

Performance Measurement of Web application Using Jmeter Framework

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ABSTRACT:

Software Testing is a process of finding errors while executing a program so that we get a zero defect software. Software testing is the most important and time consuming part of software development life cycle. Its purpose is to detect software failures so that defects may be recovered and corrected in early phase. Software testing is gaining more and more importance in the future.

Software testing means to cut errors, reduce maintenances and to short the cost of software development. Software testing is a highly complex and time consuming activity- It is even difficult to say when testing is complete. Software testing is the process to uncover requirement, design and coding errors in the program [3]. White box test suites are derived from the source code of the software component under test. Because programs can be represented in terms of graphs, solid coverage criteria can be defined for white box testing strategies. In this paper, we start with a brief overview of the principles underlying white box testing .In our paper, we have described and compared the most prevalent and commonly used software testing techniques for detecting errors, they are White Box Testing.

KEYWORDS: Software testing, White box testing, Jmeter tool.

I. INTRODUCTION:

Software testing is a most often used technique for verifying and validating the quality of software. Software testing is the procedure of executing a program or system with the intent of finding faults .It is measured to be labor intensive and expensive, which accounts for > 50 % of the total cost of software development. In other words, we can say it's a process of executing a program with intends to find errors. In the language of Verification and Validation (V&V), black box testing is often used for

validation (i.e. are we building the right software?) and white box testing is often used for verification (i.e. are we building the software right?). Software testing is a significant activity of the software. Development life cycle (SDLC) [5].Software testing identifies defect, flows or errors in the software.

II. GOAL AND OBJECTIVE OF TESTING

A. Definition:

Testing is refer to verify that a program give correct and expected output on the basis of specified input. The other definition of software testing given by Dijkstra “A process of executing a program with the goal of finding errors” [7].

By Miller “Testing should have major intent of finding errors”.

These all definition implies the testing is the process of finding of errors in a software system not their absence. A best test is that which has high chances of finding undiscovered errors. Testing is the process done to enhance the quality of software.

B. Fault and Failure:

Fault and failure both are strictly related but both have different meaning. If software is tested and the result is responses as ‘fail’ this stated that a programming is showing some undesirable behavior which is called ‘failure’.

- Failure is the inability of a system to perform required function with specific requirement [8].
- Fault- The failure is derived from fault- A incorrect process in computer to perform in unanticipated manner.
- Error -The intermediate unstable or unanticipated state is known as error [8].

FAULT->ERROR->FAILURE [9]

III. TYPES OF TESTING

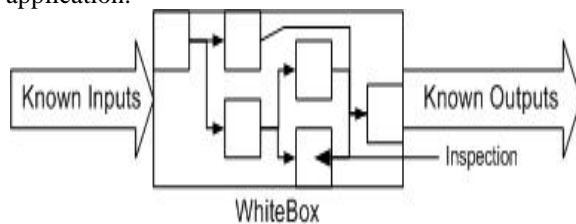
Software can be tested by two methods or we can say that there are main two methods of software testing.

- Black Box Testing
- White Box Testing

Now we can discuss only white box testing:

White box testing:

It is known as clear box testing, glass box testing, transparent box and structural testing [10]. White box testing test the internal structure or working of an application.



This testing is highly effective in finding errors and bugs in the program. In white box testing tester uses specific knowledge of program to verify the output [7]. It is the detailed investigation of internal logic and structure of the code. In white box testing it is necessary for a tester to have full knowledge of source code.

White Box Testing is performed on the knowledge of how the system is implemented. White Box Testing includes analyzing data flow, control flow, information flow, coding practices, and exception and error handling within the system, to test the intended and unintended software behavior [6].

White box testing can be quite complex. The complexity involved has a lot to do with the application being tested. A small application that performs a single simple operation could be white box tested in few minutes, while larger programming applications take days, weeks and even longer to fully test. White-box testing is a method of testing the application at the level of the source code. These tests Cases are derived through the use of the design techniques mentioned above: control flow testing, as well as modified condition/decision coverage.

White Box Testing can be performed to validate whether code implementation follows intended design, to validate implemented security functionality, and to uncover exploitable vulnerabilities. White Box Testing requires access to

the source code. White box testing test the internal structure or working of an application. This testing is highly effective in finding errors and bugs in the program. In white box testing tester uses specific knowledge of program to verify the output [7].

White box testing technique is used by both developers as well as testers. It helps them understand which line of code is actually executed and which is not.

IV Tool: Jmeter

The Apache JMeter is pure Java open source software, which was first developed by Stefano Mazzocchi of the Apache Software Foundation, designed to load test functional behaviour and measure performance.

JMeter is an Apache Jakarta project that can be used as a load testing tool for analyzing and measuring the performance of a variety of services, with a focus on web applications .The Apache JMeter™ application is open source software, a 100% pure Java application designed to load test functional behavior and measure performance. Apache JMeter is an open source load and performance tool written in Java and it's available on almost any OS. It was originally designed for testing Web Applications but has since expanded to other test functions.

JMeter is not a browser. As far as web-services and remote services are concerned, JMeter looks like a browser (or rather, multiple browsers); however JMeter does not perform all the actions supported by browsers. In particular, JMeter does not execute the Javascript found in HTML pages.

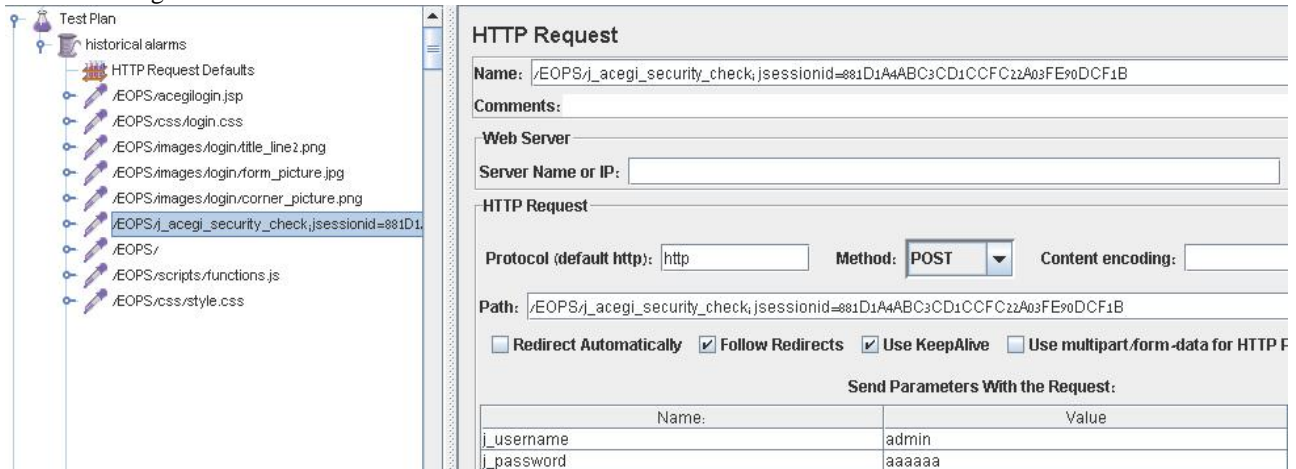
JMeter can be used as a unit test tool for JDBC database connection, FTP, LDAP, Web Services J MS, HTTP and generic TCP connections. JMeter can also be configured as a monitor, although this is typically considered an ad-hoc solution in lieu of advanced monitoring solutions.

Proxy Server (preparing test)

Role

- Record Http requests run by users.
- Stick to the exact http request a lambda user .
- Record only what is meaningful.

- To be organized.



The screenshot shows the JMeter GUI. On the left, a Test Plan tree is visible with the following items: historical alarms, HTTP Request Defaults, /EOPS/acegi/login.jsp, /EOPS/css/login.css, /EOPS/images/login/title_line2.png, /EOPS/images/login/form_picture.jpg, /EOPS/images/login/corner_picture.png, /EOPS/j_acegi_security_check;jsessionid=881D1A4ABC3CD1CCFC22A03FE90DCF1B (selected), /EOPS/, /EOPS/scripts/functions.js, and /EOPS/css/style.css. The right pane shows the configuration for the selected HTTP Request:

HTTP Request

Name: /EOPS/j_acegi_security_check;jsessionid=881D1A4ABC3CD1CCFC22A03FE90DCF1B

Comments:

Web Server

Server Name or IP:

HTTP Request

Protocol (default http): http Method: POST Content encoding:

Path: /EOPS/j_acegi_security_check;jsessionid=881D1A4ABC3CD1CCFC22A03FE90DCF1B

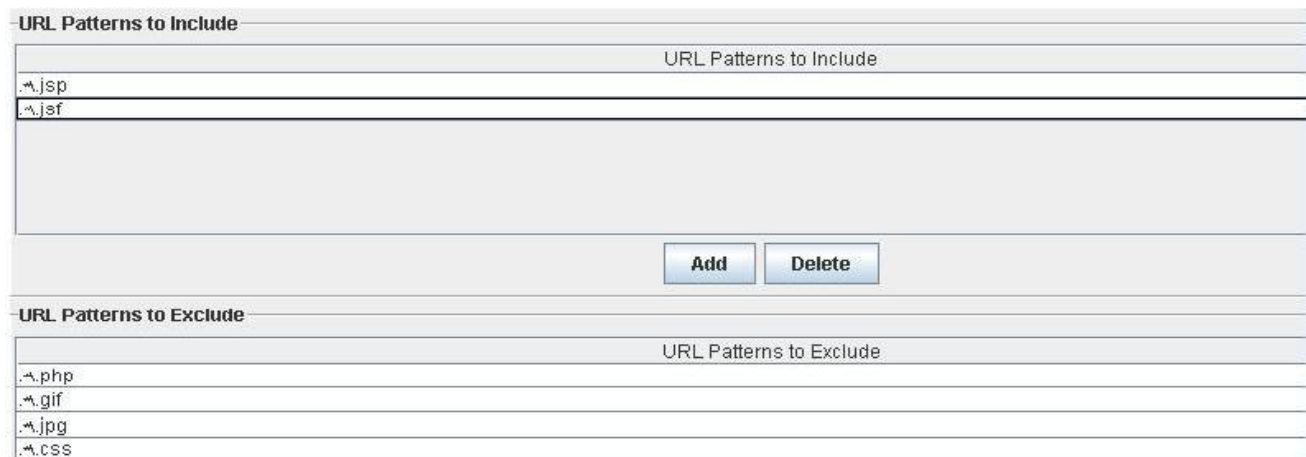
Redirect Automatically Follow Redirects Use KeepAlive Use multipart/form-data for HTTP F

Send Parameters With the Request:

Name:	Value
i_username	admin
j_password	aaaaaa

Warning

- Doesn't record https.



The screenshot shows the 'URL Patterns to Include' and 'URL Patterns to Exclude' configuration dialog. The 'URL Patterns to Include' section contains a list with two entries: *.jsp and *.jsf. Below the list are 'Add' and 'Delete' buttons. The 'URL Patterns to Exclude' section contains a list with four entries: *.php, *.gif, *.jpg, and *.css.

V CONCLUSION: In above discussion there are various types of testing. In this paper my focus is on white box testing. Software testing is the activity that executes software with an intention of finding errors

There are many tools available to do the same however I will be using Jmeter. Jmeter application is open source software, a 100% pure Java application designed to load test functional behavior and measure performance. It was originally designed for testing

Web Applications but has since expanded to other test functions

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