

Specification of RobotFramework AIO v. 0.5.1

Implemented by:

Thomas Pollerspöck

Nguyen Huynh Tri Cuong

Tran Duy Ngoan

Mai Dinh Nam Son

Tran Hoang Nguyen

Holger Queckenstedt

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Chapter 1

RobotFramework AIO environment

During an installation of the RobotFramework AIO all content is placed at two different main locations:

- `RobotFramework`
Contains the framework installation files itself
- `RobotTest`
Contains the *playground* for the user, including default folder for testcases and logfiles

The root path to these folders can be set by the user during the installation process (called `<root>` in listings below).

The following overview contains a list of environment variables that are introduced by the installer. They can be used to refer to locations inside these folders.

- `RobotLogPath`
Log files folder in which the RobotFramework AIO places the log files per default.
Location: `<root>/RobotTest/logfiles`
- `RobotTestPath`
Folder in which the user can place the testcases.
Location: `<root>/RobotTest/testcases`
- `RobotTutorialPath`
Folder containing a tutorial of the RobotFramework AIO (useful for self learning).
Location: `<root>/RobotTest/tutorial`
- `RobotPythonPath`
Folder containing the Python installation.
Location: `<root>/RobotFramework/python39`
- `RobotScriptPath`
Folder containing scripts of the Python installation.
Location: `<root>/RobotFramework/python39/scripts`
- `RobotVsCode`
Folder containing the installation of *Visual Studio Code* that is intended to be the main development environment for the RobotFramework AIO.
Location: `<root>/RobotFramework/robotvscode`
- `RobotToolsPath`
Tools which require and extend functionality of the Robot Framework.
Location: `<root>/RobotFramework/tools`
- `RobotDevtools`
Tools which are independent of Robot Framework, but are bundled and tested with RobotFramework AIO.
Location: `<root>/RobotFramework/devtools`

- **RobotAppium**
Location of Appium tested and distributed with RobotFramework AIO. More information about Appium you find here: [appium](#)
Location: `<root>/RobotFramework/devtools/Windows/Appium`
- **RobotNodeJS**
Root folder of `nodjs` tested and distributed with RobotFramework AIO. More information about `nodjs` you you find here: [nodejs.org](#)
Location: `<root>/RobotFramework/devtools/Windows/nodejs`

Chapter 2

Apertis Pro

2.1 How to use DLT

2.1.1 dlt-daemon on Apertis

Verify that **dlt-daemon** has installed on Apertis Pro target or not.

```
systemctl status dlt-daemon
```

In case **dlt-daemon** is not available, follow below steps to install and start dlt-daemon service:

- Install **dlt-daemon** package

```
sudo apt install dlt-daemon
```

- Start **dlt-daemon** service

```
sudo systemctl start dlt-daemon
```

2.1.2 Apertis Pro firewall configuration

In order to capture DLT log/trace from DLT client(**DLT Viewer**, **DLTConnector**), DLT client has to communicate with Apertis Pro (TCP/IP protocol) via port **3490** (as default).

So that, this connection should be allowed on Apertis Pro target.

Adopt settings of firewall at Apertis Pro:

- Add new rule to allow DLT service at port **3490** (as default)

Edit `/etc/iptables/rules.v4` file to add below line

```
...
# Accept dlt for development
-A INPUT -p tcp -m state --state NEW -m tcp --dport 3490 -j ACCEPT
...
```

- Restart the firewall with changed parameters

```
sudo systemctl restart iptables.service
```

2.1.3 DLTSelfTestApp

DLTSelfTestApp is an application which will be run on the Apertis Pro target for testing the DLT connection between RobotFramework AIO and target.

This package is a part of RobotFramework AIO selftest helpers.

To install **DLTSelfTestApp**, download its debian package on Apertis Pro target then execute the below command.

```
sudo dpkg -i <path/to/dltselftestapp_1.0.0_amd64.deb>
```

DLTSelfTestApp application will be installed in `/opt/bosch/rob主w/dlt` directory and can be started with below command:

```
/opt/bosch/rob主fw/dlt/DLTSelfTestApp
```

Welcome log message `Welcome to RobotFramework AIO DLTSelfTestApp...` will be sent at application startup.

Then the ping log `ping message from RobotFramework AIO DLTSelfTestApp` every 5 seconds.

DLT command injection:

To perform the DLT command injection, use below information:

- App ID: **RBFW**
- Context ID: **TEST**
- Service ID: **0x1000**
- Data as Textdata

DLT log reponse of **DLTSelfTestApp** will bases on injected command:

- `welcome` : DLT reponse as above welcome message.
- `exit` : DLT reponse as `Bye...` then **DLTSelfTestApp** will be terminated.
- Other commands: DLT reponse as combination of data and string.

e.g: `Data: 000000: 77 65 6c 63 6f 6d 65 31 32 31 32 00 xx xx xx xx welcome1212`

2.1.4 QConnectDLTLibrary

QConnectDLTLibrary is part of RobotFramework AIO. It provides the ability for handling connection to Diagnostic Log and Trace(DLT) Module. The library support for getting trace message and sending trace command

Sample RobotFramework AIO testcase which are using **QConnectDLTLibrary** to test DLTSelfTestApp on Apertis Pro target:

- Header of a RobotFramework AIO testcase containing common settings (`*** Settings ***`) like the setups and teardowns, the definition of variables (`*** Variables ***`) and the definition of keywords (`*** Keywords ***`):

```
*** Settings ***
Documentation  This is selftest for DLT connection with DLTSelfTestApp
Library       QConnectionLibrary.ConnectionManager
Suite Setup   Open Connection
Suite Teardown Close Connection

*** Variables ***
${CONNECTION_NAME}  TEST_CONN_DLTSelfTestApp
${DLT_CONNECTION_CONFIG} =  SEPARATOR=
... {
...     "gen3flex@DLTSLIMWFH": {
...         "target_ip": "127.0.0.1",
...         "target_port": 4490,
...         "mode": 0,
...         "ecu": "ECU1",
...         "com_port": "COM1",
...         "baudrate": 115200,
...         "server_ip": "localhost",
...         "server_port": 1234
...     }
... }

*** Keywords ***
Close Connection
    disconnect  ${CONNECTION_NAME}
    Log to console    \nDLT connection has been closed!

Open Connection
```

```

    ${dlt_config} =      evaluate      json.loads('"'${DLT_CONNECTION_CONFIG}"')      json

connect                conn_name=${CONNECTION_NAME}
...                    conn_type=DLT
...                    conn_mode=dltconnector
...                    conn_conf=${dlt_config}

Log to console         \nDLT connection has been opened successfully!

```

- Sample RobotFramework AIO testcase to verify the ping message from DLTSelfTestApp

```

*** Test Cases ***
Match log/trace from DLTSelfTestApp
[Documentation]      Match log/trace from DLTSelfTestApp
[Tags]              DLTSelfTestApp
${res}=             verify      conn_name=${CONNECTION_NAME}
...                  search_pattern=(DLT:0x01.*RBFW.*)
...                  timeout=6    # DLTSelfTestApp pings a message every 5 seconds

# log to console     \n${res}[0]
# verify that reponse message should contain "Ping" keyword
Should Match Regexp  ${res}[0]    DLT:0x01.*RBFW.*Ping.*

```

- Sample RobotFramework AIO testcase to verify command injection with DLTSelfTestApp

```

Command injection with DLTSelfTestApp
[Documentation]      Get log/trace from DLTSelfTestApp
[Tags]              DLTSelfTestApp
${res}=             verify      conn_name=${CONNECTION_NAME}
...                  search_pattern=(DLT:0x01.*RBFW.*Welcome.*)
...                  send_cmd=DLT_CALL_SW_INJECTION_ECU ECU1 1000 RBFW TEST ↵
↵ 'welcome'

# log to console     \n${res}[0]

${res}=             verify      conn_name=${CONNECTION_NAME}
...                  search_pattern=(DLT:0x01.*RBFW.*other_cmd.*)
...                  send_cmd=DLT_CALL_SW_INJECTION_ECU ECU1 1000 RBFW TEST ↵
↵ 'other_cmd'

# log to console     \n${res}[0]

```

Please refer [QConnectDLTLibrary repository](#) for more details about usage and other example testcase for DLT connection.

Chapter 3

Code analysis

The RobotFramework AIO installation provides a static code analyser to detect potential errors and violations to coding conventions. The name of the analyser is **Robocop**.

Robocop is integrated in Visual Studio Code and is triggered automatically in case of

1. a file is opened in editor,
2. a file is changed and saved.

The outcome will look like this:

```

suite02.robot 3 X
robotframework-tutorial > 901_static_code_analysis > suite02.robot > ...
31 Test Case 0201
32 ....[Documentation]....Documentation of test case
33 ....Log....I am test '${TEST_NAME}' of suite '${SUITE_NAME}'....console=yes
34 ....# TODO: Add return value to keyword implementation; check return value here
35 ....test_keyword_1
36
Run | Debug | Run in Interactive Console
37 Test Case 0201
38 ....[Documentation]....Documentation of test case
39 ....Log....I am test '${TEST_NAME}' of suite '${SUITE_NAME}'....console=yes
40
41
42
43
PROBLEMS 6 OUTPUT DEBUG CONSOLE TERMINAL Filter (e.g. text, **/*.ts, !**/node_modules/**)
v suite02.robot robotframework-tutorial • 901_static_code_analysis 3
  x Multiple test cases with name 'Test Case 0201' (first occurrence in line 31) robocop(0801) [37, 1]
  y Found TODO in comment robocop(0701) [34, 7]
  y Too many blank lines at the end of file robocop(1010) [43, 1]

```

Further examples can be found in the RobotFramework AIO tutorial, chapter [901_static_code_analysis](#).

How to configure?

Robocop contains a set of rules that are used to check the source files of the RobotFramework AIO. Not all of them are really useful and some of them are also against our company internal development rules. Therefore we have the need to exclude rules from Robocop execution.

Some rules can be configured (e.g. the rule checking the maximum number of characters within a line of code). Also here we have the need for careful adaptations.

When Robocop is triggered automatically within Visual Studio Code, then the configuration is done with the help of a `.robocop` file. This file has to be placed within the projects folder (see tutorial). To make Robocop results comparable this configuration file should not be modified - or at least should be kept aligned with the version all other project team members use.

Command line

In addition to the automated triggering within Visual Studio Code Robocop can also be called in command line. This is useful

1. in case of a complete folder has to be checked in one step (to avoid the need to open every single source file inside separately),
2. in case of an alternative configuration is wanted (temporarily; to avoid to manipulate the standard configuration file),
3. in case of Robocop shall be triggered by automats like Jenkins,
4. in case of the Robocop results are needed within a log file (output to a log file needs to be configured separately).

To give it a try make a copy of the configuration file `.robocop` available within the tutorial, and give this copy any other name (e.g. `robocop.arg`).

Now Robocop can be called with command lines like this:

1.) *Simple check of single file with default configuration:*

```
"%RobotPythonPath%/python.exe" -m robocop "<path>/mytestfile.robot"
```

2.) *Check of single file with individual configuration taken from argument file:*

```
"%RobotPythonPath%/python.exe" -m robocop --argumentfile "<path>/robocop.arg" ↔  
↔ "<path>/mytestfile.robot"
```

3.) *Check of entire folder with individual configuration taken from argument file:*

```
"%RobotPythonPath%/python.exe" -m robocop --argumentfile "<path>/robocop.arg" "<folder>"
```

How to activate?

In Visual Studio Code the automated triggering of Robocop is activated per default within

```
RobotFramework\robotvscode\data\user-data\User\settings.json
```

with the following switches set to `true` :

```
"robot.lint.enabled": true,  
"robot.lint.robocop.enabled": true,
```

Chapter 4

Library documentation

The following sections contain the documentation of additional libraries that are part of the RobotFramework AIO.

RobotFramework AIO bundle

RobotFramework AIO
Version 0.5.1 (from 07/2022)

Included libraries

GenPackageDoc
Version 0.30.0 (from 31.08.2022)
https://github.com/test-fullautomation/python-genpackagedoc
<i>Documentation builder for Python packages</i>

PythonExtensionsCollection
Version 0.9.1 (from 23.08.2022)
https://github.com/test-fullautomation/python-extensions-collection
<i>Additional Python functions</i>

RobotframeworkExtensions
Version 0.8.1 (from 23.08.2022)
https://github.com/test-fullautomation/robotframework-extensions-collection
<i>Additional Robot Framework keywords</i>

JsonPreprocessor
Version 0.1.3 (from 05.07.2022)
https://github.com/test-fullautomation/python-jsonpreprocessor
<i>Preprocessor for json files</i>

RobotFramework_Testsuites
Version 0.2.2 (from 18.07.2022)
https://github.com/test-fullautomation/robotframework-testsuitesmanagement
<i>Functionality to manage RobotFramework testsuites</i>

QConnectBase

Version 1.1.0 (from 05.07.2022)

<https://github.com/test-fullautomation/robotframework-qconnect-base>*Robot Framework test library for TCP, SSH, serial connection***QConnectionDLTLibrary**

Version 1.1.0 (from 11.07.2022)

<https://sourcecode.socialcoding.bosch.com/projects/ROBFW/repos/robotframework-qconnect-dlt/browse>*Robot Framework test library for TCP, SSH, serial connection***RobotResults2RQM**

Version 1.1.1 (from 01.08.2022)

<https://github.com/test-fullautomation/robotframework-testresult2rqmtool>*Imports robot result(s) to IBM Rational Quality Manager (RQM)***RobotResults2DB**

Version 1.2.1 (from 22.08.2022)

<https://github.com/test-fullautomation/robotframework-testresultwebapptool>*Imports robot result(s) to TestResultWebApp database***TestResultWebApp**

Version 0.1.0 (from 04.07.2022)

<https://github.com/test-fullautomation/testresultwebapp>*Web based display of test results***TMLLog2RobotLog**

Version 1.1.0 (from 12.07.2022)

<https://sourcecode.socialcoding.bosch.com/projects/ROBFW/repos/robotframework-tmllog2robotlog/browse>*Convert TML-Framework results to Robot Framework results*

4.1 GenPackageDoc

GenPackageDoc

v. 0.30.0

Holger Queckenstedt

31.08.2022

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Chapter 1

Introduction

The Python package `GenPackageDoc` generates the documentation of Python modules. The content of this documentation is taken out of the docstrings of functions, classes and their methods.

It is possible to extend the documentation by the content of additional text files. The docstrings and also the additional text files have to be written in rst syntax (rst is the abbreviation for "re structured text", that is a certain markdown dialect).

The documentation is generated in two steps:

1. The rst sources are converted into LaTeX sources
2. The LaTeX sources are converted into a PDF document. This requires a separately installed LaTeX distribution (recommended: MiKTeX), that is **not** part of `GenPackageDoc`.

The sources of `GenPackageDoc` are available in the following GitHub repository:

[python-genpackagedoc](#)

The repository `python-genpackagedoc` uses it's own functionality to document itself and the contained Python package `GenPackageDoc`.

Therefore the complete repository can be used as an example about writing a package documentation.

It has to be considered, that the main goal of `GenPackageDoc` is to document Python sources that are stored within a repository, and therefore we have dependencies to the structure of the repository. For example: Configuration files with values that are specific for a repository, should not be installed. Such a specific configuration value is e.g. the name of the package or the name of the PDF document.

The impact is: There is a deep relationship between the repository containing the sources to be documented, and the sources and the configuration of `GenPackageDoc` itself. Therefore some manual preparations are necessary to use `GenPackageDoc` also in other repositories.

How to do this is explained in detail in the next chapters.

The outcome of all preparations of `GenPackageDoc` in your own repository is a PDF document like the one you are currently reading.

Chapter 2

Description

2.1 Repository content

What is the content of the repository python-genpackagedoc?

- Folder `GenPackageDoc`
Contains the package code.
This folder is specific for the package.
- Folder `config`
Contains the repository configuration (e.g. the name of the package, the name of the repository, the author, and more ...).
This folder is specific for the repository.
- Folder `additions`
Contains additionally needed sources like setup related class definitions and sources, that are imported from other repositories - to make this repository stand alone
- Folder `packagedoc`
Contains all package documentation related files, e.g. the `GenPackageDoc` configuration, additional input files and the generated documentation itself.
This folder is specific for the documentation.
- Repository root folder
 - `genpackagedoc.py`
Python script to start the documentation build
 - `setup.py`
Python script to install the package sources. This includes the execution of `genpackagedoc.py`. Therefore building the documentation is part of the installation process.
 - `dump_repository_config.py`
Little helper to dump the repository configuration to console

2.2 Documentation build process

How do the files and folders listed above, belong together? What is the way, the information flows when the documentation is generated?

- The process starts with the execution of `genpackagedoc.py` within the repository root folder.
`genpackagedoc.py` can be used stand alone - but this script is also called by `setup.py`. The impact is that every installation includes an update of the documentation.

- `genpackagedoc.py` creates a repository configuration object

```
config/CRepositoryConfig.py
```

- The repository configuration object reads the static repository configuration values out of a separate json file

```
config/repository-config.json
```

- The repository configuration object adds dynamic values (like operating system specific settings and paths) to the repository configuration. Not all of them are required for the documentation build process, but the repository configuration also supports the setup process (`setup.py`).

There is one certain setting in the repository configuration file

```
config/repository-config.json,
```

that is essential for the documentation build process:

```
"PACKAGEDOC" : "../packagedoc"
```

This is the path to a folder, in which all further documentation related files are placed. In case of the path is relative, the reference is the position of `genpackagedoc.py`. It is required that within this folder the configuration file for the documentation build process

```
packagedoc-config.json
```

can be found. The name of this json file is fix!

- The configuration file `packagedoc-config.json` contains settings like
 - Paths to Python packages to be documented
 - Paths and names of additional rst files
 - Path and name of output folder (tex files and output PDF file)
 - User defined parameter (that can be defined here as global runtime variables and can be used in any rst code)
 - Basic settings related to the output PDF file (like document name, name of author, ...)
 - Path to LaTeX compiler
(a *LaTeX distribution* is not part of `GenPackageDoc`)

Be aware of that the within `packagedoc-config.json` specified output folder

```
"OUTPUT" : "../build"
```

will be deleted at the beginning of the documentation build process! Make sure that you do not have any files inside this folder opened when you start the process. In case of the path is relative, the reference is the position of `genpackagedoc.py`. The complete path is created recursively.

Further details are explained within the json file itself.

- `genpackagedoc.py` also creates an own configuration object

```
GenPackageDoc/CPackageDocConfig.py
```

`CPackageDocConfig.py` takes over all repository configuration values, reads in the static `GenPackageDoc` configuration (`packagedoc-config.json`) and adds dynamically computed values like the full absolute paths belonging to the documentation build process. Also all command line parameters are resolved and checked.

The reference for all relative paths is the position of `genpackagedoc.py` (that is the repository root folder).

After the execution of `genpackagedoc.py` the resulting PDF document can be found under the specified name within the specified output folder ("OUTPUT"). This folder also contains all temporary files generated during the documentation build process.

Because the output folder is a temporary one, the PDF document is copied to the folder containing the package sources and therefore is included in the package installation. This is defined in the `GenPackageDoc` configuration, section "PDFDEST".

Command line

Some configuration parameter predefined within `packagedoc.config.json`, can be overwritten in command line.

`--output`

Path and name of folder containing all output files.

`--pdfdest`

Path and name of folder in which the generated PDF file will be copied to (after this file has been created within the output folder).

Caution: The generated PDF file will per default be copied to the package folder within the repository. This is defined in `packagedoc.config.json`. The version of the PDF file within the package folder will be part of the installation (when using `setup.py`). When you change the PDF destination, then you get this file at another location - but this file will not be part of the installation any more. Installed will be the version, that is still present within the package folder of the repository. Please try to get the bottom of your motivation when you change this setting.

`--configdest`

Path and name of folder in which a dump of the current configuration will be copied to.

The configuration dump is part of the build output (section 'OUTPUT') and available in txt and in json format. It might be useful for further processes to have access to all details regarding the current documentation build.

`--strict`

If `True`, a missing LaTeX compiler aborts the process, otherwise the process continues.

`--simulateonly`

If `True`, the LaTeX compiler is switched off. No new PDF output will be generated. Already existing PDF output will not be updated. This is not handled as error and also not handled as warning. Only the source files will be parsed. This switch is useful to do a pre check for possible syntax issues within the source files without spending time for rendering PDF files.

Example

```
genpackagedoc.py --output=" ../any/other/location" --pdfdest=" ../any/other/location"
↪ --configdest=" ../any/other/location" --strict=True
```

All listed parameters are optional. `GenPackageDoc` creates the complete output path (`--output`) recursively. Other destination folder (`--pdfdest` and `--configdest`) have to exist already.

2.3 PDF document structure

How is the resulting PDF document structured? What causes an entry within the table of content of the PDF document?

In the following we use terms taken over from the LaTeX world: *chapter*, *section* and *subsection*.

A *chapter* is the top level within the PDF document; a *section* is the level below *chapter*, a *subsection* is the level below *section*.

The following assignments happen during the generation of a PDF document:

- The content of every additionally included separate rst file is a *chapter*.
 - In case of you want to add another chapter to your documentation, you have to include another rst file.
 - The headline of the chapter is the name of the rst file (automatically).
Therefore the heading within an rst file has to start at section level!
- The content of every included Python module is also a *chapter*.
 - The headline of the chapter is the name of the Python module (automatically).
This means also that within the PDF document structure every Python module is at the same level as additionally included rst files.
- Within additionally included separate rst files sections and subsections can be defined by the following rst syntax elements for headings:
 - A line underlined with "=" characters is a section
 - A line underlined with "-" characters is a subsection
- Within the docstrings of Python modules the headings are added automatically (for functions, classes and methods)
 - Classes and functions are listed at section level (both classes and functions are assumed to be at the same level).
 - Class methods are listed at subsection level.

Further nestings of headings are not supported (because we do not want to overload the table of content).

2.4 Examples

2.4.1 Example 1: rst file

The text of this chapter is taken over from an rst file named `Description.rst`.

This rst file contains the following headlines:

```
Repository content
=====

Documentation build process
=====

PDF document structure
=====

Examples
=====

Example 1: rst file
-----

Example 2: Python module
-----
```

Because `Description.rst` is the second imported rst file, the chapter number is 2. The chapter headline is "Description" (the name of the rst file). The top level headlines *within* the rst file are at *section* level. The fourth section (Examples) contains two subsections.

The outcome is the following part of the table of content:

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2.4.2 Example 2: Python module

Part of this documentation is a Python module with name `CDocBuilder.py` (listed in table of content at *chapter* level). This module contains a class with name `CDocBuilder` (listed in table of content at *section* level). The class `CDocBuilder` contains a method with name `Build` (listed in table of content at *subsection* level).

This causes the following entry within the table of contents:

3	CDocBuilder.py	8
3.1	Class: CDocBuilder	8
3.1.1	Method: Build	8

2.5 Interface and module descriptions

How to describe an interface of a function or a method? How to describe a Python module?

To have a unique look and feel of all interface descriptions, the following style is recommended:

Example

```

    """
Description of function or method.

**Arguments:**

* ``input_param_1``

  / *Condition*: required / *Type*: str /

  Description of input_param_1.

* ``input_param_2``

  / *Condition*: optional / *Type*: bool / *Default*: False /

  Description of input_param_2.

**Returns:**

* ``return_param``

  / *Type*: str /

  Description of return_param.
    """

```

Some of the special characters used within the interface description, are part of the rst syntax. They will be explained in one of the next sections.

The docstrings containing the description, have to be placed directly in the next line after the `def` or `class` statement.

It is also possible to place a docstring at the top of a Python module. The exact position doesn't matter - but it has to be the first constant expression within the code. Within the documentation the content of this docstring is placed before the interface description and should contain general information belonging to the entire module.

The usage of such a docstring is an option.

2.6 Runtime variables

What are "runtime variables" and how to use them in rst text?

All configuration parameters of GenPackageDoc are taken out of four sources:

1. the static repository configuration
config/repository.config.json
2. the dynamic repository configuration
config/CRepositoryConfig.py
3. the static GenPackageDoc configuration
packagedoc/packagedoc.config.json
4. the dynamic GenPackageDoc configuration
GenPackageDoc/CPackageDocConfig.py

Some of them are runtime variables and can be accessed within rst text (within docstrings of Python modules and also within separate rst files).

This means it is possible to add configuration values automatically to the documentation.

This happens by encapsulating the runtime variable name in triple hashes. This "triple hash" syntax is introduced to make it easier to distinguish between the json syntax (mostly based on curly brackets) and additional syntax elements used within values of json keys.

The name of the repository e.g. can be added to the documentation with the following rst text:

```
The name of the repository is ###REPOSITORYNAME###.
```

This document contains a chapter "Appendix" at the end. This chapter is used to make the repository configuration a part of this documentation and can be used as example.

Additionally to the predefined runtime variables a user can add own ones.

See "PARAMS" within packagedoc.config.json.

All predefined runtime variables are written in capital letters. To make it easier for a developer to distinguish between predefined and user defined runtime variables, all user defined runtime variables have to be written in small letters completely.

Also the "DOCUMENT" keys within packagedoc.config.json are runtime variables.

Also within packagedoc.config.json the triple hash syntax can be used to access repository configuration values.

With this mechanism it is e.g. possible to give the output PDF document automatically the name of the package:

```
"DOCUMENT" : {
    "OUTPUTFILENAME" : "###PACKAGENAME###.tex",
```

2.7 Syntax aspects

Important to know about the syntax of Python and rst is:

- In both Python and rst the indentation of text is part of the syntax!
- The indentation of the triple quotes indicating the beginning and the end of a docstring has to follow the Python syntax rules.
- The indentation of the content of the docstring (= the interface description in rst format) has to follow the rst syntax rules. To avoid a needless indentation of the text within the resulting PDF document it is recommended to start the docstring text within the first column (or rather use the first column as reference for further indentations of rst text).
- In rst also blank lines are part of the syntax!

Please be attentive while typing your documentation in rst format!

2.7.1 Syntax extensions

GenPackageDoc extends the rst syntax by the following topics:

- *newline*
A newline (line break) is realized by a slash (‘/’) at the end of a line containing any other rst text (this means: the slash must **not** be the only character in line). Internally this slash is mapped to the LaTeX command `\newline`.
- *vspace*
An additional vertical space (size: the height of the ‘x’ character - depending on the current type and size of font) is realized by a single slash (‘/’). This slash must be the only character in line! Internally this slash is mapped to the LaTeX command `\vspace{1ex}`.
- *newpage*
A newpage (page break) is realized by a double slash (‘//’). These two slashes must be the only characters in line! Internally this double slash is mapped to the LaTeX command `\newpage`.

These syntax extensions can currently be used in separate rst files only and are not available within docstrings of Python modules.

2.7.2 Examples

(to be continued)

Chapter 3

CDocBuilder.py

Python module containing all methods to generate tex sources.

3.1 Class: CDocBuilder

Imported by:

```
from GenPackageDoc.CDocBuilder import CDocBuilder
```

Main class to build tex sources out of docstrings of Python modules and separate text files in rst format.

Depends on a json configuration file, provided by a `oPackageDocConfig` object (this includes the Repository configuration).

Method to execute: `Build()`

3.1.1 Method: Build

Arguments:

(no arguments)

Returns:

- `bSuccess`
/ *Type: bool* /
Indicates if the computation of the method `sMethod` was successful or not.
- `sResult`
/ *Type: str* /
The result of the computation of the method `sMethod`.

Chapter 4

CInterface.py

Python module containing an interface for GenPackageDoc. This interface can be used to get access to the LaTeX stylesheets that are part of the GenPackageDoc installation.

4.1 Class: CInterface

Imported by:

```
from GenPackageDoc.CInterface import CInterface
```

4.1.1 Method: GetLaTeXStyles

The LaTeX stylesheets are part of the installation of GenPackageDoc. In case of anyone else than GenPackageDoc needs these stylesheets, this method can be used to copy them to any other folder.

Arguments:

- `sDestination`
/ *Condition:* required / *Type:* str /
Path and name of a folder in which the styles folder from GenPackageDoc will be copied.

Returns:

- `bSuccess`
/ *Type:* bool /
Indicates if the computation of the method `sMethod` was successful or not.
- `sResult`
/ *Type:* str /
The result of the computation of the method `sMethod`.

Chapter 5

CPackageDocConfig.py

Python module containing the configuration for GenPackageDoc. This includes the repository configurantion and command line values.

5.1 Class: CPackageDocConfig

Imported by:

```
from GenPackageDoc.CPackageDocConfig import CPackageDocConfig
```

5.1.1 Method: PrintConfig

Prints all cofiguration values to console.

5.1.2 Method: PrintConfigKeys

Prints all cofiguration key names to console.

5.1.3 Method: Get

Returns the configuration value belonging to a key name.

5.1.4 Method: GetConfig

Returns the complete configuration dictionary.

Chapter 6

CPatterns.py

Python module containing source patterns used to generate the tex file output.

6.1 Class: CPatterns

Imported by:

```
from GenPackageDoc.CPatterns import CPatterns
```

The CPatterns class provides a set of LaTeX source patterns used to generate the tex file output.

All source patterns are accessible by corresponding `Get` methods. Some source patterns contain placeholder that will be replaced by input parameter of the `Get` method.

6.1.1 Method: GetHeader

Defines the header of the main tex file.

Arguments:

- `sTitle`
/ *Condition*: required / *Type*: str /
The title of the output document (name of the described package)
- `sVersion`
/ *Condition*: required / *Type*: str /
The version of the output document (version of the described package)
- `sAuthor`
/ *Condition*: required / *Type*: str /
The author of the output document (author of the described package)
- `sDate`
/ *Condition*: required / *Type*: str /
The date of the output document (date of the described package)

Returns:

- `sHeader`
/ *Type*: str /
LaTeX code containing the header of main tex file.

6.1.2 Method: GetChapter

Defines single chapter of the main tex file.

A single chapter is equivalent to an additionally imported text file in rst format or equivalent to a single Python module within a Python package.

Arguments:

- `sHeadline`
/ *Condition*: required / *Type*: str /
The chapter headline (that is either the name of an additional rst file or the name of a Python module).
- `sDocumentName`
/ *Condition*: required / *Type*: str /
The name of a single tex file containing the chapter content. This file is imported in the main text file after the chapter headline that is set by `sHeadline`.

Returns:

- `sHeader`
/ *Type*: str /
LaTeX code containing the headline and the input of a single tex file.

6.1.3 Method: GetFooter

Defines the footer of the main tex file.

Arguments:

(no arguments)

Returns:

- `sFooter`
/ *Type*: str /
LaTeX code containing the footer of the main tex file.

Chapter 7

CSourceParser.py

Python module containing all methods to parse the documentation content of Python source files.

7.1 Class: CSourceParser

Imported by:

```
from GenPackageDoc.CSourceParser import CSourceParser
```

The CSourceParser class provides a method to parse the functions, classes and their methods together with the corresponding docstrings out of Python modules. The docstrings have to be written in rst syntax.

7.1.1 Method: ParseSourceFile

The method ParseSourceFile parses the content of a Python module.

Arguments:

- `sFile`
/ *Condition:* required / *Type:* str /
Path and name of a single Python module.
- `bIncludePrivate`
/ *Condition:* optional / *Type:* bool / *Default:* False /
If False: private methods are skipped, otherwise they are included in documentation.
- `bIncludeUndocumented`
/ *Condition:* optional / *Type:* bool / *Default:* True /
If True: also classes and methods without docstring are listed in the documentation (together with a hint that information is not available), otherwise they are skipped.

Returns:

- `dictContent`
/ *Type:* dict /
A dictionary containing all the information parsed out of `sFile`.
- `bSuccess`
/ *Type:* bool /
Indicates if the computation of the method `sMethod` was successful or not.
- `sResult`
/ *Type:* str /
The result of the computation of the method `sMethod`.

Chapter 8

Outlook

ToDo list:

- [01]
Introduce `setup.py` including the execution of `genpackagedoc.py` and adding the generated PDF document to the installation.
Introduce `README.rst` and `README.md`.
10.05.2022: Setup process introduced and `README.rst` added
- [02]
Currently it is hard coded, that private functions and methods are skipped. Therefore they are not part of the resulting PDF document.
A configuration switch might be useful to give the user the ability to control this behavior.
09.05.2022: Parameter 'INCLUDEPRIVATE' added
- [03]
Currently it is implemented that also functions, classes and methods without docstrings are part of the resulting PDF document. They are listed together with the hint, that a docstring is not available.
A configuration switch might be useful to give the user the ability to control this behavior.
09.05.2022: Parameter 'INCLUDEUNDOCUMENTED' added
- [04]
Currently it is implemented that for Python modules will be searched recursively within the given root folder. Maybe the algorithm also catches modules from which the user does not want `GenPackageDoc` to include them.
A configuration exclude filter can be implemented to skip those files. Or maybe other way round: An include filter includes a subset of available files only.
The same filter mechanism can be extended for the content of Python modules (= include/exclude functions, classes and methods).
- [05]
Currently the configuration parameter for the documentation build process are taken from a json file `packagedoc.config.json`.
It might be helpful to have the possibility to overwrite them in command line (e.g. for redirecting the path to the output folder without changing any code).
31.05.2022: Implemented in v. 0.15.0
- [06]
Introduce text boxes for warnings, errors and informations.
19.05.2022: implemented in v. 0.12.0
- [07]
The documentation build process allows relative paths only
(in `packagedoc.config.json`).
Maybe a mechanism is useful to allow absolute paths and paths based on environment variables also.
01.06.2022: implemented in v. 0.16.0

CHAPTER 8. OUTLOOK

- [08]
Explore further rst syntax elements like the code directive. Some of them produces LaTeX code that requires the include of additional LaTeX packages. Sometimes this causes errors that have to be fixed.
05.05.2022: Python syntax highlighting realized
- [09]
The documentation has to be extended by a set of rst examples (rst best practices).
- [10]
A postprocessing for LaTeX code needs to be implemented:
 - Enable proper line breaks
 - Resolve the ambiguity of labels created automatically when the LaTeX code is generated (for every input file separately)
 10.05.2022: Experimental syntax extensions for `newline`, `newpage` and `vspace`
 17.05.2022: Postprocessing for rst and tex sources added; "multiply-defined labels" fix.
- [11]
Currently the docstrings of Python modules have to contain a heading for functions, classes and methods. The developer is responsible for that. Maybe it is not necessary to maintain these headings manually. It has to be investigated, if these headings can be added automatically by `GenPackageDoc`.
06.05.2022: Headings are added automatically.
- [12]
Currently the documentation of a single Python module starts at *function* or *class* level. This means it is not possible to provide common information about the Python module itself (placed **before** the content of the first function or class of the module). A way have to be found to add such content.
06.05.2022: Implemented in version 0.4.0
- [13]
The error handling needs to be extended!
17.06.2022: Implemented in version 0.17.0
- [14]
Take over the description of

```
config/repository-config.json
```

 from inside this json file (comment blocks) to the main PDF document.
- [15]
Reference section with useful links
- [16]
History
10.05.2022: History added
- [17]
Debug switch to enable additional output
- [18]
Parse decorators to identify Robot Framework keyword definitions
- [19]
Selftest
- [20]
Introduce a separate folder containing TeX styles - instead of having them hard coded within `CPatterns.py`.
24.05.2022: implemented in v. 0.13.0

Chapter 9

Appendix

About this package:

Table 9.1: Package setup

Setup parameter	Value
Name	GenPackageDoc
Version	0.30.0
Date	31.08.2022
Description	Documentation builder for Python packages
Package URL	python-genpackagedoc
Author	Holger Queckenstedt
Email	Holger.Queckenstedt@de.bosch.com
Language	Programming Language :: Python :: 3
License	License :: OSI Approved :: Apache Software License
OS	Operating System :: OS Independent
Python required	>=3.0
Development status	Development Status :: 3 - Alpha
Intended audience	Intended Audience :: Developers
Topic	Topic :: Software Development

Chapter 10

History

0.1.0	04/2022
<i>Initial version</i>	
0.2.0	05.05.2022
<i>Python syntax highlighting within code blocks added</i>	
0.3.0	06.05.2022
<i>Automated headings for functions, classes and methods</i>	
0.4.0	06.05.2022
<i>Possibility to describe complete Python modules added</i>	
0.5.0	09.05.2022
<i>Parameter <code>INCLUDEPRIVATE</code> added</i>	
0.6.0	09.05.2022
<i>Parameter <code>INCLUDEUNDOCUMENTED</code> added</i>	
0.7.0	10.05.2022
<i>Setup process introduced and <code>README.rst</code> added; code maintenance</i>	
0.8.0	10.05.2022
<i>Bugfixes and code maintenance; history added</i>	
0.9.0	10.05.2022
<i>Layout maintenance and syntax extensions for <code>newline</code>, <code>newpage</code> and <code>vspace</code> reworked</i>	
0.9.1	11.05.2022
<i>Documentation maintenance</i>	
0.9.2	16.05.2022
<i>Fix: automated line breaks within code blocks</i>	
0.10.0	17.05.2022
<i>Postprocessing for <code>rst</code> and <code>tex</code> sources added; 'multiply-defined labels' fix</i>	
0.11.0	18.05.2022
<i>Import of <code>tex</code> files enabled</i>	
0.12.0	19.05.2022
<ul style="list-style-type: none"> - Admonitions added, based on <code>LaTeX</code> environment <code>tcolorbox</code> - Layout adoptions in <code>titlepage</code> - Page numbering fix in <code>TOC</code> 	
0.13.0	24.05.2022
<i><code>LaTeX</code> style definitions moved to separate folder</i>	
0.14.0	27.05.2022

CHAPTER 10. HISTORY

- <i>LaTeX</i> compiler check added - Control parameter <i>STRICT</i> added to <i>packagedoc.config</i>	
0.15.0	31.05.2022
- Command line added - Separate <i>GenPackageDoc</i> configuration class added	
0.16.0	01.06.2022
Path computation reworked	
0.17.0	17.06.2022
- Configuration dump added - Code maintenance - Error handling extended	
0.18.0	20.06.2022
Added parameter to define an output folder for a dump of final configuration	
0.19.0	28.06.2022
- Method <i>GetLaTeXStyles</i> added - <i>PythonExtensionsCollection</i> updated to version 0.8.0	
0.20.0	29.06.2022
Document title bugfix: Added missing masking of underlines (required for <i>LaTeX</i>)	
0.21.0	12.07.2022
Separated file <i>preamble.tex</i>	
0.22.0	13.07.2022
- Maintenance of <i>preamble.tex</i> and <i>styles</i> folder - <i>setup.py</i> fix (install <i>tex</i> files also)	
0.23.0	13.07.2022
Maintenance of <i>preamble.tex</i>	
0.24.0	25.07.2022
Maintenance of <i>robotframeworkaio.sty</i> (line breaks in listings)	
0.25.0	27.07.2022
Layout maintenance of <i>RobotFramework AIO</i> syntax highlighting (<i>.sty</i> files)	
0.26.0	27.07.2022
History reworked; <i>common.sty</i> introduced	
0.27.0	17.08.2022
Added <i>LaTeX</i> style definition for <i>Python</i> syntax highlighting	
0.28.0	23.08.2022
- Introduced new <i>LaTeX</i> environment variable <i>GENDOC_LATEXPAT</i> - <i>robotframeworkaio.sty</i> aligned to version in <i>GenMainDoc</i>	
0.29.0	24.08.2022
Changed the way the import path of a module is printed out to <i>PDF</i> file	
0.30.0	31.08.2022
Introduced <i>simulateonly</i> mode (command line switch to skip the <i>PDF</i> generation)	

GenPackageDoc.pdf

Created at 31.08.2022 - 17:05:35

by *GenPackageDoc* v. 0.30.0

4.2 PythonExtensionsCollection

PythonExtensionsCollection

v. 0.9.1

Holger Queckenstedt

23.08.2022

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Chapter 1

Introduction

The Python Extensions Collection package extends the functionality of Python by some useful functions that are not available in Python immediately.

This covers for example string operations like normalizing a path or searching for parent directories within a path.

The Python Extensions Collection contains several Python modules and every module has to be imported separately in case of the functions inside are needed.

Module import

The modules of the Python Extension Collection and their methods can be accessed in the following ways:

CFile

```
from PythonExtensionsCollection.File.CFile import CFile
...
sFile = r"%TMP%\File.txt"
oFile = CFile(sFile)
```

Please consider that oFile is an instance of the class CFile - *and not a file handle*.

CString

```
from PythonExtensionsCollection.String.CString import CString
...
sPath = CString.NormalizePath(sPath)
...
bAck = CString.StringFilter(sString, ...)
...
sResult = CString.FormatResult(sMethod="", bSuccess=True, sResult="")
```

CUtils

```
from PythonExtensionsCollection.Utils.CUtils import *
...
PrettyPrint(oData)
```

Chapter 2

Description

2.1 Path normalization

It's not easy to handle paths - and especially the path separators - independent from the operating system.

Under Linux it is obvious that single slashes are used as separator within paths. Whereas the Windows explorer uses single backslashes. In both operating systems web addresses contains single slashes as separator when displayed in web browsers.

Using single backslashes within code - as content of string variables - is dangerous because the combination of a backslash and a letter can be interpreted as escape sequence - and this is maybe not the effect a user wants to have.

To avoid unwanted escape sequences backslashes have to be masked (by the usage of two of them: `\\`). But also this could not be the best solution because there are also applications (like the Windows explorer) that are not able to handle masked backslashes. They expect to get single backslashes within a path.

Preparing a path for best usage within code also includes collapsing redundant separators and up-level references. Python already provides functions to do this, but the outcome (path contains slashes or backslashes) depends on the operating system. And like already mentioned above also under Windows backslashes might not be the preferred choice.

It also has to be considered that redundant separators at the beginning of an address of a local network resource (like `\\server.com`) and or inside an internet address (like `https:\\server.com`) must **not** be collapsed! Unfortunately the Python function `normpath` does not consider this context.

To give the user full control about the format of a path, independent from the operating system and independent if it's a local path, a path to a local network resource or an internet address, the function `CString::NormalizePath()` provides lot's of parameters to influence the result.

2.2 File access with CFile

The motivation for the CFile module contains two main topics:

1. More user control by introducing further parameter for file access functions. With high priority CFile enables the user to take care about that nothing existing is overwritten accidentally.
2. Hide the file handles und use the mechanism of class variables to avoid access violations independent from the way different operation systems like Windows and Unix are handling this.

This shortens the code, eases the implementation and makes tests (in which this module is used) more stable.

Define two variables with path and name of test files.

Under Windows:

```
sFile_1 = r"%TMP%\CFile.TestFile.1.txt"
sFile_2 = r"%TMP%\CFile.TestFile.2.txt"
```

Or under Linux:

CHAPTER 2. DESCRIPTION

2.2. FILE ACCESS WITH CFILE

```
sFile_1 = r"/tmp/CFile_TestFile_1.txt"
sFile_2 = r"/tmp/CFile_TestFile_2.txt"
```

The first class instance:

```
oFile_1 = CFile(sFile_1)
```

`oFile_1` is the instance of a class - *and not the file handle*. The file handle is hidden, the user has nothing to do with it.

Every class instance can work with one single file only (during the complete instance lifetime) and has exclusive access to this file.

No other class instance is allowed to use this file. Therefore the second line in the following code throws an exception:

```
oFile_1.A = CFile(sFile_1)
oFile_1.B = CFile(sFile_1)
```

It's more save to implement in this way:

```
try:
    oFile_1 = CFile(sFile_1)
except Exception as reason:
    print(str(reason))
```

For writing content to files two methods are available: `Write()` and `Append()`.

Using `Write()` causes the class to open the file for writing ('w') - in case of the file is not already opened for writing. Using `Append()` causes the class to open the file for appending ('a') - in case of the file is not already opened for appending.

Switching between `Write()` and `Append()` causes an intermediate file handle `close()` internally!

Write some content to file:

```
bSuccess, sResult = oFile_1.Write("A B C")
print(f"> sResult oFile_1.Write : '{sResult}' / bSuccess : {bSuccess}")
```

Most of the functions returns at least `bSuccess` and `sResult`.

- `bSuccess` is `True` in case of no error occurred.
- `bSuccess` is `False` in case of an error occurred.
- `bSuccess` is `None` in case of a very fatal error occurred (exceptions).
- `sResult` contains details about what happens during computation.

It is possible now to continue with using `oFile_1.Write("...")`; the content will be appended - as long as the file is still open for writing.

Some functions close the file handle (e.g. `ReadLines()`). Therefore sequences like

```
oFile_1.Write("...")
oFile_1.Readlines("...")
oFile_1.Write("...")
```

should be avoided - because the `Write()` after the `ReadLines()` starts the file from scratch and the file content written by the previous `Write()` calls is lost.

For appending content to a file use the function `Append()`.

Append content to file:

CHAPTER 2. DESCRIPTION

2.2. FILE ACCESS WITH CFILE

```
bSuccess, sResult = oFile_1.Append("A B C")
```

For reading content from a file use the function `ReadLines()`.

Read from file:

```
listLines_1, bSuccess, sResult = oFile_1.ReadLines()
for sLine in listLines_1:
    print(f"{sLine}")
```

Additionally to `bSuccess` and `sResult` the function returns a list of lines.

Internally `ReadLines()` takes care about:

- Closing the file - in case the file is still opened
- Opening the file for reading
- Reading the content line by line until the end of file is reached
- Closing the file

To avoid code like this

```
for sLine in listLines_1:
    print(f"{sLine}")
```

it is also possible to let `ReadLines()` do this:

```
listLines_1, bSuccess, sResult = oFile_1.ReadLines(bToScreen=True)
```

A function to read a single line from file only is not available, but it is possible to use some filter parameter of `ReadLines()` to reduce the amount of content already during the file is read. This prevents the user from implementing further loops.

Let's assume the following:

- The file `sFile_1` contains empty lines
- The file `sFile_1` contains also lines, that are commented out (with a hash '#' at the beginning)
- We want `ReadLines()` to skip empty lines and lines that are commented out

This can be implemented in the following way.

Read a subset of file content:

```
listLines_1, bSuccess, sResult = oFile_1.ReadLines(bSkipBlankLines=True,
                                                    sComment='#')
```

It is a good practice to close file handles as soon as possible. Therefore `CFile` provides the possibility to do this explicitly.

Close a file handle:

```
bSuccess, sResult = oFile_1.Close()
```

This makes sense in case of later again access to this file is needed.

Additionally to that the file handle is closed implicitly:

- in case of it is required (e.g. when switching between read and write access),
- in case of the class instance is destroyed.

Therefore an alternative to the `Close()` function is the deletion of the class instance:

```
del oFile_1
```

This makes sense in case of access to this file is not needed any more.

It is recommended to prefer `del` (instead of `Close()`) to avoid to keep too much not used objects for a too long length of time in memory.

A file can be copied to another file.

Copy a file:

```
bSuccess, sResult = oFile_1.CopyTo(sFile_2)
```

The destination (`sFile_2` in the example above) can either be a full path and name of a file or the path only.

It makes a difference if the destination file exists or not. The optional parameter `bOverwrite` controls the behavior of `CopyTo()`.

The default is that it is not allowed to overwrite an existing destination file: `bOverwrite` is `False`. `CopyTo()` returns `bSuccess = False` in this case.

In case the user want to allow `CopyTo()` to overwrite existing destination files, it has to be coded explicitly:

```
bSuccess, sResult = oFile_1.CopyTo(sFile_2, bOverwrite=True)
```

A file can be moved to another file.

Move a file:

```
bSuccess, sResult = oFile_1.MoveTo(sFile_2)
```

Also `MoveTo()` supports `bOverwrite`. The behavior is the same as `CopyTo()`.

A file can be deleted.

Delete a file:

```
bSuccess, sResult = oFile_1.Delete()
```

It is possible to distinguish between two different motivations to delete a file:

1. *Explicitly do a deletion*

This requires that the file to be deleted, does exist.

2. *Making sure only that the files does not exist*

In this case it doesn't matter that maybe there is nothing to delete because the file already does not exist.

The optional parameter `bConfirmDelete` controls this behavior.

Default is that `Delete()` requires an existing file to delete:

```
bSuccess, sResult = oFile_1.Delete(bConfirmDelete=True)
```

In case of the file does not exist, `Delete()` returns `bSuccess = False`.

`Delete()` also returns `bSuccess = False|None` in case of an existing file cannot be deleted (e.g. because of an access violation).

If it doesn't matter if the file exists or not, it has to be coded explicitly:

```
bSuccess, sResult = oFile_1.Delete(bConfirmDelete=False)
```

In this case `Delete()` only returns `bSuccess = False|None` in case of an existing file cannot be deleted (e.g. because of an access violation).

Avoid access violations

Like already mentioned above every instance of `CFile` has an exclusive access to it's own file.

Only in case of `CopyTo()` and `MoveTo()` other files are involved: the destination files.

To avoid access violations it is not possible to copy or move a file to another file, that is under access of another instance of `CFile`.

In the following example `oFile_1.CopyTo(sFile_2)` returns `bSuccess = False` because `sFile_2` is already in access by `oFile_2`.

```
oFile_1 = CFile(sFile_1)
bSuccess, sResult = oFile_1.Write("A B C")

oFile_2 = CFile(sFile_2)
listLines_2, bSuccess, sResult = oFile_2.ReadLines()

bSuccess, sResult = oFile_1.CopyTo(sFile_2)

del oFile_1
del oFile_2
```

The solution is to delete the class instances as early as possible.

In the following example the copying is successful:

```
oFile_1 = CFile(sFile_1)
bSuccess, sResult = oFile_1.Write("A B C")

oFile_2 = CFile(sFile_2)
listLines_2, bSuccess, sResult = oFile_2.ReadLines()
del oFile_2

bSuccess, sResult = oFile_1.CopyTo(sFile_2)
del oFile_1
```

Chapter 3

CFile.py

3.1 Class: enFileStatType

Imported by:

```
from PythonExtensionsCollection.File.CFile import enFileStatType
```

The class `enFileStatType` defines the following file states:

- `closed`
- `openedforwriting`
- `openedforappending`
- `openedforreading`

3.2 Class: CFile

Imported by:

```
from PythonExtensionsCollection.File.CFile import CFile
```

The class `CFile` provides a small set of file functions with extended parametrization (like switches defining if a file is allowed to be overwritten or not).

Most of the functions at least returns `bSuccess` and `sResult`.

- `bSuccess` is `True` in case of no error occurred.
- `bSuccess` is `False` in case of an error occurred.
- `bSuccess` is `None` in case of a very fatal error occurred (exceptions).
- `sResult` contains details about what happens during computation.

Every instance of `CFile` handles one single file only and forces exclusive access to this file.

It is not possible to create an instance of this class with a file that is already in use by another instance.

It is also not possible to use `CopyTo` or `MoveTo` to overwrite files that are already in use by another instance. This makes the file handling more save against access violations.

3.2.1 Method: Close

Closes the opened file.

Arguments:

(no args)

Returns:

- `bSuccess`
/ *Type*: bool /
Indicates if the computation of the method was successful or not.
- `sResult`
/ *Type*: str /
The result of the computation of the method.

3.2.2 Method: Delete

Deletes the current file.

Arguments:

- `bConfirmDelete`
/ *Condition*: optional / *Type*: bool / *Default*: True /
Defines if it will be handled as error if the file does not exist.
If True: If the file does not exist, the method indicates an error (`bSuccess = False`).
If False: It doesn't matter if the file exists or not.

Returns:

- `bSuccess`
/ *Type*: bool /
Indicates if the computation of the method was successful or not.
- `sResult`
/ *Type*: str /
The result of the computation of the method.

3.2.3 Method: Write

Writes the content of a variable `Content` to file.

Arguments:

- `Content`
/ *Condition*: required / *Type*: one of: str, list, tuple, set, dict, dotdict /
If `Content` is not a string, the `Write` method resolves the data structure before writing the content to file.
- `nVSpaceAfter`
/ *Condition*: optional / *Type*: int / *Default*: 0 /
Adds vertical space `nVSpaceAfter` (= number of blank lines) after `Content`.
- `sPrefix`
/ *Condition*: optional / *Type*: str / *Default*: None /
`sPrefix` is added to every line of output (in case of `sPrefix` is not None').
- `bToScreen`
/ *Condition*: optional / *Type*: bool / *Default*: False /
Prints `Content` also to screen (in case of `bToScreen` is True).

Returns:

- `bSuccess`
/ *Type*: bool /
Indicates if the computation of the method was successful or not.
- `sResult`
/ *Type*: str /
The result of the computation of the method.

3.2.4 Method: Append

Appends the content of a variable `Content` to file.

Arguments:

- `Content`
/ Condition: required */ Type:* one of: str, list, tuple, set, dict, dict /
 If `Content` is not a string, the `Write` method resolves the data structure before writing the content to file.
- `nVSpaceAfter`
/ Condition: optional */ Type:* int */ Default:* 0 /
 Adds vertical space `nVSpaceAfter` (= number of blank lines) after `Content`.
- `sPrefix`
/ Condition: optional */ Type:* str */ Default:* None /
`sPrefix` is added to every line of output (in case of `sPrefix` is not None').
- `bToScreen`
/ Condition: optional */ Type:* bool */ Default:* False /
 Prints `Content` also to screen (in case of `bToScreen` is True).

Returns:

- `bSuccess`
/ Type: bool /
 Indicates if the computation of the method was successful or not.
- `sResult`
/ Type: str /
 The result of the computation of the method.

3.2.5 Method: ReadLines

Reads content from current file. Returns an array of lines together with `bSuccess` and `sResult` (feedback).

The method takes care of opening and closing the file. The complete file content is read by `ReadLines` in one step, but with the help of further parameters it is possible to reduce the content by including and excluding lines.

The logical join of all filter is: AND.

Arguments:

- `bCaseSensitive`
/ Condition: optional */ Type:* bool */ Default:* True /
 – If True, the standard filters work case sensitive, otherwise not.
 – This has no effect to the regular expression based filters `sInclRegEx` and `sExclRegEx`.
- `bSkipBlankLines`
/ Condition: optional */ Type:* bool */ Default:* False /
 If True, blank lines will be skipped, otherwise not.
- `sComment`
/ Condition: optional */ Type:* str */ Default:* None /
 In case of a line starts with the string `sComment`, this line is skipped.
- `sStartsWith`
/ Condition: optional */ Type:* str */ Default:* None /
 – The criterion of this filter is fulfilled in case of the input string starts with the string `sStartsWith`

- More than one string can be provided (semicolon separated; logical join: OR)
- `sEndsWith`
/ *Condition*: optional / *Type*: str / *Default*: None /
 - The criterion of this filter is fulfilled in case of the input string ends with the string `sEndsWith`
 - More than one string can be provided (semicolon separated; logical join: OR)
- `sStartsWith`
/ *Condition*: optional / *Type*: str / *Default*: None /
 - The criterion of this filter is fulfilled in case of the input string starts with the string `sStartsWith`
 - More than one string can be provided (semicolon separated; logical join: AND)
- `sEndsWith`
/ *Condition*: optional / *Type*: str / *Default*: None /
 - The criterion of this filter is fulfilled in case of the input string ends not with the string `sEndsWith`
 - More than one string can be provided (semicolon separated; logical join: AND)
- `sContains`
/ *Condition*: optional / *Type*: str / *Default*: None /
 - The criterion of this filter is fulfilled in case of the input string contains the string `sContains` at any position
 - More than one string can be provided (semicolon separated; logical join: OR)
- `sContainsNot`
/ *Condition*: optional / *Type*: str / *Default*: None /
 - The criterion of this filter is fulfilled in case of the input string does **not** contain the string `sContainsNot` at any position
 - More than one string can be provided (semicolon separated; logical join: AND)
- `sInclRegEx`
/ *Condition*: optional / *Type*: str / *Default*: None /
 - *Include* filter based on regular expressions (consider the syntax of regular expressions!)
 - The criterion of this filter is fulfilled in case of the regular expression `sInclRegEx` matches the input string
 - Leading and trailing blanks within the input string are considered
 - `bCaseSensitive` has no effect
 - A semicolon separated list of several regular expressions is **not** supported
- `sExclRegEx`
/ *Condition*: optional / *Type*: str / *Default*: None /
 - *Exclude* filter based on regular expressions (consider the syntax of regular expressions!)
 - The criterion of this filter is fulfilled in case of the regular expression `sExclRegEx` does **not** match the input string
 - Leading and trailing blanks within the input string are considered
 - `bCaseSensitive` has no effect
 - A semicolon separated list of several regular expressions is **not** supported
- `bLStrip`
/ *Condition*: optional / *Type*: bool / *Default*: False /
If True, leading spaces are removed from line before the filters are used, otherwise not.

- `bRStrip`
/ Condition: optional / Type: bool / Default: True /
 If `True`, trailing spaces are removed from line before the filters are used, otherwise not.
- `bToScreen`
/ Condition: optional / Type: bool / Default: False /
 If `True`, the content read from file is also printed to screen, otherwise not.

3.2.6 Method: GetFileInfo

Returns the following informations about the file (encapsulated within a dictionary `dFileInfo`):

Returns:

- Key `sFile`
/ Type: str /
 Path and name of current file
- Key `bFileIsExisting`
/ Type: bool /
 True if file is existing, otherwise `False`
- Key `sFileName`
/ Type: str /
 The name of the current file (incl. extension)
- Key `sFileExtension`
/ Type: str /
 The extension of the current file
- Key `sFileNameOnly`
/ Type: str /
 The pure name of the current file (without extension)
- Key `sFilePath`
/ Type: str /
 The the path to current file
- Key `bFilePathIsExisting`
/ Type: bool /
 True if file path is existing, otherwise `False`

3.2.7 Method: CopyTo

Copies the current file to `sDestination`, that can either be a path without file name or a path together with a file name.

In case of the destination file already exists and `bOverwrite` is `True`, than the destination file will be overwritten.

In case of the destination file already exists and `bOverwrite` is `False` (default), than the destination file will not be overwritten and `CopyTo` returns `bSuccess = False`.

Arguments:

- `sDestination`
/ Condition: required / Type: string /
 The path to destination file (either incl. file name or without file name)
- `bOverwrite`
/ Condition: optional / Type: bool / Default: False /

- In case of the destination file already exists and `bOverwrite` is `True`, than the destination file will be overwritten.
- In case of the destination file already exists and `bOverwrite` is `False` (default), than the destination file will not be overwritten and `CopyTo` returns `bSuccess = False`.

Returns:

- `bSuccess`
/ *Type*: `bool` /
Indicates if the computation of the method was successful or not.
- `sResult`
/ *Type*: `str` /
The result of the computation of the method.

3.2.8 Method: MoveTo

Moves the current file to `sDestination`, that can either be a path without file name or a path together with a file name.

Arguments:

- `sDestination`
/ *Condition*: required / *Type*: `string` /
The path to destination file (either incl. file name or without file name)
- `bOverwrite`
/ *Condition*: optional / *Type*: `bool` / *Default*: `False` /
 - In case of the destination file already exists and `bOverwrite` is `True`, than the destination file will be overwritten.
 - In case of the destination file already exists and `bOverwrite` is `False` (default), than the destination file will not be overwritten and `MoveTo` returns `bSuccess = False`.

Returns:

- `bSuccess`
/ *Type*: `bool` /
Indicates if the computation was successful or not
- `sResult`
/ *Type*: `str` /
Contains details about what happens during computation

Chapter 4

CFolder.py

4.1 Function: `rm_dir_readonly`

Calls `os.chmod` in case of `shutil.rmtree` (within `Delete()`) throws an exception (making files writable).

4.2 Class: `CFolder`

Imported by:

```
from PythonExtensionsCollection.Folder.CFolder import CFolder
```

The class `CFolder` provides a small set of folder functions with extended parametrization (like switches defining if a folder is allowed to be overwritten or not).

Most of the functions at least returns `bSuccess` and `sResult`.

- `bSuccess` is `True` in case of no error occurred.
- `bSuccess` is `False` in case of an error occurred.
- `bSuccess` is `None` in case of a very fatal error occurred (exceptions).
- `sResult` contains details about what happens during computation.

Every instance of `CFolder` handles one single folder only and forces exclusive access to this folder.

It is not possible to create an instance of this class with a folder that is already in use by another instance.

The constructor of `CFolder` requires the input parameter `sFolder`, that is the path and the name of a folder that is handled by the current class instance.

4.2.1 Method: `Delete`

Deletes the folder the current class instance contains.

Arguments:

- `bConfirmDelete`
/ *Condition:* optional / *Type:* bool / *Default:* True /
Defines if it will be handled as error if the folder does not exist.
If True: If the folder does not exist, the method indicates an error (`bSuccess = False`).
If False: It doesn't matter if the folder exists or not.

Returns:

- `bSuccess`
/ *Type*: bool /
Indicates if the computation of the method was successful or not.
- `sResult`
/ *Type*: str /
The result of the computation of the method.

4.2.2 Method: Create

Creates the current folder `sFolder`.

Arguments:

- `bOverwrite`
/ *Condition*: optional / *Type*: bool / *Default*: False /
 - In case of the folder already exists and `bOverwrite` is `True`, than the folder will be deleted before creation.
 - In case of the folder already exists and `bOverwrite` is `False` (default), than the folder will not be touched.

In both cases the return value `bSuccess` is `True` - because the folder exists.
- `bRecursive`
/ *Condition*: optional / *Type*: bool / *Default*: False /
 - In case of `bRecursive` is `True`, than the complete destination path will be created (including all intermediate subfolders).
 - In case of `bRecursive` is `False`, than it is expected that the parent folder of the new folder already exists.

Returns:

- `bSuccess`
/ *Type*: bool /
Indicates if the computation of the method was successful or not.
- `sResult`
/ *Type*: str /
The result of the computation of the method.

4.2.3 Method: CopyTo

Copies the current folder to `sDestination`, that has to be a path to a folder **within** the source folder will be copied to (with it's original name),

In case of the destination folder already exists and `bOverwrite` is `True`, than the destination folder will be overwritten.

In case of the destination folder already exists and `bOverwrite` is `False` (default), than the destination folder will not be overwritten and `CopyTo` returns `bSuccess = False`.

Arguments:

- `sDestination`
/ *Condition*: required / *Type*: string /
The path to destination folder
- `bOverwrite`
/ *Condition*: optional / *Type*: bool / *Default*: False /

- In case of the destination folder already exists and `bOverwrite` is `True`, than the destination folder will be overwritten.
- In case of the destination folder already exists and `bOverwrite` is `False` (default), than the destination folder will not be overwritten and `CopyTo` returns `bSuccess = False`.

Returns:

- `bSuccess`
/ *Type*: `bool` /
Indicates if the computation of the method was successful or not.
- `sResult`
/ *Type*: `str` /
The result of the computation of the method.

Chapter 5

CString.py

5.1 Class: CString

Imported by:

```
from PythonExtensionsCollection.String.CString import CString
```

The class `CString` contains some string computation methods like e.g. normalizing a path.

5.1.1 Method: NormalizePath

Normalizes local paths, paths to local network resources and internet addresses

Arguments:

- `sPath`
/ *Condition:* required / *Type:* str /
The path to be normalized
- `bWin`
/ *Condition:* optional / *Type:* bool / *Default:* False /
If `True` then returned path contains masked backslashes as separator, otherwise slashes
- `sReferencePathAbs`
/ *Condition:* optional / *Type:* str / *Default:* None /
In case of `sPath` is relative and `sReferencePathAbs` (expected to be absolute) is given, then the returned absolute path is a join of both input paths
- `bConsiderBlanks`
/ *Condition:* optional / *Type:* bool / *Default:* False /
If `True` then the returned path is encapsulated in quotes - in case of the path contains blanks
- `bExpandEnvVars`
/ *Condition:* optional / *Type:* bool / *Default:* True /
If `True` then in the returned path environment variables are resolved, otherwise not.
- `bMask`
/ *Condition:* optional / *Type:* bool / *Default:* True (requires `bWin=True`)/
 - If `bWin` is `True` and `bMask` is `True` then the returned path contains masked backslashes as separator.
 - If `bWin` is `True` and `bMask` is `False` then the returned path contains single backslashes only - this might be required for applications, that are not able to handle masked backslashes.
 - In case of `bWin` is `False` `bMask` has no effect.

Returns:

- `sPath`
/ *Type*: str /
The normalized path (is None in case of `sPath` is None)

5.1.2 Method: DetectParentPath

Computes the path to any parent folder inside a given path. Optionally `DetectParentPath` is able to search for files inside the parent folder.

Arguments:

- `sStartPath`
/ *Condition*: required / *Type*: str /
The path in which to search for a parent folder
- `sFolderName`
/ *Condition*: required / *Type*: str /
The name of the folder to search for within `sStartPath`. It is possible to provide more than one folder name separated by semicolon
- `sFileName`
/ *Condition*: optional / *Type*: str / *Default*: None /
The name of a file to search within the detected parent folder

Returns:

- `sDestPath`
/ *Type*: str /
Path and name of parent folder found inside `sStartPath`, None in case of `sFolderName` is not found inside `sStartPath`. In case of more than one parent folder is found `sDestPath` contains the first result and `listDestPaths` contains all results.
- `listDestPaths`
/ *Type*: list /
If `sFolderName` contains a single folder name this list contains only one element that is `sDestPath`. In case of `FolderName` contains a semicolon separated list of several folder names this list contains all found paths of the given folder names. `listDestPaths` is None (and not an empty list!) in case of `sFolderName` is not found inside `sStartPath`.
- `sDestFile`
/ *Type*: str /
Path and name of `sFileName`, in case of `sFileName` is given and found inside `listDestPaths`. In case of more than one file is found `sDestFile` contains the first result and `listDestFiles` contains all results. `sDestFile` is None in case of `sFileName` is None and also in case of `sFileName` is not found inside `listDestPaths` (and therefore also in case of `sFolderName` is not found inside `sStartPath`).
- `listDestFiles`
/ *Type*: list /
Contains all positions of `sFileName` found inside `listDestPaths`.
`listDestFiles` is None (and not an empty list!) in case of `sFileName` is None and also in case of `sFileName` is not found inside `listDestPaths` (and therefore also in case of `sFolderName` is not found inside `sStartPath`).
- `sDestPathParent`
/ *Type*: str /
The parent folder of `sDestPath`, None in case of `sFolderName` is not found inside `sStartPath` (`sDestPath` is None).

5.1.3 Method: StringFilter

During the computation of strings there might occur the need to get to know if this string fulfils certain criteria or not. Such a criterion can e.g. be that the string contains a certain substring. Also an inverse logic might be required: In this case the criterion is that the string does **not** contain this substring.

It might also be required to combine several criteria to a final conclusion if in total the criterion for a string is fulfilled or not. For example: The string must start with the string *prefix* and must also contain either the string *substring1* or the string *substring2* but must also **not** end with the string *suffix*.

This method provides a bunch of predefined filters that can be used singly or combined to come to a final conclusion if the string fulfils all criteria or not.

The filters are divided into three different types:

1. Filters that are interpreted as raw strings (called 'standard filters'; no wild cards supported)
2. Filters that are interpreted as regular expressions (called 'regular expression based filters'; the syntax of regular expressions has to be considered)
3. Boolean switches (e.g. indicating if also an empty string is accepted or not)

The input string might contain leading and trailing blanks and tabs. This kind of horizontal space is removed from the input string before the standard filters start their work (except the regular expression based filters).

The regular expression based filters consider the original input string (including the leading and trailing space).

The outcome is that in case of the leading and trailing space shall be part of the criterion, the regular expression based filters can be used only.

It is possible to decide if the standard filters shall work case sensitive or not. This decision has no effect on the regular expression based filters.

The regular expression based filters always work with the original input string that is not modified in any way.

Except the regular expression based filters it is possible to provide more than one string for every standard filter (must be a semikolon separated list in this case). A semicolon that shall be part of the search string, has to be masked in this way: `\;`.

This method returns a boolean value that is `True` in case of all criteria are fulfilled, and `False` in case of some or all of them are not fulfilled.

The default value for all filters is `None` (except `bSkipBlankStrings`). In case of a filter value is `None` this filter has no influence on the result.

In case of all filters are `None` (default) the return value is `True` (except the string itself is `None` or the string is empty and `bSkipBlankStrings` is `True`).

In case of the string is `None`, the return value is `False`, because nothing concrete can be done with `None` strings.

Internally every filter has his own individual acknowledge that indicates if the criterion of this filter is fulfilled or not.

The meaning of *criterion fulfilled* of a filter is that the filter supports the final return value `bAck` of this method with `True`.

The final return value `bAck` of this method is a logical join (AND) of all individual acknowledges (except `bSkipBlankStrings` and `sComment`; in case of their criteria are **not** fulfilled, immediately `False` is returned).

Summarized:

- Filters are used to define *criteria*
- The return value of this method provides the *conclusion* - indicating if all criteria are fulfilled or not

The following filters are available:

`bSkipBlankStrings`

- Like already mentioned above leading and trailing spaces are removed from the input string at the beginning
- In case of the result is an empty string and `bSkipBlankStrings` is `True`, the method immediately returns `False` and all other filters are ignored

sComment

- In case of the input string starts with the string `sComment`, the method immediately returns `False` and all other filters are ignored
- Leading blanks within the input string have no effect
- The decision also depends on `bCaseSensitive`
- The idea behind this decision is: Ignore a string that is commented out

sStartsWith

- The criterion of this filter is fulfilled in case of the input string starts with the string `sStartsWith`
- Leading blanks within the input string have no effect
- The decision also depends on `bCaseSensitive`
- More than one string can be provided (semicolon separated; logical join: OR)

sEndsWith

- The criterion of this filter is fulfilled in case of the input string ends with the string `sEndsWith`
- Trailing blanks within the input string have no effect
- The decision also depends on `bCaseSensitive`
- More than one string can be provided (semicolon separated; logical join: OR)

sStartsNotWith

- The criterion of this filter is fulfilled in case of the input string does **not** start with the string `sStartsNotWith`
- Leading blanks within the input string have no effect
- The decision also depends on `bCaseSensitive`
- More than one string can be provided (semicolon separated; logical join: AND)

sEndsNotWith

- The criterion of this filter is fulfilled in case of the input string does **not** end with the string `sEndsNotWith`
- Trailing blanks within the input string have no effect
- The decision also depends on `bCaseSensitive`
- More than one string can be provided (semicolon separated; logical join: AND)

sContains

- The criterion of this filter is fulfilled in case of the input string contains the string `sContains` at any position
- Leading and trailing blanks within the input string have no effect
- The decision also depends on `bCaseSensitive`
- More than one string can be provided (semicolon separated; logical join: OR)

sContainsNot

- The criterion of this filter is fulfilled in case of the input string does **not** contain the string `sContainsNot` at any position
- Leading and trailing blanks within the input string have no effect
- The decision also depends on `bCaseSensitive`
- More than one string can be provided (semicolon separated; logical join: AND)

sInclRegEx

- *Include* filter based on regular expressions (consider the syntax of regular expressions!)
- The criterion of this filter is fulfilled in case of the regular expression `sInclRegEx` matches the input string
- Leading and trailing blanks within the input string are considered
- `bCaseSensitive` has no effect
- A semicolon separated list of several regular expressions is **not** supported

sExclRegEx

- *Exclude* filter based on regular expressions (consider the syntax of regular expressions!)
- The criterion of this filter is fulfilled in case of the regular expression `sExclRegEx` does **not** match the input string
- Leading and trailing blanks within the input string are considered
- `bCaseSensitive` has no effect
- A semicolon separated list of several regular expressions is **not** supported

Further arguments:

- `sString`
/ *Condition*: required / *Type*: str /
The input string that has to be investigated.
- `bCaseSensitive`
/ *Condition*: optional / *Type*: bool / *Default*: True /
If True, the standard filters work case sensitive, otherwise not.
- `bDebug`
/ *Condition*: optional / *Type*: bool / *Default*: False /
If True, additional output is printed to console (e.g. the decision of every single filter), otherwise not.

Returns:

- `bAck`
/ *Type*: bool /
Final statement about the input string `sString` after filter computation

Examples:

1. Returns True:

```
StringFilter(sString      = "Speed is 25 beats per minute",
             bCaseSensitive = True,
             bSkipBlankStrings = True,
             sComment      = None,
             sStartsWith   = "Sp",
             sEndsWith     = None,
             sStartsWithNot = None,
             sEndsWithNot  = None,
             sContains     = "beats",
             sContainsNot  = None,
             sInclRegEx    = None,
             sExclRegEx    = None)
```

2. Returns False:

```
StringFilter(sString      = "Speed is 25 beats per minute",
             bCaseSensitive = True,
             bSkipBlankStrings = True,
             sComment      = None,
             sStartsWith    = "Sp",
             sEndsWith      = None,
             sStartsNotWith = None,
             sEndsNotWith   = "minute",
             sContains      = "beats",
             sContainsNot   = None,
             sInclRegex     = None,
             sExclRegex     = None)
```

3. Returns True:

```
StringFilter(sString      = "Speed is 25 beats per minute",
             bCaseSensitive = True,
             bSkipBlankStrings = True,
             sComment      = None,
             sStartsWith    = None,
             sEndsWith      = None,
             sStartsNotWith = None,
             sEndsNotWith   = None,
             sContains      = None,
             sContainsNot   = "Beats",
             sInclRegex     = None,
             sExclRegex     = None)
```

4. Returns True:

```
StringFilter(sString      = "Speed is 25 beats per minute",
             bCaseSensitive = True,
             bSkipBlankStrings = True,
             sComment      = None,
             sStartsWith    = None,
             sEndsWith      = None,
             sStartsNotWith = None,
             sEndsNotWith   = None,
             sContains      = None,
             sContainsNot   = None,
             sInclRegex     = r"\d{2}",
             sExclRegex     = None)
```

5. Returns False:

```
StringFilter(sString      = "Speed is 25 beats per minute",
             bCaseSensitive = True,
             bSkipBlankStrings = True,
             sComment      = None,
             sStartsWith    = "Speed",
             sEndsWith      = None,
             sStartsNotWith = None,
             sEndsNotWith   = None,
             sContains      = None,
             sContainsNot   = None,
             sInclRegex     = r"\d{3}",
             sExclRegex     = None)
```

6. Returns False:

```
StringFilter(sString      = "Speed is 25 beats per minute",
             bCaseSensitive = True,
             bSkipBlankStrings = True,
             sComment      = None,
             sStartsWith   = "Speed",
             sEndsWith     = "minute",
             sStartsNotWith = "speed",
             sEndsNotWith  = None,
             sContains     = "beats",
             sContainsNot  = None,
             sInclRegex    = r"\d{2}",
             sExclRegex    = r"\d{2}")
```

7. Returns False:

```
StringFilter(sString      = "      ",
             bCaseSensitive = True,
             bSkipBlankStrings = True,
             sComment      = None,
             sStartsWith   = None,
             sEndsWith     = None,
             sStartsNotWith = None,
             sEndsNotWith  = None,
             sContains     = None,
             sContainsNot  = None,
             sInclRegex    = None,
             sExclRegex    = None)
```

8. Returns False:

```
StringFilter(sString      = "# Speed is 25 beats per minute",
             bCaseSensitive = True,
             bSkipBlankStrings = True,
             sComment      = "#",
             sStartsWith   = None,
             sEndsWith     = None,
             sStartsNotWith = None,
             sEndsNotWith  = None,
             sContains     = "beats",
             sContainsNot  = None,
             sInclRegex    = None,
             sExclRegex    = None)
```

9. Returns False:

```
StringFilter(sString      = "      Alpha is not beta; and beta is not gamma      ",
             bCaseSensitive = True,
             bSkipBlankStrings = True,
             sComment      = None,
             sStartsWith   = None,
             sEndsWith     = None,
             sStartsNotWith = None,
             sEndsNotWith  = None,
             sContains     = "      Alpha      ",
             sContainsNot  = None,
             sInclRegex    = None,
             sExclRegex    = None)
```

Because blanks around search strings (here " Alpha ") are considered, whereas the blanks around the input string are removed before computation. Therefore " Alpha " cannot be found within the (shortened) input string.

10. This alternative solution returns True:

```
StringFilter(sString      = "  Alpha is not beta; and beta is not gamma  ",
             bCaseSensitive = True,
             bSkipBlankStrings = True,
             sComment      = None,
             sStartsWith   = None,
             sEndsWith     = None,
             sStartsWithNot = None,
             sEndsWithNot  = None,
             sContains     = None,
             sContainsNot  = None,
             sInclRegex    = r"\s{3}Alpha",
             sExclRegex    = None)
```

11. Returns True:

```
StringFilter(sString      = "Alpha is not beta; and beta is not gamma",
             bCaseSensitive = True,
             bSkipBlankStrings = True,
             sComment      = None,
             sStartsWith   = None,
             sEndsWith     = None,
             sStartsWithNot = None,
             sEndsWithNot  = None,
             sContains     = "beta; and",
             sContainsNot  = None,
             sInclRegex    = None,
             sExclRegex    = None)
```

The meaning of "beta; and" is: The criterion is fulfilled in case of either "beta" or " and" can be found. That's True in this example - but this has nothing to do with the fact, that also this string "beta; and" can be found. Here the semikolon is a separator character and therefore part of the syntax.

A semicolon that shall be part of the search string, has to be masked with '\;':

The meaning of "beta\; not" in the following example is: The criterion is fulfilled in case of "beta; not" can be found.

That's **not** True. Therefore the method returns False:

```
StringFilter(sString      = "Alpha is not beta; and beta is not gamma",
             bCaseSensitive = True,
             bSkipBlankStrings = True,
             sComment      = None,
             sStartsWith   = None,
             sEndsWith     = None,
             sStartsWithNot = None,
             sEndsWithNot  = None,
             sContains     = r"beta\; not",
             sContainsNot  = None,
             sInclRegex    = None,
             sExclRegex    = None)
```

5.1.4 Method: FormatResult

Formats the result string sResult depending on bSuccess:

- bSuccess is True indicates *success*
- bSuccess is False indicates an *error*

- `bSuccess` is `None` indicates an *exception*

Additionally the name of the method that causes the result, can be provided (*optional*). This is useful for debugging.

Arguments:

- `sMethod`
/ *Condition*: optional / *Type*: str / *Default*: (empty string) /
Name of the method that causes the result.
- `bSuccess`
/ *Condition*: optional / *Type*: bool / *Default*: True /
Indicates if the computation of the method `sMethod` was successful or not.
- `sResult`
/ *Condition*: optional / *Type*: str / *Default*: (empty string) /
The result of the computation of the method `sMethod`.

Returns:

- `sResult`
/ *Type*: str /
The formatted result string.

Chapter 6

CUtils.py

6.1 Function: PrettyPrint

Wrapper function to create and use a `CTypePrint` object. This wrapper function is responsible for printing out the content to console and to a file (depending on input parameter).

The content itself is prepared by the method `TypePrint` of class `CTypePrint`. This happens `PrettyPrint` internally.

The idea behind the `PrettyPrint` function is to resolve also the content of composite data types and provide for every parameter inside:

- the type
- the total number of elements inside (e.g. the number of keys inside a dictionary)
- the counter number of the current element
- the value

Example call:

```
PrettyPrint(oData)
```

(with *oData* is a Python variable of any type)

The output can e.g. look like this:

```
[DICT] (3/1) > {K1} [STR] : 'Val1'
[DICT] (3/2) > {K2} [LIST] (4/1) > [INT] : 1
[DICT] (3/2) > {K2} [LIST] (4/2) > [STR] : 'A'
[DICT] (3/2) > {K2} [LIST] (4/3) > [INT] : 2
[DICT] (3/2) > {K2} [LIST] (4/4) > [TUPLE] (2/1) > [INT] : 9
[DICT] (3/2) > {K2} [LIST] (4/4) > [TUPLE] (2/2) > [STR] : 'Z'
[DICT] (3/3) > {K3} [INT] : 5
```

Every line of output has to be interpreted strictly from left to right.

For example the meaning of the fifth line of output

```
[DICT] (3/2) > {K2} [LIST] (4/4) > [TUPLE] (2/1) > [INT] : 9
```

is:

- The type of input parameter (*oData*) is dict
- The dictionary contains 3 keys
- The current line gives information about the second key of the dictionary

- The name of the second key is 'K2'
- The value of the second key is of type `list`
- The list contains 4 elements
- The current line gives information about the fourth element of the list
- The fourth element of the list is of type `tuple`
- The tuple contains 2 elements
- The current line gives information about the first element of the tuple
- The first element of the tuple is of type `int` and has the value 9

Types are encapsulated in square brackets, counter in round brackets and key names are encapsulated in curly brackets.

Arguments:

- `oData`
/ *Condition*: required / *Type*: (any Python data type) /
A variable of any Python data type.
- `hOutputFile`
/ *Condition*: optional / *Type*: file handle / *Default*: None /
If handle is not None the content is written to this file, otherwise not.
- `bToConsole`
/ *Condition*: optional / *Type*: bool / *Default*: True /
If True the content is written to console, otherwise not.
- `nIndent`
/ *Condition*: optional / *Type*: int / *Default*: 0 /
Sets the number of additional blanks at the beginning of every line of output (indentation).
- `sPrefix`
/ *Condition*: optional / *Type*: str / *Default*: None /
Sets a prefix string that is added at the beginning of every line of output.
- `bHexFormat`
/ *Condition*: optional / *Type*: bool / *Default*: False /
If True the output is printed in hexadecimal format (but valid for strings only).

Returns:

- `listOutLines` (*list*)
/ *Type*: list /
List of lines containing the prepared output

6.2 Class: CTypePrint

Imported by:

```
from PythonExtensionsCollection.Utils.CUtils import CTypePrint
```

The class `CTypePrint` provides a method (`TypePrint`) to compute the following data:

- the type
- the total number of elements inside (e.g. the number of keys inside a dictionary)

- the counter number of the current element
- the value

of simple and composite data types.

The call of this method is encapsulated within the function `PrettyPrint` inside this module.

6.2.1 Method: TypePrint

The method `TypePrint` computes details about the input variable `oData`.

Arguments:

- `oData`
/ *Condition*: required / *Type*: any Python data type /
Python variable of any data type.
- `bHexFormat`
/ *Condition*: optional / *Type*: bool / *Default*: False /
If `True` the output is provide in hexadecimal format.

Returns:

- `listOutLines`
/ *Type*: list /
List of lines containing the resolved content of `oData`.

Chapter 7

Appendix

About this package:

Table 7.1: Package setup

Setup parameter	Value
Name	PythonExtensionsCollection
Version	0.9.1
Date	23.08.2022
Description	Additional Python functions
Package URL	python-extensions-collection
Author	Holger Queckenstedt
Email	Holger.Queckenstedt@de.bosch.com
Language	Programming Language :: Python :: 3
License	License :: OSI Approved :: Apache Software License
OS	Operating System :: OS Independent
Python required	>=3.0
Development status	Development Status :: 4 - Beta
Intended audience	Intended Audience :: Developers
Topic	Topic :: Software Development

Chapter 8

History

0.1.0	08/2021
<i>Initial version</i>	
0.2.0	02/2022
<i>Code maintenance</i>	
0.3.0	20.05.2022
<i>Documentation tool chain switched to GenPackageDoc</i>	
0.4.0	24.05.2022
- Documentation rebuild with GenPackageDoc v. 0.13.0 - Code maintenance	
0.5.0	31.05.2022
<i>Adapted to GenPackageDoc v. 0.15.0</i>	
0.6.0	02.06.2022
- Documentation rebuild with GenPackageDoc v. 0.16.0 - Code maintenance	
0.7.0	10.06.2022
<i>Module CFolder added (with methods: Create and Delete</i>	
0.8.0	28.06.2022
<i>Module CFolder: Method: CopyTo added</i>	
0.9.0	27.07.2022
<i>History reworked (requires GenPackageDoc v. 0.26.0 at least)</i>	

PythonExtensionsCollection.pdf*Created at 31.08.2022 - 17:05:43**by GenPackageDoc v. 0.30.0*

4.3 RobotframeworkExtensions

RobotframeworkExtensions

v. 0.8.1

Holger Queckenstedt

23.08.2022

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Chapter 1

Introduction

The *Robotframework Extensions Collection* extends the functionality of the Robotframework by some keywords providing features, that are implemented in the *Python Extensions Collection*.

The goal behind these extensions is to have certain functionality available in both: pure Python applications and Robotframework.

The *Robotframework Extensions Collection* requires an installed *Python Extensions Collection*, that can be found in this repository:

[python-extensions-collection](#)

Chapter 2

Collection.py

The Collection module is the interface between the Python Extensions Collection and the Robotframework. This library containing the keyword definitions, can be imported in the following way:

```
Library      RobotframeworkExtensions.Collection      WITH NAME      rf.extensions
```

2.1 Class: Collection

Imported by:

```
from RobotframeworkExtensions.Collection import Collection
```

Module main class

2.1.1 Method: pretty_print

The pretty_print keyword logs the content of parameters of any Python data type (input: oData).

Simple data types are logged directly. Composite data types are resolved before logging.

The output contains for every parameter: the value, the type and counter values (in case of composite data types).

The trace level for output is INFO.

The output is also returned as list of strings.

Arguments:

- oData
/ *Condition:* required / *Type:* any Python type /
Data to be pretty printed

Returns:

- listOutLines (*list*)
/ *Type:* list /
List of strings containing the resolved data structure of oData (same content as printed to console).

Example:

Variable of Python type list:

```
set_test_variable    @{aItems}    String
...                  ${25}
...                  ${True}
...                  ${None}
```

Call of `pretty_print` keyword:

```
rf.extensions.pretty_print    ${aItems}
```

Output:

```
INFO - [LIST] (4/1) > [STR]   : 'String'
INFO - [LIST] (4/2) > [INT]   : 25
INFO - [LIST] (4/3) > [BOOL]  : True
INFO - [LIST] (4/4) > [NONE]  : None
```

2.1.2 Method: `normalize_path`

The `normalize_path` keyword normalizes local paths, paths to local network resources and internet addresses

Arguments:

- `sPath`
/ *Condition*: required / *Type*: str /
The path to be normalized
- `bWin`
/ *Condition*: optional / *Type*: bool / *Default*: False /
If `True` then the returned path contains masked backslashes as separator, otherwise slashes
- `sReferencePathAbs`
/ *Condition*: optional / *Type*: str / *Default*: None /
In case of `sPath` is relative and `sReferencePathAbs` (expected to be absolute) is given, then the returned absolute path is a join of both input paths
- `bConsiderBlanks`
/ *Condition*: optional / *Type*: bool / *Default*: False /
If `True` then the returned path is encapsulated in quotes - in case of the path contains blanks
- `bExpandEnvVars`
/ *Condition*: optional / *Type*: bool / *Default*: True /
If `True` then in the returned path environment variables are resolved, otherwise not.
- `bMask`
/ *Condition*: optional / *Type*: bool / *Default*: True (requires `bWin=True`) /
If `bWin` is `True` and `bMask` is `True` then the returned path contains masked backslashes as separator.
If `bWin` is `True` and `bMask` is `False` then the returned path contains single backslashes only - this might be required for applications, that are not able to handle masked backslashes.
In case of `bWin` is `False` `bMask` has no effect.

Returns:

- `sPath`
/ *Type*: str /
The normalized path (is `None` in case of `sPath` is `None`)

Example 1:

Variable containing a path with:

- different types of path separators
- redundant path separators (but backslashes have to be masked in the definition of the variable, this is *not* an unwanted redundancy)

- up-level references

```
set_test_variable    ${sPath}    C:\\subfolder1\\../subfolder2\\\\../subfolder3\\
```

Printing the content of `sPath` shows how the path looks like when the masking of the backslashes is resolved:

```
C:\subfolder1\\../subfolder2\../subfolder3\
```

Usage of the `normalize_path` keyword:

```
${sPath}    rf.extensions.normalize_path    ${sPath}
```

Result (content of `sPath`):

```
C:/subfolder3
```

In case we need the Windows version (with masked backslashes instead of slashes):

```
${sPath}    rf.extensions.normalize_path    ${sPath}    bWin=${True}
```

Result (content of `sPath`):

```
C:\\subfolder3
```

The masking of backslashes can be deactivated:

```
${sPath}    rf.extensions.normalize_path    ${sPath}    bWin=${True}    bMask=${False}
```

Result (content of `sPath`):

```
C:\subfolder3
```

Example 2:

Variable containing a path of a local network resource:

```
set_test_variable    ${sPath}    \\\anyserver.com\part1//part2\\\part3/part4
```

Result of normalization:

```
//anyserver.com/part1/part2/part3/part4
```

Example 3:

Variable containing an internet address:

```
set_test_variable    ${sPath}    http:\\\\anyserver.com\part1//part2\\\part3/part4
```

Result of normalization:

```
http://anyserver.com/part1/part2/part3/part4
```


Chapter 3

Appendix

About this package:

Table 3.1: Package setup

Setup parameter	Value
Name	RobotframeworkExtensions
Version	0.8.1
Date	23.08.2022
Description	Additional Robot Framework keywords
Package URL	robotframework-extensions-collection
Author	Holger Queckenstedt
Email	Holger.Queckenstedt@de.bosch.com
Language	Programming Language :: Python :: 3
License	License :: OSI Approved :: Apache Software License
OS	Operating System :: OS Independent
Python required	>=3.0
Development status	Development Status :: 4 - Beta
Intended audience	Intended Audience :: Developers
Topic	Topic :: Software Development

Chapter 4

History

0.1.0	01/2022
<i>Initial version</i>	
0.2.0	03/2022
<i>Setup maintenance</i>	
0.3.0	05/2022
<i>Documentation tool chain switched to GenPackageDoc</i>	
0.4.0	24.05.2022
<ul style="list-style-type: none"> - Documentation rebuild with GenPackageDoc v. 0.13.0 - Code maintenance 	
0.5.0	31.05.2022
<i>Adapted to GenPackageDoc v. 0.15.0</i>	
0.6.0	02.06.2022
<ul style="list-style-type: none"> - Documentation rebuild with GenPackageDoc v. 0.16.0 - Code maintenance 	
0.7.0	28.06.2022
<i>PythonExtensionsCollection updated to version 0.8.0</i>	
0.8.0	27.07.2022
<i>History reworked (requires GenPackageDoc v. 0.26.0 at least)</i>	

RobotframeworkExtensions.pdf*Created at 31.08.2022 - 17:05:51**by GenPackageDoc v. 0.30.0*

4.4 JsonPreprocessor

JsonPreprocessor

v. 0.1.3

Mai Dinh Nam Son

05.07.2022

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Chapter 1

Introduction

Json Preprocessor

!!! add introduction - if wanted !!

Chapter 2

Description

The json preprocessor:



TO BE CONTINUED

Chapter 3

CJsonPreprocessor.py

3.1 Class: CSyntaxType

Imported by:

```
from JsonPreprocessor.CJsonPreprocessor import CSyntaxType
```

3.2 Class: CPythonJSONDecoder

Imported by:

```
from JsonPreprocessor.CJsonPreprocessor import CPythonJSONDecoder
```

Method: PythonJSONDecoder Add python data types and syntax to json. True, False and None will be accepted as json syntax elements.

Args: json.JSONDecoder (*object*) Decoder object provided by `json.loads`

3.2.1 Method: custom_scan_once

3.3 Class: CJsonPreprocessor

Imported by:

```
from JsonPreprocessor.CJsonPreprocessor import CJsonPreprocessor
```

CJsonPreprocessor extends the syntax of json.

Features are

- Allow c/c++-style comments within json files.
`//` single line or part of single line and `/* */` multiline comments are possible
- Allow to import json files into json files
`"[import]" : "relative/absolute path"`, imports another json file to exactly this location.
`%envvariable%` and `${envvariable}` can be used, too.
- Allow use of variables within json files
In any place the syntax `${basenode.subnode. ... nodename}` allows to reference an already existing variable.
Example:

```
{
  "basenode" : {
    subnode : {
      "myparam" : 5
    },
    "myVar" : "${basenode.subnode.myparam}"
  }
}
```

- Allow python data types True, False and None

3.3.1 Method: jsonLoad

Method: jsonLoad This function is the entry point of JsonPreprocessor.

It loads the json file, preprocesses it and returns the preprocessed result as data structure.

Args: jFile (*string*) relative/absolute path to main json file.

%envvariable% and \${envvariable} can be used, too in order to access environment variables.

Returns: oJson (*dict*) preprocessed json file(s) as data structure

Chapter 4

Appendix

About this package:

Table 4.1: Package setup

Setup parameter	Value
Name	JsonPreprocessor
Version	0.1.3
Date	05.07.2022
Description	Preprocessor for json files
Package URL	python-jsonpreprocessor
Author	Mai Dinh Nam Son
Email	son.maidinhnam@vn.bosch.com
Language	Programming Language :: Python :: 3
License	License :: OSI Approved :: Apache Software License
OS	Operating System :: OS Independent
Python required	>=3.0
Development status	Development Status :: 4 - Beta
Intended audience	Intended Audience :: Developers
Topic	Topic :: Software Development

Chapter 5

History

0.1.0	01/2022
<i>Initial version</i>	

JsonPreprocessor.pdf*Created at 31.08.2022 - 17:05:57**by GenPackageDoc v. 0.30.0*

4.5 RobotFramework_Testsuites

RobotFramework_Testsuites

v. 0.2.2

Mai Dinh Nam Son

18.07.2022

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Chapter 1

Introduction

RobotFramework.Testsuites

!!! add introduction - if wanted !!

Chapter 2

Description

The RobotFramework AIO testsuites management:
TO BE CONTINUED

Chapter 3

CConfig.py

3.1 Class: dotdict

Imported by:

```
from RobotFramework.Testsuites.Config.CConfig import dotdict
```

3.2 Class: CConfig

Imported by:

```
from RobotFramework.Testsuites.Config.CConfig import CConfig
```

Defines the properties of configuration Holds the identified config files. Level1 is highest priority, Level4 is lowest priority.

(remaining content needs to be fixed and restored)

3.2.1 Method: loadCfg

3.2.2 Method: updateCfg

staticmethod updateParams: This method updates preprocessor, global or local params base on ROBFW local config or any json config file according to purpose of specific testsuite.

Args: sUpdateCfgFile: str

Returns: None

3.2.3 Method: verifyRbfwVersion

Validate the current robotframework version with maximum and minimum version (if provided in the configuration file). In case the current version is not between min and max version, then the execution of testsuite is terminated with "unknown" state Method: bValidateMinVersion -----

Validate current version with required minimum version. Method: bValidateMaxVersion -----

Validate current version with required maximum version. Method: bValidateSubVersion -----

Validate the format of provided sub version and parse it into sub tuple for version comparison. Method: tupleVersion -----

Return a tuple which contains the (major, minor, patch) version.

(remaining content needs to be fixed and restored)

3.2.4 Method: versioncontrol_error

Wrapper version control error log: Log error message of version control due to reason and set to unknown state. reason can only be "conflict_min", "conflict_max" and "wrong_minmax".

Chapter 4

COnFailureHandle.py

4.1 Class: COnFailureHandle

Imported by:

```
from RobotFramework.Testsuites.Keywords.COnFailureHandle import COnFailureHandle
```

4.1.1 Method: is_noney

4.1.2 Method: register_keyword_run_on_failure

TBD

Chapter 5

CSetup.py

5.1 Class: CSetupKeywords

Imported by:

```
from RobotFramework.Testsuites.Keywords.CSetup import CSetupKeywords
```

Definition setup keywords Method: testsuite_setup -----

5.1.1 Method: testsuite_teardown

5.1.2 Method: testcase_setup

5.1.3 Method: testcase_teardown

5.1.4 Method: update_config

5.2 Class: CGeneralKeywords

Imported by:

```
from RobotFramework.Testsuites.Keywords.CSetup import CGeneralKeywords
```

Definition setup keywords Method: get_config -----

oConfigParams: is the dictionary consist of some configuration params which are return to user from get_config_params

keyword Method: load_json -----

Chapter 6

CStruct.py

6.1 Class: CStruct

Imported by:

```
from RobotFramework.Testsuites.Uutils.CStruct import CStruct
```

Constructor `__init__` creates the given attributes dynamically at runtime.

Args:

Attributes to be created with the initial value

Returns:

Accessible attributes

Chapter 7

Event.py

7.1 Class: Event

Imported by:

```
from RobotFramework.Testsuites.Utils/Events.Event import Event
```

7.1.1 Method: trigger

Chapter 8

ScopeEvent.py

8.1 Class: ScopeEvent

Imported by:

```
from RobotFramework.Testsuites.Utills/Events.ScopeEvent import ScopeEvent
```

8.1.1 Method: trigger

8.2 Class: ScopeStart

Imported by:

```
from RobotFramework.Testsuites.Utills/Events.ScopeEvent import ScopeStart
```

8.3 Class: ScopeEnd

Imported by:

```
from RobotFramework.Testsuites.Utills/Events.ScopeEvent import ScopeEnd
```

Chapter 9

`__init__.py`

9.1 Function: `on`

9.2 Function: `dispatch`

9.3 Function: `register_event`

Chapter 10

LibListener.py

10.1 Class: LibListener

Imported by:

```
from RobotFramework.Testsuites.Utls.LibListener import LibListener
```

Define some hook methods

Chapter 11

__init__.py

11.1 Class: RobotFramework.Testsuites

Imported by:

```
from RobotFramework.Testsuites.__init__ import RobotFramework.Testsuites
```

RobotFramework.Testsuites is the Bosch testing library for Robot Framework. RobotFramework.Testsuites control peripheral devices, tools and target under testing. Method: run_keyword -----

11.1.1 Method: get_keyword_tags

11.1.2 Method: get_keyword_documentation

11.1.3 Method: failure_occurred

11.2 Class: CTestsuitesCfg

Imported by:

```
from RobotFramework.Testsuites.__init__ import CTestsuitesCfg
```

Chapter 12

version.py

12.1 Function: robfwaio_version

Return testsuitemanagement version as Robot framework AIO version

Chapter 13

Appendix

About this package:

Table 13.1: Package setup

Setup parameter	Value
Name	RobotFramework.Testsuites
Version	0.2.2
Date	18.07.2022
Description	Functionality to manage RobotFramework testsuites
Package URL	robotframework-testsuitesmanagement
Author	Mai Dinh Nam Son
Email	son.maidinhnam@vn.bosch.com
Language	Programming Language :: Python :: 3
License	License :: OSI Approved :: Apache Software License
OS	Operating System :: OS Independent
Python required	>=3.0
Development status	Development Status :: 4 - Beta
Intended audience	Intended Audience :: Developers
Topic	Topic :: Software Development

Chapter 14

History

0.1.0	06/2022
<i>Initial version</i>	

RobotFramework.Testsuites.pdf*Created at 31.08.2022 - 17:06:04**by GenPackageDoc v. 0.30.0*

4.6 QConnectBase

QConnectBase

v. 1.1.0

Nguyen Huynh Tri Cuong

05.07.2022

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Chapter 1

Introduction

QConnectBase

TO BE CONTINUED

Chapter 2

Description

QConnectBase
TO BE CONTINUED

Chapter 3

__init__.py

3.1 Class: ConnectionManager

Imported by:

```
from QConnectBase.__init__ import ConnectionManager
```

Class to manage all connections.

Chapter 4

connection_base.py

4.1 Class: BrokenConnError

Imported by:

```
from QConnectBase.connection_base import BrokenConnError
```

4.2 Class: ConnectionBase

Imported by:

```
from QConnectBase.connection_base import ConnectionBase
```

Base class for all connection classes. Method: `is_supported_platform` -----
Check if current platform is supported.

Returns: True if platform is supported.
False if platform is not supported.

4.2.1 Method: `is_precondition_pass`

Check for precondition.

Returns: True if passing the precondition.
False if failing the precondition.

4.2.2 Method: `error_instruction`

Get the error instruction.

Returns: Error instruction string.

4.2.3 Method: `quit`

>> This method MUST be overridden in derived class << Abstract method for quitting the connection.

Args: `is_disconnect_all`: Determine if it's necessary to disconnect all connections.

Returns: None.

4.2.4 Method: connect

>> This method MUST be overridden in derived class << Abstract method for quitting the connection.

Args: device: Determine if it's necessary to disconnect all connections.

files: Determine if it's necessary to disconnect all connections.

test_connection: Determine if it's necessary to disconnect all connections.

Returns: None.

4.2.5 Method: disconnect

>> This method MUST be overridden in derived class << Abstract method for disconnecting connection.

Args: device: Device name.

Returns: None.

4.2.6 Method: send_obj

Wrapper method to send message to a tcp connection.

Args: obj: Data to be sent. cr: Determine if it's necessary to add newline character at the end of command.

Returns: None

4.2.7 Method: read_obj

Wrapper method to get the response from connection.

Returns: Responded message.

4.2.8 Method: wait_4_trace

Suspend the control flow until a Trace message is received which matches to a specified regular expression.

Args: search_obj : Regular expression all received trace messages are compare to. Can be passed either as a string or a regular expression object. Refer to Python documentation for module 're'.

use_fetch_block : Determine if 'fetch block' feature is used.

end_of_block_pattern : The end of block pattern.

filter_pattern : Regular expression object to filter message line by line.

timeout : Optional timeout parameter specified as a floating point number in the unit 'seconds'.

fct_args: Optional list of function arguments passed to be sent.

Returns: None : If no trace message matched to the specified regular expression and a timeout occurred.

<match> : If a trace message has matched to the specified regular expression, a match object is returned as the result. The complete trace message can be accessed by the 'string' attribute of the match object. For access to groups within the regular expression, use the group() method. For more information, refer to Python documentation for module 're'.

4.2.9 Method: wait_4_trace_continuously

Getting trace log continuously without creating a new trace queue.

Args: trace_queue: Queue to store the traces.

timeout: Timeout for waiting a matched log.

fct_args: Arguments to be sent to connection.

Returns: None : If no trace message matched to the specified regular expression and a timeout occurred.

match object : If a trace message has matched to the specified regular expression, a match object is returned as the result. The complete trace message can be accessed by the 'string' attribute of the match object. For access to groups within the regular expression, use the group() method. For more information, refer to Python documentation for module 're'.

4.2.10 Method: create_and_activate_trace_queue

Create Queue and assign it to _trace_queue object and activate the queue with the search element.

Args: search_element : Regular expression all received trace messages are compare to. Can be passed either as a string or a regular expression object. Refer to Python documentation for module 're'.#

use_fetch_block : Determine if 'fetch block' feature is used.

end_of_block_pattern : The end of block pattern.

regex_line_filter_pattern : Regular expression object to filter message line by line.

Returns: trq_handle, trace_queue: the handle and search object

4.2.11 Method: deactivate_and_delete_trace_queue

Deactivate trace queue and delete.

Args: trq_handle: Trace queue handle.

trace_queue: Trace queue object.

Returns: None.

4.2.12 Method: activate_trace_queue

Activates a trace message filter specified as a regular expression. All matching trace messages are put in the specified queue object.

Args: search_obj : Regular expression all received trace messages are compare to. Can be passed either as a string or a regular expression object. Refer to Python documentation for module 're'.#

trace_queue : A queue object all trace message which matches the regular expression are put in. The using application must assure, that the queue is emptied or deleted.

use_fetch_block : Determine if 'fetch block' feature is used

end_of_block_pattern : The end of block pattern

line_filter_pattern : Regular expression object to filter message line by line.

Returns: <int> : Handle to deactivate the message filter.

4.2.13 Method: deactivate_trace_queue

Deactivates a trace message filter previously activated by ActivateTraceQ() method.

Args: handle : Integer object returned by ActivateTraceQ() method.

Returns: False : No trace message filter active with the specified handle (i.e. handle is not in use).

True : Trace message filter successfully deleted.

4.2.14 Method: check_timeout

>> This method will be override in derived class << Check if responded message come in cls._RESPOND.TIMEOUT or we will raise a timeout event.

Args: msg: Responded message for checking.

Returns: None.

4.2.15 Method: pre_msg_check

>> This method will be override in derived class << Pre-checking message when receiving it from connection.

Args: msg: received message to be checked.

Returns: None.

4.2.16 Method: post_msg_check

>> This method will be override in derived class << Post-checking message when receiving it from connection.

Args: msg: received message to be checked.

Returns: None.

Chapter 5

connection_manager.py

5.1 Class: InputParam

Imported by:

```
from QConnectBase.connection_manager import InputParam
```

5.1.1 Method: get_attr_list

5.2 Class: ConnectParam

Imported by:

```
from QConnectBase.connection_manager import ConnectParam
```

Class for storing parameters for connect action. Class: SendCommandParam =====

Imported by:

```
from QConnectBase.connection_manager import SendCommandParam
```

Class for storing parameters for send command action. Class: VerifyParam =====

Imported by:

```
from QConnectBase.connection_manager import VerifyParam
```

Class for storing parameters for verify action. Class: ConnectionManager =====

Imported by:

```
from QConnectBase.connection_manager import ConnectionManager
```

Class to manage all connections. Method: quit -----

Quit connection manager.

Returns: None.

5.2.1 Method: add_connection

Add a connection to managed dictionary.

Args: name: connection's name.

conn: connection object.

Returns: None.

5.2.2 Method: remove_connection

Remove a connection by name.

Args: connection_name: connection name.

Returns: None.

5.2.3 Method: get_connection_by_name

Get an exist connection by name.

Args: connection_name: connection's name.

Returns: Connection object.

5.2.4 Method: disconnect

Keyword for disconnecting a connection by name.

Args: connection_name: Name of connection.

Returns: None.

5.2.5 Method: connect

Keyword for making a connection.

Args: args: Non-Keyword Arguments.

kwargs: Keyword Arguments.

Returns: None.

5.2.6 Method: connect_named_args

Making a connection with name arguments.

Args: kwargs: Dictionary of arguments.

Returns: None.

5.2.7 Method: connect_unnamed_args

Making a connection.

Args: connection_name: Name of connection.

connection_type: Type of connection.

mode: Connection mode.

config: Configuration for connection.

Returns: None.

5.2.8 Method: send_command

Keyword for sending command to a connection.

Args: args: Non-Keyword Arguments.

kwargs: Keyword Arguments.

Returns: None.

5.2.9 Method: send_command_named_args

Send command to a connection with name arguments.

Args: args: Dictionary of arguments.

Returns: None.

5.2.10 Method: send_command_unnamed_args

Send command to a connection.

Args: connection_name: connection's name.
command: command.

Returns: None.

5.2.11 Method: verify

Keyword uses to verify a pattern from connection response after sending a command.

Args: args: Non-Keyword Arguments.
kwargs: Keyword Arguments.

Returns: match_res: matched string.

5.2.12 Method: verify_named_args

Verify a pattern from connection response after sending a command with named arguments.

Args: kwargs: Dictionary of arguments.

Returns: match_res: matched string.

5.2.13 Method: verify_unnamed_args

Verify a pattern from connection response after sending a command.

Args: connection_name: connection's name.
search_obj: search pattern.
timeout: timeout for waiting result.
fetch_block: use fetch block feature.
end_of_block_pattern: pattern for detecting the end of block.
filter_pattern: line filter pattern.
fct_args: command to be sent.

Returns: match_res: matched string.

5.3 Class: TestOption

Imported by:

```
from QConnectBase.connection_manager import TestOption
```

Chapter 6

constants.py

6.1 Class: SocketType

Imported by:

```
from QConnectBase.constants import SocketType
```

6.2 Class: String

Imported by:

```
from QConnectBase.constants import String
```

Chapter 7

qlogger.py

7.1 Class: ColorFormatter

Imported by:

```
from QConnectBase.qlogger import ColorFormatter
```

Custom formatter class for setting log color. Method: format -----
Set the color format for the log.

Args: record: log record.

Returns: Log with color formatter.

7.2 Class: QFileHandler

Imported by:

```
from QConnectBase.qlogger import QFileHandler
```

Handler class for user defined file in config. Method: get_log_path -----
Get the log file path for this handler.

Args: config: connection configurations.

Returns: Log file path.

7.2.1 Method: get_config_supported

Check if the connection config is supported by this handler.

Args: config: connection configurations.

Returns: True if the config is supported.
False if the config is not supported.

7.3 Class: QDefaultFileHandler

Imported by:

```
from QConnectBase.qlogger import QDefaultFileHandler
```

Handler class for default log file path. Method: `get_log_path` -----

Get the log file path for this handler.

Args: `logger_name`: name of the logger.

Returns: Log file path.

7.3.1 Method: `get_config_supported`

Check if the connection config is supported by this handler.

Args: `config`: connection configurations.

Returns: True if the config is supported.
False if the config is not supported.

7.4 Class: `QConsoleHandler`

Imported by:

```
from QConnectBase.qlogger import QConsoleHandler
```

Handler class for console log. Method: `get_config_supported` -----

Check if the connection config is supported by this handler.

Args: `config`: connection configurations.

Returns: True if the config is supported.
False if the config is not supported.

7.5 Class: `QLogger`

Imported by:

```
from QConnectBase.qlogger import QLogger
```

Logger class for QConnect Libraries. Method: `get_logger` -----

Get the logger object.

Args: `logger_name`: Name of the logger.

Returns: Logger object.

7.5.1 Method: `set_handler`

Set handler for logger.

Args: `config`: connection configurations.

Returns: None if no handler is set. Handler object.

Chapter 8

serial_base.py

8.1 Class: SerialConfig

Imported by:

```
from QConnectBase.serialclient.serial_base import SerialConfig
```

Class to store the configuration for Serial connection. Class: SerialSocket =====

Imported by:

```
from QConnectBase.serialclient.serial_base import SerialSocket
```

Class for handling serial connection. Method: connect -----

Connect to serial port.

Returns: None.

8.1.1 Method: disconnect

Disconnect serial port.

Args: _device: unused.

Returns: None.

8.1.2 Method: quit

Quit serial connection.

Returns: None

8.2 Class: SerialClient

Imported by:

```
from QConnectBase.serialclient.serial_base import SerialClient
```

Serial client class. Method: connect -----

Connect to the Serial port.

Returns: None.

Chapter 9

raw_tcp.py

9.1 Class: RawTCPBase

Imported by:

```
from QConnectBase.tcp/raw.raw_tcp import RawTCPBase
```

Base class for a raw tcp connection. Class: RawTCPBase =====

Imported by:

```
from QConnectBase.tcp/raw.raw_tcp import RawTCPBase
```

Class for a raw tcp connection server. Class: RawTCPClient =====

Imported by:

```
from QConnectBase.tcp/raw.raw_tcp import RawTCPClient
```

Class for a raw tcp connection client.

Chapter 10

ssh_client.py

10.1 Class: AuthenticationType

Imported by:

```
from QConnectBase.tcp/ssh.ssh_client import AuthenticationType
```

10.2 Class: SSHConfig

Imported by:

```
from QConnectBase.tcp/ssh.ssh_client import SSHConfig
```

Class to store the configuration for SSH connection. Class: SSHClient =====

Imported by:

```
from QConnectBase.tcp/ssh.ssh_client import SSHClient
```

SSH client connection class. Method: connect -----

Implementation for creating a SSH connection.

Returns: None.

10.2.1 Method: close

Close SSH connection.

Returns: Method: quit -----

Quit and stop receiver thread.

Returns: None.

Chapter 11

tcp_base.py

11.1 Class: TCPConfig

Imported by:

```
from QConnectBase.tcp.tcp_base import TCPConfig
```

Class to store configurations for TCP connection. Class: TCPBase =====

Imported by:

```
from QConnectBase.tcp.tcp_base import TCPBase
```

Base class for a tcp connection. Method: close -----

Close connection.

Returns: None.

11.1.1 Method: quit

Quit connection.

Args: is_disconnect_all: Determine if it's necessary for disconnect all connection.

Returns: None.

11.1.2 Method: connect

>> Should be override in derived class. Establish the connection.

Returns: None.

11.1.3 Method: disconnect

>> Should be override in derived class. Disconnect the connection.

Returns: None.

11.2 Class: TCPBaseServer

Imported by:

```
from QConnectBase.tcp.tcp_base import TCPBaseServer
```

Base class for TCP server. Method: `accept_connection` -----

Wrapper method for handling accept action of TCP Server.

Returns: None.

11.2.1 Method: `connect`

11.2.2 Method: `disconnect`

11.3 Class: `TCPBaseClient`

Imported by:

```
from QConnectBase.tcp.tcp_base import TCPBaseClient
```

Base class for TCP client. Method: `connect` -----

11.3.1 Method: `disconnect`

Chapter 12

utils.py

12.1 Class: Singleton

Imported by:

```
from QConnectBase.utils import Singleton
```

Class to implement Singleton Design Pattern. This class is used to derive the TTFisClientReal as only a single instance of this class is allowed.

Disabled pyLint Messages: R0903: Too few public methods (%s/%s) Used when class has too few public methods, so be sure it's really worth it.

This base class implements the Singleton Design Pattern required for the TTFisClientReal. Adding further methods does not make sense.

12.2 Class: DictToClass

Imported by:

```
from QConnectBase.utils import DictToClass
```

Class for converting dictionary to class object. Method: validate -----

12.3 Class: Utils

Imported by:

```
from QConnectBase.utils import Utils
```

Class to implement utilities for supporting development. Method: get_all_descendant_classes -----

Get all descendant classes of a class

Args: cls: Input class for finding descendants.

Returns: Array of descendant classes.

12.3.1 Method: get_all_sub_classes

Get all children classes of a class

Args: cls: Input class for finding children.

Returns: Array of children classes.

12.3.2 Method: is_valid_host**12.3.3 Method: execute_command****12.3.4 Method: kill_process****12.3.5 Method: caller_name**

Get a name of a caller in the format module.class.method

Args: skip: specifies how many levels of stack to skip while getting caller name. skip=1 means "who calls me", skip=2 "who calls my caller" etc.

Returns: An empty string is returned if skipped levels exceed stack height

12.3.6 Method: load_library

Load native library depend on the calling convention.

Args: path: library path. is_stdcall: determine if the library's calling convention is stdcall or cdecl.

Returns: Loaded library object.

12.3.7 Method: is_ascii_or_unicode

Check if the string is ascii or unicode

Args: str_check: string for checking codecs: encoding type list

Returns: True : if checked string is ascii or unicode False : if checked string is not ascii or unicode

12.4 Class: Job

Imported by:

```
from QConnectBase.utils import Job
```

12.4.1 Method: stop**12.4.2 Method: run****12.5 Class: ResultType**

Imported by:

```
from QConnectBase.utils import ResultType
```

Result Types. Class: ResponseMessage =====

Imported by:

```
from QConnectBase.utils import ResponseMessage
```

Response message class Method: get_json -----

Convert response message to json Returns: Response message in json format Method: get_data -----

Get string data result Returns: String result Method: create_from_string -----

Chapter 13

Appendix

About this package:

Table 13.1: Package setup

Setup parameter	Value
Name	QConnectBase
Version	1.1.0
Date	05.07.2022
Description	Robot Framework test library for TCP, SSH, serial connection
Package URL	robotframework-qconnect-base
Author	Nguyen Huynh Tri Cuong
Email	cuong.nguyenhuynhtri@vn.bosch.com
Language	Programming Language :: Python :: 3
License	License :: OSI Approved :: Apache Software License
OS	Operating System :: OS Independent
Python required	>=3.0
Development status	Development Status :: 4 - Beta
Intended audience	Intended Audience :: Developers
Topic	Topic :: Software Development

Chapter 14

History

1.0.0	2022
<i>Initial version</i>	

QConnectBase.pdf*Created at 31.08.2022 - 17:06:12**by GenPackageDoc v. 0.30.0*

4.7 QConnectionDLTLibrary

QConnectionDLTLibrary

v. 1.1.0

Nguyen Huynh Tri Cuong

11.07.2022

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QConnectionDLTLibrary
TO BE CONTINUED

Chapter 2

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QConnectionDLTLibrary
TO BE CONTINUED

Chapter 3

trace_client.py

3.1 Class: TraceClient

Imported by:

```
from QConnectionDLTLibrary.trace/common.trace_client import TraceClient
```

Proxy class for redirect to real trace class. Method: get_selected_device -----
Get the selected device.

Returns: The selected device.

3.1.1 Method: quit

Quit connection.

Args: disconnect_all: Determine if it's necessary for disconnect all connection.

Returns: None.

3.1.2 Method: connect

Establish the connection.

Args: args: Arguments for connecting.

Returns: True if connect successfully.
False if connect unsuccessfully.

3.1.3 Method: select_device

Select the device.

Args: device: Name of the device to be selected.

Returns: None.

3.1.4 Method: is_device_connected

Check if the device is connected.

Args: device: Name of the device.

Returns: True if the device is connected.
False if the device hasn't been connected.

3.1.5 Method: enable_mst_socket

Not implemented yet.

Args: port_addr: Port address.

Returns: None.

3.1.6 Method: disconnect

Disconnect the connection.

Args: device: Name of the device.

Returns: None.

3.1.7 Method: restart

Restart the connection.

Args: args : Arguments for restarting.

Returns:

True if restarting successfully.

False if restarting unsuccessfully.

3.1.8 Method: create_and_activate_trace_queue

Create Queue and assign it to `_trace_queue` object and activate the queue with the search element.

Args: search_element : Regular expression all received trace messages are compare to. Can be passed either as a string or a regular expression object. Refer to Python documentation for module 're'.#

use_fetch_block : Determine if 'fetch block' feature is used.

end_of_block_pattern : The end of block pattern.

regex_line_filter_pattern : Regular expression object to filter message line by line.

Returns: trq_handle, trace_queue : the handle and search object

3.1.9 Method: deactivate_and_delete_trace_queue

Deactivate trace queue and delete.

Args: trq_handle: Trace queue handle.

trace_queue: Trace queue object.

Returns: None.

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Chapter 4

trace_client_base.py

4.1 Function: wait

Suspend the control flow for the specified period of time.

Args: time2wait : Time information as an integer value unit : Unit information as a string. Supported units are 'ms', 's', 'min'

Returns: None.

4.2 Class: TraceClientBase

Imported by:

```
from QConnectionDLTLibrary.trace/common.trace_client_base import TraceClientBase
```

A base class for all DLT trace clients. Method: is_supported_platform -----
Check if this platform is supported by the handle class.

Returns: True if the platform is supported.
False if the platform is not supported.

4.2.1 Method: is_precondition_pass

Checking precondition.

Returns: True if passing precondition.
False if failing precondition.

4.2.2 Method: error_instruction

Get error instruction.

Returns: Error instruction string.

4.2.3 Method: get_selected_device

Abstract method for getting selected device.

Returns: None.

4.2.4 Method: quit

Abstract method for quitting connection.

Args: `is_disconnect_all`: Determine if it's necessary for disconnecting all connection.

Returns: None.

4.2.5 Method: connect

Abstract method for connecting.

Args: `args`: Arguments for connecting.

Returns: None.

4.2.6 Method: select_device

Abstract method for selecting device.

Args: `device`: Device name.

Returns: None.

4.2.7 Method: enable_mst_socket

Abstract method for enabling mst socket.

Args: `port_addr`: Port address.

Returns: None.

4.2.8 Method: disconnect

Abstract method for disconnecting connection.

Args: `device`: Device name.

Returns: None.

4.2.9 Method: restart

Abstract method for restarting DLT connection.

Args: `args`: Arguments for restarting.

Returns: None.

4.2.10 Method: get_selected_device

This method returns the currently connected and active device. Be aware that the active device might change any time (e.g. by a parallel thread). Method: `is_device_connected` -----

Check if device is connected.

Args: `device`: Device to be checked.

Returns: True if device is connected.
False if device is not connected.

4.2.11 Method: is_device_connected

This method returns True if the device is already connected.

Chapter 5

dlt_client.py

5.1 Class: BrokenConnError

Imported by:

```
from QConnectionDLTLibrary.trace.dlt_client import BrokenConnError
```

5.2 Class: DLTCConfig

Imported by:

```
from QConnectionDLTLibrary.trace.dlt_client import DLTCConfig
```

Class for storing configurations for DLTConnector. Method: validate -----

5.3 Class: DLTClient

Imported by:

```
from QConnectionDLTLibrary.trace.dlt_client import DLTClient
```

Class for handling dlt connection via dlt connector. Method: is_process_running -----

Check if a process is running.

Args: process_name : Name of the process to be checked.
cmdline_check : Check the process' commandline contain.

Returns: True : If the process is running.
False: If the process is not running.

5.3.1 Method: error_instruction

Get error instruction.

Returns: Error instruction.

5.3.2 Method: get_selected_device

Get selected device.

Returns: Selected device.

5.3.3 Method: enable_mst_socket

Not implemented.

Args: port_addr:

Returns: None.

5.3.4 Method: check_timeout

Check if waiting response timeout exceeded.

Args: msg: Message to be checked.

Returns: None.

5.3.5 Method: pre_msg_check

Check for the trace file loaded message.

Args: msg: Message to be checked.

Returns: None

5.3.6 Method: read_obj

Override read_obj function for DLTServerApp communication.

Returns: Received message from DLTServerApp through TCPIP.

5.3.7 Method: connect

Connect to DLTServerApp through socket.

Args: test_connection: determine if connection test is necessary.

Returns: Device's name if connecting successfully.

5.3.8 Method: quit

Quit DLTCconnector client.

Args: disconnect_all: Determine if all connection will be disconnected.

Returns: None.

5.3.9 Method: disconnect

Disconnect device.

Args: device: device's name

Returns: None

5.3.10 Method: restart

Restart the connection.

Args: files: Trace file list.

Returns: True if restart successfully.

False if restart unsuccessfully.

5.3.11 Method: select_device

This method selects an already connected device.

Args: device: name of device as a string.

Returns: None.

Chapter 6

ttfis_client.py

6.1 Function: get_csm_version

6.2 Class: TTFisConfig

Imported by:

```
from QConnectionDLTLibrary.trace.ttfis_client import TTFisConfig
```

Class for storing configurations for TTFisClient. Class: TTFisClient =====

Imported by:

```
from QConnectionDLTLibrary.trace.ttfis_client import TTFisClient
```

Windows COM-Interface wrapper class to access TTFis COM Server (i.e. CSM.EXE). For details, refer to document APL.TTFis.CSM.doc in the TTFis installation directory. Method: quit -----

This method initiates the shutdown of the COM-Interface to TTFis COM Server. Call this method at the end of your script. Method: get_trc_list -----

This method returns the list of TRC Files used for a device Method: restart -----

This method resolves communication problems between Target and TTFis COM Server. Use this method very carefully! Method: load_trc_files -----

This method loads additional TRC-Files to the active device of TTFis.

Parameter: files : list of filenames as strings which refer to the TRC-files to be loaded

Return Value: True : Loading of TRC-Files successful False : Loading of TRC-Files failed

6.2.1 Method: connect

This method connects a named device to TTFis.

Parameter: device : name of device as a string (e.g. 'paramount@usb') files : list of filenames as strings which refer to the TRC-files to be loaded

Return Value: <devicename> : Returns the device name as a string if connection is successful None : Connection failed

6.2.2 Method: disconnect

This method disconnects a named device from TTFis.

Parameter: device : name of device as a string (e.g. 'paramount@usb')

6.2.3 Method: select_device

This method selects an already connected device.

Parameter: device : name of device as a string (e.g. 'paramount@usb')

6.2.4 Method: get_selected_device

This method returns the currently connected and active device. Be aware that the active device might change any time (e.g. by a parallel thread). Method: is_device_connected -----

This method returns True if the device is already connected. Method: enable_mst_socket -----

This method enables the MST Socket Hook (e.g. of the `paramount@usb` device).

Parameter: port_addr : Socket port address. If not specified, the default port 12300 is used.

6.2.5 Method: send_obj

Send TTFis command to selected device.

Syntax-Variants: Cmd(cmdstr) Cmd(device, cmdstr)

Parameter: cmdstr : TTFis command as a string (multiple lines separated by 'n' are possible, leading blanks/tabs are ignored) device : Device name to be selected before the command is issued

6.2.6 Method: mini_profiler_start

This method starts a separate Python thread which triggers the embedded MiniProfiler output at a specified rate. At the moment, there is no graphical front-end for this feature. The trace output needs to be evaluated by separate tooling offline.

Parameter: intervall : Optional polling intervall parameter specified as a floating point number in the unit 'seconds'.

6.2.7 Method: mini_profiler_stop

This method stops a separate Python thread which triggered the embedded MiniProfiler output.

Chapter 7

Appendix

About this package:

Table 7.1: Package setup

Setup parameter	Value
Name	QConnectionDLTLibrary
Version	1.1.0
Date	11.07.2022
Description	Robot Framework test library for TCP, SSH, serial connection
Package URL	robotframework-qconnect-dlt
Author	Nguyen Huynh Tri Cuong
Email	cuong.nguyenhuynhtri@vn.bosch.com
Language	Programming Language :: Python :: 3
License	License :: OSI Approved :: Apache Software License
OS	Operating System :: OS Independent
Python required	>=3.0
Development status	Development Status :: 4 - Beta
Intended audience	Intended Audience :: Developers
Topic	Topic :: Software Development

Chapter 8

History

1.0.0	2022
<i>Initial version</i>	

QConnectionDLTLibrary.pdf
Created at 31.08.2022 - 17:06:20
by GenPackageDoc v. 0.30.0

4.8 RobotResults2RQM

RobotResults2RQM

v. 1.1.1

Tran Duy Ngoan

01.08.2022

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Chapter 1

Introduction

[RobotResults2RQM](#) tool provides the ability to interact with RQM resources (test plan, test case, build, ...).

[RobotResults2RQM](#) tool uses **[RqmAPI](#)** to:

- get resource: by given ID or all vailable entities of resource type.
- update resource: by given ID.
- create new resource: with resource templates under [RQM_templates](#) folder

Chapter 2

Description

2.1 Sample RobotFramework Testcase:

For test case management, we need some traceable information such as version, testcase ID, component, ... to manage and track testcase(s) on RQM.

So, this information can be provided in `Metadata` (for the whole testsuite/execution info: version, build, ...) and `[Tags]` information (for specific testcase info: component, testcase ID, requirement ID, ...).

Sample Robot testcase with the necessary information for importing to RQM: :

```
*** Settings ***
Metadata    project      ROBFW          # Test Environment
Metadata    version_sw   SW_VERSION_0.1 # Build Record
Metadata    component    Import_Tools   # Component - is used for test case
Metadata    machine       ${COMPUTERNAME} # Hostname
Metadata    team-area     Internet Team RQM # team-area (case-sensitive)

*** Test Cases ***
Testcase 01
    [Documentation]    This test is traceable with provided tcid
    [Tags]             TCID-1001    FID-112    FID-111    ↔
    ↪ robotfile=https://github.com/test-fullautomation
    Log                This is Testcase 01

Testcase 02
    [Documentation]    This new testcase will be created if -createmissing argument
    ...               is provided when importing
    [Tags]             FID-113    robotfile=https://github.com/test-fullautomation
    Log                This is Testcase 02
```

2.2 Tool features:

By default, tool will base on provided arguments (see Usage) and `tcid` information in Robot test case(s) to:

- Login the RQM server and verify the provided `project` , `testplan` .
- Create build record and test environment (if already provided in Robot test case and not existing on RQM) for execution.
- Create new Test Case Execution Record - TCER (if it is not existing) bases on test case ID and `testplan` ID.
- Create new Test Case Execution Result which contents the detail and result state of test case.
- Link all test case(s) to provided `testplan` .

Besides, `RobotResults2RQM` tool also supports to:

- Create new test case(s) which is not existing on RQM (do not have `tcid` information) while importing result(s) to RQM with optional argument `-createmissing` .
- Update information (such as testcase name, Requirement ID, ...) of existing testcase on RQM with optional argument `-updatetestcase` .

2.3 Robot Testcase information on RQM:

For more detail how the RobotFramework testcase information is displayed on RQM, please refer be mapping table:

CHAPTER 2. DESCRIPTION

2.3. ROBOT TESTCASE INFORMATION ON RQM:

RQM data		RobotFramework	
Resource	Attribute/ Field	Testsuite/Testcase	Output.xml
Build Record	Title	Metadata version_sw Build	//suite/metadata/item[@name="version_sw"]
Test Environment	Title	Metadata project Environment	//suite/metadata/item[@name="project"]
Test Case	ID	[Tags] tcid-xxx	//suite/test/tags/tag[@text="tcid-xxx"]
	Name	tesname	//suite/test/@name
	Team Area	Metadata team-area Team_Area	//suite/metadata/item[@name="team-area"]
	Description	test doc - [Documentation]	//suite/test/doc/@text
	Owner	provided user in cli	
	Component/ Categories	Metadata component Component	//suite/metadata/item[@name="component"]
	Requirement ID	[Tags] fid-yyy	//suite/test/tags/tag[@text="fid-yyy"]
	Robot File	[Tags] robotfile-zzz	//suite/test/tags/tag[@text="robotfile-zzz"]
Test Case Execution Record (TCER)	Owner	provided user in cli	
	Team Area	Metadata team-area Team_Area	//suite/metadata/item[@name="team-area"]
	Test Plan	Interaction URL to provided testplan in cli	
	Test Case	Interaction URL to provided testcase ID: provided tcid in [Tags]: tcid-xxx or generated tcid when using -createmissing	//suite/test/tags/tag[@text="tcid-xxx"]
	Test Environ- ment	Metadata project Environment	//suite/metadata/item[@name="project"]
Test Result	Owner	provided user in cli	
	Tested By	provided user in cli - userid must be used	
	Team Area	Metadata team-area Team_Area	//suite/metadata/item[@name="team-area"]
	Actual Result	Test case result (PASSED, FAILED, UNKNOWN)	//suite/test/status/@status
	Host Name	Metadata machine ↔ ↔ %COMPUTERNAME%	//suite/metadata/item[@name="machine"]
	Test Plan	Interaction URL to provided testplan in cli	
	Test Case	Interaction URL to provided testcase ID: provided tcid in [Tags]: tcid-xxx or generated tcid when using -createmissing	//suite/test/tags/tag[@text="tcid-xxx"]
	Test Case Execution Record	Interaction URL to TCER ID	
	Build	Metadata version_sw Build	//suite/metadata/item[@name="version_sw"]
	Start Time	Test case start time	//suite/test/status/@starttime
	End Time	Test case end time	//suite/test/status/@endtime
	Total Run Time	Calculated from start and end time	
	Result Details	Test case message log	//suite/test/status/@text

Table 2.1: RQM data & RobotFramework testcase/output.xml

Chapter 3

CRQM.py

3.1 Function: get_xml_tree

Parse xml object from file.

Arguments:

- `file_name`
 / *Condition*: required / *Type*: str /
 Path to file or file-like object.
- `bdttd.validation`
 / *Condition*: optional / *Type*: bool /
 If True, validate against a DTD referenced by the document.

Returns:

- `oTree`
 / *Type*: lxml.etree._ElementTree object /
 The xml etree object.

3.2 Class: CRQMClient

Imported by:

```
from RobotResults2RQM.CRQM import CRQMClient
```

CRQMClient class uses RQM REST APIs to get, create and update resources (testplan, testcase, test result, ...) on RQM - Rational Quality Manager

Resoure type mapping:

- `buildrecord`: Build Record
- `configuration`: Test Environment
- `testplan`: Test Plan
- `testsuite`: Test Suite
- `suiteexecutionrecord`: Test Suite Execution Record (TSER)
- `testsuitelog`: Test Suite Log
- `testcase`: Test Case
- `executionworkitem`: Test Execution Record (TCER)
- `executionresult`: Execution Result

3.2.1 Method: login

Log in RQM by provided user & password.

Arguments:

(no arguments)

Returns:

- bSuccess

/ Type: bool /

Indicates if the computation of the method login was successful or not.

3.2.2 Method: verifyProjectName

Verify the project name by searching it in project-areas XML response.

Arguments:

(no arguments)

Returns:

- bSuccess

/ Type: bool /

Indicates if the computation of the method verifyProjectName was successful or not.

3.2.3 Method: disconnect

Disconnect from RQM.

Arguments:

(no arguments)

Returns:

(no returns)

3.2.4 Method: config

Configure RQMClient with testplan ID, build, configuration, createmissing, ...

- Verify the existence of provided testplan ID.
- **Verify the existences of provided build and configuration names** before creating new ones.

Arguments: *plan_id

/ Condition: required / Type: str /

Testplan ID of RQM project for importing result(s).

- buildname

/ Condition: optional / Type: str / Default: None /

The Build Record for linking result(s). Set it to None if not be used, the empty name " will lead to error.

- config_name

/ Condition: optional / Type: str / Default: None /

The Test Environment for linking result(s). Set it to None if not be used, the empty name " may lead to error.

- createmissing

/ *Condition*: optional / *Type*: bool / *Default*: False /

If True, the testcase without tcid information will be created on RQM.

- `updatetestcase`

/ *Condition*: optional / *Type*: bool / *Default*: False /

If True, the information of testcase on RQM will be updated bases on robot testfile.

- `suite_id` (optional)

/ *Condition*: optional / *Type*: str / *Default*: None /

Testsuite ID of RQM project for importing result(s).

Returns:

(no returns)

3.2.5 Method: `userURL`

Return interaction URL of provided userID

Arguments:

- `userID`

/ *Condition*: required / *Type*: str /

The user ID.

Returns:

- `userURL`

/ *Type*: str /

The interaction URL of provided userID.

3.2.6 Method: `integrationURL`

Return interaction URL of provided resource and ID. The provided ID can be `internalID` (contains only digits) or `externalID`.

Arguments:

- `resourceType`

/ *Condition*: required / *Type*: str /

The RQM resource type (e.g: "testplan", "testcase", ...).

- `id`

/ *Condition*: optional / *Type*: str / *Default*: None /

The ID of given resource. If given: the specified url to resource ID is returned. If 'None': the url to resource type (to get all entity) is returned.

- `forceinternalID`

/ *Condition*: optional / *Type*: bool / *Default*: False /

If True, force to return the url of resource as internal ID.

Returns:

- `integrationURL`

/ *Type*: str /

The interaction URL of provided resource and ID.

3.2.7 Method: webIDfromResponse

Get internal ID (number) from response of POST method.

Note: Only executionresult has response text. Other resources has only response header.

Arguments:

- response
/ Condition: required / Type: str /
The xml response from POST method for parsing ID information.
- tagID
/ Condition: optional / Type: str / Default: 'rqm:resultId' /
Tag name which contains ID information.

Returns:

- resultId
/ Type: str /
The internal ID (as number).

3.2.8 Method: webIDfromGeneratedID

Return web ID (ns2:webId) from generate ID by get resource data from RQM.

Note:

- This method is only used for generated testcase, executionworkitem and executionresult.
- buildrecord and configuration does not have ns2:webId in response data.

Arguments:

- resourceType
/ Condition: required / Type: str /
The RQM resource type.
- generateID
/ Condition: required / Type: str /
The Slug ID which is returned in Content-Location from POST response.

Returns:

- webID
/ Type: str /
The web ID (as number).

3.2.9 Method: getResourceByID

Return data of provided resource and ID by GET method

Arguments:

- resourceType
/ Condition: required / Type: str /
The RQM resource type.
- id
/ Condition: required / Type: str /
ID of resource.

Returns:

- res
/ Type: Response object /
Response data of GET request.

3.2.10 Method: getAllByResource

Return all entries (in all pages) of provided resource by GET method.

Arguments:

- resourceType
/ Condition: required / Type: str /
The RQM resource type.

Returns:

- dReturn
/ Type: dict /
A dictionary which contains response status, message and data.
Example:

```
{
  'success' : False,
  'message' : '',
  'data'    : {}
}
```

3.2.11 Method: getAllBuildRecords

Get all available build records of project on RQM and store them into dBuildVersion property.

Arguments:

(no arguments)

Returns:

(no returns)

3.2.12 Method: getAllConfigurations

Get all available configurations of project on RQM and store them into dConfiguration property.

Arguments:

(no arguments)

Returns:

(no returns)

3.2.13 Method: getAllTeamAreas

Get all available team-areas of project on RQM and store them into dTeamAreas property.

Example:

```
{
  'teamA' :
    ↳ '{host}/qm/process/project-areas/{project-id}/team-areas/{teamA-id}',
  'teamB' :
    ↳ '{host}/qm/process/project-areas/{project-id}/team-areas/{teamB-id}'
}
```

Arguments:

(no arguments)

Returns:

(no returns)

3.2.14 Method: addTeamAreaNode

Append team-area node which contains URL to given team-area into xml template.

Note: team-area information is case-casesensitive

Arguments:

- root
 - / Condition: required / Type: Element object /
 - The xml root object.
- sTeam
 - / Condition: required / Type: str /
 - Team name to be added.

Returns:

- root
 - / Type: str /
 - The xml root object with addition team-area node.

3.2.15 Method: createTestcaseTemplate

Return testcase template from provided information.

Arguments:

- testCaseName

/ *Condition*: required / *Type*: str /
Testcase name.

- sDescription

/ *Condition*: optional / *Type*: str / *Default*: " /
Testcase description.

- sComponent

/ *Condition*: optional / *Type*: str / *Default*: " /
Component which testcase is belong to.

- sFID

/ *Condition*: optional / *Type*: str / *Default*: " /
Function ID (requirement ID) for linking.

- sTeam

/ *Condition*: optional / *Type*: str / *Default*: " /
Team name for linking.

- sRobotFile

/ *Condition*: optional / *Type*: str / *Default*: " /
Link to robot file on source control.

- sTestType

/ *Condition*: optional / *Type*: str / *Default*: " /
Test type information.

- sASIL

/ *Condition*: optional / *Type*: str / *Default*: " /
ASIL information.

- sOwnerID

/ *Condition*: optional / *Type*: str / *Default*: " /
User ID of testcase owner.

- sTCtemplate

/ *Condition*: optional / *Type*: str / *Default*: None /
Existing testcase template as xml string.
If not provided, template file under RQM_templates is used as default.

Returns:

- sTCxml

/ *Type*: str /
The xml testcase template as string.

3.2.16 Method: createTCERTemplate

Return testcase execution record template from provided information.

Arguments:

- `testcaseID`
/ Condition: required / Type: str /
 Testcase ID for linking.
- `testcaseName`
/ Condition: required / Type: str /
 Testcase name.
- `testplanID`
/ Condition: required / Type: str /
 Testplan ID for linking.
- `confID`
/ Condition: optional / Type: str / Default: " /
 Configuration - Test Environment for linking.
- `sTeam`
/ Condition: optional / Type: str / Default: " /
 Team name for linking.
- `sOwnerID`
/ Condition: optional / Type: str / Default: " /
 User ID of testcase owner.

Returns:

- `sTCERxml`
/ Type: str /
 The xml testcase execution record template as string.

3.2.17 Method: createExecutionResultTemplate

Return testcase execution result template from provided information.

Arguments:

- `testcaseID`
/ Condition: required / Type: str /
 Testcase ID for linking.
- `testcaseName`
/ Condition: required / Type: str /
 Testcase name.
- `testplanID`
/ Condition: required / Type: str /
 Testplan ID for linking.
- `TCERID`

/ *Condition*: required / *Type*: str /
 Testcase execution record (TCER) ID for linking.

- `resultState`

/ *Condition*: required / *Type*: str /
 Testcase result status.

- `startTime`

/ *Condition*: required / *Type*: str /
 Testcase start time.

- `endTime`

/ *Condition*: optional / *Type*: str / *Default*: " /
 Testcase end time.

- `duration`

/ *Condition*: optional / *Type*: str / *Default*: " /
 Testcase duration.

- `testPC`

/ *Condition*: optional / *Type*: str / *Default*: " /
 Test PC which executed testcase.

- `testBy`

/ *Condition*: optional / *Type*: str / *Default*: " /
 User ID who executed testcase.

- `lastlog`

/ *Condition*: optional / *Type*: str / *Default*: " /
 Traceback information (for Failed testcase).

- `buildrecordID`

/ *Condition*: optional / *Type*: str / *Default*: " /
 Build Record ID for linking.

- `sTeam`

/ *Condition*: optional / *Type*: str / *Default*: " /
 Team name for linking.

- `sOwnerID`

/ *Condition*: optional / *Type*: str / *Default*: " /
 User ID of testcase owner.

Returns:

- `sTCResultxml`

/ *Type*: str /
 The xml testcase result template as string.

3.2.18 Method: createBuildRecordTemplate

Return build record template from provided build name.

Arguments:

- buildName
/ Condition: required / Type: str /
Build Record name.

Returns:

- sBuildxml
/ Type: str /
The xml build template as string.

3.2.19 Method: createConfigurationTemplate

Return configuration - Test Environment template from provided configuration name.

Arguments:

- buildName
/ Condition: required / Type: str /
Configuration - Test Environment name.

Returns:

- sEnvironmentxml
/ Type: str /
The xml test environment template as string.

3.2.20 Method: createTSERTemplate

Return testsuite execution record (TSER) template from provided configuration name.

Arguments:

- testsuiteID
/ Condition: required / Type: str /
Testsuite ID.
- testsuiteName
/ Condition: required / Type: str /
Testsuite name.
- testplanID
/ Condition: required / Type: str /
Testplan ID for linking.
- confID
/ Condition: optional / Type: str / Default: " /
Configuration - Test Environment ID for linking.
- sOwnerID

/ Condition: optional / Type: str / Default: " /
User ID of testsuite owner.

Returns:

- `sTSxml`
/ Type: str /
The xml testsuite template as string.

3.2.21 Method: createTestsuiteResultTemplate

Return testsuite execution result template from provided configuration name.

Arguments:

- `testsuiteID`
/ Condition: required / Type: str /
Testsuite ID.
- `testsuiteName`
/ Condition: required / Type: str /
Testsuite name.
- `TSERID`
/ Condition: required / Type: str /
Testsuite execution record (TSER) ID for linking.
- `lTCER`
/ Condition: required / Type: str /
List of testcase execution records (TCER) for linking.
- `lTCResults`
/ Condition: required / Type: str /
List of testcase results for linking.
- `startTime`
/ Condition: optional / Type: str / Default: " /
Testsuite start time.
- `endTime`
/ Condition: optional / Type: str / Default: " /
Testsuite end time.
- `duration`
/ Condition: optional / Type: str / Default: " /
Testsuite duration.
- `sOwnerID`
/ Condition: optional / Type: str / Default: " /
User ID of testsuite owner.

Returns:

- `sTSResultxml`
/ Type: str /
The xml testsuite result template as string.

3.2.22 Method: createResource

Create new resource with provided data from template by POST method.

Arguments:

- resourceType
/ Condition: required / Type: str /
Resource type.
- content
/ Condition: required / Type: str /
The xml template as string.

Returns:

- returnObj
/ Type: dict /
A dictionary reponse which contains status, ID, status_code and error message.
Example:

```
{
  'success' : False,
  'id': None,
  'message': '',
  'status_code': ''
}
```

3.2.23 Method: createBuildRecord

Create new build record.

Arguments:

- sBuildSWVersion
/ Condition: required / Type: str /
Build version - Build Record name.
- forceCreate
/ Condition: optional / Type: bool / Default: False /
If True, force to create new build record without existing verification.

Returns:

- returnObj
/ Type: dict /
A dictionary reponse which contains status, ID, status_code and error message.
Example:

```
{
  'success' : False,
  'id': None,
  'message': '',
  'status_code': ''
}
```

3.2.24 Method: createConfiguration

Create new configuration - test environment.

Arguments:

- `sConfigurationName`
/ Condition: required / Type: str /
 Configuration - Test Environment name.
- `forceCreate`
/ Condition: optional / Type: str / Default: False /
 If True, force to create new Test Environment without existing verification.

Returns:

- `returnObj`
/ Type: dict /
 A dictionary reponse which contains status, ID, status_code and error message.
 Example:

```
{
  'success' : False,
  'id': None,
  'message': '',
  'status_code': ''
}
```

3.2.25 Method: updateResourceByID

Update data of provided resource and ID by PUT method.

Arguments:

- `resourceType`
/ Condition: required / Type: str /
 Resource type.
- `id`
/ Condition: required / Type: str /
 Resource id.
- `content`
/ Condition: required / Type: str /
 The xml template as string.

Returns:

- `res`
/ Type: Response object /
 Response object from PUT request.

3.2.26 Method: linkListTestcase2Testplan

Link list of test cases to provided testplan ID.

Arguments:

- testplanID
/ *Condition*: required / *Type*: str /
Testplan ID to link given testcase(s).
- lTestcases
/ *Condition*: optional / *Type*: list / *Default*: None /
List of testcase(s) to be linked with given testplan.
If not provide, lTestcaseIDs property will be used as list of testcase.

Returns:

- returnObj
/ *Type*: dict /
Response dictionary which contains status and error message.
Example:

```
{
  'success' : False,
  'message' : ''
}
```

3.2.27 Method: linkListTestcase2Testsuite

Link list of test cases to provided testsuite ID

Arguments:

- testsuiteID
/ *Condition*: required / *Type*: str /
Testsuite ID to link given testcase(s).
- lTestcases
/ *Condition*: optional / *Type*: list / *Default*: None /
List of testcase(s) to be linked with given testplan.
If not provide, lTestcaseIDs property will be used as list of testcase.

Returns:

- returnObj
/ *Type*: dict /
Response dictionary which contains status and error message.
Example:

```
{
  'success' : False,
  'message' : ''
}
```

Chapter 4

`__init__.py`

RobotResults2RQM package provides an interface to import robot result(s) from output.xml result file to IBM Rational Quality Manager (RQM).

Chapter 5

robot2rqm.py

5.1 Function: get_from_tags

Extract testcase information from tags.

Example: TCID-xxxx, FID-xxxx, ...

Arguments:

- `lTags`
/ Condition: required / Type: list /
List of tag information.
- `reInfo`
/ Condition: required / Type: str /
Regex to get the expected info (ID) from tag info.

Returns:

- `lInfo`
/ Type: list /
List of expected information (ID)

5.2 Function: convert_to_datetime

Convert time string to datetime.

Arguments:

- `time`
/ Condition: required / Type: str /
String of time.

Returns:

- `dt`
/ Type: datetime object /
Datetime object.

5.3 Function: process_suite_metadata

Try to find metadata information from all suite levels.

Metadata at top suite level has a highest priority.

Arguments:

- suite
 - / *Condition*: required / *Type*: TestSuite object /
 - Robot suite object.
- default_metadata
 - / *Condition*: optional / *Type*: dict / *Default*: DEFAULT_METADATA /
 - Initial Metadata information for updating.

Returns:

- dMetadata
 - / *Type*: dict /
 - Dictionary of Metadata information.

5.4 Function: process_metadata

Extract metadata from suite result bases on DEFAULT_METADATA.

Arguments:

- metadata
 - / *Condition*: required / *Type*: dict /
 - Robot metadata object.
- default_metadata
 - / *Condition*: optional / *Type*: dict / *Default*: DEFAULT_METADATA /
 - Initial Metadata information for updating.

Returns:

- dMetadata
 - / *Type*: dict /
 - Dictionary of Metadata information.

5.5 Function: process_suite

Process robot suite for importing to RQM.

Arguments:

- RQMClient
 - / *Condition*: required / *Type*: RQMClient object /
 - RQMClient object.
- suite
 - / *Condition*: required / *Type*: TestSuite object /
 - Robot suite object.

Returns:

(no returns)

5.6 Function: process_test

Process robot test for importing to RQM.

Arguments:

- RQMClient
/ *Condition*: required / *Type*: RQMClient object/
RQMClient object.
- test
/ *Condition*: required / *Type*: TestCase object/
Robot test object.

Returns:

(no returns)

5.7 Function: RobotResults2RQM

Import robot results from output.xml to RQM - IBM Rational Quality Manager.

Flow to import Robot results to RQM:

1. Process provided arguments from command line
2. Login Rational Quality Management (RQM)
3. Parse Robot results
4. Import results into RQM
5. Link all executed testcases to provided testplan/testsuite ID

Arguments:

- args
/ *Condition*: required / *Type*: ArgumentParser object /
Argument parser object which contains:
 - outputfile : path to the output file or directory with output files to be imported.
 - host : RQM host url.
 - project : RQM project name.
 - user : user for RQM login.
 - password : user password for RQM login.
 - testplan : RQM testplan ID.
 - recursive : if True, then the path is searched recursively for log files to be imported.
 - createmissing : if True, then all testcases without fcid are created when importing.
 - updatetestcase : if True, then testcases information on RQM will be updated bases on robot testfile.
 - dryrun : if True, then just check the RQM authentication and show what would be done.

Returns:

(no returns)

5.8 Class: Logger

Imported by:

```
from RobotResults2RQM.robot2rqm import Logger
```

Logger class for logging message.

5.8.1 Method: config

Configure Logger class.

Arguments:

- `output_console`
/ Condition: optional / Type: bool / Default: True /
 Write message to console output.
- `output_logfile`
/ Condition: optional / Type: str / Default: None /
 Path to log file output.
- `indent`
/ Condition: optional / Type: int / Default: 0 /
 Offset indent.
- `dryrun`
/ Condition: optional / Type: bool / Default: True /
 If set, a prefix as 'dryrun' is added for all messages.

Returns:

(no returns)

5.8.2 Method: log

Write log message to console/file output.

Arguments:

- `msg`
/ Condition: optional / Type: str / Default: " /
 Message which is written to output.
- `color`
/ Condition: optional / Type: str / Default: None /
 Color style for the message.
- `indent`
/ Condition: optional / Type: int / Default: 0 /
 Offset indent.

Returns:

(no returns)

5.8.3 Method: log_warning

Write warning message to console/file output.

Arguments:

- msg
/ *Condition*: required / *Type*: str /
Warning message which is written to output.

Returns:

(no returns)

5.8.4 Method: log_error

Write error message to console/file output.

- msg
/ *Condition*: required / *Type*: str /
Error message which is written to output.
- fatal_error
/ *Condition*: optional / *Type*: bool / *Default*: False /
If set, tool will terminate after logging error message.

Returns:

(no returns)

Chapter 6

Appendix

About this package:

Table 6.1: Package setup

Setup parameter	Value
Name	RobotResults2RQM
Version	1.1.1
Date	01.08.2022
Description	Imports robot result(s) to IBM Rational Quality Manager (RQM)
Package URL	robotframework-testresult2rqmtool
Author	Tran Duy Ngoan
Email	Ngoan.TranDuy@vn.bosch.com
Language	Programming Language :: Python :: 3
License	License :: OSI Approved :: Apache Software License
OS	Operating System :: OS Independent
Python required	>=3.0
Development status	Development Status :: 4 - Beta
Intended audience	Intended Audience :: Developers
Topic	Topic :: Software Development

Chapter 7

History

0.1.0	07/2022
<i>Initial version</i>	
1.1.1	01.08.2022
<i>Rework repository's document bases on GenPackageDoc</i>	

RobotResults2RQM.pdf*Created at 31.08.2022 - 17:06:27**by GenPackageDoc v. 0.30.0*

4.9 RobotResults2DB

RobotResults2DB

v. 1.2.1

Tran Duy Ngoan

22.08.2022

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Chapter 1

Introduction

[RobotResults2DB](#) tool helps to import robot *output.xml* result file(s) to [TestResultWebApp](#)'s database for presenting an overview about the execution and detail of each test result.

In order to display the Robot Framework results on [TestResultWebApp](#) Dashboard properly, Robot testcase need to give some required information for management such as project/variant, software version, component, ...

Therefore, `Metadata` and `[Tags]` are used to provide that information to *output.xml* result which is used for importing data to WebApp.

Chapter 2

Description

2.1 Robot Framework Testcase Settings:

For the whole test execution:

- Project/Variant (can be overwritten by argument `--variant` or `--config` of [RobotResults2DB](#) tool when importing):

```
Metadata    project    ${Project_name}
```

- Versions (can be overwritten by argument `--versions` or `--config` of [RobotResults2DB](#) tool when importing):

```
Metadata    version_hw    ${Software_version}
Metadata    version_hw    ${Hardware_version}
Metadata    version_test    ${Test_version}
```

For the Suite/File information:

- Description/Documentation:

```
Documentation    ${Suite_description}
```

- Author:

```
Metadata    author    ${Author_name}
```

- Component (can be overwritten by argument `--config` of [RobotResults2DB](#) tool when importing):

```
Metadata    component    ${Component_name}
```

- Test Tool - framework and python version, e.g **Robot Framework 3.2rc2 (Python 3.9.0 on win32)**:

```
Metadata    testtool    ${Test_tool}
```

- Test Machine:

```
Metadata    machine    ${COMPUTERNAME}
```

- Tester:

```
Metadata    tester    ${USER}
```

For test case information:

- Issue ID:

```
[Tags]    ISSUE-${ISSUE_ID}
```

- Testcase ID:

```
[Tags]    TCID-${TC_ID}
```

- Requirement ID:

```
[Tags]    FID-${REQ_ID}
```

2.2 Sample Robot Framework Testcase:

For test case management, we need some traceable information such as version, testcase ID, component, ... to manage and track testcase(s) on RQM.

So, this information can be provided in `Metadata` (for the whole testsuite/execution info: version, build, ...) and `[Tags]` information (for specific testcase info: component, testcase ID, requirement ID, ...).

Sample Robot Framework testcase with the necessary information for importing to RQM:

```
*** Settings ***
# Test execution level
Metadata    project           ROBFW           # Project/Variant
Metadata    version_sw       SW_VERSION_0.1       # Software version
Metadata    version_hw       HW_VERSION_0.1       # Hardware version
Metadata    version_test     TEST_VERSION_0.1     # Test version

# File/Suite level
Documentation    This is description for robot test file
Metadata    author    Tran Duy Ngoan (RBVH/ECM1)
Metadata    component    Import_Tools
Metadata    testtool    Robot Framework 3.2rc2 (Python 3.9.0 on win32)
Metadata    machine     ${COMPUTERNAME}
Metadata    tester      ${USER}

*** Test Cases ***
Testcase 01
[Tags]    ISSUE-001    TCID-1001    FID-112    FID-111
Log       This is Testcase 01

Testcase 02
[Tags]    ISSUE-RTC-003    TCID-1002    FID-113
Log       This is Testcase 01
```

Listing 2.1: Sample Robot Framework testcase

Hint



You don't need to define above highlighted `Metadata` (`testtool` , `machine` and `tester`) with RobotFramework AIO because `RobotFramework.Testsuites` library will handle these definitions within `Suite Setup` .

2.3 Display on WebApp:

When the *output.xml* file(s) is importing successfully to database, the result for that execution will be available on [TestResultWebApp](#).

Above settings in robot testcase will be reflect on **Dashboard** (General view) and **Data table** (Detailed view) as below figures:

Execution result metadata:

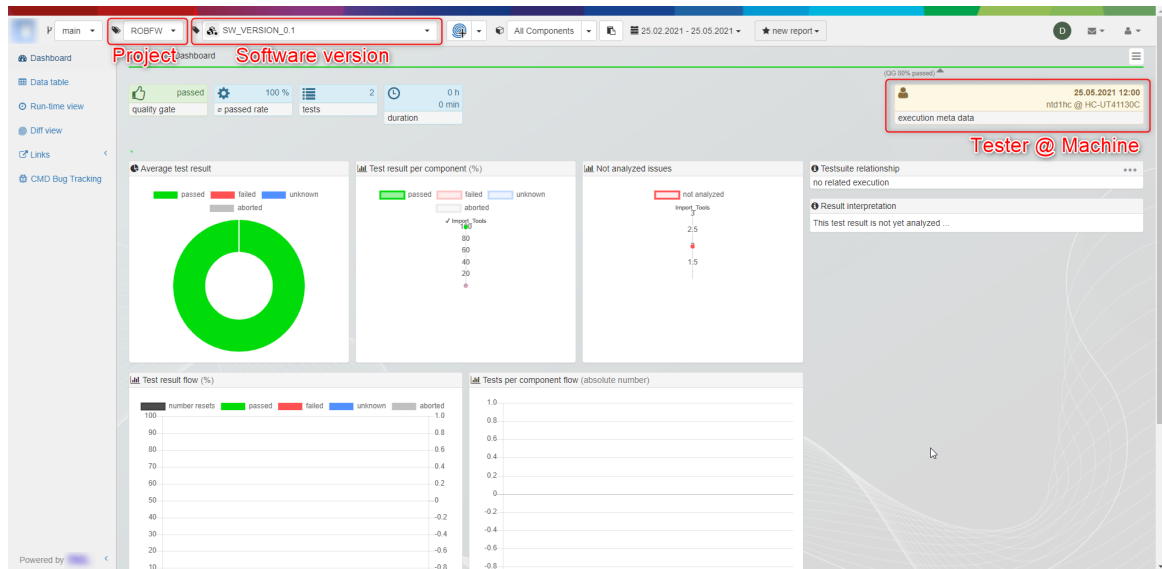


Figure 2.1: Dashboard view

Suite/File metadata and Testcase information:

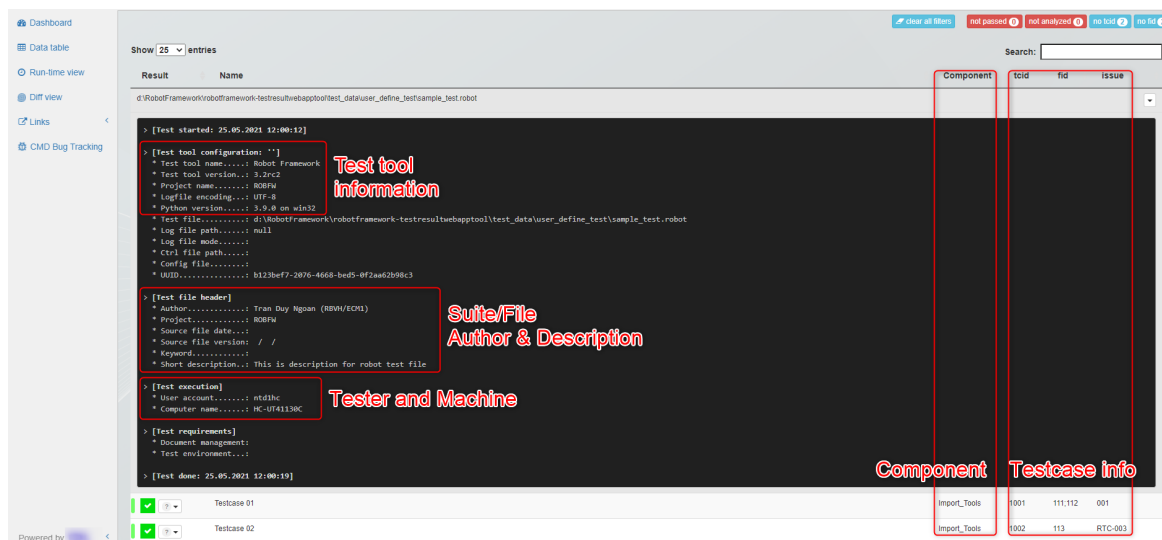


Figure 2.2: Datatable view

2.4 Notes:

When above settings is missing, that leads to the missing information in the *output.xml*.

Some required fields for management will be set to default value when importing with [RobotResults2DB](#) tool:

- `Project` : will be set to default value `ROBFW` if not defined.
- `Software version` : will be set to execution time `%Y%m%d_%H%M%S` as default value.
- `Component` : will be set to default value `unknown` if not defined.

But, you can provide them as command arguments when executing the [RobotResults2DB](#) tool with below optional arguments (refer its [usage](#)):

- `--variant VARIANT`
To specify the Project/Variant information.
- `--versions VERSIONS`
To specify the Software version information.

- `--config CONFIG`
Provide a configuration json file `CONFIG` which helps:

- To configure the Project/Variant, Software version information (lower priority than above commandline arguments)
- To create a mapping between testcase folder and Component information which is display on [TestResultWebApp](#).

Sample configuration json file:

```
{
  "component" : {
    "cli"      : "robot/cli",
    "core"     : "robot/core",
    "external" : "robot/external",
    "keywords" : "robot/keywords",
    "libdoc"   : "robot/libdoc",
    "output"   : "robot/output",
    "parsing"  : "robot/parsing",
    "reboot"   : "robot/reboot",
    "rpa"      : "robot/rpa",
    "running"  : "robot/running",
    "std_lib"  : "robot/standard_libraries",
    "tags"     : "robot/tags",
    "test_lib" : "robot/test_libraries",
    "testdoc"  : "robot/testdoc",
    "tidy"     : "robot/tidy",
    "variables" : "robot/variables"
  },
  "version_sw" : "Atest",
  "variant"    : "ROBFW"
}
```

Chapter 3

CDataBase.py

3.1 Class: CDataBase

Imported by:

```
from RobotResults2DB.CDataBase import CDataBase
```

CDataBase class play a role as mysqlclient and provide methods to interact with TestResultWebApp's database.

3.1.1 Method: connect

Connect to the database with provided authentication and db info.

Arguments:

- host
/ *Condition*: required / *Type*: str /
URL which is hosted the TestResultWebApp's database.
- user
/ *Condition*: required / *Type*: str /
User name for database authentication.
- passwd
/ *Condition*: required / *Type*: str /
User's password for database authentication.
- database
/ *Condition*: required / *Type*: str /
Database name.
- charset
/ *Condition*: optional / *Type*: str / *Default*: 'utf8' /
The connection character set.
- use_unicode
/ *Condition*: optional / *Type*: bool / *Default*: True /
If True, CHAR and VARCHAR and TEXT columns are returned as Unicode strings, using the configured character set.

Returns:

(no returns)

3.1.2 Method: disconnect

Disconnect from TestResultWebApp's database.

Arguments:

(no arguments)

Returns:

(no returns)

3.1.3 Method: cleanAllTables

Delete all table data. Please be careful before calling this method.

Arguments:

(no arguments)

Returns:

(no returns)

3.1.4 Method: sCreateNewTestResult

Creates a new test result in `tbl_result`. This is the main table which is linked to all other data by means of `test_result_id`.

Arguments:

- `tbl_prj_project`
/ Condition: required / Type: str /
Project information.
- `tbl_prj_variant`
/ Condition: required / Type: str /
Variant information.
- `tbl_prj_branch`
/ Condition: required / Type: str /
Branch information.
- `tbl_test_result_id`
/ Condition: required / Type: str /
UUID of test result.
- `tbl_result_interpretation`
/ Condition: required / Type: str /
Result interpretation.
- `tbl_result_time_start`
/ Condition: required / Type: str /
Test result start time as format %Y-%m-%d %H:%M:%S.
- `tbl_result_time_end`
/ Condition: required / Type: str /
Test result end time as format %Y-%m-%d %H:%M:%S.
- `tbl_result_version_sw_target`
/ Condition: required / Type: str /
Software version information.

- `_tbl_result_version_sw_test`
/ *Condition*: required / *Type*: str /
Test version information.
- `_tbl_result_version_target`
/ *Condition*: required / *Type*: str /
Hardware version information.
- `_tbl_result_jenkinsurl`
/ *Condition*: required / *Type*: str /
Jenkinsurl in case test result is executed by jenkins.
- `_tbl_result_reporting_qualitygate`
/ *Condition*: required / *Type*: str /
Qualitygate information for reporting.

Returns:

- `_tbl_test_result_id`
/ *Type*: str /
`test_result_id` of new test result.

3.1.5 Method: nCreateNewFile

Create new file entry in `tbl_file` table.

Arguments:

- `_tbl_file_name`
/ *Condition*: required / *Type*: str /
File name information.
- `_tbl_file_tester_account`
/ *Condition*: required / *Type*: str /
Tester account information.
- `_tbl_file_tester_machine`
/ *Condition*: required / *Type*: str /
Test machine information.
- `_tbl_file_time_start`
/ *Condition*: required / *Type*: str /
Test file start time as format `%Y-%m-%d %H:%M:%S`.
- `_tbl_file_time_end`
/ *Condition*: required / *Type*: str /
Test file end time as format `%Y-%m-%d %H:%M:%S`.
- `_tbl_test_result_id`
/ *Condition*: required / *Type*: str /
UUID of test result for linking to `tbl_result` table.
- `_tbl_file_origin`
/ *Condition*: required / *Type*: str /
Origin (test framework) of test file. Deafult is "ROBFW"

Returns:

- `iInsertedID`
/ *Type*: int /
ID of new entry.

3.1.6 Method: vCreateNewHeader

Create a new header entry in `tbl_file.header` table which is linked with the file.

Arguments:

- `_tbl_file_id`
/ Condition: required / Type: int /
File ID information.
- `_tbl_header.testtoolconfiguration.testtoolname`
/ Condition: required / Type: str /
Test tool name.
- `_tbl_header.testtoolconfiguration.testtoolversionstring`
/ Condition: required / Type: str /
Test tool version.
- `_tbl_header.testtoolconfiguration.projectname`
/ Condition: required / Type: str /
Project name.
- `_tbl_header.testtoolconfiguration.logfileencoding`
/ Condition: required / Type: str /
Encoding of logfile.
- `_tbl_header.testtoolconfiguration.pythonversion`
/ Condition: required / Type: str /
Python version info.
- `_tbl_header.testtoolconfiguration.testfile`
/ Condition: required / Type: str /
Test file name.
- `_tbl_header.testtoolconfiguration.logfilepath`
/ Condition: required / Type: str /
Path to log file.
- `_tbl_header.testtoolconfiguration.logfilemode`
/ Condition: required / Type: str /
Mode of log file.
- `_tbl_header.testtoolconfiguration.ctrlfilepath`
/ Condition: required / Type: str /
Path to control file.
- `_tbl_header.testtoolconfiguration.configfile`
/ Condition: required / Type: str /
Path to configuration file.
- `_tbl_header.testtoolconfiguration.confname`
/ Condition: required / Type: str /
Configuration name.
- `_tbl_header.testfileheader.author`
/ Condition: required / Type: str /
File author.

- `.tbl.header.testfileheader.project`
/ *Condition*: required / *Type*: str /
Project information.
- `.tbl.header.testfileheader.testfiledate`
/ *Condition*: required / *Type*: str /
File creation date.
- `.tbl.header.testfileheader.version.major`
/ *Condition*: required / *Type*: str /
File major version.
- `.tbl.header.testfileheader.version.minor`
/ *Condition*: required / *Type*: str /
File minor version.
- `.tbl.header.testfileheader.version.patch`
/ *Condition*: required / *Type*: str /
File patch version.
- `.tbl.header.testfileheader.keyword`
/ *Condition*: required / *Type*: str /
File keyword.
- `.tbl.header.testfileheader.shortdescription`
/ *Condition*: required / *Type*: str /
File short description.
- `.tbl.header.testexecution.useraccount`
/ *Condition*: required / *Type*: str /
Tester account who run the execution.
- `.tbl.header.testexecution.computername`
/ *Condition*: required / *Type*: str /
Machine name which is executed on.
- `.tbl.header.testrequirements.documentmanagement`
/ *Condition*: required / *Type*: str /
Requirement management information.
- `.tbl.header.testrequirements.testenvironment`
/ *Condition*: required / *Type*: str /
Requirement environment information.
- `.tbl.header.testbenchconfig.name`
/ *Condition*: required / *Type*: str /
Testbench configuration name.
- `.tbl.header.testbenchconfig.data`
/ *Condition*: required / *Type*: str /
Testbench configuration data.
- `.tbl.header.preprocessor.filter`
/ *Condition*: required / *Type*: str /
Preprocessor filter information.
- `.tbl.header.preprocessor.parameters`
/ *Condition*: required / *Type*: str /
Preprocessor parameters definition.

Returns:

(no returns)

3.1.7 Method: nCreateNewSingleTestCase

Create single testcase entry in `tbl_case` table immediately.

Arguments:

- `_tbl_case_name`
/ *Condition*: required / *Type*: str /
Test case name.
- `_tbl_case_issue`
/ *Condition*: required / *Type*: str /
Test case issue ID.
- `_tbl_case_tcid`
/ *Condition*: required / *Type*: str /
Test case ID (used for testmanagement tool).
- `_tbl_case_fid`
/ *Condition*: required / *Type*: str /
Test case requirement (function) ID.
- `_tbl_case_testnumber`
/ *Condition*: required / *Type*: int /
Order of test case in file.
- `_tbl_case_repeatcount`
/ *Condition*: required / *Type*: int /
Test case repeatition count.
- `_tbl_case_component`
/ *Condition*: required / *Type*: str /
Component which test case is belong to.
- `_tbl_case_time_start`
/ *Condition*: required / *Type*: str /
Test case start time as format %Y-%m-%d %H:%M:%S.
- `_tbl_case_result_main`
/ *Condition*: required / *Type*: str /
Test case main result.
- `_tbl_case_result_state`
/ *Condition*: required / *Type*: str /
Test case completion state.
- `_tbl_case_result_return`
/ *Condition*: required / *Type*: int /
Test case result code (as integer).
- `_tbl_case_counter_resets`
/ *Condition*: required / *Type*: int /
Counter of target reset within test case execution.
- `_tbl_case_lastlog`
/ *Condition*: required / *Type*: str /
Traceback information when test case is failed.

- `_tbl_test_result_id`
/ *Condition*: required / *Type*: str /
UUID of test result for linking to file in `tbl_result` table.
- `_tbl_file_id`
/ *Condition*: required / *Type*: int /
Test file ID for linking to file in `tbl_file` table.

Returns:

- `iInsertedID`
/ *Type*: int /
ID of new entry.

3.1.8 Method: nCreateNewTestCase

Create bulk of test case entries: new test cases are buffered and inserted as bulk.

Once `_NUM_BUFFERED_ELEMENTS_FOR_EXECUTE_MANY` is reached, the creation query is executed.

Arguments:

- `_tbl_case_name`
/ *Condition*: required / *Type*: str /
Test case name.
- `_tbl_case_issue`
/ *Condition*: required / *Type*: str /
Test case issue ID.
- `_tbl_case_tcid`
/ *Condition*: required / *Type*: str /
Test case ID (used for testmanagement tool).
- `_tbl_case_fid`
/ *Condition*: required / *Type*: str /
Test case requirement (function) ID.
- `_tbl_case_testnumber`
/ *Condition*: required / *Type*: int /
Order of test case in file.
- `_tbl_case_repeatcount`
/ *Condition*: required / *Type*: int /
Test case repeatition count.
- `_tbl_case_component`
/ *Condition*: required / *Type*: str /
Component which test case is belong to.
- `_tbl_case_time_start`
/ *Condition*: required / *Type*: str /
Test case start time as format `%Y-%m-%d %H:%M:%S`.
- `_tbl_case_result_main`
/ *Condition*: required / *Type*: str /
Test case main result.

- `_tbl_case_result_state`
/ *Condition*: required / *Type*: str /
Test case completion state.
- `_tbl_case_result_return`
/ *Condition*: required / *Type*: int /
Test case result code (as integer).
- `_tbl_case_counter_resets`
/ *Condition*: required / *Type*: int /
Counter of target reset within test case execution.
- `_tbl_case_lastlog`
/ *Condition*: required / *Type*: str /
Traceback information when test case is failed.
- `_tbl_test_result_id`
/ *Condition*: required / *Type*: str /
UUID of test result for linking to file in `tbl_result` table.
- `_tbl_file_id`
/ *Condition*: required / *Type*: int /
Test file ID for linking to file in `tbl_file` table.

Returns:*(no returns)***3.1.9 Method: vCreateTags**

Create tag entries.

Arguments:

- `_tbl_test_result_id`
/ *Condition*: required / *Type*: str /
UUID of test result.
- `_tbl_usr_result_tags`
/ *Condition*: required / *Type*: str /
User tags information.

Returns:*(no returns)***3.1.10 Method: vSetCategory**

Create category entry.

Arguments:

- `_tbl_test_result_id`
/ *Condition*: required / *Type*: str /
UUID of test result.
- `tbl_result_category_main`
/ *Condition*: required / *Type*: str /
Category information.

Returns:*(no returns)*

3.1.11 Method: vUpdateStartTime

Create start-end time entry.

Arguments:

- `_tbl_test_result_id`
/ *Condition*: required / *Type*: str /
UUID of test result.
- `_tbl_result_time_start`
/ *Condition*: required / *Type*: str /
Result start time as format %Y-%m-%d %H:%M:%S.
- `_tbl_result_time_end`
/ *Condition*: required / *Type*: str /
Result end time as format %Y-%m-%d %H:%M:%S.

Returns:

(no returns)

3.1.12 Method: arGetCategories

Get existing categories.

Arguments:

(no arguments)

Returns:

- `arCategories`
/ *Type*: list /
List of existing categories.

3.1.13 Method: vCreateAbortReason

Create abort reason entry.

Arguments:

- `_tbl_test_result_id`
/ *Condition*: required / *Type*: str /
UUID of test result.
- `_tbl_abort_reason`
/ *Condition*: required / *Type*: str /
Abort reason.
- `_tbl_abort_message`
/ *Condition*: required / *Type*: str /
Detail message of abort.

Returns:

(no returns)

3.1.14 Method: vCreateReanimation

Create reanimation entry.

Arguments:

- `_tbl_test_result_id`
/ Condition: required / Type: str /
UUID of test result.
- `_tbl_num_of_reanimation`
/ Condition: required / Type: int /
Counter of target reanimation during execution.

Returns:

(no returns)

3.1.15 Method: vCreateCCRdata

Create CCR data per test case.

Arguments:

- `_tbl_test_case_id`
/ Condition: required / Type: int /
test case ID.
- `lCCRdata`
/ Condition: required / Type: list /
list of CCR data.

Returns:

(no returns)

3.1.16 Method: vFinishTestResult

Finish upload:

- First do bulk insert of rest of test cases if buffer is not empty.
- Then set state to "new report".

Arguments:

- `_tbl_test_result_id`
/ Condition: required / Type: str /
UUID of test result.

Returns:

(no returns)

3.1.17 Method: vUpdateEvtbls

Call `update_evtbls` stored procedure.

Arguments:

(no arguments)

Returns:

(no returns)

3.1.18 Method: vUpdateEvtbl

Call update_evtbl stored procedure to update provided test_result_id.

Arguments:

- `_tbl_test_result_id`
/ *Condition*: required / *Type*: str /
UUID of test result.

Returns:

(no returns)

3.1.19 Method: vEnableForeignKeyCheck

Switch foreign_key_checks flag.

Arguments:

- `enable`
/ *Condition*: optional / *Type*: bool / *Default*: True /
If True, enable foreign key constraint.

Returns:

(no returns)

3.1.20 Method: sGetLatestFileID

Get latest file ID from tbl_file table.

Arguments:

- `_tbl_test_result_id`
/ *Condition*: required / *Type*: str /
UUID of test result.

Returns:

- `_tbl_file_id`
/ *Type*: int /
File ID.

3.1.21 Method: vUpdateFileEndTime

Update test file end time.

Arguments:

- `_tbl_file_id`
/ *Condition*: required / *Type*: int /
File ID to be updated.
- `_tbl_file_time_end`
/ *Condition*: required / *Type*: str /
File end time as format %Y-%m-%d %H:%M:%S.

Returns:

(no returns)

3.1.22 Method: vUpdateResultEndTime

Update test result end time.

Arguments:

- `_tbltest_result_id`
/ *Condition*: required / *Type*: int /
Result UUID to be updated.
- `_tblresult_time_end`
/ *Condition*: required / *Type*: str /
Result end time as format `%Y-%m-%d %H:%M:%S`.

Returns:

(no returns)

3.1.23 Method: bExistingResultID

Verify the given test result UUID is existing in `tbl_result` table or not.

Arguments:

- `_tbltest_result_id`
/ *Condition*: required / *Type*: int /
Result UUID to be verified.

Returns:

- `bExisting`
/ *Type*: bool /
True if test result UUID is already existing.

Chapter 4

robot2db.py

4.1 Function: is_valid_uuid

Verify the given UUID is valid or not.

Arguments:

- `uuid_to_test`
/ *Condition*: required / *Type*: str /
UUID to be verified.
- `version`
/ *Condition*: optional / *Type*: int / *Default*: 4 /
UUID version.

Returns:

- `bValid`
/ *Type*: bool /
True if the given UUID is valid.

4.2 Function: get_from_tags

Extract testcase information from tags.

Example: TCID-xxxx, FID-xxxx, ...

Arguments:

- `lTags`
/ *Condition*: required / *Type*: list /
List of tag information.
- `reInfo`
/ *Condition*: required / *Type*: str /
Regex to get the expectedated info (ID) from tag info.

Returns:

- `lInfo`
/ *Type*: list /
List of expected information (ID)

4.3 Function: get_branch_from_swversion

Get branch name from software version information.

Convention of branch information in suffix of software version:

- All software version with .0F is the main/freature branch. The leading number is the current year. E.g. 17.0F03
- All software version with .1S, .2S, ... is a stabi branch. The leading number is the year of branching out for stabilization. The number before "S" is the order of branching out in the year.

Arguments:

- `sw_version`
/ *Condition*: required / *Type*: str /
Software version.

Returns:

- `branch_name`
/ *Type*: str /
Branch name.

4.4 Function: format_time

Format the given time string to TestResultWebApp's format for importing to db.

Arguments:

- `stime`
/ *Condition*: required / *Type*: str /
String of time.

Returns:

- `sFormattedTime`
/ *Type*: str /
TestResultWebApp's time as format %Y-%m-%d %H:%M:%S.

4.5 Function: process_suite_metadata

Try to find metadata information from all suite levels.

Metadata at top suite level has a highest priority.

Arguments:

- `suite`
/ *Condition*: required / *Type*: TestSuite object /
Robot suite object.
- `default_metadata`
/ *Condition*: optional / *Type*: dict / *Default*: DEFAULT_METADATA /
Initial Metadata information for updating.

Returns:

- `dMetadata`
/ *Type*: dict /
Dictionary of Metadata information.

4.6 Function: process_metadata

Extract metadata from suite result bases on DEFAULT_METADATA.

Arguments:

- `metadata`
/ *Condition*: required / *Type*: dict /
Robot metadata object.
- `default_metadata`
/ *Condition*: optional / *Type*: dict / *Default*: DEFAULT_METADATA /
Initial Metadata information for updating.

Returns:

- `dMetadata`
/ *Type*: dict /
Dictionary of Metadata information.

4.7 Function: process_suite

Process to the lowest suite level (test file):

- Create new file and its header information
- Then, process all child test cases

Arguments:

- `db`
/ *Condition*: required / *Type*: CDataBase object /
CDataBase object.
- `suite`
/ *Condition*: required / *Type*: TestSuite object /
Robot suite object.
- `_tbltest_result_id`
/ *Condition*: required / *Type*: str /
UUID of test result for importing.
- `root_metadata`
/ *Condition*: required / *Type*: dict /
Metadata information from root level.
- `dConfig`
/ *Condition*: required / *Type*: dict / *Default*: None /
Configuration data which is parsed from given json configuration file.

Returns:

(no returns)

4.8 Function: process_test

Process test case data and create new test case record.

Arguments:

- db
/ Condition: required / Type: CDataBase object /
CDataBase object.
- test
/ Condition: required / Type: TestCase object /
Robot test object.
- file_id
/ Condition: required / Type: int /
File ID for mapping.
- test_result_id
/ Condition: required / Type: str /
Test result ID for mapping.
- metadata_info
/ Condition: required / Type: dict /
Metadata information.
- test_number
/ Condition: required / Type: int /
Order of test case in file.

Returns:

(no returns)

4.9 Function: process_config_file

Parse information from configuration file:

- component:

```
{
  "component" : {
    "componentA" : "componentA/path/to/testcase",
    "componentB" : "componentB/path/to/testcase",
    "componentC" : [
      "componentC1/path/to/testcase",
      "componentC2/path/to/testcase"
    ]
  }
}
```

Then all testcases which their paths contain componentA/path/to/testcase will be belong to componentA, ...

- variant, version_sw: configuration file has low priority than command line.

Arguments:

- `config_file`
/ *Condition*: required / *Type*: str /
Path to configuration file.

Returns:

- `dConfig`
/ *Type*: dict /
Configuration object.

4.10 Function: validate_config

Validate the json configuration base on given schema.

Default schema just supports component, variant and version_sw.

```
CONFIG_SCHEMA = {
    "component" : [str, dict],
    "variant"   : str,
    "version_sw": str,
}
```

Arguments:

- `dConfig`
/ *Condition*: required / *Type*: dict /
Json configuration object to be verified.
- `dSchema`
/ *Condition*: optional / *Type*: dict / *Default*: CONFIG_SCHEMA /
Schema for the validation.
- `bExitOnFail`
/ *Condition*: optional / *Type*: bool / *Default*: True /
If True, exit tool in case the validation is fail.

Returns:

- `bValid`
/ *Type*: bool /
True if the given json configuration data is valid.

4.11 Function: normalize_path

Normalize path file.

Arguments:

- `sPath`
/ *Condition*: required / *Type*: str /
Path file to be normalized.
- `sNPath`
/ *Type*: str /
Normalized path file.

4.12 Function: truncate_string

Truncate input string before importing to database.

Arguments:

- `sString`
/ *Condition*: required / *Type*: str /
Input string for truncation.
- `iMaxLength`
/ *Condition*: required / *Type*: int /
Max length of string to be allowed.
- `sEndChars`
/ *Condition*: optional / *Type*: str / *Default*: '...' /
End characters which are added to end of truncated string.

Returns:

- `content`
/ *Type*: str /
String after truncation.

4.13 Function: RobotResults2DB

Import robot results from `output.xml` to `TestResultWebApp`'s database.

Flow to import Robot results to database:

1. Process provided arguments from command line.
2. Connect to database.
3. Parse Robot results.
4. Import results into database.
5. Disconnect from database.

Arguments:

- `args`
/ *Condition*: required / *Type*: `ArgumentParser` object /
Argument parser object which contains:
 - `outputfile` : path to the output file or directory with output files to be imported.
 - `server` : server which hosts the database (IP or URL).
 - `user` : user for database login.
 - `password` : password for database login.
 - `database` : database name.
 - `recursive` : if `True`, then the path is searched recursively for log files to be imported.
 - `dryrun` : if `True`, then just check the RQM authentication and show what would be done.
 - `UUID` : UUID used to identify the import and version ID on `TestResultWebApp`.
 - `variant` : variant name to be set for this import.
 - `versions` : metadata: Versions (Software;Hardware;Test) to be set for this import.
 - `config` : configuration json file for component mapping information.

Returns:

(no returns)

4.14 Class: Logger

Imported by:

```
from RobotResults2DB.robot2db import Logger
```

Logger class for logging message.

4.14.1 Method: config

Configure Logger class.

Arguments:

- `output_console`
/ *Condition*: optional / *Type*: bool / *Default*: True /
Write message to console output.
- `output_logfile`
/ *Condition*: optional / *Type*: str / *Default*: None /
Path to log file output.
- `indent`
/ *Condition*: optional / *Type*: int / *Default*: 0 /
Offset indent.
- `dryrun`
/ *Condition*: optional / *Type*: bool / *Default*: True /
If set, a prefix as 'dryrun' is added for all messages.

Returns:

(no returns)

4.14.2 Method: log

Write log message to console/file output.

Arguments:

- `msg`
/ *Condition*: optional / *Type*: str / *Default*: " /
Message which is written to output.
- `color`
/ *Condition*: optional / *Type*: str / *Default*: None /
Color style for the message.
- `indent`
/ *Condition*: optional / *Type*: int / *Default*: 0 /
Offset indent.

Returns:

(no returns)

4.14.3 Method: log_warning

Write warning message to console/file output.

Arguments:

- msg
/ *Condition*: required / *Type*: str /
Warning message which is written to output.

Returns:

(no returns)

4.14.4 Method: log_error

Write error message to console/file output.

Arguments:

- msg
/ *Condition*: required / *Type*: str /
Error message which is written to output.
- fatal_error
/ *Condition*: optional / *Type*: bool / *Default*: False /
If set, tool will terminate after logging error message.

Returns:

(no returns)

Chapter 5

Appendix

About this package:

Table 5.1: Package setup

Setup parameter	Value
Name	RobotResults2DB
Version	1.2.1
Date	22.08.2022
Description	Imports robot result(s) to TestResultWebApp database
Package URL	robotframework-testresultwebapptool
Author	Tran Duy Ngoan
Email	Ngoan.TranDuy@vn.bosch.com
Language	Programming Language :: Python :: 3
License	License :: OSI Approved :: Apache Software License
OS	Operating System :: OS Independent
Python required	>=3.0
Development status	Development Status :: 4 - Beta
Intended audience	Intended Audience :: Developers
Topic	Topic :: Software Development

Chapter 6

History

0.1.0	07/2022
<i>Initial version</i>	
1.2.1	22.08.2022
<i>Rework repository's document bases on GenPackageDoc</i>	

RobotResults2DB.pdf*Created at 31.08.2022 - 17:06:35**by GenPackageDoc v. 0.30.0*

4.10 TestResultWebApp

TestResultWebApp

v. 0.1.0

Thomas Pollerspöck

04.07.2022

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Chapter 1

Introduction

This package provides a generic web based open source application which allows processing displaying of test result data in a sophisticated way.

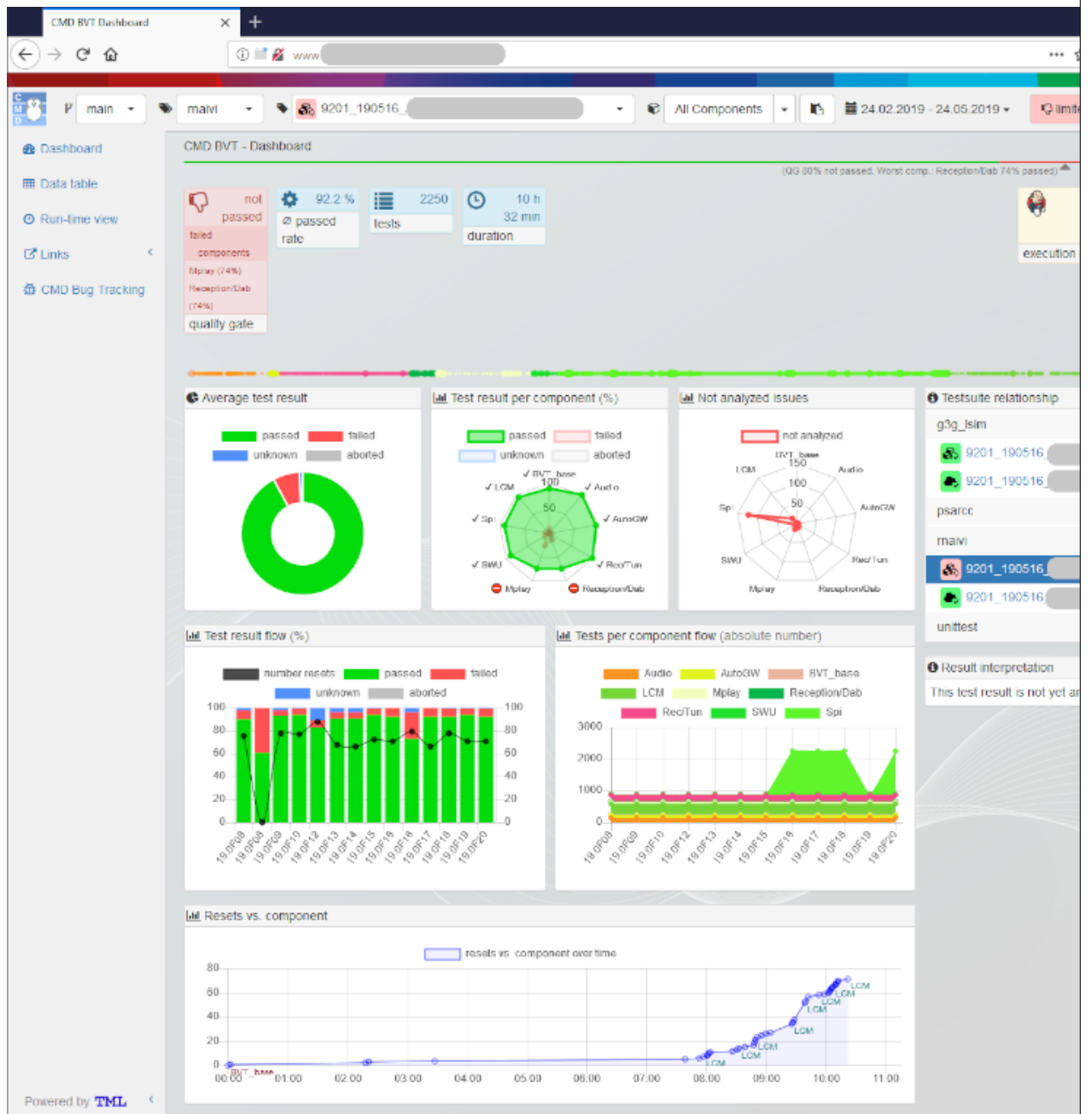
TO BE CONTINUED

(Place the content of

HowTo_curl_test_TODO_convertto_rst.txt and

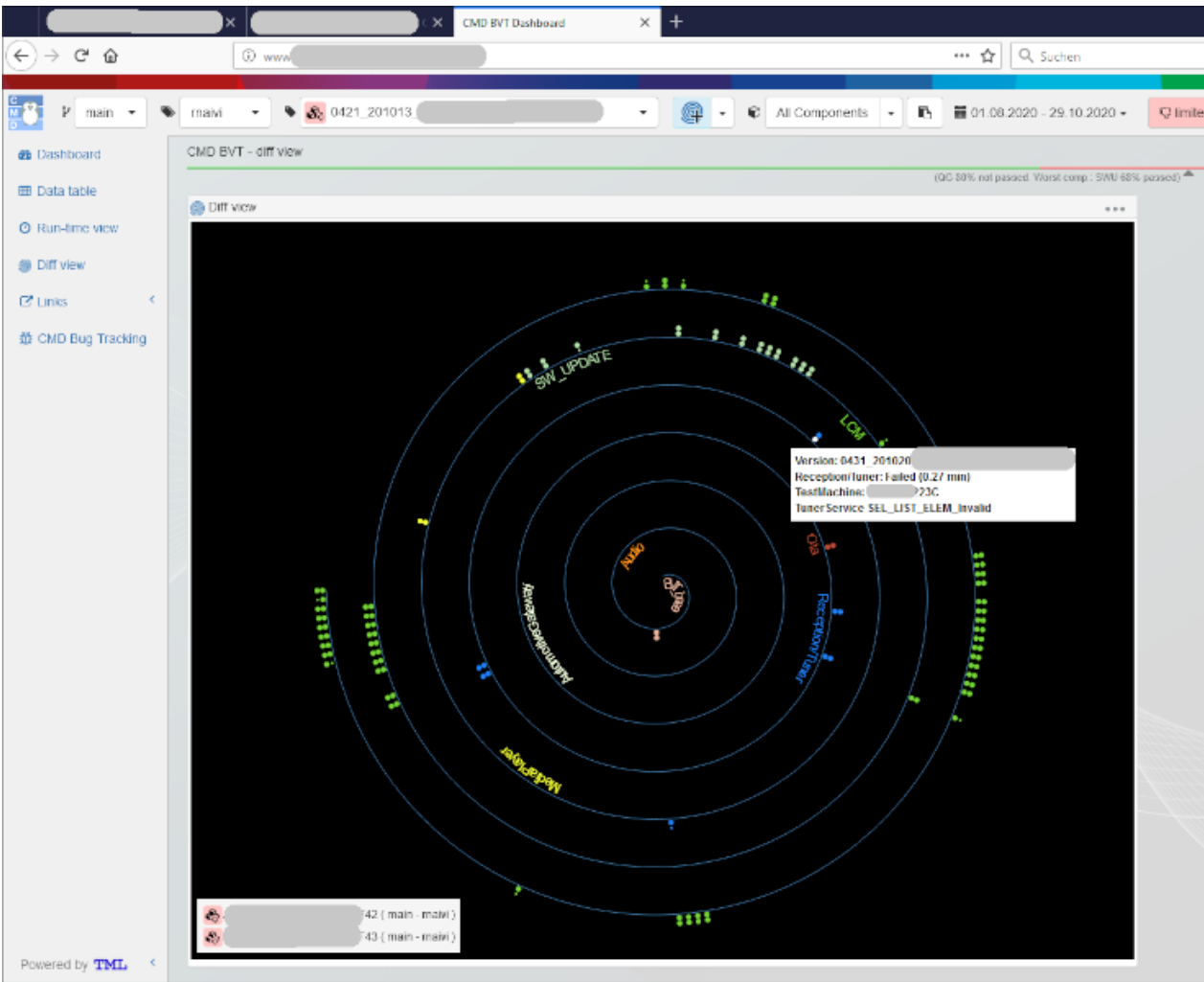
HowTo_NewWebApp_instance_TODO_convertto_rst.txt here)

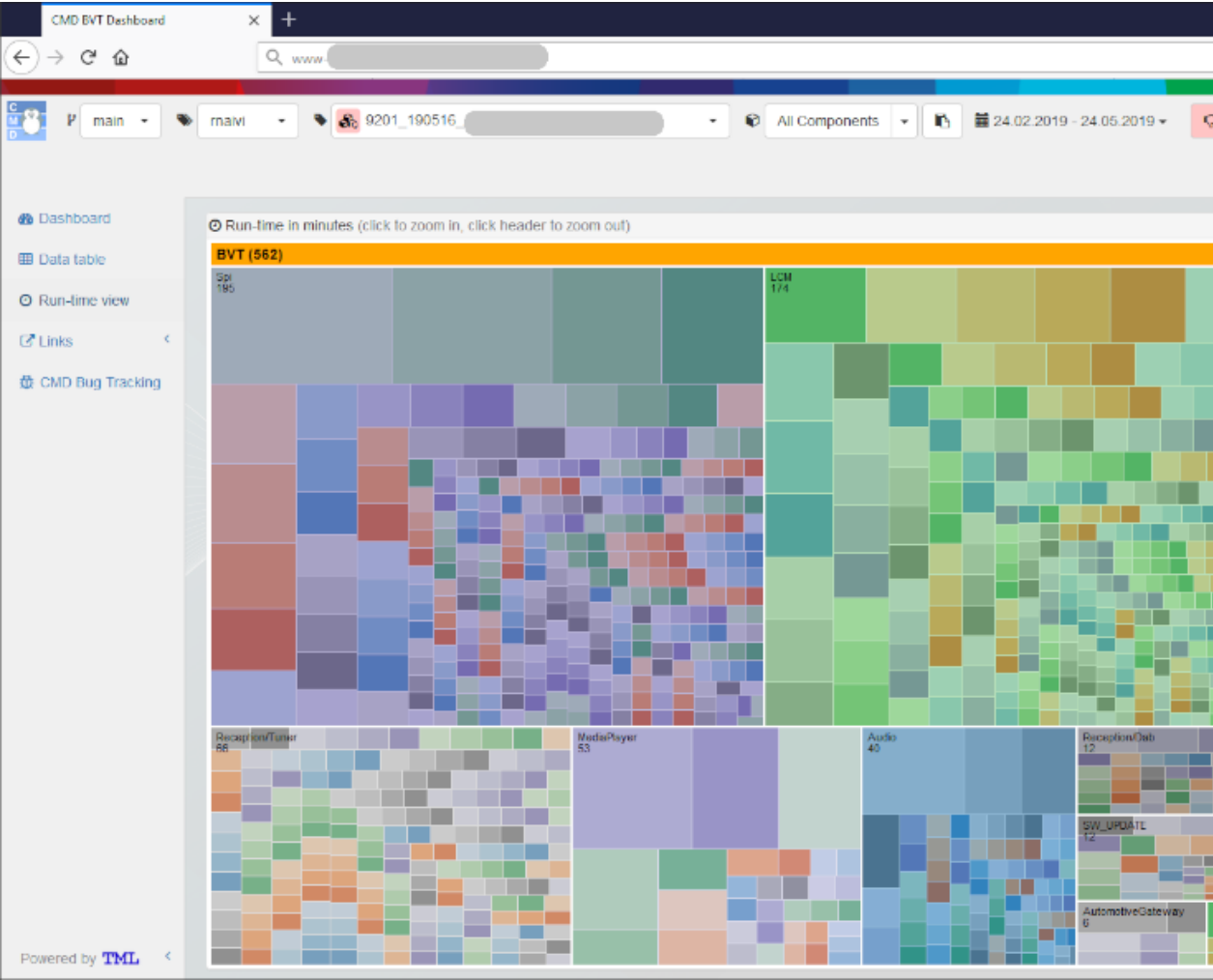
1.1 Impressions



The screenshot displays the 'CMD BVT Dashboard' in a web browser. The dashboard includes a sidebar with navigation links: Dashboard, Data table, Run-time view, Links, and CMD Bug Tracking. The main content area is titled 'CMD BVT - data table' and shows a table of test results. The table has columns for Result, Name, Component, and tcid. The results are filtered to show 10 entries. The table shows various test cases, including 'INVALID sink connection', 'Connected to AUX_2', and 'change source from AUX_2 to TUNER_AM and sink internal Amp'. Some entries have comments, such as 'The RTC linked is not for the issue, but since there are some missing traces, we need to enable the audio stack traces to further analyze the issue.' and 'test comment'. The dashboard also includes a search bar, a 'clear all filters' button, and a 'not passed' status indicator.

Result	Name	Component	tcid
✓	INVALID sink connection	Audio	TC1459
✓	Connected to AUX_2	Audio	TC1412
✓	change source from AUX_2 to TUNER_AM and sink internal Amp	Audio	TC1460
✓	change source from AUX_2 to TUNER_FM and sink internal Amp	Audio	TC1415
✓	change source from AUX_2 to MEDIA_PLAYER and sink internal Amp	Audio	TC1421
✓	change source from AUX_2 to AUX_2 and sink internal Amp	Audio	TC3005
✓	INVALID sink connection	Audio	TC1440
✓	Connect to TUNER_AM	Audio	TC1463
✓	change source from TUNER_AM to TUNER_FM and sink internal Amp	Audio	TC1483





Chapter 2

Description

The TestResultWebApp:
TO BE CONTINUED

Chapter 3

Appendix

About this package:

Table 3.1: Package setup

Setup parameter	Value
Name	TestResultWebApp
Version	0.1.0
Date	04.07.2022
Description	Web based display of test results
Package URL	testresultwebapp
Author	Thomas Pollerspöck
Email	Thomas.Pollerspoeck@de.bosch.com
Language	Programming Language :: Python :: 3
License	License :: OSI Approved :: Apache Software License
OS	Operating System :: OS Independent
Python required	>=3.0
Development status	Development Status :: 4 - Beta
Intended audience	Intended Audience :: Developers
Topic	Topic :: Software Development

Chapter 4

History

0.1.0	07/2022
<i>Initial version</i>	

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4.11 TMLLog2RobotLog

TMLLog2RobotLog

v. 1.1.0

Tran Duy Ngoan

12.07.2022

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CHAPTER 1. INTRODUCTION

Chapter 1

Introduction

TMLLog2RobotLog

TO BE CONTINUED

Chapter 2

Description

TMLLog2RobotLog
TO BE CONTINUED

Chapter 3

__main__.py

3.1 Function: process_commandline

process provided argument(s) from command line Function: validate_cli_arguments =====

3.2 Function: TMLLog2RobotLog

3.3 Class: Logger

Imported by:

```
from TMLLog2RobotLog.__main__ import Logger
```

Logger class for logging message Method: config -----

Configure Logger class - output_console: write message to console output. Default value is True - output_logfile: path to log file output. Default is None - dryrun: if set, a prefix as 'dryrun' is added for all messages Method: log -----

write log message to console/file output - msg: message to write to output - color: color style for the message Method: log_warning -----

write warning message to console/file output - msg: message to write to output Method: log_error -----

write error message to console/file output - msg: message to write to output - fatal_error: if set, tool will terminate after logging error message Class: CTMLLog2Robot =====

Imported by:

```
from TMLLog2RobotLog.__main__ import CTMLLog2Robot
```

CTMLLog2Robot class Method: config -----

3.3.1 Method: run

process TMLLog2Robot converter Method: get_tml_logs -----

get TML log results Method: get_robot_log -----

get Robot log result Method: convert_to_robot -----

convert TML log results to Robot results Method: merge_results -----

merge Robot results Method: save_result_file -----

save robot_result as output_file file Method: find_suite -----

Chapter 4

resultbuilder.py

4.1 Function: TMLExecutionResult

4.2 Class: TMLExecutionResultBuilder

Imported by:

```
from TMLLog2RobotLog.resultbuilder import TMLExecutionResultBuilder
```

4.2.1 Method: build

Chapter 5

xmlementhandlers.py

5.1 Class: XmlElementHandler

Imported by:

```
from TMLLog2RobotLog.xmlementhandlers import XmlElementHandler
```

5.1.1 Method: start

5.1.2 Method: end

5.2 Class: _Handler

Imported by:

```
from TMLLog2RobotLog.xmlementhandlers import _Handler
```

5.2.1 Method: get_child_handler

5.2.2 Method: start

5.2.3 Method: end

5.2.4 Method: to_timestamp

5.2.5 Method: filename

5.3 Class: UnknownHandler

Imported by:

```
from TMLLog2RobotLog.xmlementhandlers import UnknownHandler
```

5.3.1 Method: get_child_handler

5.4 Class: RootHandler

Imported by:

```
from TMLLog2RobotLog.xml_elementhandlers import RootHandler
```

5.5 Class: TMLHandler

Imported by:

```
from TMLLog2RobotLog.xml_elementhandlers import TMLHandler
```

5.5.1 Method: start

5.6 Class: MetadataSet

Imported by:

```
from TMLLog2RobotLog.xml_elementhandlers import MetadataSet
```

5.6.1 Method: end

5.7 Class: MetadataHandler

Imported by:

```
from TMLLog2RobotLog.xml_elementhandlers import MetadataHandler
```

5.8 Class: JenkinsurlHandler

Imported by:

```
from TMLLog2RobotLog.xml_elementhandlers import JenkinsurlHandler
```

5.9 Class: VersionsHandler

Imported by:

```
from TMLLog2RobotLog.xml_elementhandlers import VersionsHandler
```

5.10 Class: VersionSWHandler

Imported by:

```
from TMLLog2RobotLog.xml_elementhandlers import VersionSWHandler
```

5.11 Class: VersionHWHandler

Imported by:

```
from TMLLog2RobotLog.xml_elementhandlers import VersionHWHandler
```

5.12 Class: VersionTestHandler

Imported by:

```
from TMLLog2RobotLog.xmlelementhandlers import VersionTestHandler
```

5.13 Class: VersionTMLHandler

Imported by:

```
from TMLLog2RobotLog.xmlelementhandlers import VersionTMLHandler
```

5.14 Class: TagsHandler

Imported by:

```
from TMLLog2RobotLog.xmlelementhandlers import TagsHandler
```

5.15 Class: CategoryHandler

Imported by:

```
from TMLLog2RobotLog.xmlelementhandlers import CategoryHandler
```

5.16 Class: QualitygateHandler

Imported by:

```
from TMLLog2RobotLog.xmlelementhandlers import QualitygateHandler
```

5.17 Class: FileHandler

Imported by:

```
from TMLLog2RobotLog.xmlelementhandlers import FileHandler
```

5.17.1 Method: start

5.18 Class: HeaderHandler

Imported by:

```
from TMLLog2RobotLog.xmlelementhandlers import HeaderHandler
```

5.19 Class: TeststartedHandler

Imported by:

```
from TMLLog2RobotLog.xmlelementhandlers import TeststartedHandler
```

5.19.1 Method: end

5.20 Class: TesttoolconfigurationHandler

Imported by:

```
from TMLLog2RobotLog.xmlelementhandlers import TesttoolconfigurationHandler
```

5.21 Class: TesttoolnameHandler

Imported by:

```
from TMLLog2RobotLog.xmlelementhandlers import TesttoolnameHandler
```

5.21.1 Method: end

5.22 Class: TesttoolversionHandler

Imported by:

```
from TMLLog2RobotLog.xmlelementhandlers import TesttoolversionHandler
```

5.22.1 Method: end

5.23 Class: ProjectHandler

Imported by:

```
from TMLLog2RobotLog.xmlelementhandlers import ProjectHandler
```

5.23.1 Method: end

5.24 Class: TestfileheaderHandler

Imported by:

```
from TMLLog2RobotLog.xmlelementhandlers import TestfileheaderHandler
```

5.25 Class: AuthorHandler

Imported by:

```
from TMLLog2RobotLog.xmlelementhandlers import AuthorHandler
```

5.26 Class: DescriptionHandler

Imported by:

```
from TMLLog2RobotLog.xmlelementhandlers import DescriptionHandler
```

5.26.1 Method: end

5.27 Class: TestexecutionHandler

Imported by:

```
from TMLLog2RobotLog.xmlelementhandlers import TestexecutionHandler
```

5.28 Class: TesterHandler

Imported by:

```
from TMLLog2RobotLog.xmlelementhandlers import TesterHandler
```

5.28.1 Method: end

5.29 Class: TestmachineHandler

Imported by:

```
from TMLLog2RobotLog.xmlelementhandlers import TestmachineHandler
```

5.29.1 Method: end

5.30 Class: TestrequirementsHandler

Imported by:

```
from TMLLog2RobotLog.xmlelementhandlers import TestrequirementsHandler
```

5.30.1 Method: get_child_handler

5.31 Class: TestbenchconfigHandler

Imported by:

```
from TMLLog2RobotLog.xmlelementhandlers import TestbenchconfigHandler
```

5.31.1 Method: get_child_handler

5.32 Class: PreprocessorparamsHandler

Imported by:


```
from TMLLog2RobotLog.xmlelementhandlers import PreprocessorparamsHandler
```

5.32.1 Method: get_child_handler

5.33 Class: TestresultsHandler

Imported by:

```
from TMLLog2RobotLog.xmlelementhandlers import TestresultsHandler
```

5.34 Class: TestHandler

Imported by:

```
from TMLLog2RobotLog.xmlelementhandlers import TestHandler
```

5.34.1 Method: start

5.34.2 Method: end

5.35 Class: ResultHandler

Imported by:

```
from TMLLog2RobotLog.xmlelementhandlers import ResultHandler
```

5.36 Class: MainHandler

Imported by:

```
from TMLLog2RobotLog.xmlelementhandlers import MainHandler
```

5.36.1 Method: end

5.37 Class: StateHandler

Imported by:

```
from TMLLog2RobotLog.xmlelementhandlers import StateHandler
```

5.37.1 Method: get_child_handler

5.38 Class: ReturnHandler

Imported by:

```
from TMLLog2RobotLog.xmlelementhandlers import ReturnHandler
```

5.38.1 Method: get_child_handler**5.39 Class: LastlogHandler***Imported by:*

```
from TMLLog2RobotLog.xmlelementhandlers import LastlogHandler
```

5.39.1 Method: end**5.40 Class: FooterHandler***Imported by:*

```
from TMLLog2RobotLog.xmlelementhandlers import FooterHandler
```

5.41 Class: TestdoneHandler*Imported by:*

```
from TMLLog2RobotLog.xmlelementhandlers import TestdoneHandler
```

5.41.1 Method: end

Chapter 6

Appendix

About this package:

Table 6.1: Package setup

Setup parameter	Value
Name	TMLLog2RobotLog
Version	1.1.0
Date	12.07.2022
Description	Convert TML-Framework results to Robot Framework results
Package URL	robotframework-tmllog2robotlog
Author	Tran Duy Ngoan
Email	Ngoan.TranDuy@vn.bosch.com
Language	Programming Language :: Python :: 3
License	License :: OSI Approved :: Apache Software License
OS	Operating System :: OS Independent
Python required	>=3.0
Development status	Development Status :: 4 - Beta
Intended audience	Intended Audience :: Developers
Topic	Topic :: Software Development

Chapter 7

History

1.0.0	2022
<i>Initial version</i>	

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RobotFrameworkAIO_Reference.pdf*Created at 31.08.2022 - 17:05:34**by genmaindoc v. 0.19.0*
