application has been developed using python 3.7, any prior version might work, but untested. If you feel adventurous, you can checkout [pyenv](#).

This software being a python script, it doesn't need to be installed. However requirements are needed for that purpose.

You'll need whatever is present in the [requirements.txt](#). As Linux distributions such as debian are commonly out of date, I'd recommend installing the requirement locally, under your user directory, with the following command.

```
~$ pip install --user -r requirements.txt
```

You could also opt to install in a virtual environment through pipenv. `pipenv install` will use the Pipfile already present in the repository.

```
~$ pip install pipenv
~$ pipenv install
```

### Running the app

If you chose pipenv, you can then start the application using the following, provided you are in the same folder as the `run.py` file.

```
~$ pipenv run ./run.py
```

If you opted for the simple pip install, simply execute `run.py`.

```
~$ python run.py
```

### 1.1.2 Known issues

The software is currently being rewritten, as such no known limitation exists. This might change once we get out of alpha.

### 1.1.3 Hacking

If you want to hack around, you only require the dependencies listed in the `requirements.txt` file. The Pipfile has a list of dev-packages, which is unneeded to actually run and develop the software. They're helper tools, like `pylint` or `flake8`

### Documentation generator

The documentation is currently available at <https://qmodmanager.rtfid.io/>

The generation of the documentation on `readthedocs.org` necessitate some extra steps in order to successfully generate the api documentation. We have to generate ui files at build time, which are not included in the repository nor available to `rtfd`. Therefore a script `apidoc` has been provided as helper.

The `apidoc` script will forcefully generate the required files for the api. In addition of that, it will also parse the various UI files present in the resources folder and generate stubs in the `_ext` folder. Those stubs needs to be regenerated whenever a UI file is added to the resources folder.

## 1.2 Usage

In this document will inform you about various elements of the graphical user interface of PyQModManager.



### 1.2.1 Settings

The software needs to know two on disk locations: where the game is located and a space to store the modules you've downloaded.

The game location should be the folder containing the .jar or .exe of the game. The archive repository for your module should be a random *empty* folder of your choice.

### 1.2.2 Adding modules to be tracked by the software

The software keeps track of 3 types of archives: Rar files, 7z files and Zip files. Two ways exists to have the game track modules:

1. Drop an archive in the repository folder.
2. Use the button from the toolbar.

If you use , the archive file will be copied over the repository folder leaving the original file untouched.

### 1.2.3 Removing an archive

Select the archive you wish to delete and click on the trashbin () button. Alternatively, right-click on the archive and select the appropriate option. PyQModManager sends all removed archives to your trashbin, which you will need to empty manually.

### 1.2.4 Installing a module

Select the archive you wish to install then click on the install () button of the toolbar. Alternatively, you can right-click the archive and select the install option.

Only files natively handled by Lilith's Throne mod system are supported. Any other file or folder will be ignored.

### Supported paths structure

A proper structure for a mod would be the following:

```
namespace/
|-- items
|   |-- clothing
|   |   |-- category
|   |       |-- cloth_test.svg
|   |       |-- cloth_test.xml
|   |-- items
|   |   |-- category
|   |       |-- itemName.svg
|   |       |-- itemName.xml
|   |-- patterns
|   |   |-- pattern_name.svg
|   |   |-- pattern_name.xml
|   |-- tattoos
|   |   |-- category
|   |       |-- tattoo_test.svg
|   |       |-- tattoo_test.xml
|   |-- weapons
```

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```
|      |-- category
|      |      |-- weapon_test.svg
|      |-- weapon_test.xml
|-- outfits
|  |-- OutfitName
|  |-- outfit_test.xml
|-- setBonuses
|  |-- template.xml
|-- statusEffects
|  |-- set_itemName.svg
|  |-- set_itemName.xml
```

The first folder must be the namespace, or colloquially the name of the modder. The module will be ignored if it is packaged with the initial `/res/mods` folders. The software will look for the existence of the sub-folders `items`, `setBonuses`, `statusEffects` and `outfits`.

If the `items` folder is found, the software will then verify the existence of the following sub-folders: `clothing`, `weapons`, `tattoos`, `patterns` and `items`.

## 1.2.5 Uninstalling a module

Select the archive you wish to uninstall then click on the `uninstall ()` button of the toolbar. Alternatively, you can right-click the archive and select the `uninstall` option.

## 1.2.6 Monitoring of the hard drive

The software will monitor file-system changes on both the game's module folder and the folder you designated as repository. The software will automatically scan any archive dropped in your repository folder, as well as making sure the game's module folder remains known even if you unpack files through other means than PyQModManager.

You can toggle off that behavior through the `auto-refresh` checkbox located above the list of your available modules. Doing so will activate a `refresh` button, located right next to the checkbox, which will allow you to manually refresh the internal database if you make changes to the file system.

The monitoring of the file-system is designed to be as lightweight as possible. It disable itself whenever PyQModManager becomes inactive (`alt-tab` or `minimized`), and reactive itself whenever the software gain focus. Gaining back focus will force a refresh of the database on a needed basis: if nothing has changed, nothing is done.

## 1.3 Version History

### 1.3.1 1.0.0-beta1 - ??????????

#### Added

- Support items pattern (mods only)
- Descriptive text for each option of the settings window. Should help with confusing options.

#### Changed

- Ignore unrecognized sub-folders under `namespace/items/`

- Prompt the user to restart the application if the specified settings options are changed.
- Prompt the user to open the settings window if required.

#### Fixed

- Crash: ZipFiles created using no compression method would crash the application. This is due to an absence of information within the attributes. Resolved by being less strict in normalizing file attributes read for the archive: if it is not explicitly a folder, then it is a file.
- Crash: If the paths stored in the user settings file did no longer point to an existing folder.

### 1.3.2 1.0.0-alpha13 - 02-09-20

#### Fixed

- Crash on windows platform.

### 1.3.3 1.0.0-alpha12 - 02-09-20

#### Added

- A context menu on the treeview if the file is present on disk:
  - Open containing folder
  - Open file using text editor, graphics editor or both (for svg)
- List untracked files present in the `res/mods` folder. It is understood by untracked that files existing in the folder weren't found in any of the archives.
- Support for new mod files
  - `res/mods/statusEffects`
  - `res/mods/setBonuses`
  - `res/mods/items/items`

#### Changed

- Directories in the treeview now properly show their status.
- Context menus rewritten in a less stupid way.
- Archives context menu disable entries when they don't apply, an archive that is not installed cannot be uninstalled and so on.
- Got rid of the resources files for the setting window. It is now programatically built, which helps with maintenance.

### 1.3.4 1.0.0-alpha11 - 20-05-12

#### Added

- Color code each managed item based on their status
  - Each line has a dual color: left and right
  - Right side can either be transparent or red, to show existing conflicts.
  - Left side can either be green, blue or yellow
    - \* Yellow is for missing files
    - \* Blue is for mismatched files
    - \* Green is when every files of the archive matches on the drive.
  - Greyed out text means the archive contains nothing that can be installed
  - The Help buttons will send users to the readthedocs website.

#### Changed

- Each file is now beautifully displayed in a tree instead of using a TextInput
- Files are color coded depending on their states.
- The conflicts tab details where a file as been found as duplicate: *GameFile* or *Archive*

#### Fixed

- Fix crash related to file system watch (watchdog)

### 1.3.5 1.0.0-alpha10

- Same as alpha9, but working.

### 1.3.6 1.0.0-alpha9

- Send archives to the trashbin instead of a full removal from the hard drive.
- Foundations for the internationalisation (i18n) of the software through gettext
- A Watchdog to monitor both the module's repository and the game's module path
  - The software will automatically add whatever archive dropped in the module's repository
  - The software will automatically determine if the game's module directory has been modified and regenerate it's database the next time the application gain focus
  - A checkbox exists to disable this behavior if unchecked.
- Internal dev stuff: changes of libraries used, reworking codebase, etc

## 1.4 qmm

### 1.4.1 qmm package

```
qmm.get_base_path()  
qmm.get_data_path(repath)  
qmm.is_frozen()
```

#### Subpackages

#### qmm.ab package

#### Submodules

#### qmm.ab.archives module

```
class qmm.ab.archives.ABCArchiveInstance (archive_name, file_list)  
    Bases: abc.ABC  
  
    all_ignored  
        Value is True if all files of the archive are of status FILE_IGNORED.  
  
    all_matching  
        Return True if all files in the archive matches on the drive.  
  
    ar_type = None  
  
    conflicts()  
        Yield FileMetadata of conflicting entries of the archive.  
  
    files (exclude_directories=False) → Generator[qmm.bucket.FileMetadata, None, None]  
  
    find (fmd: qmm.bucket.FileMetadata)  
        Return a FileMetadata object if managed by the archive.  
  
        The comparison is done on path and crc, not origin.  
  
        Parameters fmd (FileMetadata) – a FileMetadata object  
  
        Returns (FileMetadata, int)  
  
        Return type tuple  
  
    find_metadata_by_path (path)  
  
    folders () → Generator[qmm.bucket.FileMetadata, None, None]  
        Yield folders present in the archive.  
  
    get_status (file: qmm.bucket.FileMetadata) → qmm.fileutils.FileState  
  
    has_conflicts  
        Value is True if conflicts exists for this archive.  
  
    has_ignored  
        Value is True if a file of the archive is of status FILE_IGNORED.  
  
    has_matched  
        Return True if a file of the archive is of status FILE_MATCHED.
```

**has\_mismatched**

Value is *True* if a file of the archive is of status `FILE_MISMATCHED`.

**has\_missing**

Value is *True* if a file of the archive is of status `FILE_MISSING`.

**ignored()** → `Iterable[qmm.bucket.FileMetadata]`

Yield file metadata of ignored entries of the archive.

**install\_info()**

**matched()** → `Generator[qmm.bucket.FileMetadata, None, None]`

Yield file metadata of matched entries of the archive.

**mismatched()** → `Generator[qmm.bucket.FileMetadata, None, None]`

Yield file metadata of mismatched entries of the archive.

**missing()** → `Generator[qmm.bucket.FileMetadata, None, None]`

Yield file metadata of missing entries of the archive.

**reset\_conflicts()**

**reset\_status()**

Called whenever the state of an archive becomes dirty, which is also the default state.

Populate 'self.\_meta' with tuples containing the 'FileMetadata' object of each individual file alongside the current status of that file. The status can be either `FILE_MATCHED`, `FILE_MISMATCHED`, `FILE_IGNORED` or `FILE_MISSING`.

**status()** → `Generator[Tuple[qmm.bucket.FileMetadata, int], None, None]`

**uninstall\_info()**

Informations necessary to the uninstall function.

**class** `qmm.ab.archives.ArchiveType`

Bases: `enum.IntEnum`

An enumeration.

**FILE = 1**

**VIRTUAL = 2**

## qmm.ab.widgets module

**class** `qmm.ab.widgets.ABCListRowItem` (*filename: Optional[str], archive\_manager: qmm.filehandler.ArchivesCollection*)

Bases: `QListWidgetItem`

**filename**

Returns the name of the archive filename, suitable for path manipulations.

**hashsum**

Returns the sha256 hashsum of the archive.

**modified**

Return last modified time for an archive, usually time of creation.

**name**

Return the name of the archive, formatted for GUI usage.

Transfrom the '\_' character into space.

**refresh\_strings()**

Called when the game's folder state changed.

Reinitialize the widget's strings, recompute the conflicts then redo all triaging and formatting.

**set\_gradients()**

**set\_text\_color()**

## qmm.settings package

### Submodules

#### qmm.settings.core\_dialogs module

Constructors for the setting window.

Some of the design and code were influenced by [Spyder Ide](#). Spyder IDE is released under MIT.

The setting window has two major elements:

1. A side bar on the left listing the different pages
2. A content area on the right with the selected page widgets

Names	Sections
Page name	<ul style="list-style-type: none"> <li>• Page widget</li> <li>• Page widget</li> <li>• Page widget</li> <li>• Page widget</li> <li>• Page widget</li> </ul>
Page name	
Page name	
Page name	
Yes / No	

```
class qmm.settings.core_dialogs.Page(parent, verbose_mode=False)
```

Bases: `QWidget`

**ICON** = None

**NAME** = None

**c\_browsedir**(text, confkey, tip=None, restart=False, placeholder=None)

**c\_combobox**(text, choices, confkey, restart=False, tip=None)

**c\_lineedit**(text, confkey, restart=False, \*\*qtparams)

**get\_icon**()

**get\_name**()

**init\_page**()

**load\_configuration**()

**prompt\_restart\_required**(changed\_elements)

Prompt user to restart software.

**save**()

**select\_directory**(lineedit)

```
    setup_ui ()
    show_this_page
    validate ()

class qmm.settings.core_dialogs.PreferencesDialog (parent=None)
    Bases: QDialog
    accept ()
        Go through all the pages and save everything.
    add_page (widget)
    button_clicked (button)
        Save a specific page
    checkbox_toggled (checkbox)
        Enable descriptive help.
    get_page (index=None)

qmm.settings.core_dialogs.create_button (text, callback)

qmm.settings.core_dialogs.make_layout (parent, align, *widgets)
    Generate a box layout depending of align.

qmm.settings.core_dialogs.make_verbose_layout (parent, align, helper, *widgets)
    Generate a GridLayout, insert extra helper widget on the second row.

    The helper widget is supposed to be a QLabel. Tries to respect align.
```

### qmm.settings.pages module

```
class qmm.settings.pages.GeneralPage (parent, verbose_mode=False)
    Bases: qmm.settings.core_dialogs.Page
    NAME = 'General'
    setup_ui ()
```

### qmm.settings.validators module

```
class qmm.settings.validators.IsDirValidator (data: str)
    Bases: object
    Validate a setting entry as an existing directory.
    validate (a, v)

class qmm.settings.validators.IsFileValidator (data: str)
    Bases: object
    Validate a setting entry as an existing file.
    validate (a, v)

qmm.settings.validators.make_html_list (elements)
    Helper function to display a list of item within Qt.
```



## Submodules

### qmm.bucket module

Buckets of dicts with a set of helpers function.

This module serves has a stand-in database, any function or method it contain would be facilitator to either access or transform the data. This module is necessary in order to keep track of the state of the different files and make that specific state available globally within the other modules.

**class** qmm.bucket.**FileMetadata** (*crc, path: Union[str, pathlib.Path], attributes, modified, isfrom*)

Bases: `object`

Representation of a file.

Can handle game files, mod files or file information coming from an archive.

#### Parameters

- **crc** (*int*) – CRC32 of the represented file, 0 or empty if file is a folder.
- **path** (*str or os.PathLike*) – relative path to the represented file.
- **attributes** (*str or None*) – ‘D’ for folder, ‘F’ otherwise. If the value passed is None, the attributes will be deduced from *path*
- **modified** (*str or None*) – timestamp of the last modification of the file.
- **isfrom** (*int or str*) – Will be the name of the archive the file originates from. Otherwise either `TYPE_GAMEFILE` or `TYPE_LOOSEFILE`.

**as\_dict** ()

Return this object as a dict (kinda).

**attributes**

**crc**

**exists** ()

Check if the file exists on the disk.

**is\_dir** ()

Check if the represented item is a directory.

**is\_file** ()

Check if the represented item is a file.

**modified**

**origin**

**path**

**path\_as\_posix** ()

Return ‘pathlib.PurePosixPath’ with self.\_Path as value.

**split** ()

qmm.bucket.**TYPE\_GAMEFILE** = 2

File present in an archive

qmm.bucket.**TYPE\_LOOSEFILE** = 1

File present on the disk

`qmm.bucket.as_conflict (key: str, value)`

Append and item to the conflicts bucket

`qmm.bucket.as_gamefile (crc: Crc32, value: Union[pathlib.Path, pathlib.PurePath])`

Add to the gamefiles a path indexed to its target CRC32.

`qmm.bucket.as_loosefile (crc: Crc32, filepath: pathlib.Path)`

Adds filepath to the loosefiles bucket, indexed on given CRC.

`qmm.bucket.file_crc_in_loosefiles (filemd: qmm.bucket.FileMetadata) → bool`

Check if a file's crc exists in loosefile's index.

`qmm.bucket.file_path_in_loosefiles (filemd: qmm.bucket.FileMetadata) → bool`

Check if a file's path exists within the different loosefile lists.

`qmm.bucket.remove_item_from_loosefiles (file: qmm.bucket.FileMetadata)`

Removes the reference to file if it is found in loosefiles.

`qmm.bucket.with_conflict (path: str) → bool`

Check if path exists in conflicts's keys.

The conflicts bucket purpose is to list issues in-between archives only.

**Parameters** `path (str)` – Simple string, should be a path pointing to a file

**Returns** True if path exist in conflicts's keys

**Return type** `bool`

`qmm.bucket.with_gamefiles (crc: Crc32 = None, path: str = None)`

Determine if a file exists within the cached list of game files.

First check if a CRC32 exist within the gamefiles bucket, if no CRC is given or the check fails, will then check if a path is present in the gamefiles's bucket values.

**Parameters**

- `crc (int)` – CRC32 as integer
- `path (str)` – the relative pathlike string of a file

**Returns** True if either CRC32 or path are found

**Return type** `bool`

## qmm.common module

`qmm.common.acommand (alias)`

`qmm.common.bundled_tools_path ()`

Returns the path to the bundled 7z executable.

`qmm.common.command (binary, alias=False)`

Return path to binary or None if not found.

Analogous to bash's command, but do not actually execute anything.

**Parameters**

- `binary (str)` – Name of binary to find in PATH
- `alias (bool)` – True if the name is an alias to be looked up the pre-made dict. `alias` is only useful for windows OS as the binary can be a tuple. Aliases are also used to find predefined software without the need of calling them by name, good for cross platform.

**Returns** Path to the binary or None if not found.

**Return type** `os.Pathlike` or `None`

`qmm.common.settings = <qmm.config.Config object>`  
 instance of the Config object that governs the user's preferences. Can be imported anywhere in the app

`qmm.common.settings_are_set()`  
 Returns False if either 'local\_repository' or 'game\_folder' isn't set.

`qmm.common.startfile(file)`

`qmm.common.timestamp_to_string(timestamp)`  
 Takes a UNIX timestamp and return a vernacular date.

`qmm.common.valid_suffixes(output_format='qfiledialog') → Union[List[str], Tuple[str, str, str], bool]`  
 Properly format a list of filters for QFileDialog.

**Parameters** `output_format (str)` – Accepts either 'qfiledialog' or 'pathlib'. 'pathlib' returns a simple list of suffixes, whereas 'qfiledialog' format the output to be an acceptable filter for QFileDialog.

**Returns** a list of valid suffixes.

**Return type** `list`

## qmm.config module

**class** `qmm.config.Config(filename, config_dir=None, defaults=None, compress=False, on_load_validators=None)`  
 Bases: `collections.abc.MutableMapping`  
 Influenced by deluge's config object.

**delayed\_save(msec=5000)**  
 Schedule a save in the future if one isn't already planned.

**load(filename=None)**

**save(filename=None)**

**exception** `qmm.config.SettingsNotSetError`  
 Bases: `Exception`

`qmm.config.get_config_dir(filename=None, extra_directories=None) → str`  
 Return the full path of the user config dir.

**Parameters**

- **filename** – If provided, gets added at the end of the string.
- **extra\_directories** – If provided, extends on the returned path.

## qmm.dialogs module

Contains a bunch of helper function to display Qt's dialogs.

**class** `qmm.dialogs.SplashProgress(parent, title, message)`  
 Bases: `QDialog, qmm.ui_qprogress.Ui_Dialog`

**progress(text: str, category: str = None)**

`qmm.dialogs.q_error(message, **kwargs)`  
Helper function to show an error dialog.

`qmm.dialogs.q_information(message, **kwargs)`  
Helper function to show an informational dialog.

`qmm.dialogs.q_warning(message, **kwargs)`  
Helper function to show a warning dialog.

`qmm.dialogs.q_warning_yes_no(message, **kwargs)`  
Helper function to show an Y/N warning dialog.

## qmm.filehandler module

**exception** `qmm.filehandler.ArchiveException`  
Bases: `Exception`

**class** `qmm.filehandler.ArchiveInstance` (*archive\_name, file\_list*)  
Bases: `qmm.ab.archives.ABCArchiveInstance`

Represent an archive and its content already analyzed and ready for display.

**ar\_type** = 1

**conflicts** ()  
Yield FileMetadata of conflicting entries of the archive.

**ignored** ()  
Yield file metadata of ignored entries of the archive.

**install\_info** ()  
Return a several lists useful to the installation process.

The content in matched and ignored key will be compiled into a set of exclude flags, whereas the content of mismatched key will be overridden.

**See also:**

`install_archive()`

**matched** ()  
Yield file metadata of matched entries of the archive.

**mismatched** ()  
Yield file metadata of mismatched entries of the archive.

**missing** ()  
Yield file metadata of missing entries of the archive.

**reset\_conflicts** ()  
Generate a list of conflicting files, either from in the game folders or in other archives, for each file present in this archive.

**uninstall\_info** ()  
Informations necessary to the uninstall function.

**class** `qmm.filehandler.ArchivesCollection`  
Bases: `collections.abc.MutableMapping, typing.Generic`

Manage sets of `ArchiveInstance`.

**add\_archive** (*path*, *hashsum*: *str* = *None*, *progress*=*None*)

Add an archive to the list of managed archives.

This method should be used over `__setitem__` as it setup the different metadata required by the UI.

**build\_archives\_list** (*progress*, *rebuild*=*False*)

**diff\_matched\_with\_loosefiles** ()

**find** (*archive\_name*: *str* = *None*, *hashsum*: *str* = *None*)

Find a member based on the name or hashsum of the archive.

If *archiveName* is not *None*, will check if *archiveName* exists in the keys of the collection. If *hashsum* is not *None*, will check if the value exists in the `self._hashsums` dict. If all checks fails, returns *False*.

#### Parameters

- **archive\_name** – filename of the archive, suffix included (default *None*)
- **hashsum** – sha256sum of the file (default *None*)

**Returns** Boolean or *ArchiveInstance*

**hashsums** (*key*)

**initiate\_conflicts\_detection** ()

**refresh** () → *Iterable*[*Tuple*[*int*, *str*]]

Scan the local repository to add or remove archives as needed.

This is a companion method to use with *WatchDog* whenever something changes on the filesystem.

**Yields** (*Union*[*ArchiveEvents*.*FILE\_ADDED*, *ArchiveEvents*.*FILE\_REMOVED*],  
*str*) – State and name of the file.

**rename\_archive** (*src\_path*, *dest\_path*)

Rename the key pointing to an archive.

Whenever an archive on the drive gets renamed, we need to do the same with the key under which the parsed data is stored.

**special**

**stat** (*key*)

**class** *qmm*.*filehandler*.**VirtualArchiveInstance** (*file\_list*)

Bases: *qmm*.*ab.archives*.*ABCArchiveInstance*

**ar\_type** = 2

**conflicts** ()

Yield *FileMetadata* of conflicting entries of the archive.

**ignored** ()

Yield file metadata of ignored entries of the archive.

**install\_info** ()

**matched** ()

Yield file metadata of matched entries of the archive.

**mismatched** ()

Yield file metadata of mismatched entries of the archive.

**missing** ()

Yield file metadata of missing entries of the archive.

**reset\_conflicts()**

**uninstall\_info()**

Informations necessary to the uninstall function.

`qmm.filehandler.build_cmd(filepath, *ext, extract=True, output=None, **extra)`

`qmm.filehandler.build_game_files_crc32(progress=None)`

Compute the CRC32 value of all the game files then add them to a bucket.

The paths returned by this function are non-existent due to a difference between the mods and the game folder structure. It is needed to be that way in order to compare the mod files with the existing game files.

**Parameters** `progress(progress())` – Callback to a method accepting strings as argument.

`qmm.filehandler.build_loose_files_crc32(progress=None)`

Build the CRC32 value of all loose files.

**Parameters** `progress(progress())` – Callback to a method accepting strings as argument.

`qmm.filehandler.conflicts_process_files(files, archives_list, current_archive, processed)`

Process an archive, verify that each of its files are unique.

**Parameters**

- **files** (`files()`) – Process the files fed by the instance method.
- **archives\_list** (`ArchivesCollection`) – Instance of `ArchivesCollection`.
- **current\_archive** (`str`) – Filename on the disk of the current archive being processed.
- **processed** (`list` or `None`) – List of processed archives. Set to `None` if only one archive needs to be processed.

`qmm.filehandler.copy_archive_to_repository(filename)`

Copy an archive to the manager's repository.

`qmm.filehandler.delete_archive(filepath)`

Delete an archive from the filesystem.

`qmm.filehandler.extract7z(file_archive: pathlib.Path, output_path: path-  
lib.Path, exclude_list=None, progress=None) →  
Union[List[qmm.bucket.FileMetadata], bool]`

`qmm.filehandler.file_in_other_archives(file: qmm.bucket.FileMetadata, archives:  
qmm.filehandler.ArchivesCollection, ignore:  
List[T]) → List[T]`

Search for existence of file in other archives.

**Parameters**

- **file** (`FileMetadata`) – file to be found
- **archives** (`ArchivesCollection`) – instance of `ArchivesCollection`
- **ignore** (`list`) – list of archives to ignore, for example already parsed archives

**Returns** List of archives containing the same file.

**Return type** List

`qmm.filehandler.generate_conflicts_between_archives(archives_lists:  
qmm.filehandler.ArchivesCollection,  
progress=None)`

`qmm.filehandler.get_mod_folder(with_file: str = None, prepend_modpath=False) → pathlib.Path`

Return the path to the game folder.

**Parameters**

- **with\_file** – append ‘with\_file’ to the path
- **prepend\_modpath** – if True, adds the module path before ‘with\_file’

**Returns** PathLike structure representing the game folder.

```
qmm.filehandler.install_archive (file_to_extract: str, file_context: Dict[str,
                                List[qmm.bucket.FileMetadata]]) → Union[bool,
                                List[qmm.bucket.FileMetadata]]
```

Install the content of an archive into the game mod folder.

**Parameters**

- **file\_to\_extract** (*str*) – path to the archive to extract.
- **file\_context** (*dict*) – A dict containing the keys *matched*, *mismatched*, *ignored*. Each of these entries point to a list containing *FileMetadata* objects.

The content in *matched* and *ignored* key will be compiled into a set of exclude flags, whereas the content of *mismatched* key will be overridden. See *ArchiveInstance.install\_info()*

**Returns** Output of function *extract7z()* or *False*

```
qmm.filehandler.list7z (file_path: Union[str, pathlib.Path], progress=None) →
                        List[qmm.bucket.FileMetadata]
```

```
qmm.filehandler.reErrorMatch ()
Matches zero or more characters at the beginning of the string.
```

```
qmm.filehandler.reExtractMatch ()
Matches zero or more characters at the beginning of the string.
```

```
qmm.filehandler.reListMatch ()
Matches zero or more characters at the beginning of the string.
```

```
qmm.filehandler.sha256hash (filename: Union[IO, str]) → Optional[str]
Return the 256 hash of the managed archive.
```

**Parameters** **filename** – path to the file to hash

**Returns** a string if successful, otherwise *None*

**Return type** *str* or *None*

```
qmm.filehandler.uninstall_files (file_list: List[qmm.bucket.FileMetadata])
Removes a list of files and directory from the filesystem.
```

**Parameters** **file\_list** (*list [FileMetadata]*) – A list of *FileMetadata* objects.

**Returns** *True* on success, *False* if an error occurred during the deleting process.

**Return type** *bool*

**Notes**

Any error will be logged silently to the application configured facility.

## qmm.fileutils module

**class** qmm.fileutils.**ArchiveEvents**

Bases: `enum.Enum`

An enumeration.

**FILE\_ADDED** = 1

**FILE\_REMOVED** = 2

**class** qmm.fileutils.**FileState**

Bases: `enum.Enum`

An enumeration.

**IGNORED** = 4

Indicate that the file will be ignored by the software.

**MATCHED** = 1

Indicate that the file is found on the drive, and match in content.

**MISMATCHED** = 3

Indicate that the file to exists on drive, but not matching in content.

**MISSING** = 2

Indicate that the file is absent from the drive.

**qcolor**

**class** qmm.fileutils.**FileStateColor**(*r, g, b, a*)

Bases: `enum.Enum`

Gradients of colors for each file of the tree widget.

**CONFLICTS** = (135, 33, 39, 255)

**IGNORED** = (219, 219, 219, 255)

**MATCHED** = (91, 135, 33, 255)

**MISMATCHED** = (132, 161, 225, 255)

**MISSING** = (237, 213, 181, 255)

**qcolor**

**tab\_conflict** = (135, 33, 39, 255)

**tab\_ignored** = (135, 33, 39, 255)

qmm.fileutils.**file\_status**(*file: qmm.bucket.FileMetadata*) → qmm.fileutils.FileState

qmm.fileutils.**ignore\_patterns**(*seven\_flag=False*)

Output a tuple of patterns to ignore.

**Parameters** *seven\_flag* (*bool*) – Patterns format following 7z exclude switch.

## qmm.lang module

qmm.lang.**get\_locale**()

qmm.lang.**list\_available\_languages**()

qmm.lang.**normalize\_locale**(*loc: str*)



```
qmm.lang.set_gettext (install=True)
```

## qmm.manager module

Handles the Qt main window.

```
class qmm.manager.ArchiveAddedEventHandler (moved_cb, created_cb, deleted_cb, modified_cb)
    Bases: qmm.manager.QmmWdEventHandler, watchdog.events.
            PatternMatchingEventHandler, QObject
```

**on\_created** (event)

Called when a file or directory is created.

**Parameters event** (DirCreatedEvent or FileCreatedEvent) – Event representing file/directory creation.

**on\_deleted** (event)

Called when a file or directory is deleted.

**Parameters event** (DirDeletedEvent or FileDeletedEvent) – Event representing file/directory deletion.

**on\_modified** (event)

Called when a file or directory is modified.

**Parameters event** (DirModifiedEvent or FileModifiedEvent) – Event representing file/directory modification.

**on\_moved** (event)

Called when a file or a directory is moved or renamed.

**Parameters event** (DirMovedEvent or FileMovedEvent) – Event representing file/directory movement.

```
class qmm.manager.GameModEventHandler (moved_cb, created_cb, deleted_cb, modified_cb)
    Bases: qmm.manager.QmmWdEventHandler, watchdog.events.
            PatternMatchingEventHandler, QObject
```

**on\_created** (event)

Called when a file or directory is created.

**Parameters event** (DirCreatedEvent or FileCreatedEvent) – Event representing file/directory creation.

**on\_deleted** (event)

Called when a file or directory is deleted.

**Parameters event** (DirDeletedEvent or FileDeletedEvent) – Event representing file/directory deletion.

**on\_modified** (event)

Called when a file or directory is modified.

**Parameters event** (DirModifiedEvent or FileModifiedEvent) – Event representing file/directory modification.

**on\_moved** (event)

Called when a file or a directory is moved or renamed.

**Parameters event** (DirMovedEvent or FileMovedEvent) – Event representing file/directory movement.

```
class qmm.manager.MainWindow
    Bases: QMainWindow, qmm.manager.QEventFilter, qmm.ui_mainwindow.Ui_MainWindow

    add_callbacks_post_show (items)

    closeEvent (self, QCloseEvent)

    do_about ()
        Show the about window.

    do_settings ()
        Show the settings window.

    fswatch_clear (QString, QString)

    fswatch_ignore (QString, QString)

    get_row_index_by_name (name)
        Return row if name is found in the list.

        Parameters name (str) – Filename of the archive to find, matches content of the
            ListRowItem text method.

        Returns index of item found, None if name matches nothing.

        Return type int or None

    is_mod_repo_dirty

    on_selection_change () → None
        Change the tab color to match the selected element in linked list.

    on_window_activate ()

    on_window_deactivate ()

    post_show_setup ()
        Actions to be triggered only after mainwindow show method is triggered

    refresh_list_item_state ()
        Refresh the listwidget whenever an item is added or removed.

    set_tab_color (index, color: PyQt5.QtGui.QColor = None) → None
        Manage tab text color.

        Helper to MainWindow._on_selection_change.

        Store the default text color of a tab in order to restore it whenever the selected element in the linked list
        changes.

        Parameters

        • index (int) – index of the tab

        • color (QColor) – new color of the text

    setup_schedulers ()

class qmm.manager.QAppEventFilter
    Bases: QObject

    Detect if the application is active then triggers to appropriate events.

    The purpose of this object is to enable or disable WatchDog related procedures. We want to disable file system
    watch on the modules directory when the window is inactive (user has alt-tabbed outside of it or minimized
    the application), as such delay any activity until the user comes back to the application itself. The intent is to
```

minimize unneeded operations as the user could move and rename multiple files in the folder. We only need to scan the module's repository once the user has finished, thus once the application becomes active.

The detection of activity needs to be done at the Session Manager, namely `QApplication` (`QGuiApplication` or `QCoreApplication`). That object handles every window and widgets of the application. Each of those window and widgets could become inactive regardless of the status of the whole application. Inactivity could be defined as whenever the application loose focus (keyboard input). This loss also happen whenever the window is being dragged around by the user, which means we need to make sure to not trigger any refresh of the database for those user cases. To achieve that we track the geometry and coordinates of the window and trigger the callback only if those parameters remains the same between an inactive and active event.

Callbacks are `on_window_activate` and `on_window_deactivate`.

**eventFilter** (*self*, *QObject*, *QEvent*) → bool

**get\_coords** () → Tuple[int, int]

Return the coordinates of the top window.

**get\_geometry** () → Tuple[int, int]

Return the geometry of the top window.

**set\_coords** ()

**set\_geometry** ()

**set\_top\_window** (*window*: *qmm.manager.MainWindow*)

Define the widget that is considered as top window.

**class** `qmm.manager.QEventFilter`

Bases: `object`

**eventFilter** (*o*, *e*)

**setup\_filters** (*objects*)

**class** `qmm.manager.QmmWdEventHandler` (*moved\_cb*, *created\_cb*, *deleted\_cb*, *modified\_cb*)

Bases: `object`

**clear** (*src\_path*, *event\_type*)

Remove a path from the event's ignore tuple.

**ignore** (*src\_path*, *event\_type*)

Ignore an event if path is found in it's ignore tuple.

**sgn\_created** (*PyQt\_PyObject*)

**sgn\_deleted** (*PyQt\_PyObject*)

**sgn\_modified** (*PyQt\_PyObject*)

**sgn\_moved** (*PyQt\_PyObject*)

**exception** `qmm.manager.UnknownContext`

Bases: `Exception`

**class** `qmm.manager.WatchDogSchedules`

Bases: `enum.Enum`

An enumeration.

**ARCHIVES** = 'archives'

**MODULES** = 'modules'

```
qmm.manager.main()
    Start the application proper.
```

## qmm.version module

## qmm.widgets module

Contains various Qt Widgets used internally by the application.

```
class qmm.widgets.ArchiveFilesTreeRow (text: Union[str, List[T]], parent, item:
    qmm.bucket.FileMetadata, tooltip: str = None,
    color: Optional[PyQt5.QtGui.QColor] = None,
    icon=None, **extra)
```

Bases: `QTreeWidgetItem`

```
class qmm.widgets.ListRowItem (filename: Optional[str], archive_manager:
    qmm.filehandler.ArchivesCollection)
```

Bases: `qmm.ab.widgets.ABCListRowItem`

ListWidgetItem representing one single archive.

```
class qmm.widgets.ListRowVirtualItem (archive_manager)
```

Bases: `qmm.ab.widgets.ABCListRowItem`

**refresh\_strings()**

Called when the game's folder state changed.

Reinitialize the widget's strings, recompute the conflicts then redo all triaging and formatting.

**set\_gradients()**

```
class qmm.widgets.QAbout (parent=None)
```

Bases: `QWidget`, `qmm.ui_about.Ui_About`

About window displaying various informations about the software.

```
class qmm.widgets.TreeWidgetMenu (treewidget: PyQt5.QtWidgets.QTreeWidgetItem)
```

Bases: `QObject`

**show\_menu(position)**

```
qmm.widgets.autoresize_columns (tree_widget: PyQt5.QtWidgets.QTreeWidgetItem)
```

Resize all columns of a `QTreeWidgetItem` to fit content.

```
qmm.widgets.build_conflict_tree_widget (container: PyQt5.QtWidgets.QTreeWidgetItem,
    archive_instance: qmm.filehandler.ArchiveInstance)
```

```
qmm.widgets.build_ignored_tree_widget (container: PyQt5.QtWidgets.QTreeWidgetItem, ig-
    nored_iter: Iterable[qmm.bucket.FileMetadata])
```

```
qmm.widgets.build_tree_from_path (item: qmm.bucket.FileMetadata, parent:
    PyQt5.QtWidgets.QTreeWidgetItem, folders, color=None,
    **kwargs)
```

Generate a set of related `PyQt5.QtWidgets.QTreeWidgetItem()` based on a file path.

If *extra\_column* is specified, it must be a list containing text that will be used to create new columns after the first one. Useful to add extra information.

### Parameters

- **item** – a `qmm.bucket.FileMetadata` object.
- **parent** – The container widget to anchor the first node to.

- **folders** – A dict containing the parents widgets.
- **color** (*Optional[List]*) – Background color value for the widget.

**Keyword Arguments** **extra\_column** (*List[str]*) – Extra values to pass down to `_create_treewidget()`

**Returns** A dictionary containing the folders ancestry.

**Return type** `dict`

`qmm.widgets.build_tree_widget` (*container: PyQt5.QtWidgets.QTreeWidget, archive\_instance: qmm.filehandler.ArchiveInstance*)



## CHAPTER 2

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### Contribute

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Did you find a bug or have a feature request for PyQModManager? You can file an issue ticket at the [issue tracker](#). You can also ask questions at the Lilith's Throne official [discord](#).





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