

## 1.1 Controller

A module qualification session is instantiated using the `Controller.py` program. It will instantiate the module test result object for all folders found in the `TestResultDirectory` variable defined in the configuration and all necessary sub test result objects from the classes found in `TestResultClasses/CMSPixel/ModuleTestGroup/`, provide it with a test result environment object containing data relevant for the qualification session. It also reads the configuration and sets all relevant paths.

### 1.1.1 System Requirements

The following requirements have to be met in order for the `Controller.py` to run correctly:

1. Python installed, minimum version: 2.6
2. Python packages:
  - (a) ROOT (<http://root.cern.ch/drupal/content/pyroot>)

### 1.1.2 Step-By-Step Guide

Follow this step-by-step guide in order to perform module qualifications and generate the result output.

1. Check the minimum requirements as described in section 1.1.1
2. Open the command line on your UNIX system(Mac, Linux, etc.)
3. Change to the directory where the analysis scripts are located, i.e. where the `Controller.py` is stored, by typing `cd PathToAnalysisScripts`, where you replace `PathToAnalysisScripts` by the actual path to the analysis scripts.
4. Adjust the configuration to your current qualification session by editing the configuration files found in the `Configuration/` subfolder. The following lists describes the content of each configuration file:
  - **GradingParameters.cfg** Contains all the grading parameters. Usually needs no changes.
  - **ModuleInformation.cfg** Contains module information such as the module version, etc. for the type of modules analysed in the current qualification session.
  - **Paths.cfg** Stores the paths to the test result directory where all test results you want to qualify in this session are stored. Moreover, the path to the overview page is stored. This directory also contains the local `Overview.sqlite` sqlite database that stores all qualification results. The same database can be used for any number of qualification sessions, even when the test results in each session are stored in different folders, and therefore the resulting overview page contains all module qualification results.
  - **SystemConfiguration.cfg** Several system parameters such as the default image format, database connection parameters, etc. can be changed in this file.

5. Type the command `python Controller.py` to run the qualification session. For each module, it should display  
“Working on: 'TestDate': '1363355666', 'TestType': 'FullQualification', 'ModuleID': 'M1193' –”. The current step is shown as either “Populating Data” or “Generating Final Output”. If other messages occur, it is recommended to analyse their meaning, as they are most probably indicating some problems that might have occurred during the qualification process.
6. If no error messages appeared, all files should have been generated and the overview page can be found in the folder specified in the configuration. Each module test result folder now contains a folder called `FinalResults`, which you can browse to access the test result files of any sub test. **Important Notice:** The HTML-files can be opened with any web browser, but for best results, make sure you use an up-to-date version of one of the applications recommended in table 6. Please note that Internet Explorer lower than version 10 is unable to display SVG-graphics. If needed, the output file format can be changed to “png”, with the drawback of using the scalability of vector graphics.

Application	Minimum Version
Mozilla Firefox	4
Google Chrome	18
Safari	3
Opera	9
Internet Explorer	10

Table 1: Browser recommendations for opening the HTML-files