# Software Testing Assignment
## Module–2(Manual testing)

### 1. What is Exploratory Testing?

Though the current trend in testing is to push for automation, exploratory testing is a way of thinking. Automation has its limits.
Is not random testing but it is adhoc testing with purpose of find bugs.
Is structured an rigorous
Is cognitively (thinking) structured as compared to procedural of script testing. this structure comes from charter, time boxing etc.
Is highly teachable and manageable
Is not a technique but it is an approach. What actions you perform next is governed by what you are doing currently.

### 2. What is traceability matrix?

To protect against changes you should be able to trace back from every system component to the original requirement that cause its presence.

### 3. What is Boundary value testing?

Boundary value testing is a methodology test cases that concentrates software testing effort on cases near the limits of valid ranges.
Boundary value testing is a method which refines equivalence partitioning.

### 4. What is equivalence partition testing?

Aim is to treat groups of inputs as equivalent and to select one representative input to test them all.

### 5. What is integration testing?

Integration testing performed to expose defects in the interface and in the interaction between integrated components or systems.
Integration testing is a level of the software testing process where individual units are combined and tested as a group.

## 6. What is component testing?

Component (unit) a minimal software item that can be tested in isolation.it means “A unit is the smallest part of software”.
Component testing is testing of individual software component.
Unit testing is a level of a software/system are tested. The purpose is to validate that each unit of software performs as designed.
Unit testing is the first level of testing and is performed prior to integration testing.
Sometimes known as Unit testing, Module testing or Program testing.
Unit testing frameworks, drivers, stubs, and mock or fake objects are used to assist in unit testing.

## 7. What is functional system testing ?

Functional testing is performed using the functional specification provided by the client and verifies the system against the functional requirements.

## 8. What is adhoc testing?

Adhoc testing is an informal testing type with an aim to break the system.
It does not follow any test design techniques to create test case.
In fact is does not create test cases altogether.
This testing is primary performed if the knowledge of tester in the system under test is very high.

## 9. What is white box testing and list the types of white box testing?

- Based on code and the design of the system.
- The test provide the ability to derive the extent of coverage of the whole application.

**Types:**

1. Statement coverage
2. Branch coverage
3. Decision coverage

## 10. What is black box testing? What are the different black box testing techniques?

- Based on requirements.
- From the requirement, tests are created.
- Specification Models can be used for systematic test case design.
- Testing techniques

1. Equivalence partitioning
2. Boundary value analysis
3. Decision tables
4. State transition testing
5. Use case testing

## 11. What are error, defect, bug and failure?

- **Error:** A human action that produce an incorrect result.
- **Defect:** A flow in component or system that cause the component or system to fail perform its required function.
- **Failure:** deviation of component or system from its expected delivery, service or result
- **Bug:** A fault in program which cause the program to perform in an unintended on unanticipated manner

## 12. Difference between smoke and sanity.

| Smoke | Sanity |
|---|---|
| Check the critical functionality | Check the new functionality |
| It is done in initial stage | It is done after 30 builds |
| It check the stability | Its check sanity/rationally |
| Part of acceptance testing | Part of regration testing |
| General health check-up | Advance health check-up |
| Done by tester and developers | Done by tester |
| It checks the system end to end | It checks only particular function of entire system |
| 20 test cases it should take 30 minute to test | |

## 13. Difference between QA v/s QC v/s Tester

| QA | QC | Tester |
|---|---|---|
| Activities which ensure the implementation of processes, procedures and standards in context to verification of developed software and intended requirements. | Activities which ensure the verification of developed software with respect to documented (or not in some cases) requirements. | Activities which ensure the identification of bugs/error/defects in the software. |
| Focuses on processes and procedures rather than conducting actual testing on the system. | Focuses on actual testing by executing software with intend to identify bugs/defect through implementation of procedures and process. | Focuses on actual testing. |
| Process oriented activities. | Product oriented activities. | Product oriented activities. |
| Preventive activities. | It is a corrective process. | It is a preventive process. |
| It is a subset of software test life cycle (STLC). | QC can be considered as the subset of Quality assurance. | Testing is the sub set of Quality control. |

## 14. Explain difference between functional testing and non-functional testing.

| Functional Testing | Non-functional testing |
|---|---|
| Functional testing is performed using the functional specification provided by client and verifies the system against the functional requirement. | Non-functional testing checks the performance, reliability, scalability and other non-functional aspects of the software system |
| Functional testing executed first | Non-functional testing should be performed after functional testing. |
| Manual testing or automation tools can be used for functional testing | Using tools will be effective for this testing |
| Business requirement are the inputs to function testing | Performance parameters like speed, scalability are inputs to non-functional testing. |
| Functional testing describes what the product does | Non-functional testing describes how the product works |
| Easy to do manual testing | Tough to do manual testing |

## 15. Mention what is big bang testing?

- In big bang integration testing all components or module is integrated simultaneously after which everything is tested as a whole.

- Big bang testing has the advantage that everything is finished before integration testing starts.

## 16. What is non-functional testing?

- Non-functional testing should be performed after functional testing.
- Non-functional testing checks the performance, reliability, scalability, and other non-functional aspects of the software testing.

## 17. Explain what test plan is? What is the information that should be covered.

- Test planning in STLC is a phase in which a senior OA manager determines the test plan strategy along with efforts and cost estimation for the project.
  **Activities**
- Preparation of the test plan/strategy document for various types of testing.
- Test control selection
- Test effort estimation
- Resource planning and determining roles and responsibility
- Training requirement
  **Deliverables**
- Test plan/strategy document
- Effort estimation document

## 18. What are 7key principles? Explain in detail?

**(1.) Testing shows presence of defects.**

Testing can show that defects are present, but cannot prove that there are no defects. We test to find faults.

**(2.) Exhaustive testing is impossible**

Testing everything including all combinations of input and pre-conditions is not possible.

**(3.) Why do not test everything**

Requires enormous resources
Is too expensive
Takes too long

**(4.) Early testing**

Testing activities should start as early as possible in software development life cycle. And should be focused on defined objectives.

**(5.) Defect clustering**

Defects are not evenly spread in system.
They are clustered

**(6.) Pesticide paradox**

If the same tests are repeated over and over again eventually the same set of cases will do no longer find any new defects.
To overcome this "Pesticide paradox" the test case need to be regularly reviewed and revised, and new and different tests need to be written to exercise different parts of the software or system to potentially find more defects.

**(7.) Testing is context dependent**

Different kinds of sites are tested differently
3 to 10 failures per thousand line of code (KLOC) typical for commercial software
1 to 10 failures per KLOC typical for industrial software
0.01 failures per KLOC for NASA shuttle code

## 19. What is GUI testing?

Graphical user interface testing (GUI) testing is a process of testing the systems GUI of the systems under test. GUI testing involves checking the screen with the control like menus, icons and all types of bar- tool bar, menu bar, dialog boxes and windows etc.

## 20. Difference between verification and validation

| Criteria | Verification | Validation |
|---|---|---|
| Definition | The process of evaluating work products (not the actual final product) of a development phase to determine whether they meet specify requirement for that phase | The process of evaluating software during or at the end of development process to determine whether it satisfies specified business requirements |
| Objective | To ensure that the product is being built according to the requirements and design specification. In other words to ensure that work products meet their specified requirements | TO ensure that the product actually meet the user need and that the specification ware correct in the first phase. In other word to demonstrate that the product fulfils its intended use when placed in its intended environment |
| Question | Are we building the product write? | Are we building the write product? |
| Evaluation item | Plans, requirement specification, design specification, code, test cases | The actual product/software |
| Activities | Reviews<br>Walkthroughs<br>Inspections | Testing |

## 21. What is alpha testing?

- It is always performed by developers at the software development site.
- Sometimes it is also performed by independent testing team.
- Alpha testing is not open to market and public.
- It is conducted for software application and project.
- It is always perform at virtual environment.
- It is always perform in within organization.
- It is a form of acceptance testing.
- It comes under the category of both white and black box testing.

## 22. What is beta testing?

- It is always performed by the customer at their own site.
- It is not perform by independent testing team.
- Beta testing is always open to market and public.
- It is usually conducted for software project.
- It is perform in real time environment.
- It is always perform outside the organization.
- It is also form of acceptance testing.
- It is only a kind of black box testing.
- Beta testing can be considered “Pre-release” testing.
- Pilot testing is testing to product on real world as well as collect data on the use of product in the classroom.

## 23. What is load testing?

- Load testing is to test system behaviour under normal workload condition and it is just testing or simulating with actual workload.
- Load testing identifies the bottlenecks in the system under various workloads and checks hoe the system react when the load is gradually increased.
- Load testing does not break system.

## 24. What is stress testing?

- Stress testing is to test the system behaviour under extreme conditions and is carried out till the system failure.
- Stress testing determines the breaking point of system or reveals the maximum point after which it break.
- Stress testing tries to break system by testing overwhelming data and resources.

## 25. When should "Regression testing" can be perform?

- Testing of previously tested program following modification to ensure that defect have not been introduced or uncovered in unchanged areas of the software as a result of the changes made.it is performed when software or its environment is changed.

## 26. Explain types of performance testing?

1. **Load testing**
   Load testing is a type of testing which involves evaluating the performance of the system under the expected workload.

2. **Stress testing**
   Stress testing is a type of performance testing where we evaluate the applications performance at load much higher than expected load.

3. **Endurance testing**
   Endurance testing is also known as 'soak testing'. It is done to determine if the system can sustain the continuous expected load for a long duration.

4. **Spike testing**
   In spike testing, we analyse the behaviour of the system on suddenly increasing the number of users.

5. **Volume Testing**
   The volume testing performed by feeding the application with a high volume of data.

6. **Scalability testing**
   The objective of scalability testing is to determine the software applications effectiveness in "scaling up" to support an increase in user load.

## 27. What is the purpose of exit criteria?

- Exit criteria is used to determine whether a given test activity has been completed or Not. Exit criteria can be defined for all of the test activities right form planning, specification and execution.

## 28. What is determines the level of risk?

- Project risk
- Product risk

## 29. What is the difference between the STLC (Software testing life cycle) and SDLC (Software development life cycle)?

| Software development life cycle | Software test life cycle |
|---|---|
| SDLC is mainly related to software development. | STLC is mainly related to software testing. |
| Besides development other phases like testing is also included. | It focuses only on testing the software. |
| In SDLC, more number of members (developers) are required for the whole process. | In STLC, less number of members (tester) are needed. |
| In SDLC , development team makes the plans and designs based on the requirements | In STLC, testing team (test lead or test architect) makes the plans and designs. |
| Goal of SDLC is to complete successful development of software. | Goal of STLC is to complete successful testing software. |
| It helps in developing good quality software. | It helps in making the software defect free. |
| SDLC phases are completed before the STLC phases. | STLC phases are performed after SDLC Implementation phase. |

## 30. Difference between test case, test scenarios and test script.

| Test Scenario | Test case | Test script |
|---|---|---|
| Is any functionality that can be tested. | Is a set of actions executed to verify particular features functionality. | Is a set of instruction to test an app automatically. |
| Is derived from test artifacts like business requirement specification and software requirement specification. | Is mostly derived from test scenarios. | Is mostly derived from test cases. |
| Helps test the end to end functionality in an agile way. | Helps in exhaustive testing of an app. | Helps test specific things repeatedly. |
| Is more focused on what to test. | Is focused on what to test and how to test. | Is focused on expected result. |
| Takes less time and fewer resources to create. | Require more resources and time. | Requires less time for testing but more resources for script creating and uploading. |
| Includes an end to end functionality to be tested. | Includes test steps, data, expected result for testing. | Includes different commands to develop a script. |
| The main task is to check the full functionality of a software application. | The main task is to verify compliance with the applicable standards, guidelines and customer requirements. | The main task is to verify that nothing is skipped and the result are true as the desired testing plan. |
| Allows quickly assessing the testing scope. | Allows detecting errors and defects. | Allows carrying out an automatic execution of test cases. |