

A Survey on Software Testing Tools for Web Applications

^[1] S.Veena, ^[2] S.Aarthi, ^[3] K.S.Aishwarya, ^[4] P.Arunadevi

^[1] Professor, ^{[2][3]} Student

^{[1][2][3]} Computer Science and Engineering, S.A.Engineering College

Abstract: - The role of testing in software development begins with improved reliability, quality and performance of the software. Software testing has now become a part of programming so that the developers are able to rectify errors right from the beginning stage. It is a stage where the developers find bugs in the software and make the software bug free. This paper discusses about the testing tools used for web application along with few tools which can perform data analysis of the web application.

Keywords: - Software Testing, Web application, Testing Tool, Data analysis.

I. INTRODUCTION

Software testing is an activity to check whether the actual results match the expected results and to ensure that the software system is Defect free. It involves execution of a software component or system component to evaluate one or more properties of interest.

Software testing also helps to identify errors, gaps or missing requirements in contrary to the actual requirements. It can be either done manually or using automated tools. Some prefer saying Software testing as a white box and Black Box Testing.

II WEB BASED APPLICATION

A web based application is an application which can be accessed and used over the network. i.e. internet, intranet or extranets. Internet is the worldwide collection of interconnected networks. Intranets are the networks which are used within the organizations by internal employees and extranets are the networks which are used by organization internally as well as by the business partners of the organization.

Web Based architecture is an extension of client/server architecture, however both cannot be considered as same. There is a difference between both the architectures. In client/server architecture the client workstation have the application software which is used to communicate to the application server but in the web-based application the

client machines have the web browsers and these client machine are networked to the web server by either LAN(Local Area Network) or WAN(Wide Area Network).

III TESTING TOOLS FOR WEB APPLICATION

The comprehensive list of most widely used web application testing tools grouped by web testing types:

- Load, stress and Performance testing Tools
- Web Functional, GUI or Regression testing Tools
- Link Manager testing tools
- Web Site Security testing Tools
- Cross-browser testing tools

Here are some important tools used to test the performance, load and stress of the web application. These tools ensure that your web application will run under high performance and less load & stress.

- LoadRunner
- LoadUI

Tools which can even analyse the data or performance of an application are
WebLOAD

- Apache JMeter
- NeoLoad

International Journal of Engineering Research in Computer Science and Engineering (IJERCSE)

Vol 6 Issue 2, February 2019

IV COMPARISON OF WEB APPLICATION TOOLS

Name	Features	Application
WebLOAD	<ul style="list-style-type: none"> It is an enterprise-scale load testing tool with powerful scripting capabilities that make it easy to test complex scenarios. It gives an analysis of the web application performance. 	<ul style="list-style-type: none"> WebLOAD supports hundreds of technologies – from web protocols to enterprise applications. StresStimulus is a load testing tool for websites. It determines the performance of the web and scalability of the web application under heavy traffic load.
test IO	<ul style="list-style-type: none"> Crowd testing with test IO lets the user to call upon the skill and insight of thousands of testing professionals It test on real devices and get the feedback from real humans Improves the quality of the web apps and websites. 	<ul style="list-style-type: none"> It can be used to test the security of the Browser and also the compatibility of the device.
LoadRunner	<ul style="list-style-type: none"> It is a load testing tool for Windows and Linux and it is used to test the web and other applications. It also determines the result of the web application under heavy load 	<ul style="list-style-type: none"> HPLoadrunner is a Single Testing Tool which can test the browser applications and native mobile applications and also service virtualization in the industry.
Selenium	<ul style="list-style-type: none"> Selenium is designed in a way to support and encourage automation testing of functional aspects of web based applications. WebDriver directly communicates with the web browser. It uses programming languages such as Java, C#, PHP, Python, Ruby and PERL to create more complex tests. 	<ul style="list-style-type: none"> Selenium IDE is a Firefox plugin that permits the testers to record their actions as per the workflow Selenium RC-was the flagship testing framework, which allows the simple and complex browser actions and also linear execution.
QTP (Quick Test Professional)	<ul style="list-style-type: none"> QTP (Quick Test Professional) a Windows based software testing tool used to test the applications on the web or desktop, best for “Functional” and “Regression” testing, given by Hewlett Packard (HP). 	<ul style="list-style-type: none"> QTP uses VB Script language to run the script and supports Web, Java. QTP was only working on Windows operating system, but UFT 12.0 supports Safari on a remote Mac, all useful browsers

**International Journal of Engineering Research in Computer Science and Engineering
(IJERCSE)**

Vol 6 Issue 2, February 2019

Loadster	<ul style="list-style-type: none"> • A commercial load testing tool to test websites, web applications/services (HTTP web services). • Load testing assists to determine performance bottlenecks, expect and avoid crashes, and confirm your application can handle high traffic events. 	<ul style="list-style-type: none"> • It simulates and guess how web applications will perform under heavy load, given by Loadster, supports Linux, Mac, and Windows. • It also simulates the numbers of users, networking with the site and collects stats for each virtual user distinctly.
Apache Jmeter	<ul style="list-style-type: none"> • It has a simple and intuitive GUI. • It is a platform-independent tool. • JMeter can conduct load and performance test for many different server types – Web - HTTP, HTTPS, SOAP, Database and Mail. 	<ul style="list-style-type: none"> • The Apache JMeter application is open source software, a 100% pure Java application designed to load test functional behaviour and measure performance. • It analyse and measure the performance of the application such as performance under different load of the server, group of servers and network place.
NeoLoad	<ul style="list-style-type: none"> • It is a load and stress testing tool, which is designed to measure, analyze and improve the performance of the website. • The testing process of the tool will be very fast, efficient, and frequent. • This tool delivers the result in a very fast manner. 	<ul style="list-style-type: none"> • This tool can be used in Windows, Linux, and Solaris operating system. • Although load increases on the website due to simultaneous access of many users, this tool is helpful in checking the performance of the website under heavy load. • It analyse and improve the performance of the web site application
Load Impact	<ul style="list-style-type: none"> • An online load testing tool used to test websites, web applications, mobile applications and APIs under heavy load for all platforms. • Testing process is very fast and simple. 	<ul style="list-style-type: none"> • Load impact uses to test all applications/services and websites online, instead of setting-up offline to test the application.
Wapt	<ul style="list-style-type: none"> • It performs the Load test • Record user sessions with any desktop or mobile browser. • Test applications featuring AJAX calls and RIA technologies. 	<ul style="list-style-type: none"> • It provides an easy and cheapest way to test websites, like; business applications websites, mobile websites, web portals, etc. Testing. • It works on secure HTTPS

International Journal of Engineering Research in Computer Science and Engineering (IJERCSE)

Vol 6 Issue 2, February 2019

	<ul style="list-style-type: none"> • Support of authentication schemes and client certificates. • Flexible error handling and adjustable pass/fail criteria. • Customizable server response validation. 	websites, dynamic content and RIA applications under data-driven mode
Contrast security	<ul style="list-style-type: none"> • It undergoes over 2000 tests without generating any data breaching[1]. • It is a product which instruments the applications with sensors to detect security vulnerabilities in your code and protect the applications against attacks. 	<ul style="list-style-type: none"> • Bluemix uses the liberty-for-java buildpack to secure their applications.
Crossbow	<ul style="list-style-type: none"> • It provides vulnerability testing and platform for assessment [1]. 	<ul style="list-style-type: none"> • Ruggedcom Crossbow is designed to provide NERC CIP compliant access to Intelligent Electronic Devices.
Redseal	<ul style="list-style-type: none"> • It is used to manage firewall complications [1]. • All the network elements handover their statistics to this tool. 	<ul style="list-style-type: none"> • Redseal is used for “Continuous Diagnostics and Mitigation” which is focussed on Hardware Asset Management, Configuration Settings Management, Vulnerability Management, Boundary Protection and Respond to events.

V CONCLUSION

Software testing is an important part of the software development process. It is not a single activity that takes place after code implementation, but is part of each stage of the lifecycle. A successful test strategy will begin with consideration during requirements specification. Testing details will be fleshed through high and low level system designs, and testing will be carried out by developers and separate test groups after code implementation. As with the other activities in the software lifecycle, testing has its own unique challenges. As software systems become more and more complex, the importance of effective, well planned testing efforts will only increase. This paper had discussed on the introduction to Testing, Testing tools used for web application and also compared the various tools used in web application.

REFERENCES

1. S.Veena, Divyalakshmi.M, Poornima.M., “Study of Cyber Security in Data Breaching”, International Journal of Advance Engineering and Research Development”, Volume 5, Issue 03, March 2018.

2. <https://www.testbytes.net/blog/role-of-software-testing-in-software-development>

3. <https://www.softwaretestinghelp.com/most-popular-web-application-testing-tools>

4. <http://condor.depaul.edu/sjost/hci430/documents/testing/software-testing.htm>