Module -2

**(Manual Testing)**

1. What is software testing?

**Ans. Software testing is the act of examining the artifacts and the behavior of the software under test by validation and verification.**

**Software testing can also provide an objective, independent view of the software to allow the business to appreciate and understand the risks of software implementation.**

1. What Is error, defect, bug and failure?

**Ans. - Error :- a mistake in coding is called error**

* **Defect :- error found by tester is called defect**

**The variation between the actual result and expected results is known as defect.**

* **Bug:- defect accepted by developer team then it is called bug.**
* **Failure :- when a defect reaches the end customer it is called a failure.**

1. What is 7 key principles ? Explain in detail ?

**Ans.**

1. **Testing shows presence of defect**

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

**But what if , you work extra hard , talking all precautions & make your software product 99% bug-free. And the software does not meet the needs & requirement of the client.**

**This leads us to our next principle , which states that – absence of error .**

1. **Exhaustive testing is impossible**

**:-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 the risk ?**

**To answer let do a exercise**

**In your opinion , which operation is most likely to cause your operating system to fail?**

**I am sure most of you would have guessed, opening 10 different application all at the same time.**

**So if you were testing this operating system, you would realize that defect are likely to be found in multi asking activities and need to be tested thoroughly which brings us to our next principle defect clustering**

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 pareto principle to software testing .**

**Approximately 80% of the problems are found in20% of the modules.**

**By experience , you can identify such risky modules . but this approach has its own problems.**

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

1. **Early testing**

**:- 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 defect in the early stages of 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. **The pesticide paradox**

**:-if the same test are repeated over and over again eventually the same set of test cases will no longer find any new defects to overcome this use “ PESTICIDE PARADOX”**

**Test cases needs 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.**

**Testing identifies bugs and programmers respond to fix them, as bugs are eliminated by the programmers , the software improves , as software improves the effectiveness of previous tests erodes.**

1. **Testing is context dependence**

**:- different kinds of sites are tested differently .**

**Different methodologies techniques and type and nature of the application**

1. **Absence of errors fallacy**

**:-it is possible that software which is 99% bug-free 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. The absence of error is a fallacy i.e. finding and fixing defects does not help if the system build is unusable and does not fulfill the users needs & requirements.**

**To solve this problem , the next principle of testing stated that early testing.**

1. Difference between QA v/s QC v/s Tester

**Ans. QA:- Subset of SDLC.**

**Process-oriented.**

**Preventive process.**

**Focus on processes.**

**Proactive process.**

**Verifies the quality.**

**The whole project team involved.**

**Makes sure the right things are being**

**Done.**

**QC:- Subset of QA.**

**Product-oriented**

**Corrective process**

**Focus on required quality**

**Reactive process**

**Validates the quality**

**Testing team involved**

**Makes sure the things are doing right.**

**Tester:-Subset of QC**

**Product-oriented**

**Corrective process**

**Corrective process**

**Focus on actual testing**

**Reactive process**

**Validates the quality**

**Testing team involved**

**Evaluates the results of done things**

1. What is boundary value testing ?

**Ans. Boundary – value analysis is a software testing technique in which testes are designed to include representative of boundary values in a range. The idea comes from the boundary . given that we have a set of test vectors to test the system a topology can be defined on that set.**

1. What is equivalence partitioning testing ?

**Ans. Equivalence partitioning is a software testing technique that divides the input data from which test cases can be derived. In principal , test cases are designed to cover each partition at least once.**

1. What is integration testing ?

**Ans. 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.**

1. What determines the level of risk ?

**Ans.” Risk is a uncertain future event with a probability of occurrence and potential for loss”**

**In software testing risk is the possibility of a negative or undesirable outcome.**

1. What is component testing ?

**Ans. Component testing is also known unit testing.**

**A minimal software item that can be tested in isolation . it means “ a unit is the smallest testable part of software”**

**Component testing – the testing of individual software components.**

1. What is functional system testing ?

**Ans. A requirement that specifies a function that a system or system component must perform.**

**A requirement may exist as a text document and /or a model**

1. What is Non-functional testing ?

**Ans. Testing the attributes of a component or system that do not relate to functionality , e.g. reliability , efficiency , usability, interoperability , maintainability and portability.**

1. What is GUI testing ?

**Ans. GUI testing is the process of testing the system’s GUI of the system under test GUI testing involves checking the screen with the controls like menus, buttons , icons & all types of bar-tool bar, menu bar , dialog boxes and windows etc.**

1. What is Adhoc testing ?

**Ans. 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 cases.**

**This testing is primarily performed if the knowledge of testers in the system under test is very high.**

**Testers randomly test the application without any test cases or any business requirement document.**

**Adhoc testing can be achieved with the testing techniques called error guessing.**

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

**Ans. Testing based on analysis of the internal structure of the component or system.**

**Structured based testing techniques is also known as ‘white- box’ or ‘glass-box’ or ‘open-box’ testing technique because here the testers require knowledge of how the software is implemented , how it works.**

**In white box testing the tester is concentrating on how the software does it.**

**Types of white box testing:**

1. **Statement coverage**

* **The statement coverage is also known as line coverage or segment coverage**
* **The statement coverage covers only true conditions**

1. **Decision / branch coverage**

* **A decision is an IF statement , a loop control statement or a case statement where there are two or more outcome from the statement.**

1. **Condition coverage**

* **This is closely related to decision coverage but has better sensitivity to control flow.**
* **Condition coverage reports the true or false outcome of each condition.**

1. What is black box testing ? what are the different black box testing techniques?

**Ans. Testing , either functional or non-functional without reference to the internal structure of the component or system**

**Specification based - testing technique is also known as ‘black-box’ or input/output driven testing techniques because they view the software as a black box with input and outputs.**

**Techniques of black box testing :**

1. **Equivalence partitioning**
2. **Boundary value analysis**
3. **Decision tables**
4. **State transition testing**
5. Mention what big-bang testing ?

**Ans. Big-bang integration testing – it is the simplest integration testing approach , where all the modules are combined and the functionality is verified after the completion of individual module testing .**

**In simple words, all the modules of the system are simply put together and tested.**

1. What is the purpose of exit criteria ?

**Ans. - successful testing of integrated applications**

* **Executed test cases are documented**
* **All high prioritized bugs fixed and closd**
* **Technical documents to be submitted followed by release note.**

1. Difference between smoke and sanity ?

**Ans.**

|  |  |
| --- | --- |
| **SMOKE TESTING** | **SANITY TESTING** |
| **We check stability of the software** | **Checks the new functionality** |
| **Check the critical functionality** | **it checks the critical stage** |
| **It is done in initial stage** | **It is done after 30 built** |
| **Part of acceptance testing** | **Part of regression testing** |
| **It check only system end to end** | **It checks only a particular function of entire system** |
| **Who does:- done by testers & developer** | **Who does:- done by tester** |
| **EX:- general health check up** | **EX:- advance health check up** |

1. Explain difference between functional testing and Non-functional testing ?

**Ans.**

|  |  |
| --- | --- |
| **FUCTIONAL TESTING** | **NON FUNCTIONAL TESTING** |
| **Functional testing is executed first** | **Non-functional testing should be performed after** |
| **Manual testing or automation tools can be used for F.T.** | **Using tools will be effective for this testing** |
| **Business requirement are the inputs to F.T.** | **Performance parameters like speed, scalability are inputs to N.F.T** |
| **Functional testing describes what the product does** | **Non-functional testing describes how good the product was.** |

1. What Is alpha testing?

**Ans. Alpha testing is performed by developer at software development site.**

**Sometimes it performed by independent testing team.**

**Alpha testing is not open for market and public.**

**It is conducted for the software application and project.**

**It is always performed in virtual environment.**

**It Is form of acceptance testing.**

**Alpha testing is definitely preformed and carried out the developing organization locations with the involvement of developers.**

**It comes under the category of both black box and white box testing.**

1. What is beta testing?

**Ans. It is always performed by the customer at their own site**

* **It is performed by independent testing teams**
* **Beta testing is always open to the market and public**
* **It is usually conducted for software product**
* **It is performed in real life environment**
* **It is also the form of the acceptance testing**
* **Beta testing Is performed and carried out by user and you can say people at their own locations site using customer data**
* **It is only a kind of black box testing**

1. What is load testing ?

**Ans. Load testing is to test the system behavior under normal workload conditions ,and it is just testing or simulating with the actual workload.**

**Load testing identifies the bottlenecks breaking the system under various workload and check how the system reacts when the load is gradually increased.**

**Load testing does not break the system .**

1. What is stress testing ?

**Ans. Stress testing is to test the system behavior under extreme conditions and is carried out till the system failure.**

**In stress testing determines the point of the system to reveal the maximum point after which it breaks .**

**Stress testing tries to breaks the system by testing with overwhelming data or resources .**

1. Mention what are the categories of defect ?

**Ans. 1.Data quality / Database defects**

**:- Deals with improper handling of data in the database**

**Example: values not deleted / inserted into the database properly.**

**2.Critical functionality defects**

**:- the occurrence of these bugs hamper the crucial functionality of the application**

**Example: exception**

**3.Functionality defects**

**:- these defects affects the functionality of the application**

**example: all java script errors**

**buttons like save ,cancel , delete not performing their intended functions**

**4.Security defects**

**:- application security defects generally involve improper handling of data sent from the user to the application these defects ate the most severe and given highest priority for a fix**

**Example: accepting an invalid username/password**

**5.UI defects**

**:- as the name suggested , the bugs deal with problems related to UI are usually considered less severe**

**Example: improper error / warning / UI messages**

1. When should “regression testing be performed?

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

1. Difference between verification and validation?

**Ans.**

|  |  |
| --- | --- |
| **VARIFICATION** | **VALIDATION** |
| **The verifying process includes checking documents , designs , code , and program** | **It is a dynamic mechanism of testing and validating the actual product** |
| **It does not involve executing the code** | **It always involves executing the code** |
| **Verification uses method like reviews , walkthrough , inspection , and desk-checking etc.** | **It uses methods like black box testing , white box testing , and non functional testing** |
| **Whether the software conforms to specifications is checked** | **It checks whether the software meets the requirements and expectations of a customer** |
| **It finds bugs early in the development cycle** | **It can find bugs that the verification process can not catch** |
| **Target is application and software architecture , specification , complete design , high level , and database design etc.** | **Target is an actual product** |
| **QA team does verification and make sure that the software is as per the requirements in the SRS document.** | **With the involvement of testing team validation is execute on software code.** |
| **It comes before validation** | **it comes after verification** |

1. Difference between priority and severity ?

**Ans.**

|  |  |
| --- | --- |
| **PRIORITY** | **SEVERITY** |
| **Defect priority has defines the order in which the developer should resolve a defect** | **Defect severity is defines as the degree of impact that a defect has on the operation off the product** |
| **Priority is categorized into three types**   |  | | --- | | **Low** | | **Medium** | | **high** | | **Severity is categorized into five types**   |  | | --- | | **Critical** | | **Major** | | **Moderate** | | **Minor** | | **cosmetic** | |
| **Priority is associated with scheduling** | **Severity is associated with functionality or standards** |
| **Priority indicates how soon the bug should be fixed** | **Severity is associated with functionality or standards** |
| **Priority indicates how soon the bug should be fixed** | **Severity indicates the seriousness of the defect on the product functionality** |
| **Priority defects is decided in consultation with the manager / client** | **QA engineer determines the severity level of the defect** |
| **Priority is driven by business value** | **Severity is driven by functionality** |
| **Its value is subjective and can change over a period of the time depending on the change in the project situation** | **Its value is objective and less likely to change** |
| **High priority and low severity status indicates , defect have to be fixed on immediate bases but does not affect the application** | **High severity and low priority status indicates defect have to be fixed but not on immediate bases** |
| **Priority status is based on customer requirements** | **Severity status is based on technical aspects of the product** |
| **During UAT the development team fix defects based on priority** | **During SIT , the development team fix defects based on the severity and then priority** |

1. Difference between SDLC & STLC ?

**Ans.**

|  |  |
| --- | --- |
| **SDLC** | **STLC** |
| **Development life cycle** | **Testing life cycle** |
| **The main object of SDLC life cycle is to complete successful development of the including testing and other phases** | **The only objectives of the STLC phases is testing** |
| **In SDLC the business analyst gathers the requirements and create development plan** | **In STLC the QA team analyze requirement like functional , non-functional documents and create system test plan** |
| **In SDLC development team creates the high and low-level design plans** | **In STLC the test analyst creates the integration test plan** |
| **The real code is developed , and actual work takes place as per the design documents** | **The testing team prepares the test environment and executes them** |
| **SDLC phases also includes post deployment supports and updates** | **Testers execute regression suits , usually automation scripts to check maintenance code deployed** |

1. What is bug life cycle ?

**Ans. A computer bug is an error , flaw , mistake , failure or fault in a computer program that prevents it from working correctly or produce an incorrect result . bugs arise from mistakes and errors , made by people , in either a program’s source code or its design.**

**THERE ARE SEVERAL STEPS IN BUG LIFE CYCLE**

**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 testers approves the bug and assigned the bug to the developer team**

**Open: the developer starts analyzing and work on the defect fix**

**Fixed: when a developer makes a necessary code changes and verifies the change . he or she 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 and , the status assigned is "pending retest"**

**Retest: testers 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 “retest”**

**Verified: the tester retest the bug after it got fixed by the developer . if there is no bug detected in the software , then the bug is fixed and the status assigned is “verified”**

**Reopen: if the bug persist even after the developer has fixed the bug , the tester changes the status to “reopened”. Once again the bug goes through the life cycle**

**Closed: if the bug is no longer exists then testers assigned the status “closed”**

**Duplicate: if the defect is repeated twice or the defect corresponds to the same concept of the bug , the status is changed to “duplicate”**

**Rejected: if the developer feels the defect is not a genuine then it changes the defect to “rejected ”**

**Deferred: if the present bug is not of a prime priority and if it is expected to get fixed in the next release , then status “deferred” is assigned to such bugs.**

**Not a bug: if it does not affect the functionality of the application then the status assigned to a bug is “not a bug”**

1. What is the difference between test scenario , test cases , and test script?

**Ans.**

|  |  |  |
| --- | --- | --- |
| **Test scenario** | **Test case** | **Test script** |
| **Is any functionality that can be tested** | **Is a set of actions executed to verify particular feature or functionality** | **Is a set of instructions to test an app automatically** |
| **Is derived from test artifacts like BRS & SRS** | **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 to test specific things repeatedly** |
| **Is more focus on what to test** | **Is focused on what to test and how top test** | **Is focused on the expected result** |
| **Takes less time and fewer resources to create** | **Requires more resources and time** | **Requires less time for testing but more requires for scripts creating and updating** |
| **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 tasks is to check the full functionality of a software application** | **The main task is to verify compliance with the application standards , guideline , 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 casess** |

31) When should “ regression testing “ be performed ?

**Ans. Regression testing can be performed on a new build when there is significant change in the original functionality . it ensure that the code still work even when the changes are occurring .regression means re test those part of the application which are unchanged .**

32) Explain what test plan ? what is the information that should cover ?

**Ans. A test plan is a detailed document which describes software testing areas and activities . It outline the test strategy , objective , test schedule , required resources , test estimations and test deliverables . the test plan is base of every software testing .**

33) Bug categories are ……..

**Ans. Bug categories are following :**

**I. Performance bug**

**II. Security bug**

**III. Unit level bug**

**IV. Functional bug**

**V. Usability bug**

**VI. Syntax bug**

**VII. Compatibility error**

**VIII. Logic bug**

34 ) What are the different methodologies in agile development model ?

**Ans. 1. Scrum**

**2. Kanban**

**3. lean**

**4. XP (Extreme programing )**

**5. crystal**

**6. FDD ( feature driven development )**

**7. DSDM ( dynamic systems development method )**

35) explain the different between authorization and authentication in web testing . what are the common problem faces in web testing?

**Ans. Authentication:- accepting an invalid username /password**

**- Authorization :- accessibility to pages though permission not given**

**Below are five web application testing challenges faced by web developer during the development process .**

**• Integration testing**

**• Interoperability**

**• Security**

**• Performance**

**• Usability**

**• Quality testing**

**• Exceptional services**