

22/02/23

Experiment-1

Aim:- Introduction to software testing and validation and introduction to various testing tools.

Software Testing

- It is the process of evaluating and verifying that a software product or application does what it is supposed to do. The benefits of testing include preventing bugs, reducing development costs and improving performance.
- There are many different types of software tests, each with specific objectives and strategies:
 - ① Acceptance testing: verifying whether the whole system works as intended.
 - ② Integration testing: Ensuring that software's components or functions operate together.
 - ③ Unit testing: Validating that each software unit performs as expected.
 - ④ Functional testing: checking functions by emulating business scenarios.
 - ⑤ Performance testing: Testing how the software performs under different workloads.
 - ⑥ Regression testing: Checking whether new features break or degrade functionality.
 - ⑦ Usability testing: Validating how well a customer can use a system.

Experiment-2

Aim:- Introduction to performance testing using software apache JMeter.

Create First JMeter TestStep 1) Add Thread Group

- (i) Start JMeter
- (ii) Select Test Plan on the tree
- (iii) Add thread group
- Right click on the "Test Plan" and add a new thread group: Add → Thread(users) → Thread Group
- In the thread group control panel enter the properties.

Step 2) Adding JMeter Samplers

- HTTP Request
- Right click on Thread Group and select: Add → Samplers → HTTP Request
- In the HTTP Request Defaults control Panel, enter the website name under test.
- In this test, you keep the path field blank to make JMeter create the URL request <http://www.google.com>

Step 3) Adding Graph result

JMeter can show the result in graph. Add → Listener → Graph

Step 4) Run Test and get the test result
Press the run button on the toolbar to start the software testing process. You will see the test result display of graph in real time

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Experiment-3

Aim:- what, why, types, process, metrics of performance testing

What is Performance Testing ?

- It is one of the most critical phases of any product launch to verify and validate the product performance.
- It mainly focuses on three factors of a software program:
 - Speed
 - Scalability
 - Stability

Why Performance Testing ?

- It is used to identify and eliminate the performance bottlenecks in the software application. The testing eliminates performance glitches instead of finding bugs.

Types of performance testing:

- ① Load Testing → It is a type in which it tests an application for its performance at normal and peak usage.
- ② Volume Testing → It is a type where the system's performance is checked concerning the volume of data.
- ③ Stress Testing → It is a type in which different ways to break

the system are found.

- (4) Capacity Testing → It is a type in which it checks an application for its capability to meet business volumes.
- (5) Reliability testing → It estimates the time that the system would take to return to its normal state.
- (6) Scalability testing → Used to scale up when there is an increase in user load.

Performance testing Process:

- (1) Requirement gathering → The requirements are identified and gathered from the clients.
- (2) Selection of tools → It performs proof of concept with the available tools.
- (3) Performance test plan → It is the test plan that decides how the performance test will take place.
- (4) Performance test dev. → Here, the use cases for the identified functionalities are created.
- (5) Performance test modeling → Here the performance load model is created for test execution.
- (6) Execution of test → It does the test execution in incremental order.
- (7) Test Result Analysis → Results are most imp. for performance testing.
- (8) Report → At the end of all the steps, it is necessary to have a simplified conclusion.

Performance Testing Metrics:

It is something that is required to understand the quality and productivity. Some of the metrics are:-

- ① Processors Usage
- ② Memory Usage
- ③ Disk Time
- ④ Band width
- ⑤ Committed Memory

Tools for Performance Testing:

- ① Load V.I
- ② Webload
- ③ Neo Load
- ④ Apache JMeter
- ⑤ Load Runner.

out of these JMeter is outstanding for performance testing.