**SOFWARE 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 defect that are not easily covered in the scope of other tests.

* **What is Traceability matrix ?**

A traceability matrix is a document that details the technical requirements for a given test scenario and its current state.it helps the testing team understand the level of testing that is done for a given product. the Traceability process itself is used to review the test cases that were defined for any requirement.

* **What is Boundary value testing?**

Boundary testing is the process of testing of testing between ends or boundaries between partitions of the input values. So these extreme ends like start. End Lower-upper, maximum – minimum are called boundary values and the testing is called boundary testing.

* **What is Equivalence partitioning testing ?**

Equivalence class testing can be termed as a logical step in the modal of functional testing.it improves the quality of test cases, which further enhance the quality of testing, by removing the vast amount of redundancy and gaps that appear in the boundary value testing.

* **What is integration testing ?**

Integration testing is the phase in software testing in which individual software modules are combined and tested as a group. integration testing is conducted to evaluate the compliance of a system or component with specified functional requirements.it occurs after unit testing and before system testing.

* **What is determines the level of risk ?**

As risk is determined by a combination of probability and severity. The main area of the matrix reveals the risk levels. the levels are low, medium, high, and extremely high.to have a low level of risk, we must have a somewhat limited probability and level of severity.

* **What is alpha testing ?**

Alpha testing is the initial phase of validating whether a new product will perform as expected. Alpha tests are carried out early in the development process by internal staff and are followed up with beta tests, in which a sampling of the intended audience actually tries the product out.

* **What is beta testing ?**

Beta testing is an opportunity for real users to use a product in a production environment to uncover any bugs or issues before a general release. Beta testing is the final round of testing before releasing a product to a wide audience.

* **What is component testing ?**

Component testing is defined as a software testing type,in which the testing is performed on each individual component separately without integrating with other components.

It also referred to as module testing when it is viewed from an architecture perspective. Component testing is also referred to as unit testing, program testing or module testing.

* **What is Functional system Testing ?**

Functional testing is a type of testing that seeks to establish whether each application feature works as per the software requirements.

Each function is compared to the corresponding requirements to ascertain whether its output is consistent with the end user’s expectations.

* **What is a Non – Functional Testing** **?**

Non – functional testing assesses application properties that aren’t critical to functionality but contribute to the end-user experience.

performance and reliability under load aren’t functional components of a software system but can certainly make or break the user experience.

Security, performance, load, cost, accessibility, etc.

* **What is GUI testing ?**

GUI testing is a software testing type that checks the graphical user interface of the software. the purpose of graphical user interface testing is to ensure the functionalities of software application work as per specifications by checking screens and controls like menus,buttons,icons,etc.

* **What is Adhoc Testing ?**

Adhoc Testing is an informal or unstructured software testing type that aims to break the testing process in order to find possible defects or errors at an early possible stage.

Adhoc testing is done randomly and it is usually an unplanned activity which does not follow any documentation and test design techniques to create test cases.

* **What is Load testing ?**

Load testing is the process of subjecting a computer, Peripheral, Server, Network or application to a work level approaching the limits of its specifications.

* **What is stress testing ?**

Stress testing is the process of determining the ability of a computer, network, program of device to maintain a certain level a effectivenessunder unfavorable conditions.

The process can involve quantitative tests done in a lab, such as measuring the frequency of errors or system crashes.

* **What is white box testing and list the types of white box**

**testing ?**

White box testing is the first step of the testing process. hence, it is generally performed by developers before submitting the project. white box testing is also knows as clear box testing etc.

Different types of white – box testing

Unit testing Branch testing coverage

Static analysis Security testing

Dynamic Analysis Mutation testing

Statement Coverage

* **What is black box testing ? What are the different black box testing techniques ?**

Black box testing is a technique of software testing which examines the functionality of software without peering into its internal structure or coding.

The primary source of black box testing is a specification of requirements that is stated by the customer.

**Different black box testing techniques**

* Equivalence Partitioning
* Boundary Value Analysis
* Decision table testing
* State transition testing
* Error Guessing

* **Mention what are the categories of defects ?**
* Functional defects, functional bugs can be revealed during smoke,system,integration,regression,and user acceptance testing.
* Performance defects.
* Usability defects.
* Security defects.
* **Mention what bigbang testing is ?**

Bigbang integration testing is a testing methodology in which all components or modules of a system are combined and tested as a whole.it is often used when it is not practical to test all components together incrementally.

* **What is the purpose of exit criteria ?**

Exit criteria are the defined requirements within software testing that must be met in order to determine that testing has been completed.these conditions are typically defined by engineering or test leadership to ensure quality standards are met.

* **When should “Regression testing” be performed** ?

Regression testing can be performed on a new build when there is a significant change in the original functionality.it ensures that the code still works even when the changes are occurring. Regression means re-test those parts of the application, which are unchanged.

* **What is 7 key principles ? explain in detail ?** 
  + 1. Testing shows presence of defect
    2. Exhaustive testing is not possible
    3. Early testing
    4. Defect clustering
    5. Pesticide paradox
    6. Testing is context dependent
    7. Absence of errors fallacy

1. **Exhaustive testing is not possible**

Yes. Exhaustive testing is not possible. instead, we need the optimal amount of testing based on the risk assessment of the application.

And the million dollar question is, how do you determine this risk?

1. **Defect clustering**

Defect clustering which states that a small number of modules contain most of the defects detected. This is the application of the pare to principle to software testing. approximately 80 % of the problems are found 20 % of the modules.

If the same tests are repeated over and over again, eventually the same test cases will no longer find new bugs.

1. **Pesticide paradox**

Repetitive use of the same pesticide mix to eradicate insects during farming will over time lead to the insects developing resistance to the pesticide thereby ineffective of pesticides on insects. the same applies to software testing.

To overcome this,the test cases need to be regularly reviewed & revised,adding new & different test cases to help fin more defects.

Testers cannot simply depend on existing test techniques.he must look out coutinually to improves the existing methods to make testing more effective.but even after all this sweat & hard work in testing,you can never claim your product is bug-free.

1. **Testing shows a presence of defects**

Hence,testing principle states that – testing talks about the presence of defect and don’t talk about the absence of defect.software testing reduces the probability of undiscovered defect remaining in the software but even if no defects are found,it is not a proof of correctness.

1. **Absence of Error – fallacy**

It is possible that software which is 99% bug free is still unusable.this can be the case if the system is tested thoroughly for the wrong requirement.software testing is not mere finding defects,but also to check that software addresses the business needs.

To solve this problem, the next principles of testing states that early testing.

1. **Early testing**

Early testing should start as early as possible in the software development life cycle.so that any defects in the requirements or design phase are captured in early stages.it is much cheaper to fix a defect in the early stages of testing.but how early one should start testing? It is recommended that you start finding the bug the moment the requirements are defined. more on this principle in a later training tutorial.

1. **Testing is context dependent**

Testing is context dependent which basically means that the way you test an e commerce site will be different from the way you test a commercial off the shelf application.all the developed software are not identical.you might use a different approach,methodologies,techniques,and types of testing depending upon the application type.for instance testing ,any pos system at a retail store will be different than testing an atm machine.

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

**QA** : QA testing is a function of software quality that assures that procedures and standards are appropriate for a project and are correctly execute. The QA teams job is to improves development and test processes so that defect do not arise when the product is being developed.

**QC :** QC testing is a function of software quality that checks that the project follows standards, processes, and procedures laid down, and that the project produces the required internal and external deliverables.

The QC teams job is to identify defects after a product is developed but before it is released. Defects in the finished product.

**QA vs QC : comparison overview**

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|  | Quality Assurance | Quality Control |
| 1 | Aims to prevent defects | Aims to identify and fix defects |
| 2 | Helps build processes | Helps implement the existing processes |
| 3 | Is a managerial tool | Is a corrective tool |
| 4 | It is the duty of the complete project team. | It is only the duty of the testing team |
| 5 | Comes under the category  Of verification. | Comes under the category of validation. |
| 6 | Is a process oriented exercise. | Is a product oriented exercise. |
| 7 | Done before quality control | Done only after quality assurance |
| 8 | Processes are planned to preventdefects | Processes are planned to discover defects and fix them |

* **Difference between smoke and sanity** ?

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| **Smoke testing** | **Sanity testing** |
| Smoke testing is done to assure that the acute functionalities of program is working fine. | Sanity testing is done to check the bugs have been fixed after the build. |
| smoke testing is also called subset of acceptance testing. | Sanity testing is also called subset of regression testing. |
| Smoke testing is documented. | sanity testing isn’t documented. |
| smoke tesing is performed by either developers or testers. | Sanity testing is normally performed by testers. |
| Smoke testing may be  Stable or unstable. | Sanity testing is stable. |
| Smoke testing is scripted. | Sanity testing is usually not scripted. |
| Smoke testing is performed when new product is build. | Sanity testing is conducted after the completion of regression tensing. |

* **Difference between verification and validation**

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| Verification | Validation |
| It includes checking documents,design,codes and programs. | It includes testing and validating the actual product. |
| Verification is the static testing. | Validation is the dynamic testing. |
| It does not isclude the execution of the code. | It includes the execution of the code. |
| Methods used in verification  Are reviews, walkthroughs,  Inspections and desk checking. | Methods used in validation are black box testing, white box testing and non functional testing. |
| It can find the bugs in the early stage of the development. | It can only find the bugs that could not be found by the verification process. |
| It comes before validation. | It comes after verification. |

* Explain types of performance testing.

Performance testing is a software testing process used for testi ng the speed, response time, stability, reliability, scalability, and resource usage of a software application under a particular workload. the main purpose of performance testing is to identify and eliminate the performance bottlenecks in the software application.

* **What is error,defect, bug and failure.?**

The problem in code leads to errors,which means that a mistake can occur due to the devlopers coding error as the developer misunderstood the requirement or the requirement was not defined correctly.the developers use the term error.

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The problem in code leads to errors,which means that a mistake can occur due to the developers coding error as the developer misunderstood the requirement or the requirement was not defined correctly.the developers use the team error.

1. **What is a Defect ?**

when the application is not working as per the requirement is knows as defect.it is specified as the specified as the aberration from the actual and expected result of the application or software.

In other words,we can say that the bug announced by the programmer and inside the code is called a defect.

1. **What is a bug ?**

in software testing,a bug is the informal name of defects,which means that software or application is not working as per the requirement.when we have some coding error,it leads a program to its breakdown, which is known as a bug.the test engineers use the terminology bug.

If a QA defect a bug,they can reproduce the bug and record it with the help of the bug report template.

* **What is failure ?**

many defects lead to the software failure.which means that a loss specifies a fatal issue in software application or in its module,which makes the system unresponsive or broken.

In other words we can say that if an end user defects an issue in the product then that particular issue is called a failure.

Possibilities are there one defect that might lead to one failure or several failures.

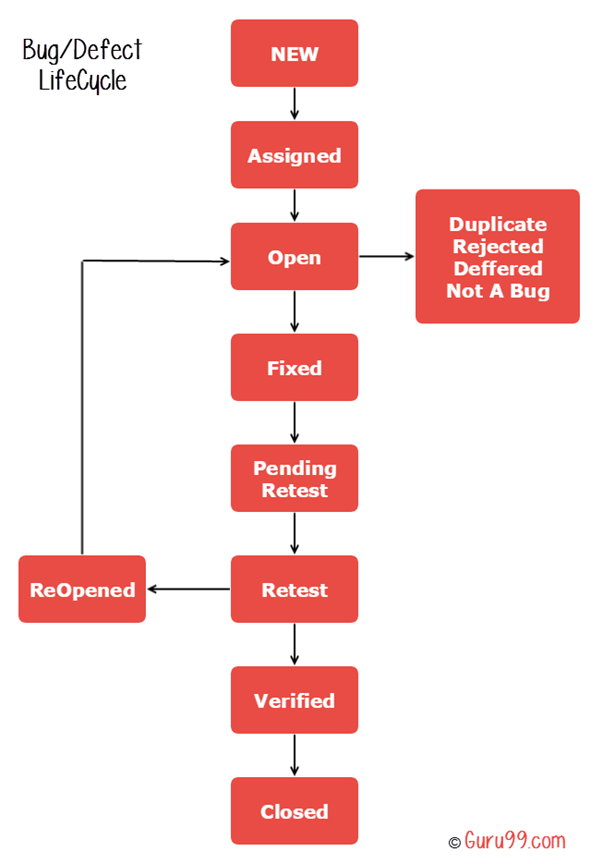
* **Difference between priority and severity.**

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| **Severity** | **Priority** |
| Severity is a parameter to denote the impact of a particular defect on the software. | Priority is a parameter to decide the order in which defects should be fixed. |
| Severity means how severe defect is affecting the functionality. | Priority means how fast defect has to be fixed. |
| Severity is related to the quality standard. | Priority is related to scheduling to resolve the problem. |
| Testing engineer decides the severity level of the defect. | Product manager decides the priorities of defects. |
| Its value is objective. | Its value is subjective. |

* **What is bug life cycle ?**

Defect life cycle, also known as bug life cycle is the journey of a defect cycle,which a defect goes through during its lifetime.it varies from organization and also from project to project as it is governed by the software testing process also depends upon the

tools used.



**Defect life cycle states :**

1. **New –** potential defect that is raised and yet to be validated.
2. **Assigned –** assigned against a developer and investigation is under progress.at this stage there are two possible outcomes.
3. **Test –** the defect is fixed and ready for testing
4. **Verified –** the defect that is retested and the test has been verified by QA.
5. **Closed –** the final state of the defect that can be closed after the qa retesting or can be closed if the defect is duplicate or considered as not a defect.
6. **Reopened –** when the defect is not fixed, QA reopens-reactivates the defect.
7. **Deferred –** when a defect cannot be addressed in that particular cycle it is deferred to future release.
8. **Rejected –** a defect can be rejected for any of the 3 reasons. duplicate defect, not a defect, non reproducible.

* **Explain the different between functional testing and nonfunctional testing**

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| **Functional testing** | **Non-functional testing** |
| it verifies the operations and actions of an application. | it verifies the behavior of an application. |
| it is based on requirements of customer. | it is based on expectations of customer. |
| it helps to enhance the behavior of the application. | it helps to improve the performance of the application. |
| Functional testing is easy to execute manually. | it is hard to execute non functional testing manually. |
| it tests what the product does. | It describes how the product does. |
| Functional testing is based on the business requirement. | Non functional testing is based on the performance requirements. |

**Examples :**

1. **Unit testing performance testing**
2. **Smoke testing load testing**
3. **Integration testing stress testing**
4. **Regression testing scalability testing**