

Software Test Automation with Robot Framework

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Abstract—Testing is a crucial activity in Software Development Process. It is to examine & modify source code. Effective Testing produces high quality software. To improve the quality and the efficiency of software testing, software automation test has been used widely during the software testing. This paper discusses the advantages of testing tools in software test automation, with the Robot framework.

Keywords-Manual Testing; Automation Testing; Robot framework;ATDD;

I. INTRODUCTION

The ideal goal of software development is to produce high quality software. Eminent quality software has characteristics like low cost, reliable and user satisfaction. Software testing is analyzing a system or a component by providing defined inputs and comparing them with the desired outputs to check the discrepancies between the desired and actual outputs and correct them.

Testing activity can be conducted in two ways manual testing & automation testing.

Manual Testing is a process where in a tester often follows a written test plan that leads them through a set of important test cases. A test case in software testing is a set of conditions written for particular applications & tester run all these conditions to ensure the correct functionality of the software applications.

Automation Testing is running test cases where manual intervention is not required to run each one. It uses special software to write & execute test cases to compare the actual outcome with the predicted outcome. Once tests have been automated, they can be run quickly and repeatedly. It is the best way to increase the effectualness, efficiency and coverage of software testing.

The main difference between Manual testing & Automation testing is that Automation testing is best suited for the environment where the repetitive work is more (e.g., running regression tests, re-entering the same test data, and checking against coding standards). Also, manual testing is best suited for the environment where the requirement changes continuously.

II. ROBOT FRAMEWORK.

The Robot framework is an open source test automation framework, solely developed by Nokia Siemens

communication technology limited company. Robotframework is used for acceptance testing and acceptance test-driven development (ATDD). It has a tabular test data syntax and it uses the keyword-driven testing approach. Because the Robot framework follows a modular architecture, the testing capability of it can be extended by test libraries programmed with Python.

The core framework of the Robotframework is implemented with Python, thus making it operating system and application independent.

The Robot framework software is released under Apache License 2.0, and most of the libraries and tools in the ecosystem are open source. Nokia Networks supports the development of the core framework.

III. ARCHITECTURE

Robot Framework is a versatile, which its application and technique is independent of each other. At the same time, it is a set of automated testing tool. As shown in Figure 1.

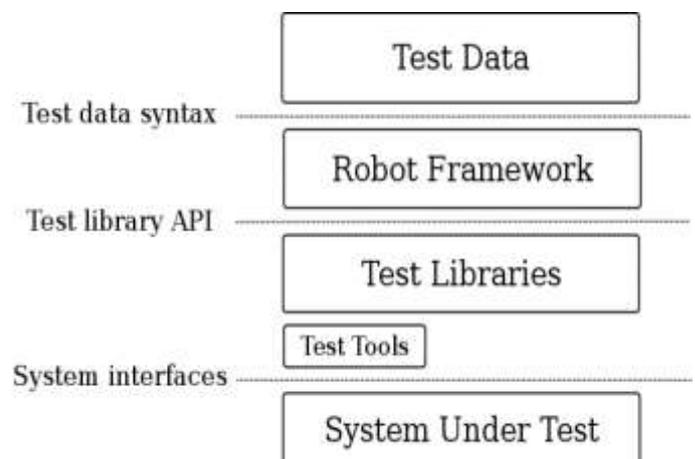


Figure 1. Robot Framework architecture

- Test Data

This is a Tabular form which is easy to edit. When to start the Robot Framework, it will use the test data to run testcases, and generates logs and reports. The core of the framework is unpredictable for the different type measuresystems, and is interactive with the measure systems through the Test Libraries. The test library can directly use as the application program interface or lower levels of testing tools as driving.

- Robot Framework

It must be run on Python or Jython, the measured system must setup by Python or Jython, because Robot Framework source code is written by Python language, and some systems must be in the Python to run, so we suggest installing Python to use Robot Framework. We can use the command to start framework and then start the test data file, execute test case.

- Test Libraries

It is composed of two parts, with Built-in Library Robot framework, as well as the R&D personnel according to the test requirements, based on the python language can be extended to Extend Library.

- System Under Test

It is the product to be tested.

IV. ACCEPTANCE TEST-DRIVEN DEVELOPMENT

ATDD is a methodology, which provides a common language between the end (customer) users, the developers and the testers. It is a process, which helps the developers and testers to understand the customer's requirements.

ATDD covers acceptance testing, but differs from it, requiring use cases and acceptance tests before any development. The emphasis in ATDD is on communication between the user, developer and tester.

V. ADVANTAGES OF ROBOT FRAMEWORK

- Easy to create a uniform format of test case.
- Use of existing keywords to create higher level keywords -- Reusable.
- The measured system application is separated from Platform.
- Source files are easy to be integrated.
- Provide tags to classify and select to execute test case.

VI. CONCLUSION

This paper analyses Robot Framework which is based on automated testing framework.it evaluates the test cases and produces the test summary report and software quality

assurance report based on the automation.it will make the process and management more standardized.

Frequent updating version of software, test's repeatability increases test personnel labor and give the test personnel certain burden. Test automation is beneficial, not only to project the regression testing, improve the testing script utilization rate, reduce the testing staff repetitive operation, but also the automation test process can be performed without testers involvement which saves a large amount of testing time. And testing personnel can use these times to study test, and to protect the quality of products which is purpose of software test.

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