Software Testing Assignment

Module -2(Manual Testing)

- What is Exploratory Testing?
  * Exploratory testing is an approach to software testing that is often described as simultaneous learning , test design , and execution. It focuses on discovery and relies on the guidance of the individual tester to uncover the defects that are not easily covered in the scope of other tests.

- What is Traceability matrix?
  *Test Conditions should be able to link back to their sources in the test basis,that is called as traceability.

  *Mapping of the data in a software is called as traceability matrix.

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

  *There are 3 types of traceability matrix.
  1. Forward : mapping of requirements to test cases.
  2. Backward : mapping of testcases to requirements.
  3. Bi-directional : a good traceability matrix is references from test cases to basic documentation and vice versa.

- What is boundary value testing?
  *boundary value analysis is a methodology for designing test cases that concentrates software testing effort on cases near the limits of valid ranges.

  Eg : if there's a number from 1-9 in a password input box.,
  Tester will do testing with the help of BVA.

Min=1(pass)	max=9(pass)
min-1(Fail)	max-1(pass)
min+1(pass)	max+1(fail)

- What is Equivalence partitioning testing?
  *Equivalence partitioning testing is dividing a data in various groups and test it.
  *it reduces the test cases.

  Eg : when there's requirement such as,
  Only Numbers allowed,
  Tester will classify the data in various groups ;

Groups of data	data using ECP
1. A to Z (Not valid)	XYZ

2. A to z (Not valid) abc
3. Numbers(2222) (Valid) 22

- What is Integration Testing?
  *Integration testing is performed between two or more modules(units).
  *It mainly focuses on the data communication between each module.
  *It is performed after unit testing.
  *there is two types method of integration testing

1. Big bang integration testing
2. Incremental integration testing :
   1.Top-down approach
   2.Bottom-up approach

- What determines the level of risk?

- What is alpha testing?
  Alpha testing is always performed by developers at the software development site.
  Sometimes it is also performed by an independent testing team.
  It is not open to the market and public.
  It is performed in a virtual environment.
  It comes under both black box and white box testing.

- What is Beta testing?
  It is performed by the customers at their own site.
  It is always open to the market and public.
  It is performed in a real time environment.
  It is always a kind of black box testing.

- What is component testing?
  component(Unit)- A minimal software item that can be tested in isolation.
  That mens a unit is the smallest testable part of software.
  Component testing:the testing of individual software components.
  It is also known as module testing or program testing.
  It is typically written and run by developers.
  It is performed by using the white box testing methods.

- What is functional system testing?
  A requirement that specifies a function that a system or system components must perform.

  There is two types of test approach:
  1.requirement based functional testing

2.process based testing.

- What is non-functional testing?
  Testing the attributes of system or components that do not relate to functionality,eg. Reliability,efficiency,usability,interoperability,maintainability and portability.

  It is the testing of “how” the system works.

  The term non-functional describes the tests required to measure characteristics of system and software that can be quantified on a varying scale , such as response times for performance testing.

- What is GUI Testing?
  Graphical user interface testing or GUI tsting is a process of testing the user interface of an application.

  A graphical user interface includes all the elements such as menus, chechbox, buttons, colors,font,size,icons,contents and images.

- What is adhoc testing?
  Adhoc testing is an informal testing type with an aim to break the system.

  Testing application without any test cases or any business requirement document.

  Tester should have knowledge of an application even if the tester does not have any required documents for that.

- What is load testing?
  Load testing is a performance testing to check the system behavior under any heavy load.
  Testing an application under heavy load, such as testing any web site under a range of load to determine at what point the system fails.

- What is stress testing?
  Stress testing is used to test the stability & reliability of the system.
  System is stressed beyond its specification to check how and when it fails.
  Performed under heavy load like putting large number beyond storage capacity ,complex database queries , continuous input to system or database load.

- What is white box testing and list the types of white box testing?
  Testing based on an analysis of the internal structure of the component or system.
  In white box testing the tester is concentrating on how the software works.
  Typically undertaken at component or component integration test phases by development team.

Types of whitebox Testing

- Unit testing
- Static analysis
- Dynamic analysis
- Statement coverage
- Branch testing
- Path testing
- Loop testing

- What is black box testing? What are the different black box testing techniques?
  Testing either functional or nonfunctional , without reference to the internal structure of the component system.
  The tester have no knowledge of how the system or component is structured inside the box.in black box testing tester is concentrating on how the system does and not on how it does.
  Techniques of black box testing
  - Equivalence partitioning
  - Boundary value analysis
  - Decision tables
  - State transition testing
  - Use-case Testing
  - Other Black Box Testing :Syntax or Pattern Testing

- mention what are the categories of defects?
  Defect is the variance from a desired product attribute (it can be a wrong, missing or extra data)
  Categories of defects:
  - Defect from the product or a variance from customer/user expectations.
  - It is a flaw in the software system and has no impact until it affects the user/customer and operational system

  There are so many types of defect
  - Data quality/database defects
  - Critical functionality defects
  - Functionality defects
  - Security defects
  - User interface defects

- Mention what bigbang testing is?
  In big bang integration testing all components or modules is integrated simultaneously ,after which everything is tested as a whole.

It is convenient for small project.
The biggest advantage is everything is finished before integration testing starts.
Ther major disadvantage is it is time consuming and difficult to trace the cause of failures because of this late integration.

- What is the purpose of exit criteria?
  Exit criteria defines the items(documents) must be completed before testing can be concluded.
  The purpose of exit criteria is to not going ahed in the process without completing the previous data.

- When should "Regression Testing" be performed?
  Testing of previously tested program following modification to ensure that defects have not been introduced or uncovered in unchanged areas of the software,as a result of the changes made.

- What is 7 key principles? Explain in detail?
  1. Testing shows presence of Defects
  2. Exhaustive Testing is Impossible!
  3. Early Testing
  4. Defect Clustering
  5. The Pesticide Paradox
  6. Testing is Context Dependent
  7. Absence of Errors Fallacy

  1.testing shows presence of defects -
  Testing can show that defects are present, but can not prove that there are no defects.
  Testing reduces the probability of undiscovered defects remaining in software.

  2. Exhausting testing is impossible -
  Testing everything including all possible combinations of inputs and precondition is not possible.
  So instead of doing exhaustive testing we can use risk and priorities to focus testing efforts.

  3. Early testing -
  Testing should start as early as possible in the software or in SDLC .

  4. Defect clustering -
  A small number of modules contain most of the defects discovered during pre-release testing .
  Defects are not evenly spread in a system.
  They are “Clustered”

5. Pesticide paradox -

If the same tests are repeated over and over again, eventually the same set of test cases will no longer find any new defects.

To overcome this “pesticide paradox”, the test cases 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.

6. Testing is context dependent. -

Testing is done differently in different contexts

Different kinds of sites are tested differently

For example = Safety – critical software is tested differently from an e-commerce site.

7. Absence of error fallacy. -

If the system built is unusable and does not fulfill the user’s needs and expectations then finding and fixing defects does not help.

If we build a system and, in doing so, find and fix defects .... It doesn’t make it a good system

- Difference between QA v/s QC v/s Tester

Quality Assurance	**Quality Control**	**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.	Tester identifies the bugs/errors/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 bug/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.	Preventive activities.
It is a subset of Software Test Life Cycle (STLC).	QC can be considered as the subset of Quality Assurance.	Testing is the subset of Quality Control.

- Difference between Smoke and Sanity?

Smoke Testing	**Sanity Testing**
It is performed to ascertain that the critical functionalities of the program are working fine.	This testing is done to check the new functionality/bugs have been fixed.
Smoke testing is performed by the developers.	Sanity testing is done by the testers alone.
Smoke testing is usually documented or scripted.	Sanity testing is usually not documented.
It is a subset of regression testing.	It is a subset of acceptance testing.
Smoke testing exercises the entire system from end to end.	Sanity testing exercises only the particular component of the entire system.

- 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 the specified requirements for that phase.	The process of evaluating software during or at the end of the development process to determine whether it satisfies specified business requirements.
Objectives	To ensure that the product is being built according to the requirements and design specifications. In other words, to ensure that work products meet their specified requirements.	To ensure that the product actually meets the user's needs, and that the specifications were correct in the first place. In other words, to demonstrate that the product fulfills its intended use when placed in its intended environment.
Question	Are we building the product right?	Are we building the right product?
Evaluation items	Plans, Requirement Specs, Design Specs, Code, Test Case	The actual product/software.

Activities	Reviews Walkthroughs Inspections	Testing

- Explain types of Performance testing.
  Software performance testing is a means of quality assurance (QA). It involves testing software applications to ensure they will perform well under their expected workload.
  Types of performance testing :
  1.Load testing - load testing measures system performance as the workload increases. That workload could mean concurrent users or transactions.
  2.stress testing - is meant to measure system performance outside of the parameters of normal working conditions. The software is given more users or transactions that can be handled. The goal of stress testing is to measure the software stability. At what point does software fail, and how does the software recover from failure?
  3. Endurance testing - is an evaluation of how software performs with a normal workload over an extended amount of time.
  4.spike testing - Spike testing is a type of stress testing that evaluates software performance when workloads are substantially increased quickly and repeatedly.
  5.volume testing - Volume testing determines how efficiently software performs with large projected amounts of data. It is also known as flood testing because the test floods the system with data.
  6.scalability testing - Scalability testing is used to determine if software is effectively handling increasing workloads. This can be determined by gradually adding to the user load or data volume while monitoring system performance. Also, the workload may stay at the same level while resources such as CPUs and memory are changed.

- What is Error, Defect, Bug and failure?
  Error : A discrepancy between a computed, observed, or measured value or condition and the true, specified, or theoretically correct value or condition. This can be a misunderstanding of the internal state of the software, an oversight in terms of memory management, confusion about the proper way to calculate a value, etc.

  Defect : Commonly refers to several troubles with the software products, with its external behavior or with its internal features.

Bug: A fault in a program which causes the program to perform in an unintended or unanticipated manner. See: anomaly, defect, error, exception, and fault. Bug is the terminology of Tester.

Failure : the inability of a system or component to perform its required functions within specified performance requirements. See: bug, crash, exception, and fault.

- Difference between Priority and Severity.
  Severity is the degree of impact that a defect has on the development or operation of a component or system.
  Priority meaning the level of (business) importance assigned to an item, e.g., defect.

- What is the Bug Life Cycle?
  The duration or time span between the first time defects are found and the time that it is closed successfully, rejected, postponed or deferred is called the 'Defect Life Cycle'.

- Explain the difference between Functional testing and NonFunctional testing.

Functional testing	**Non functional testing**
Functional testing is performed using the functional specification provided by the client and verifies the system against the functional requirements	Non-Functional testing check the Performance,reliability, scalability and other non-functional aspects of the software.
Functional testing is 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 requirements are the inputs to functional testing	Performance parameters like speed , scalability are inputs to non-functional testing.
Functional testing describes what the product does	Nonfunctional testing describes how good the product works
Easy to do manual testing	tough to do manual testing
Types of Functional testing are · Unit Testing · Smoke Testing · Sanity Testing	Types of Nonfunctional testing are · Performance Testing · Load Testing · Volume Testing · Stress Testing

· Integration Testing · White box testing · Black Box testing · User Acceptance testing · Regression Testing	· Security Testing · Installation Testing · Penetration Testing · Compatibility Testing · Migration Testing

- What is the difference between the STLC (Software Testing Life Cycle) and SDLC (Software Development Life Cycle)?
  SDLC is a structure imposed on the development of a software product that defines the process for planning, implementation, testing, documentation, deployment, and ongoing maintenance and support.
  Whereas, STLC is a systematic approach to testing, which involves verifying an application to check if it meets the requirements and is free of faults. It follows a series/phase of steps where every phase has its objective and deliverables, and the software must fulfill those goals to move on to the next step. The purpose of STLC in testing is to provide a high-quality, reliable, and stable application that stays true to the requirements of the customers. phases of STLC are Planning, Analysis, Design, Environment Setup, Execution, Closure, and Defect Retesting.

- What is the difference between test scenarios, test cases, and test script?
  A set of sequential instruction that detail how to execute a core business function is called Test script.
  A Scenario is any functionality that can be tested. It is also called Test Condition, or Test Possibility. Test Scenario is ‘What to be tested’.
  Test cases involve the set of steps, conditions and inputs which can be used while performing the testing tasks.

- Explain what Test Plan is? What is the information that should be covered?
  Test Planning in STLC is a phase in which a Senior QA manager determines the test plan strategy along with efforts and cost estimates for the project.
  Moreover, the resources, test environment, test limitations and the testing schedule are also determined. The Test Plan gets prepared and finalized in the same phase.
  Activities in Requirement Phase Testing
  Preparation of test plan/strategy document for various types of testing
  Test tool selection
  Test effort estimation
  Resource planning and determining roles and responsibilities.
  Training requirement
  Deliverables of Requirement Phase Testing:
  Test plan /strategy document.
  Effort estimation document

- What is priority?
  Priority is Relative and Business-Focused. Priority defines the order in which we should resolve a defect. Should we fix it now, or can it wait? This priority status is set by the tester to the developer mentioning the time frame to fix the defect. If high priority is mentioned then the developer has to fix it at the earliest. The priority status is set based on the customer requirements.

- What is severity?
  Severity is absolute and Customer-Focused. It is the extent to which the defect can affect the software. In other words it defines the impact that a given defect has on the system.

- Bug categories are…
  New: When a new defect is logged and posted for the first time. It is assigned a status as NEW.
  * Assigned: Once the bug is posted by the tester, the lead of the tester approves the bug and assigns the bug to the developer team

  *Open: The developer starts analyzing and works on the defect fix

  * Fixed: When a developer makes a necessary code change and verifies the change, he or she can make bug status as “Fixed.”

  *Pending retest: Once the defect is fixed the developer gives a particular code for retesting the code to the tester. Since the software testing remains pending from the testers end, the status assigned is “pending retest.”

  *Retest: Tester does the retesting of the code at this stage to check whether the defect is fixed by the developer or not and changes the status to “Re-test.”

- Difference between priority and severity

No	**Severity**	**Priority**
1	Defined by the impact of a specific problem on any application’s functionality.	Defined by the impact on business.
2	Category decided by testers.	Category decided by developers or product owners

3	The value does not change with time, it's fixed.	The priority value is subjective and may change after comparing with other defects.

- Advantage of Bugzila .
  Key features of Bugzilla includes Advanced search capabilities, E-mail Notifications ;Modify/file Bugs by e-mail ;Time tracking; Strong security; Customization ;Localization

- What are the different Methodologies in Agile Development Model?
  There are more than a dozen agile techniques that are in use. Scrum, Extreme Programming (XP), lean product development, Kanban, Feature-Driven Development (FDD), Dynamic Systems Development Method (DSDM), and the Crystal family of methodologies are the most popular approaches.

- Explain the difference between Authorization and Authentication in Web testing.What are the common problems faced in Web testing?
  Authentication is the process of verifying the identity of an individual. A user can interact with a web application using multiple actions. Access to specific resources can be restricted by using user levels.

  Authorization is the process of controlling user access via assigned roles and privileges.