Automation Testing – Applying Intelligence

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ABSTRACT

The demand for software testing is increasing in the current in scenario. The demand on faster delivery by not compromising on to quality standards with-in the software code has witnessed many projects pushing towards implementing test automation by saving time, effort and there after budget. Today’s software industry continues to witness many clients focusing on test automation for effective results in limited duration. The pressure for faster and efficient delivery of software is the main reason for increasing demand of software testing. Approach followed automation testing is to create the script and execute it at intended execution cycle. In practical scenario has observed few challenges with respect to complexity in system architectures, technologies and various platforms. Application instability contributes for further delays in execution completion. Test automation executes script by script, the key aspect is to improve the efficiency by reducing the human involvement for the execution of the script. This paper focuses on batch execution of the test scripts using an extended recovery manager plug-in in test automation using Quick Test Professional (QTP).

KEYWORDS

INTRODUCTION

One of the means to enhance software reliability and quality is testing. Testing is considered as integral to every phase of software life cycle to ensure a well developed test suite covering requirements, design and structure. According to the Myers, the focus of testing is detection of defects. It is impossible to perform all possible tests, or find all defects. Improvement to the development process focus on minimizing defects; so the techniques for testing should aim at high defect yield in relation to the efforts invested in devising and executing tests. Testing has become demanding because it is one of the most crucial tasks along the software development life cycle. Software testing is a very time consuming activity and can easily exceed half a projects’ total effort. A successful testing approach can save significantly effort and increase product quality, and thus increasing the client’s satisfaction and lowering maintenance costs [1]. Testing is the best technique to uncover the remaining errors from all phases of the software/application. Testing plays a very critical role for ensuring quality. There are few challenges faces in software testing like complete testing is practically impossible; Testers often lack skills, and a vision of appropriate projects that would keep programming testers challenged. To assess the quality of software, test cases are selected from the input domain. In partition testing the input domain is partitioned k disjoint sub domains, and then nᵢ test cases are selected from the i sub domain. Associated with each sub domain is a failure rate θᵢ.

\[
P_p = \Pi_{i=1}^{k} (1 - \theta_i)^{n_i} \geq 1 - (1 - \theta)^n = P_r
\]

In random testing, n test cases are selected at random from the entire input domain. A criterion frequently used for comparing test strategies is that of maximizing the probability of finding at least one fault. Hence partition testing is preferable to random testing if [3]

TEST AUTOMATION

Test automation is the process of comparison of actual outcomes to predicted outcomes, test control and setting of preconditions of the test and also test reporting. Software professionals in organizations are facing the challenge of constructing systems with fewer resources in an ever-shrinking timeframe [2]. To ensure software is tested adequately, but also as quickly and thoroughly as possible. Today’s software industry continues to witness many Clients focusing on Test Automation for effective results in limited duration. During the development phase of the software, errors can be identified at any stage by code inspection etc. Some errors will remain undetected, which are caught at the later stage.

Leadership Support

The initial step to decide to automate a testing project requires that the test team adjust leadership understanding of the appropriate software/application of automated testing to specific needs.

Overcoming false expectations of testing automation

Automated testing is valuable and produces a ROI (return on investment) but there may not be always an immediate payback. It is important the misconceptions that persist in the software industry are addressed. In current market scenario we often have several test automation tools available for Functional’ Testing like Quick Test Professional, Win Runner, Rational Functional Tester. As
per the Forrester Survey, Quick test Professional is dominates the automation functional testing market. The main reasons for the extensive use of QTP are its user friendly GUI, integration of tool with other tools like quality center, win runner. Projects are implemented in more than one technology like frond end being siebel, and back end as portal. QTP is preferred amongst other tools by Client especially for siebel integration.

WORKING WITH BUSINESS PROCESS TESTING
When connected to a test management tool with Business Process Testing support, Quick Test enables you to create and/or implement the steps for the components that are used in test management tool business process tests. It includes:

- Working with Business Process Testing
- Creating Components
- Recording Components
- Running Components

AUTOMATION OF SCRIPTS IN QTP
Test automation is the use of software to control the execution of tests, the comparison of actual outcomes to predicted outcomes, the setting up of test preconditions, and other test control and test reporting functions. Commonly, test automation involves automating a manual process already in place that uses a formalized testing process.

The practical implementation is using a extended recovery manager (ERM) Plug-in comes at absolutely no extra cost to the projects who already implemented Test automation as a phase, within their project life cycle. Tailoring or customization to suit to the specific needs across projects, technologies give an extra edge to ERM plug-in. Extended Recovery Manager plug-in possesses the ability to monitor handle all the predicted outcomes. As an example the error messages, the pop up for incorrect parameters or system performance issues. With the use of this plug-in, we could monitor the script virtually, which is main advantage of resource saving.

The challenges faced with the QTP tool are as follows:

- Recovery scenario manager does not work with the many applications like Siebel
- The application is not closed by the QTP in spite of having the code to close the application e.g. Browser("Application").close
- For batch testing the initial and end condition should be the same, but if the application is not closed this will create problems in the execution for multiple iterations

The extended recovery manager plug-in can be used to create

- Pre–execution settings like QTP and script settings and opening of the application
- Handling the run time exceptions like error message, pop up messages for different parameters to the application
- After the run making the end conditions same as that of start condition; so that the next iteration can proceed. Close all other open browsers or applications.

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CASE STUDY
Script anatomy was done on the simple scripts (max 100 lines of code). It was observed that execution time of the scripts was reduced to about 40 % due to the batch execution and the extended recovery scenario manager helps to keep the scripts running by handling any pop messages or error conditions by the application.

The total effort spent for the execution of the 30 simple scripts take approx. 80 hours of human effort. But the execution time by using the extended recovery scenario manager was reduced by approx 10 hours. It will considerably reduce the resource
time for the execution of the scripts. Up-fronts of the extended recovery scenario manager plug-in are as follows:

- The productivity of the team will be increased to 20%
- The unified report of the batch execution of the scripts will make it convenient to analyze the results.
- It can be extended to for batch execution of the scripts. Also, the ERM can be extended for test execution on the local or remote desktop.
- It will be useful in the case of regression testing in visible or invisible mode.

CONCLUSION
The automation of test scripts is the current demand of the market. The pressure of fast delivery by not compromising the quality of the software has increased the use the usage of automation tools like QTP. The extended recovery scenario manager will help to reduce the resource time to execute the batch scripts and to handle or recover from any error messages if any raised during the execution of the scripts. It is a structured methodology that will help to reduce the test automation execution by quickly achieving results and any hang-ups due to the application. This can be further extended to run the scripts without any intervention from humans.

DISCLAIMER
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REFERENCES
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