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Automated testing in ERP using Rational Functional Tester

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ABSTRACT

Software testing is used to identify the defects, improve the quality of software and reduce overall software costs. Automated testing tools enable testers to easily automate the entire process of testing in software testing. Testing can be done manually as well as automated. During software development and testing process, various types of metrics are collected. These metrics provide a Quantitative approach to analyze any process flow of Software Engineering. A lot of testing tools have been developed for use throughout the various SDLC phases. But the major part is the selection of tools from a pool of various categories of tools. Apart from the high cost of these tools, a single tool may not cover the whole testing automation. This paper presents the analysis of the automation tool named Rational Functional Tester. The main objective of this research paper is to focus on, effectiveness and importance of Rational Functional Tester.

Keywords: Testing, Enterprise Resource Planning, Rational Functional Tester.

I INTRODUCTION

Enterprise Resource Planning systems (ERPs) integrate (or attempt to integrate) all data and processes of an organization into a unified system. A typical ERP system will use multiple components of computer software and hardware to achieve the integration. A key ingredient of most ERP systems is the use of a unified database to store data for the various system modules. [1]

According to the forecast of technology analyst, the market of Global Enterprise Resource Planning (ERP) is expected to grow phenomenally over the next few years. Today, ERP caters the need to accomplish marketing, manufacturing, and sales inventory management of a number of organizations. In addition, it helps in creating secure and accurate data repository due to various routine search processes. The collected data are stored by ERP systems, which help in product planning and other business activities and processes. Moreover, ERP systems are open to any kind of updates according to the business upgradation.

In order to successfully implement ERP, you need to test the system processes continuously and ensure quality decision making by finding and fixing the flaws.

There are times when ERP systems are quite complex and it becomes very critical to perform testing. Today, ERP testing consumes almost half of the total ERP budget. However, testing manually doesn't guarantee the complete benefit of ERP application. Test automation helps in improving the quality of the product and reduces cost and time.

The other reasons to perform automation testing in ERP systems are mentioned below.

- Testing huge volume of data manually on a frequent basis requires a lot of time, cost, and resources
- ERP systems are usually implemented according to a particular industrial need, which makes the implementation of standard system quite difficult
- The complexity and their dependency on other systems and modules is difficult to handle by manual testing
- Systems are installed in multiple locations and configured based on the local requirements
- They are updated and modified regularly based on the changing framework
- With the transactions directly related to the centralized databases like clouds, there are more chances of security risks. This in turn makes manual testing nearly impossible

Advantages of ERP test automation

- An automated testing tool reduces the testing time for ERP environment consisting of various business processes
- Test automation allows continuous monitoring of ERP systems, which helps in finding and fixing bugs. This helps an organization to avoid any substantial loss
- It overcomes all the challenges faced during manual testing. This includes providing timely, accurate, and quality solutions to the clients
- By implementing test automation, an organization can ensure hassle free execution of their critical applications by monitoring routine data structures
- Test automation focuses on the set business requirements

Test automation is the most glamorous part of software testing. In this tester runs the script on the testing tool. Automation testing automates the steps of manual testing using automation tools such as QTP, Silk Test and Load Runner [2, 3]. It increases the execution speed, repeatability, reliability, reusable, comprehensive and programmable. Recently, the features of automated software testing tools, Silk Test and LoadRunner have been studied and compared with the QTP [2, 3]. QTP provides inbuilt support to reduce the redundancy of test cases for a particular application by providing data driven testing. QTP is mainly used for functional testing. It is user friendly [4]. Manual testing is chosen to analyze the application requirements, and to create the High and Low level design documents. Automation testing is done for graphical user interfaces and the flow control of the application [5].The automation testing tools can be compared on the basis of parameters such as Capability of

generation of scripts, Data-driven testing, Script re-usability, recording efficiency, execution speed, play back ability, Cost, and Easy to learn [6].

This study presents about how the software is tested by Rational Functional Tester and also the working procedure of Rational Functional Tester is briefly explained. By installing IBM rational Functional tester properly, anyone can test the software which they have been developed by using the explained working procedure.

II RELATED WORKS

QUICK TEST PROFESSIONAL

Quick Test Professional is an advanced, automation testing software for building functional and regression test suites. It captures, verifies and replays user interaction automatically and help tester quickly identify and reports on application effects, while providing highly developed functionality for tester collaboration. QTP also test Java applets, Java based applications, multimedia objects on Applications as well as standard Windows applications, Visual Basic 6 applications and .NET frame work applications. It works by identifying the objects in the application user interface or a web page and performing desired operations (such as mouse clicks or keyboard events); it can also capture object properties like name or handler ID. HP QTP scripting language is VB Script. To perform more complicated actions, users may need to manipulate the underlying VB Script. In the present work, we have evaluated the functional testing tool QTP. Our main motive is to perform functional testing on the web application goodreads.com and Data driven testing [7].

SILK TEST

Silk Test is a software performance testing tool across web, mobile and business applications. It was developed by Segue Software then afterward it is acquired by Borlandin year 2006.In year 2009 Borland was acquired by Micro Focus International. Silk Test scripting language is 4Test for automation scripting. It is also an object oriented language similar to C++. It can also perform Database validation using DB Tester. Silk Test supported extensions like: .NET, Java (Swing, SWT), DOM, Internet Explorer, Google chrome, Firefox, Windows GUI [8].

LOADRUNNER

A software testing tool, HP Load Runner works by creating virtual users who take the place of real users' operating client software, such as Internet Explorer, sending requirements using the HTTP protocol to IIS or Apache web servers. HP Load Runner can create thousands of concurrent users to put the application through the rigors of real-life user loads, while collecting information from main infrastructure components. The output can then be analyzed in detail to discover the reasons for particular behavior. HP Load Runner supports various set of rules bundles for load testing: .NET Record, Database, DCOM, GUI Virtual Users, Java Replay, Network, Remote Access, Remote Desktop, Internet Application, Web 2.0, Web and Multimedia and Wireless. HP Load Runner is a test automation product from Hewlett-Packardfor application load testing: examining system behaviour and presentation while generating real load [9].

RATIONAL FUNCTIONAL TESTER

Rational Functional Tester is an object-oriented automated functional testing tool capable of performing automated functional, regression, GUI, and data-driven testing. RFT supports a wide range of applications and protocols, such as HTML, Java, .NET, Windows, Eclipse, SAP, Siebel, Flex, Silverlight, Visual Basic, Dojo, GET and PowerBuilder applications.

Rational Functional Tester creates automated functional tests by recording the actions of a user on the system under test and replaying the actions on demand to execute a test. The recorded actions are stored in RFT as a simple program known as a script. RFT scripts are displayed as java programs. The tool can test the success or failure of any step with a 'checkpoint', which compares the actual result produced by the system under test at the time of execution, with an expected result stored in RFT at the time of recording.

Rational Functional Tester includes the following features:

- Broad skills match – the IBM RFT tool has been designed for users of varying technical abilities to ensure your quality assurance team isn't tied up with basic testing, and other experts in your business can get involved with and understand the test flow using a visual storyboard format.
- IBM ScriptAssure® – advanced IBM technology learns user interface characteristics and applies them to new software versions saving time spent creating new test scripts.
- Automated scripts – Rational Functional Tester enables your development teams to create keyword associated scripts which allows for easy re-use, improving efficiency.
- Eclipse Java Developer Toolkit editor – makes it easy for your team to code test scripts in Java with Eclipse. It automates code completion and offers advanced debugging options.

Rational Functional Tester is a software test automation tool used by quality assurance teams to perform automated regression testing. Testers create scripts by using a test recorder which captures a user's actions against their application under test. The recording mechanism creates a test script from the actions. The test script is produced as either a Java or Visual Basic.net application, is represented as series of screen shots that form a visual storyboard. Testers can edit the script using standard commands and syntax of these languages, or by acting against the screen shots in the storyboard.. Test scripts can then be executed by Rational Functional Tester to validate application functionality. Typically, test scripts are run in a batch mode where several scripts are grouped together and run unattended.

During the recording phase, the user may introduce verification points, which capture an expected system state, such as a specific value in a field, or a given property of an object, such as enabled or disabled. During playback, any discrepancies between the baseline captured during recording and the actual result achieved during playback are noted in the Rational Functional Tester log. The tester can then review the log to determine if an actual software bug was discovered.

Storyboard Testing

Introduced in version 8.1 of Rational Functional Tester, this technology enables testers to edit test scripts by acting against screen shots of the application.

Object

The Rational Functional Tester Object Map is the underlying technology used by Rational Functional Tester to find and act against the objects within an application. The Object Map is automatically created by the test recorder when tests are created and contains a list of properties used to identify objects during playback.

ScriptAssure

During playback, Rational Functional Tester uses the Object Map to find and act against the application interface. However, during development it is often the case that objects change between the time the script was recorded and when a script was executed. ScriptAssure technology enables Rational Functional Tester to ignore discrepancies between object definitions captured during recording and playback to ensure that test script execution runs uninterrupted. ScriptAssure sensitivity, which determines how big an object map discrepancy is acceptable, is set by the user.

Data Driven Testing

It is common for a single functional regression test to be executed multiple times with different data. To facilitate this, the test recorder can automatically parametrize data entry values, and store the data in a spreadsheet like data pool. This enables tester to add additional test data cases to the test data pool without having to modify any test code. This strategy increases test coverage and the value of a given functional test.

Dynamic Scripting Using Find API

Rational Functional Test script, Eclipse Integration uses Java as its scripting language. The Script is a .java file and has full access to the standard Java APIs or any other API exposed through other class libraries. Apart from this RFT itself provides a rich API to help user further modify the script generated through the recorder. RationalTestScript class that is the base class for any TestScript provides a find API that can be used to find the control based on the given properties.

III CONCLUSION

Manual testing is time consuming, tedious and requires heavy investment in human resources. Automation tools enable us to record the test suite and re-play it if required. Once the test suite is automated, no human intervention is required. In automation testing the initial investments are bigger than manual testing and you cannot automate everything but automatable test cases, determine which ones (manual or automated) would provide the biggest return on investment. Metrics are an important to analyze the quality, and progress of an automated software testing and manual testing effort. Rational Functional Tester is an efficient and budget automated functional testing and regression testing tool. This software enables automated testing capabilities for regression, functional, GUI, and data-driven testing.

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