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Design of Selenium frame work Webapplication Automation Development

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Abstract:

Software testing is one of the most important phases of Software Development Life Cycle and main objective to find bugs and ensure quality of the software. Software Testing can be done manually or can be automated. Manual testing is done by tester without any tool. In automation testing is done with the help of automated testing tools. The objective of the paper is to compare two automation tools, Selenium and UFT in context of testing web based application.

Key Words: Software Testing, QTP, UFT, Selenium**.**

1. INTRODUCTION

Software testing has different goals and objectives. The main goal is to find defects in a project created by a programmer while developing project. It is a process of checking and evaluating product in order to maintain quality of final product and to verify that every part of project satisfies its requirements as mentioned by the client in the Business Requirement Document (BRD). It is an integral part of SDLC. It is always a good practice to introduce testing as early as possible in the SDLC. This gives a sufficient time for the QA Analyst to build manual and automated test cases both. There are two types of testing: Manual testing and Automation testing. The selection of testing that to be done manually or with automated tool totally depends upon project requirement, budget associated with project and also which testing is benefited to the project. Manual Testing is done by tester. Tester acts as an end user and uses various features of product. Manual testing may take more time or we can say it may be more time consumable. In manual testing chances of human errors are high as compared to automation. Automation testing covers all the problems of manual testing. Automation testing automates the steps of manual testing.

2. RELATED WORK

Automation framework is work environment or facility which contains all the set of rules and careful planning to write the scripts in a manner which results for less effort spent in the maintainability of them. It adds an advantage by which we can ensure the re- usability of the test scripts. Any changes in application, the scripts need little or no updating to cope up with that change. Each of the frame work has its own pros and cons depend under which circumstances these are being adopted by the Testing Team or Test Lead. functionalities for each module, we create a separate and independent test script. Thus, when these test scripts taken together (top- down approach or bottom-up approach) builds a larger test script representing more than one module. This kind of framework can be used if your application contains lot of inter-dependent functionalities. It is usually used in integration testing where all the modules are tested separately and they either use top-down approach or bottom-up approach while integrating every module with one another. This type of framework helps the user separate the test script programming logic and the test data from each other. In this framework the data which is going to be used as an input for various tests are stored in external storing sheets like excel sheet, XML, CSV or ODBC repository. This type of framework is very beneficial when you want to test any particular functionality whose outcomes differ based on different combinations of input parameters data. For example, in case of 'User Registration' scenario, where testing is done based on different combinations of input parameters like username, email, mobile no, etc. The automation testing performed with the help of testing tools or some kind of programming languages to control the testing class. The main idea behind automation testing is to automatically do the testing work without human interactions; it reduces the cost and also makes testing more reliable and effective. Many tools are developed for this testing requirement. Selenium is automation tool which supports the different way or approaches to test application. The entire suite of tools contains a rich set of testing functions specifically for the needs of testing of web applications of all types. These operations are highly flexible, having many options for locating UI elements and comparing expected test results against actual application behavior. One of Selenium's features to support for executing one's tests on multiple browser platforms.

3. PROPOSED SYSTEM

Software companies are not only required to test the software adequately, but also it is required to test thoroughly and quickly. To perform this goal automation testing is needed. Manual testing is a time taken process and error prone, automation help to overcome this drawback by running the test frequently increases confidence in the application. Execution the test cases will also helps the user to understand the functionality.

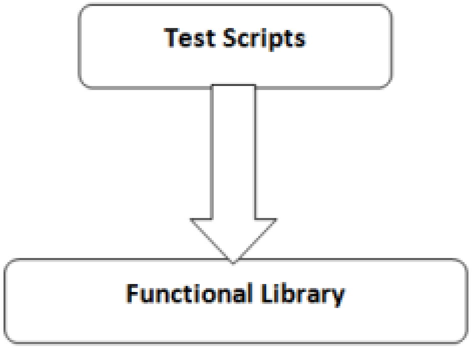

Fig.1.Automation Network

The set of automation tools can form a regression test suite. Automation also helps in finding the problem in earlier stages and fixing it. Quality library architecture framework is very similar to the test script modularity structure and offers the same advantages, but it splits the application-under-test into methods and functions (or items and methods with regards to the setup language) rather than scripts. This kind of framework requires the creation of library files that represent modules, sections, and functions of the application-under-test. These library files are then called directly from test case script. Many like script modularization this framework also yields a high amount of modularization and adds to the overall maintainability of the testing. The basic fundamental lurking behind the framework is to determine the common steps and group them into functions under a selection and call those functions in the test intrigue whenever required. On automating or testing any application, sometimes it may be required to test the same functionality repeatedly multiple times with the different set of input values. Thus, in such cases, we can't let the test data entered in the test script. Hence it is advised to retain test data into some external data base or data files outside the test scripts. A data-driven framework is where test input/output values are read from data files and are loaded into variables or manually coded scripts. In this framework, variables are used for both input values and as well as output verification values. Navigation through the program, reading and retrieving data from the data files, and loading of test status and information are all coded in the test script. This is similar to table-driven testing in which the test case is containing in the data file and not in the script; the script is just a "driver," or delivery mechanism, for the data. In data-driven testing, only test data is contained in the data files.

4. ANALYSIS

This Framework is being combination of Library Architecture and Data driven Architecture. This allows data driven scripts to take advantage of the powerful libraries and utilities that usually accompany library architecture. The framework utilities can make the data driven scripts more compact and less prone to failure than they otherwise would have been. The utilities can also facilitate the gradual and manageable conversion of existing scripts.

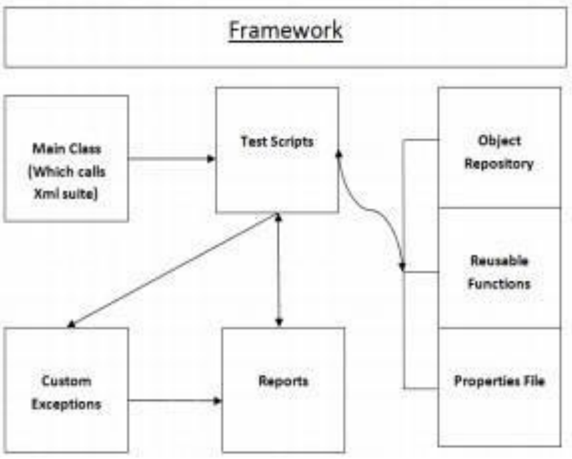

Fig.2.Framework

Here we have the function for each common step under a common library and call it in the test scripts when ever required, it also contain the data file which provides the data from the outside storage medium, like files, SQL or any data storage medium from which we can retrieve the data needed to test the software.

The folder is constituted of the classes which contain functions and methods that can be shared and used amongst the multiple classes. Very often, we are suppose to perform certain operation prior and before to the actual test execution like login to the application, setting up environments, activities related to rolls, data manipulations, sending results, methods those perform pre/post-conditions to other methods. Since we tend to perform these activities for all or most of the test script. Thus it is always recommended to create a separate class for such activities instead of coding them repeatedly inside each of the test script. In this folder they are two classes one for the Read Properties –which are having the code to read the properties file and send the data to the test cases and as an input for the test steps, other is Properties file the static variables referencing to the paths and other environmental details. These details can be Application URL, URL to the Databases, Credentials for Databases, and URL to any third party tool being used. Properties class has the string data which would be accessed by the read properties method. On executing the test case if they are some error of failure occur in the execution flow they are indeed captured in the CustomException.class. They are extending Exception.class and they are used to handle the exception which occurs in the execution, they provide a meaning full message on every error which appears. On the completion of the execution finally the report would be generated by the TestNG reporting feature [7]. TestNG, by default, generates multiple reports as part of its test execution. These reports mainly include TestNG HTML report, TestNG email able report, TestNG report XML, and JUnit report XML files. These files can be found under the output report folder.

CONCLUSION

Hybrid Framework is rugged, easy to implement, easy to use, easy to expand and easy to maintain. It is Technology and Platform independent and it is also separate from the Test Design. Once it is created it improves the speed and maintainability of automation Test Cases which uses the reusable libraries and reduces cost. In this paper we have explored the implementation of Hybrid Test Automation Framework and the different advantages of independent architectures like Library Architecture and Data Driven Architecture and how it can be effectively used during automation. We have also discussed about the folder structure and the execution flow of the framework. The framework is easy to extended and maintain. In order to support more complex tested cases, more kinds of applications will be researched in future work and it will also be checked for mobile implementation. At the same time, the exception handling in testing will also be further researched and implemented in more effective way.

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