



Department of Computer Science and Engineering

Title: Introduction to Software Testing Environment

Software Testing & Quality Assurance Lab CSE 434



Green University of Bangladesh

1 Objective(s)

- To be familiar with software testing environment.
- To gain practical knowledge on how to set test environment.

2 Problem analysis

Software Testing is the activity of checking whether the expected results match the actual results. It helps to ensure that the software system is defect free. It helps to identify missing requirements, gaps, or errors that might be contrary to the requirements. However, before testing a software you need to set up the testing

environment. Figure 1.

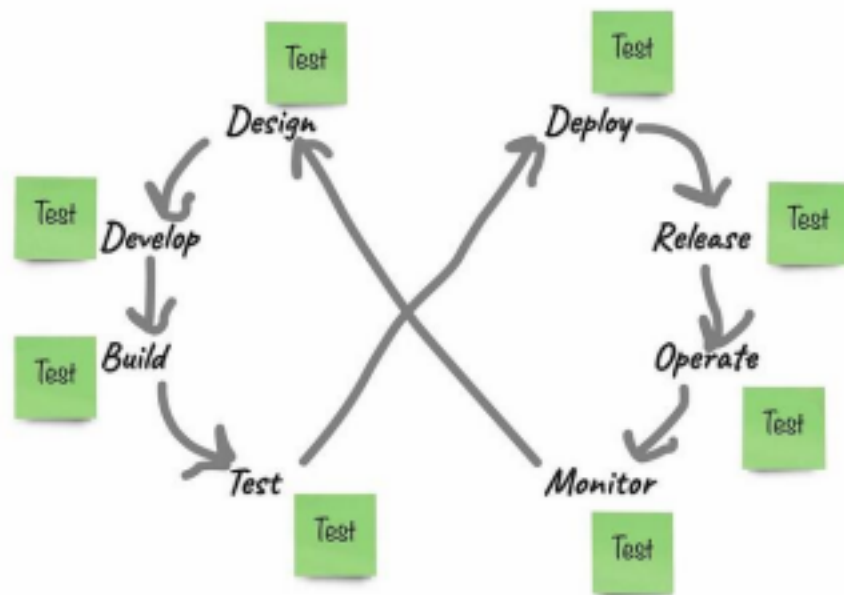


Figure 1: An example of continuous software testing

3 Test Environment

A testing environment is a setup of software and hardware for the testing teams to execute test cases. In other words, it supports test execution with hardware, software and network configured. Test bed or test environment is configured as per the need of the Application Under Test. On a few occasions, test bed could be the combination of the test environment and the test data it operates. Setting up a right test environment ensures software testing success. Any flaws in this process may lead to extra cost and time to the client.

3.1 What is Test Bed?

Test Bed is very similar to Test Environment with a small difference. Test bed is also a type of test environment which consists of test data to verify functionalities of the software applications.

3.2 Key Areas to Setup in Test Environment

It is the combination of hardware and software environment on which the tests will be executed. It includes the following set up to support the test.

- System and applications
- Test data
- Database server
- Front-end running environment
- Client operating system settings
- Browser
- Hardware includes Server Operating system
- Network
- Documentation required like reference documents/configuration guides/installation guides/user manuals

A typical Environmental Configuration for a web-based application is given below:

Web Server – IIS/Apache Database – SQL OS – Windows/ Linux Browser – IE/FireFox Java version : version 6
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3.3 Importance of Test Environment

To know about the quality and functionality of applications under process a test environment is very much important. Because it provides a dedicated environment for us to isolate the code and examine the application, so that other actions have no impact on output of the tests which are running on the server. In addition to this a test environment can mimic the work of production environment.

3.4 Process for Setup of Software Test Environment

The test environment requires setting up of various number of distinct areas like,

- Setup of Test Server:

Every test may not be executed on a local machine. It may need establishing a test server, which can support applications.

For example, Fedora set up for PHP, Java-based applications with or without mail servers, cron set up, Java-based applications, etc.

- Network:

Network set up as per the test requirement. It includes,

1. Internet setup
2. LAN Wifi setup
3. Private network setup

It ensures that the congestion that occurs during testing doesn't affect other members. (Developers, designers, content writers, etc.)

- Test PC setup:

For web testing, you may need to set up different browsers for different testers. For desktop applications, you need various types of OS for different testers PCs. For example, windows phone app testing may require

1. Visual Studio installation
1. Windows phone emulator
1. Alternatively, assigning a windows phone to the tester

- Bug Reporting:

A bug reporting tools for bug reporting, documentation and analysis, for example Jira.

- Test Tool:

A test tool setup to perform automation testing.

4 Test Environment Management

Test Environment Management mainly deals with maintenance and updating of test bed. Some of the activity involved in functioning of Test Environment Management includes:

- System and applications

- Maintenance of a central repository with all the updated version of test environments.
- Test environment management as per the test team demands.
- As per the new requirements creating new environments
- Monitoring of the environments
- Updating/deleting outdated test-environments
- Investigation of issues on the environment
- Co-ordination till an issue resolution.

4.1 Challenges in setting up Test Environment Management • Proper planning on resource usage

- Remote environment
- Elaborate setup time
- Shared usage by teams
- Complex test configuration

4.2 Best Practices for Setting up a Test Environment Management •

- Understand the test requirements thoroughly and educate the test team members. •
- Connectivity should be checked before the initiation of the testing
- Check for the required hardware and software, licenses
- Browsers and versions
- Planning out the Scheduled use of the test environment.
- Automation tools and their configurations.

5 Discussion & Conclusion

Based on the focused objective(s) to understand about the sorting algorithms, the additional lab exercise made me more confident towards the fulfilment of the objectives(s).

6 Lab Task (Please implement yourself and show the output to the instructor)

1. Find out the key areas to setup in Test Environment of given project.
2. Describe the process for setup of Software Test Environment of ATM system

7 Lab Exercise (Submit as a report)

1. Find out the key areas to setup in Test Environment of given project.
2. Describe the process for setup of Software Test Environment of ATM system

8 Policy

Copying from internet, classmate, seniors, or from any other source is strongly prohibited. 100% marks will be *deducted* if any such copying is detected.

9 Resources

https://www.tutorialspoint.com/software_testing_dictionary/test_management.htm

<https://www.geeksforgeeks.org/test-environment-for-software-testing/>