**Assignment 2**

**Module 2,Manual Testing**

1. What is Exploratory Testing?

Answer: Exploratory testing is a concurrent process where, test designs, execution and logging happen simultaneously. Makes use of experience, heuristics and test patterns. Testing is based on a test charter that may include, scope of the testing, more thinking activity. A brief description of how test will be perform. A brief description of how tests will be performed. Though the current trend in testing is to push for automation, exploratory testing is a new way of thinking. Automation has its limits. 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.

1. What is traceability matrix?

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

Types of traceability matrix:

Forward Traceability – Mapping of Requirements to Test cases

Backward Traceability – Mapping of Test Cases to Requirements

Bi-Directional Traceability - A Good Traceability matrix is the References from test cases to basis documentation and vice versa.

1. What is Boundary value testing?

Answer:

Boundary value analysis is a methodology for designing test cases that concentrates software testing effort on cases near the limits of valid ranges. Boundary value analysis is a method which refines equivalence partitioning. The trick is to concentrate software testing efforts at the extreme ends of the equivalence classes. At those points when input values change from valid to invalid errors are most likely to occur.

1. What is Equivalence partitioning testing?

Answer:

The numbers fall into a partition where each would have the same, or equivalent, result i.e. an Equivalence Partition (EP) or Equivalence Class. EP says that by testing just one value we have tested the partition.

If one value finds a bug, the others probably will too. If one doesn't find a bug, the others probably won't either, In EP we must identify Valid Equivalence partitions and Invalid Equivalence partitions where applicable. The Valid partition is bounded by the values 1 and 100.

1. What is Integration testing?

Answer:

Testing performed to expose defects in the interfaces and in the interactions 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.

There are two levels of integration testing: Component Integration Testing, System Integration Testing.

1. What determines the level of risk?

Answer:

Risk – ‘A factor that could result in future negative consequences; usually expressed as impact and likelihood’. A Risk could be any future event with a negative consequence. You need to identify the risks associated with your project. Risks are of two types: Project Risks, Product Risk.

1. What is Alpha testing?

Answer: It is always performed by the developers at the software development site. Sometimes it is also performed by Independent Testing Team. Alpha Testing is not open to the market and public, it is conducted for software application and project. It is always perform in virtual environment, and always it is form of accepting testing. It comes under the category of both White Box Testing and Black Box Testing.

1. What is beta testing?

Answer: It is performed by customer at their own site, not performed by independent testing team. Beta testing is always open to the market and public. It is usually conducted for software product. It is always performed outside the organization. It is also the form of Acceptance Testing. It is only a kind of Black Box Testing. Beta Testing is always performed at the time when software product and project are marketed. It is also considered as the User Acceptance Testing (UAT) which is done at customers or users area. Pilot Testing is testing to product on real world as well as collect data on the use of product in the classroom.

1. What is component testing?

Answer: Unit testing is the first level of testing and is performed prior to Integration Testing. Unit testing frameworks, drivers, stubs and mock or fake objects are used to assist in unit testing. Unit testing is performed by using the White Box Testing method. Unit testing in Extreme Programming involves the extensive use of testing frameworks. A unit test framework is used in order to create automated unit tests. Unit testing frameworks are not unique to extreme programming, but they are essential to it.

1. What is functional system testing?

Answer: Testing based on an analysis of the specification of the functionality of a component or system. This testing mainly involves black box testing and it is not concerned about the source code of the application. Each & every functionality of the system is tested by providing appropriate input, verifying the output and comparing the actual results with the expected results. This testing involves checking of User Interface, APIs, Database, security, client/ server applications and functionality of the Application under Test. The testing can be done either manually or using automation

1. What is Non-Functional Testing?

Answer: Non-Functional Testing: Testing the attributes of a component or system that do not relate to functionality, e.g. reliability, efficiency, usability, interoperability, maintainability and portability. The term non-functional testing describes the tests required to measure characteristics of systems and software that can be quantified on a varying scale, such as response times for performance testing. Hence load testing is carried out to check systems performance at different loads i.e. number of users accessing the system.

1. What is GUI Testing?

Answer: Graphical User Interface (GUI) testing is the process of testing the system’s GUI of the System under Test. GUI testing involves checking the screens with the controls like menus, buttons, icons, and all types of bars – tool bar, menu bar, dialog boxes and windows etc. Under this approach, graphical screens are checked manually by testers in conformance with the requirements stated in business requirements document.

GUI testing can be done using automation tools. This is done in 2 parts. During Record , test steps are captured into the automation tool. During playback, the recorded test steps are executed on the Application under Test. Example of such tools - QTP. A model is a graphical description of system’s behavior. It helps us to understand and predict the system behavior. Models help in a generation of efficient test cases using the system requirements.

1. What is Adhoc testing?

Answer: Adhoc testing is an informal testing type with an aim to break the system. This testing is primarily performed if the knowledge of testers in the system under test is very high. Adhoc testing can be achieved with the testing technique called Error Guessing. Main aim of this testing is to find defects by random checking. The Error guessing is a technique where the experienced and good testers are encouraged to think of situations in which the software may not be able to cope.

1. hat is load testing?

Answer: Load time is normally the initial time it takes an application to start. While some applications are impossible to make load in under a minute, Load time should be kept under a few seconds if possible. Response time is the time it takes from when a user inputs data into the application until the application outputs a response to that input. Load testing should be done to be certain the application can handle the anticipated number of users. A software product suffers from poor scalability when it cannot handle the expected number of users or when it does not accommodate a wide enough range of users.

1. What is stress Testing?

Answer: System is stressed beyond its specifications 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. Stress testing is used to test the stability & reliability of the system. This test mainly determines the system on its robustness and error handling under extremely heavy load conditions. It even tests beyond the normal operating point and evaluates how the system works under those extreme conditions. Stress Testing is done to make sure that the system would not crash under crunch situations. Stress testing is also known as endurance testing.

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

Answer: Testing based on an analysis of the internal structure of the component or system. Structure-based testing technique is also known as ‘white-box’ or ‘glass-box’ testing technique because here the testers require knowledge of how the software is implemented, how it works. Different test cases may be derived to exercise the loop once, twice, and many times. This may be done regardless of the functionality of the software.

Unit testing and integration testing are the types of white box testing.

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

Answer: 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 inputs and outputs. The testers have no knowledge of how the system or component is structured inside the box. In black-box testing the tester is concentrating on what the software does, not how it does it.

There are four specification-based or black-box technique:

Equivalence partitioning

Boundary value analysis

Decision tables

State transition testing

Use-case Testing

Other Black Box Testing

1. Mention what are the categories of defects?

Answer: 1). Database defect 2). Functionality defect 3). User interface defect 4). Security defect.

1. Mention what Big bang testing is?

Answer: In Big Bang integration testing all components or modules 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. The major disadvantage is that in general it is time consuming and difficult to trace the cause of failures because of this late integration.

1. What is the purpose of exit criteria?

Answer: Purpose of exit criteria is to define when we STOP testing either the end of all testing or ed of phase of testing.

1. When should "Regression Testing" be performed?

Answer: Testing of a 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. It is performed when the software or its environment is changed.

Change in requirements and code is modified according to the requirement. New feature is added to the software. Defect fixing. Performance issue fix.

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

Answer:

1. Testing shows presence of Defects:

- Testing can show that defects are present, but cannot prove that there are no defects. Testing reduces the probability of undiscovered defects remaining in the software but, even if no defects are found, it is not a proof of correctness. As we find more defects, the probability of undiscovered defects remaining in a system reduces. However Testing cannot prove that there are no defects present

1. Exhaustive Testing is Impossible:

- Testing everything including all combinations of inputs and preconditions is not possible. So, instead of doing the exhaustive testing we can use risks and priorities to focus testing efforts. That is we must Prioritise our testing effort using a Risk Based Approach.

3. Early Testing:

- Testing activities should start as early as possible in the software or system development life cycle, and should be focused on defined objectives. Testing activities should start as early as possible in the development life cycle. These activities should be focused on defined objectives – outlined in the Test Strategy. Remember from our Definition of Testing, that Testing doesn’t start once the code has been written!

1. Defect Clustering:

- A small number of modules contain most of the defects discovered during pre-release testing, or are responsible for the most operational failures. Defects are not evenly spread in a system, In other words, most defects found during testing are usually confined to a small number of modules, Similarly, most operational failures of a system are usually confined to a small number of modules. An important consideration in test prioritisation.

1. The 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.

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. Therefore we must learn, create and use new tests based on new techniques to catch new bugs.

1. Testing is Context Dependent:

- Testing is basically context dependent. Testing is done differently in different contexts. Different kinds of sites are tested differently. Whilst, Testing can be 50% of development costs, in NASA's Apollo program it was 80% testing. 3 to. 10 failures per thousand lines of code (KLOC) typical for commercial software. Also different industries impose different testing standards.

7. Absence of Errors 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. Even after defects have been resolved it may still be unusable and/or does not fulfil the users’ needs and expectations.

1. Difference between project v/s product.

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| **Project** | **Product** |
| It comprises the steps involved in making a software before it is actually available to the market. | It is the manufacture of the project for users. |
| The main goal of a project is to form a new product that has not already been made. | The main goal of the product is to complete the work successfully (solve a specific problem). |
| Project is undertaken to form a new software. | Product is the final production of the project. |
| It focuses on increasing the performance of the software that is being built. | A product focuses on the final result and the efficiency with which it can solve the given problem. |
| A project is done only once to get a new software. | A product can be made again and again for the purpose of distribution among users. |
| It is more risky as here, a software is being made for the first time. | It is relatively less risky as the software has already been made and tested. The only risk in most cases would be of wear and tear. |

1. Difference between Smoke and Sanity?

Answer:

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| **Smoke Testing** | **Sanity Testing** |
| Smoke Testing is performed to ascertain that the critical functionalities of the  program is working fine | Sanity Testing is done to check the  new functionality / bugs have been fixed |
| The objective of this testing is to verify  the "stability" of the system in order to proceed with more rigorous testing | The objective of the testing is to verify  the "rationality" of the system in order to proceed with more rigorous testing |
| This testing is performed by the developers  or testers. | Sanity testing is usually performed by testers |
| Smoke testing is usually documented  or scripted | Sanity testing is usually not documented and  is unscripted |
| Smoke testing is a subset of Regression testing | Sanity testing 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 |
| Smoke testing is like General Health Check Up | Sanity Testing is like specialized health  check up. |

1. Difference between verification and Validation.

Answer:

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| **Verification** | **Validation** |
| 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. |
| 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. |
| Are we building the product right? | Are we building the right product? |
| Plans, Requirement Specs, Design Specs, Code, Test Cases | The actual product/software. |
| Review, Walkthroughs, Inspections | Testing |

1. Explain types of Performance testing.

Answer:

Load testing:

Its a performance testing to check system behavior under load. Testing an application under heavy loads, such as testing of a web site under a range of loads to determine at what point the system’s response time degrades or fails.

Some extremely popular sites have suffered serious downtimes when they get massive traffic volumes. E-commerce websites invest heavily in advertising campaigns, but not in Load Testing to ensure optimal system performance, when that marketing brings in traffic.

Load testing gives excellent protection against poor performance and accommodates complementary strategies for performance management and monitoring of a production environment.

Stress testing:

System is stressed beyond its specifications 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.

Spike testing:

During festival time, an online shopping site may witness a spike in traffic, or when it announces a sale. When a blog is mentioned in a leading newspaper, it experiences a sudden surge in traffic.

Volume testing:

Excessive volume in terms of either users or data; examples might include a denial of service (DoS) attack or a situation where a widely viewed news item prompts a large number of users to visit a Web site during a three-minute period.

Scalability testing:

Determines maximum user load the software application can handle.

1. What is Error, Defect, Bug and failure?

Answer:

A mistake in coding is called error, error found by tester is called defect, defect accepted by development team then it is called bug, build does not meet the requirements then it is failure”.

1. Difference between Priority and Severity.

Answer:

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| **No.** | **Priority** | **Severity** |
| **1** | Priority is a term that defines how fast we need to fix a defect. | Severity is a term that denotes how severely a defect can affect the functionality of the software. |
| **2** | Priority is basically a parameter that decides the order in which we should fix the defects. | Severity is basically a parameter that denotes the total impact of a given defect on any software. |
| **3** | Priority relates to the scheduling of defects to resolve them in software. | Severity relates to the standards of quality. |
| **4** | The product manager basically decides a defect’s priority level. | The testing engineer basically decides a defect’s severity level. |
| **5** | Priority is the order in which developer has to fix the bug. | Severity is how seriously the bug is affecting the application. |
| **6** | If high priority is mentioned then the developer has to fix it at the earliest. priority status is set based on the customer requirements. | Severity type is defined by the tester based on the written test cases and functionality. |
| **7** | Its value is subjective. | Its value is objective. |
| **8** | Its value changes from time to time. | Its value doesn’t change from time to time. |
| **9** | Priority is a parameter to decide the order in which defects should be fixed. | Severity is a parameter to denote the impact of a particular defect on the software. |
| **10** | Priority means how fast defect has to be fixed. | Severity means how severe defect is affecting the functionality. |
| **11** | Priority is related to scheduling to resolve the problem. | Severity is related to the quality standard. |

1. What is bug lifecycle?

Answer:

Bug life cycle is nothing but the various phases a bug under goes after it is raised or reported. The different phases of Bug life cycle are, - New or Opened - Assigned - Fixed - Tested – Closed

1. Explain the difference between Functional testing and Non-Functional testing.

Answer:

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| --- | --- |
| **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 checks the Performance, reliability, scalability and other non-functional aspects  of the software system. |
| 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 |
| * C | Types of Nonfunctional testing are   * Performance Testing * Load Testing * Volume Testing * Stress Testing * Security Testing * Installation Testing * Penetration Testing * Compatibility Testing * Migration Testing |

1. **To Create HLR & Testcase: Instagram and face book only first page**
2. What is the difference between the STLC (Software Testing Life Cycle) and SDLC Software Development Life Cycle?

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| --- | --- | --- |
| **No.** | **STLC (Software Testing Life Cycle)** | **SDLC (Software Development Life Cycle)** |
| 1 | STLC is mainly related to software testing. | SDLC is mainly related to software development. |
| 2 | It focuses only on testing the software. | Besides development other phases like testing is also included. |
| 3 | STLC involves only five phases or steps.   1. Test Planning and Controlling 2. Test Analysis and Design 3. Test Implementation and Execution 4. Evaluating Exit Criteria and Reporting 5. Test Closure Activities | SDLC involves total six phases or steps.   1. Requirements Gathering 2. Analysis 3. Design 4. Implementation 5. Testing 6. Maintenance |
| 4 | In STLC, less number of members (testers) are needed. | In SDLC, more number of members (developers) are required for the whole process. |
| 5 | In STLC, testing team(Test Lead or Test Architect) makes the plans and designs | In SDLC, development team makes the plans and designs based on the requirements. |
| 6 | Goal of STLC is to complete successful testing of software. | Goal of SDLC is to complete successful development of software. |
| 7 | It helps in making the software defects free. | It helps in developing good quality software. |
| 8 | STLC phases are performed after SDLC phases. | SDLC phases are completed before the STLC phases. |
| 9 | Regression tests are run by QA team to check deployed maintenance code and maintains test cases and automated scripts. | Post deployment support , enhancement , and update are to be included if necessary. |
| 10 | A tested software system is the end result of STLC. | Creation of reusable software systems is the end result of SDLC. |

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

Answer:

* Test Script:A set of sequential instruction that detail how to execute a core business function.
* Test Scenario: A Scenario is any functionality that can be tested. It is also called Test Condition, or Test Possibility.
* Test Case: Test cases involve the set of steps, conditions and inputs which can be used while performing the testing tasks
  1. Explain what Test Plan is? What is the information that should be covered.

Answer:

It is a high level document in which how to perform testing is described. The Test Plan document is usually prepared by the Test Lead or Test Manager and the focus of the document is to describe what to test, how to test, when to test and who will do what test.

* **Master test plan:** A test plan that typically addresses multiple test levels.
* **Phase test plan**: A test plan that typically addresses one test phase.
* A test plan will include the following.
* Introduction to the Test Plan document
* Assumptions when testing the application
* List of test cases included in Testing the application
* List of features to be tested
* What sort of Approach to use when testing the software
* List of Deliverables that need to be tested
* The resources allocated for testing the application
* Any Risks involved during the testing process
* A Schedule of tasks and milestones as testing is started
  1. What is priority?

Answer:

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.

* 1. What is severity?

Answer:

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.

* 1. Bug categories are….

Answer: Bug Category: Security, Database, Functionality (Critical/General), UI

* 1. Advantage of Bugzila.

Answer:

* **The Advantages of Bugzilla are:**
  + It is an open-source widely used bug tracker
  + It is easy in usage and its user interface is understandable for people without technical knowledge
  + It easily integrates with test management instruments
  + It integrates with an e-mailing system
  + It automates documentation.
  + Automatic Duplicate Bug Detection.
  + Search option with advanced features.
  + File/Modify Bugs By Email.
  + Move Bugs Between Installs.
  + Multiple Authentication Methods (LDAP, Apache server).
  + Time Tracking.
  + Automated bug reporting; has an API to interact with system.
  + Integrated email capabilities.
  + Detailed permissions system.
  + Optimized database structure to enhance performance.
  + Robust security.
  + Powerful query tool.
  + Ideal for small projects.
  1. Difference between priority and severity

Answer:

|  |  |
| --- | --- |
| **Priority** | **Severity** |
| Priority is a term that defines how fast we need to fix a defect. | Severity is a term that denotes how severely a defect can affect the functionality of the software. |
| Priority is basically a parameter that decides the order in which we should fix the defects. | Severity is basically a parameter that denotes the total impact of a given defect on any software. |
| Priority relates to the scheduling of defects to resolve them in software. | Severity relates to the standards of quality. |
| The product manager basically decides a defect’s priority level. | The testing engineer basically decides a defect’s severity level. |
| Priority is the order in which developer has to fix the bug. | Severity is how seriously the bug is affecting the application. |
| If high priority is mentioned then the developer has to fix it at the earliest. priority status is set based on the customer requirements. | Severity type is defined by the tester based on the written test cases and functionality. |
| Its value is subjective. | Its value is objective. |
| Its value changes from time to time. | Its value doesn’t change from time to time. |
| Priority is a parameter to decide the order in which defects should be fixed. | Severity is a parameter to denote the impact of a particular defect on the software. |
| Priority means how fast defect has to be fixed. | Severity means how severe defect is affecting the functionality. |
| Priority is related to scheduling to resolve the problem. | Severity is related to the quality standard. |

* 1. What are the different Methodologies in Agile Development Model?

Answer:

There are various methodologies present in agile testing and those are listed below:

* 1. **Scrum**
  2. **eXtreme Programming**

Below listed methodologies are used less frequently

* **Dynamic System Development Method (DSDM)**

This is an Iterative and incremental approach that emphasizes on the continuous user involvement.

* **Test Driven Development (TDD)**

This is a technique which has short iterations where new test cases covering the desired improvement or new functionality are written first.

* **Feature Driven Development**

This is an iterative and incremental software development process and this can aim depends on the features.

* **XBreed**

Agile enterprise previously known as Xbreed .It is agile way of managing, architecting and monitoring the enterprise.

* **Crystal**

Crystal is an adaptive technique mainly used for software development methodologies.

* 1. Explain the difference between Authorization and Authentication in Web testing. What are the common problems faced in Web testing?

Answer:

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| --- | --- |
| **Authorization** | **Authentication** |
| Authorization determines what resources a user can access. | Authentication verifies who the user is. |
| Authorization works through settings that are implemented and maintained by the organization. | Authentication works through passwords, one-time pins, biometric information, and other information provided or entered by the user. |
| Authorization is the process of giving permission to access the resources. | Authentication is the process of identifying a user to provide access to a system. |
| In this, it is verified that if the user is allowed through the defined policies and rules. | In this, the user or client and server are verified. |
| It is usually done once the user is successfully authenticated. | It is usually performed before the authorization. |
| It requires the user's privilege or security level. | It requires the login details of the user, such as user name & password, etc. |
| Data is provided through the access tokens. | Data is provided through the Token Ids. |
| Authorization isn’t visible to or changeable by the user. | Authentication is visible to and partially changeable by the user. |
| Authorization permissions cannot be changed by the user. The permissions are given to a user by the owner/manager of the system, and he can only change it. | Authentication credentials can be partially changed by the user as per the requirement. |
| Example: After employees successfully authenticate themselves, they can access and work on certain functions only as per their roles and profiles. | Example: Entering Login details is necessary for the employees to authenticate themselves to access the organizational emails or software. |

* 1. **To create HLR & Test Case of Web Based (WhatsApp web , Instagram).**
  2. **To create HLR and Test Case on this Link.** [**https://artoftesting.com/**](https://artoftesting.com/)
  3. Write a scenario of only Whatsapp chat messages.
  4. Write a Scenario of Pen stand.
  5. Write a Scenario of Pen Stand
  6. Write a Scenario of Door
  7. Write a Scenario of ATM (Mentioned in excel)
  8. When to used usablity Testing?

Answer:

Used to verify mobile interface (UI), navigation, and application, as well as consistency, and soberness. Executed manually without use of tools

* 1. What is the procedure for GUI Testing?

Answer:

Graphical User Interface (GUI) testing is the process of testing the system’s GUI of the System under Test. GUI testing involves checking the screens with the controls like menus, buttons, icons, and all types of bars – tool bar, menu bar, dialog boxes and windows etc.

* 1. Write a scenario of Microwave Owen (Mentioned in excel)
  2. Write a scenario of Coffee vending Machin. (Mentioned in excel)
  3. Write a scenario of chair. (Mentioned in excel)
  4. Creat scenario of positive and negative. (Mentioned in excel)
     + Facebook Chat on Mobile
     + Gmail receving mails
     + Online shopping to buy product (Flipkart)
     + Write a Scenario of Lift(Elevator)
     + Write a Scenario of Wrist Watch
     + Write a Scenario of whatsapp Group (generate group)
     + Write a Scenario of Instagram video call chat
     + Write a Scenario of Whatsapp payment