Manual_Assignment_2
Submitted by Kuldeep Parmar

1. What is Exploratory Testing?

Exploratory testing is a flexible and unscripted approach to software testing that emphasizes personal experience, intuition, and creativity rather than following predefined test cases

Testers explore the application freely to discover defects and assess its usability
It is a concurrent process and to explore the app without refering test cases

2. What is Traceability Matrix?

A Traceability Matrix is a document that co-relates any two-baseline documents that require a many-to-many relationship to check the completeness of the relationship

It is used to track the requirements and to check the current project requirements are met

	Completion 1	Completion 2	.....	Completion m
Requirement 1	X			X
Requirement 2			X	
.....		X		
Requirement n				X

3. 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

Boundary Value Analysis (BVA) uses the same analysis of partitions as EP and is usually used in conjunction with EP in test case design but refines equivalence partitioning

The trick is to concentrate software testing efforts at the extreme ends of the equivalence classes

e.g.,

We take a equipartition example to understand BVA

To verify the range 50 to 100

Lower bound			upper bound		
a-1	a	a+1	b-1	b	b+1
49	50	51	99	100	101

4. What is Equivalence partitioning testing?

Equivalence Partitioning is a software testing technique used to reduce the number of test cases by dividing input data into partitions that are expected to produce similar results

The idea is that if one condition in a partition works correctly, the others should as well

e.g.,
Verify employees IDs: Here we have devided IDs of all the employees in equal partitions for example 1 to 50

Equivelence Partition	Reperesentative	Status
1 to 10	6	Pass/valid
11 to 20	12	Pass
21 to 30	27	Pass
31 to 40	33	Pass
41 to 50	48	Pass
51 to 60	55	Fail (Invalid)

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

Devide your range in equivelence partitions then choose the respesentative input from each partition to test them all

If the input will pass, the whole partition will be passed
If one value finds a bug, the others probably will too
If one doesn't find a bug, the others probably won't either

5. What is Integration testing?

Integration Testing is a level of the software testing process where individual units are tested combined

e.g., login process

Here username & password both are combined and needed to be checked

The purpose of this level of testing is to expose faults in the interaction between integrated units
Test drivers and test stubs are used to assist in Integration Testing

There is two types of methods of Integration Testing:

- Bing Bang Integration Testing
- Incremental Integration Testing
  a) Top Down Approach
  b) Bottom Up Approach

6. What determines the level of risk?

Likelihood is the probability of a negative outcome which generally defines the level of risk
e.g.,

Chance of the occurring of the risk, typically on a scale of 1 to 10. Here the impact of that risk is identified on a scale of 1-10

While the mitigation is the process of reducing the likelihood of that outcome
e.g.,
Via smoke and sanity testing

7. What is Alpha testing?

- It is the type of testing that is always performed by the developers at the software development site and sometimes by independent testing team
- It is always performed in **Virtual Environment**
- Alpha testing is not open to the market and public
- It is conducted for the software application and project
- It is always performed within the organization
- It is the form of Acceptance Testing
- Alpha Testing is definitely performed and carried out at the developing organizations location with the involvement of developers

- It comes under the category of both White Box Testing and Black Box Testing

8. What is beta testing?

- It is the type of testing that is always performed by the customers at their own site and not performed by independent testing team
- It is performed in **Real Time Environment**
- 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
- Beta testing (field testing) is performed and carried out by users or you can say people at their own locations and site using customer data
- 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 always performed at the user’s premises in the absence of the development team
- It is also considered as the User Acceptance Testing (UAT) which is done at customers or users area
- Beta testing can be considered “**pre-release**” testing
- It is also called as **Pilot Testing** i.e the testing of the product on real world as well as collect data on the use of product in the classroom

9. What is component testing?

Component Testing is a level of the software testing process where individual units/components of a software/system are tested
Sometimes known as Unit Testing, Module Testing or Program Testing
Unit tests are typically written and run by software developers and it is performed by using the White Box Testing method
It is the first level of testing which is performed prior to Integration Testing

e.g.,
In Login process we try to verify login by providing username or password individually

10. What is Functional system testing?

Functional system testing is the testing which verifies the attributes of a component or system that are directly relate to functionalities

e.g.,

Verification of the login to a system after entering correct credentials

To verify whether the application goes into minimized mode whenever there is an incoming phone call

Taking more time for testers to look for game play issues, graphicsc issues, audio-visual issues etc

Types of functional testing are

- Black Box Testing
- While Box Testing
- Experience Based Testing
- Smoke Testing
- Sanity Testing
- End to End Testing

11. What is Non-Functional Testing?

Non-Functional system testing is the testing which verifies the attributes of a component or system that are not directly relate to functionalities

e.g.,

In website number of user/customer will increase , how the website will handled to every customer/user

To verify the response time of the application

In mobile, it will automatically switch off without any reason

Types of non-functional testing are

- Performance Testing
- Load Testing
- Volume Testing
- Stress Testing
- Security Testing
- Installation Testing
- Penetration Testing
- Compatibility Testing
- Migration Testing

12. What is GUI Testing?

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

Approach of GUI Testing:

- Manual Based Testing
- Record And Replay
- Model Based Testing

13. What is Adhoc testing?

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

It is also called Error Guessing -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

Types of Adhoc Testing

- **Buddy testing:** Generally performed by tester and developer pair
- **Pair testing:** Generally performed by the pair of testers

- **Monkey testing:** Tester randomly test the product or application without test cases with a goal to break the system

14. What is load testing?

It is a performance testing to check system behavior (stability, response time) applying load

e.g If an application will handle 1000 users at every 5 second, you have to check 1000 or <=1000 users with your application

15. What is stress Testing?

It is a performance testing to check system behavior (stability, response time) after applying load more than the threshold limit

e.g If an application will handle 1000 users at every 5 second, you have to check 1000 or >=1000 users with your application

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

It is the type of the functional testing which is based on an analysis of the internal structure of the component or system

It is also known as glass testing or open box testing

The testers have the knowledge of how the system or component is structured inside the box e.g.,

Debugging the code while writing the software code for web, desktop, mobile or game based testing

Hence white box testing needs the knowledge of internal structure or coding, we can state three types via coverage (i.e. test coverage measures the amount of testing performed by a set of test)

- Statement coverage
- Decision coverage
- Condition coverage

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

It is the type of the functional testing which is done without the knowledge of the internal structure of the component or system

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

e.g.,

Testing the perticular software without the knowledge of the source code for web, desktop, mobile or game based testing

Different types of blackbox techniques are as below:

1. Equivalence partitioning
2. Boundary value analysis

3. Decision tables
4. State transition testing
5. Use-case Testing

Other Black Box Testing e.g., Syntax or Pattern Testing

18. Mention what bigbang testing is?

It is the type of integration testing in which all components or modules are integrated simultaneously, after which everything is tested as a whole
Big Bang testing has the advantage that everything is finished before integration testing starts
Here all component are integrated together at once, and then tested

19. What is the purpose of exit criteria?

Exit Criteria is important because it defines the items that must be completed before testing can be concluded
In an Ideal world, one can not enter the next stage until the exit criteria for the previous stage is met, but practically this is not always possible

Purpose of exit criteria:

- Successful Testing of Integrated Application
- Executed Test Cases are documented
- All High prioritized bugs fixed and closed
- Technical documents to be submitted followed by release notes

20. When should "Regression Testing" be performed?

Regression testing should be performed:

- When the system is stable and the system or the environment changes
- When testing bug-fix releases as part of the maintenance phase
- It should be applied at all Test Levels
- It should be considered complete when agreed completion criteria for regression testing have been met
- Regression test suites evolve over time and given that they are run frequently are ideal candidates for automation

Need of Regression Testing

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

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

- Testing shows the presence of Defects

Every software has defects or errors present of any kind
Testing can show that defects are present, but cannot prove that there are no defects
As we find more defects, the probability of undiscovered defects remaining in a system reduces

- Exhaustive Testing is Impossible

Testing everything including all combinations of inputs and preconditions
Sometimes testing requires enormous resources, too expensive, and takes too much time
which is practically not possible. we cannot test everything (i.e. all combinations of inputs and pre-conditions)

- 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 which are outlined in the Test Strategy

- Defect Clustering

Defects are not evenly spread in a system, they are clustered i.e. most defects found during testing are usually confined to a small number of modules

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

- Testing is Context Dependent

Testing is basically context dependent
Testing is done differently in different contexts
i.e. Different kinds of sites are tested differently

- 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
Even after defects have been resolved it may still be unusable and/or does not fulfil the users' needs and expectations

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

	QA	**QC**	**Tester**
1	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
2	Preventive activities	It is a corrective process	It is a preventive process
3	Process oriented activities	Product oriented activities	Product oriented activities
4	Focuses on processes and procedures rather than	Focuses on actual testing by executing software with	Focuses on actual testing

	conducting actual testing on the system	intend to identify bug/defect through implementation of procedures and process	
5	Activities which ensure the implementation of processes, procedures and standards in context to verification of developed software and intended requirements	Activities which ensure the verification of developed software with respect to documented (or not in some cases) requirements	Activities which ensure the identification of bugs/error/defects in the software

23. Difference between Smoke and Sanity?

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 "stability" of the system in order to with more rigorous testing	The objective of the testing is to verify the "rationality" of the system in order 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 Acceptance testing	Sanity testing is a subset of Regression 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

24. Difference between verification and Validation

Verification	Validation
Verification is a process which is performed at development level	Validation is a process which is performed at testing level
Verification phases are: Business Requirement Analysis System Design/ System Requirement Architectural Design (Technical Specification) Module Design (Program Specification)	Validation Phases are: Unit Testing Integration Testing System Testing Acceptance Testing
It is the process of evaluating product of development to check whether the specified requirements meet or not	It is the process of evaluating the product of development to check whether it satisfied business requirements or not
Verification can be achieved by asking “Are you building a product right?”	Validation can be achieved by asking “Are you building a right product?”
The evaluation of	The evaluation of validation

verification can be achieved by planning, Requirement Specification, Design Specification, Code Specification, and Test Cases	can be achieved as an Actual Product
Verification activities are Reviews and Inspections	Validation activity is Testing

25. Explain types of Performance testing

Performance testing is a type of software testing that focuses on evaluating the speed, stability, and scalability of an application under varying conditions

The primary aim is to ensure that the software meets performance criteria and can handle expected and unexpected loads effectively

Types of Performance Testing:

Load Testing:

It is a performance testing to check system behavior (stability, response time) applying load

Simulates expected user load to check system behavior under normal conditions

Goal here is to identify performance bottlenecks and ensure the system can handle the expected number of users

e.g If an application will handle 1000 users at every 5 second, you have to check 1000 or <=1000 users with your application

Stress Testing:

It is a performance testing to check system behavior (stability, response time) after applying load more than the threshold limit

Tests the system beyond its normal operational capacity to see how it behaves under extreme conditions

Evaluates the system's limits by pushing it beyond normal capacity

Goal here is to determine the breaking point of the system and identify failure modes

e.g If an application will handle 1000 users at every 5 second, you have to check 1000 or >=1000 users with your application

Endurance Testing:

It is a performance testing to check system behavior (stability, response time) applying load over an extended period

Assesses performance over an extended period to identify issues like memory leaks

Goal here is to identify issues like memory leaks and resource degradation during prolonged use

e.g. To check how the system will run continuously

Spike Testing:

It is a performance testing to check system behavior (stability, response time) applying sudden load or sharp increases in load

Tests the system's response to sudden, high traffic spikes

Goal here is to ensure the system can handle unexpected traffic surges without crashing

e.g. To check extreme increment or decrement of load according to the response time

Volume Testing:

It is a performance testing to check system behavior (stability, response time) with a large volume of data to evaluate its performance

Analyzes how the system handles large volumes of data

Goal here is to dentify how the system handles large datasets and potential performance issues related to data processing

e.g. To check the capacity or volume of database

Scalability Testing:

It is a performance testing to check system behavior (stability, response time, scalability) by system's ability to scale up or down in response to changes in load

Checks how well the system can scale in response to increasing demands

Goal here is to assess how well the system can handle increased load by adding resources

e.g. While checking the performance of the application, continue with load until your system will be crashed

If an application will handle 1000 users at every 5 sec

1500 users: 10 sec
2000 users: 20 sec
.....

1,00,000 users: 1000 sec... system crashed

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

Error: A mistake in coding is called error
A discrepancy between a computed, observed, or measured value or condition and the true, specified, or theoretically correct value or condition
e.g., 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: Error found by tester is called defect
Commonly refers to several troubles with the software products, with its external behavior or with its internal features

Bug: Defect accepted by development team then it is called 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 terminology of tester

Failure: Build does not meet the requirements then it is failure
The inability of a system or component to perform its required functions within specified performance requirements. See: bug, crash, exception, and fault

27. Explain the difference between Functional testing and Non Functional 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 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
Types of Functional testing are Unit Testing Smoke Testing Sanity Testing Integration Testing White box testing Black Box testing User Acceptance testing Regression Testing	Types of Non-functional testing are Performance Testing Load Testing Volume Testing Stress Testing Security Testing Installation Testing Penetration Testing Compatibility Testing Migration Testing

28. What is the difference between the STLC (Software Testing Life Cycle) and SDLC (Software Development Life Cycle)?

SDLC	STLC
Focused on software development	Focused on software testing
Helps to develop good quality software	Helps to make software defects free
SDLC phases are completed before the STLC phases	STLC phases are performed after SDLC phases
Coders create a well-organized development plan	QA team defines the test plan
Developers create the actual software	Tester designs test cases, set up the environment & work out the RTM

29. What are the different Methodologies in Agile Development Model?

The Agile methodology is a way to manage a project by breaking it up into several phases. It involves constant collaboration with stakeholders and continuous improvement at every stage

Once the work begins, teams cycle through a process of planning, executing, and evaluating

Different Methodologies in Agile Development Model
Agile Methodologies are:

- Scrum
- Kanban
- XP

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

Test Scenario	Test Case	Test Script
Any functionality that can be tested	It involve the set of steps, conditions and inputs which can be used while performing the testing tasks	A set of sequential instruction that detail how to execute a core business function
May include multiple test cases	Includes preconditions, steps, and expected results	Written in a programming/scripting language
e.g., "Verify user login functionality."	e.g., TC001: Verify login with valid credentials	e.g.,Selenium script for automated login test
The scenarios are derived from use cases	Test cases are derived from test scenario	Set of instructions for executing a test case i.e. derived from test case

31. Explain what Test Plan is? What is the information that should be covered.

A document describing the scope, approach, resources and schedule of intended test activities

- Determining the scope and risks and identifying the objectives of the testing
- Defining the overall approach of testing including test entry and exit criteria

- Integrating and coordinate the testing activities into software life cycle
- Scheduling test analysis, design, implementation, execution and evaluation activities

Test Plan & Strategy, Test Planning Factors, Test Planning Activities, Entry Criteria, Exit Criteria should be covered in Test plan

32. When to used Usablity Testing?

Aesthetics and design are important. How well a product looks usually determines how well it works
There are many software applications / websites, which miserably fail, once launched, due to following reasons:
Where do I click next?
Which page needs to be navigated?
Which Icon or Jargon represents what?
Error messages are not consistent or effectively displayed
Session time not sufficient
Usability Testing identifies usability errors in the system early in development cycle and can save a product from failure

e.g.,
In Web Based Testing , Desktop Based , Mobile based & Game based Testing, if fields on a page (Text box, radio options, drop-down lists) aren't aligned properly, not accessible by keyboard shortcuts then we need usability testing in those cases

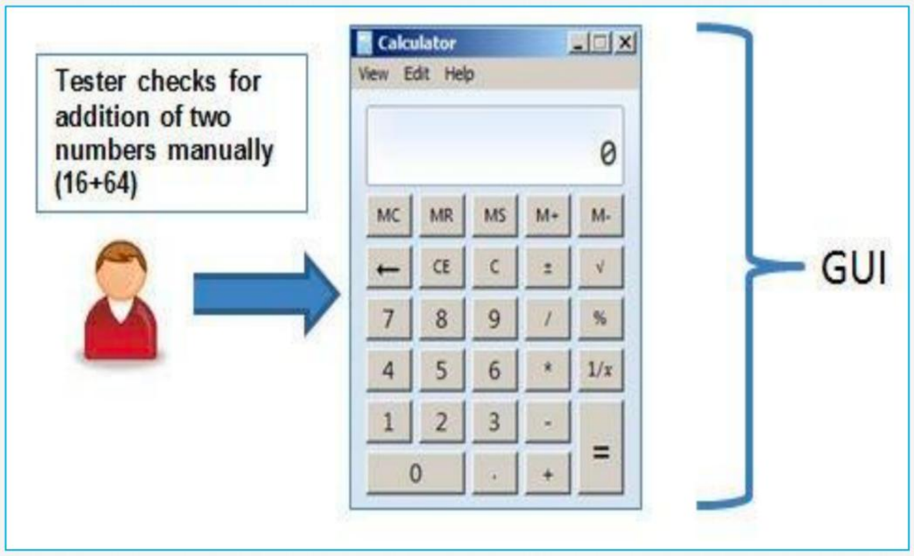
In short, effectiveness of the system, efficiency, eccuracy, user friendliness are goals in need of usability testing

33. What is the procedure for GUI Testing?

Procedure for GUI testing involves:

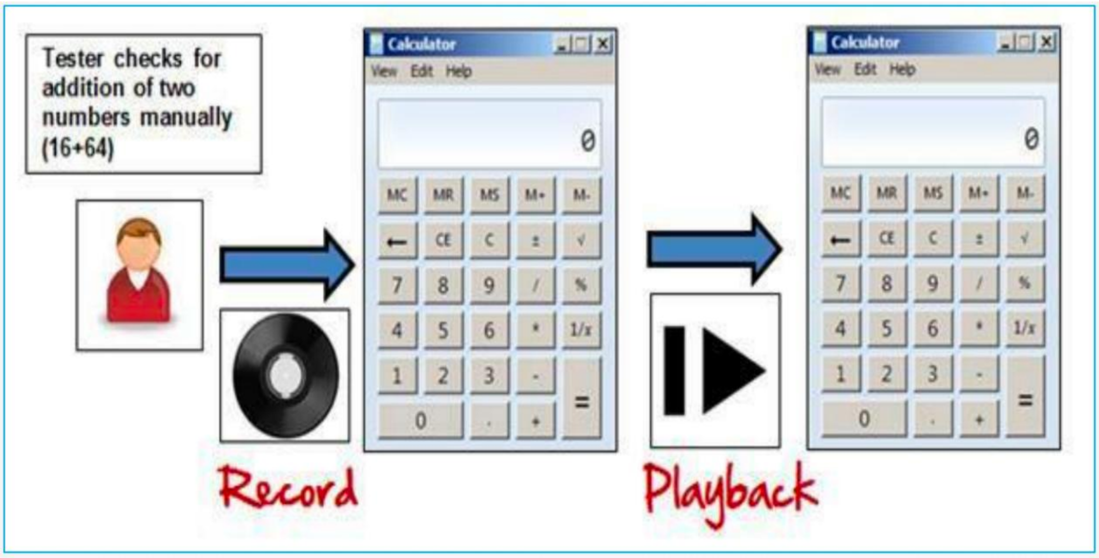
- **MANUAL BASED TESTING**

Under this approach, graphical screens are checked manually by testers in conformance with the requirements stated in business requirements document



- **RECORD AND REPLAY**

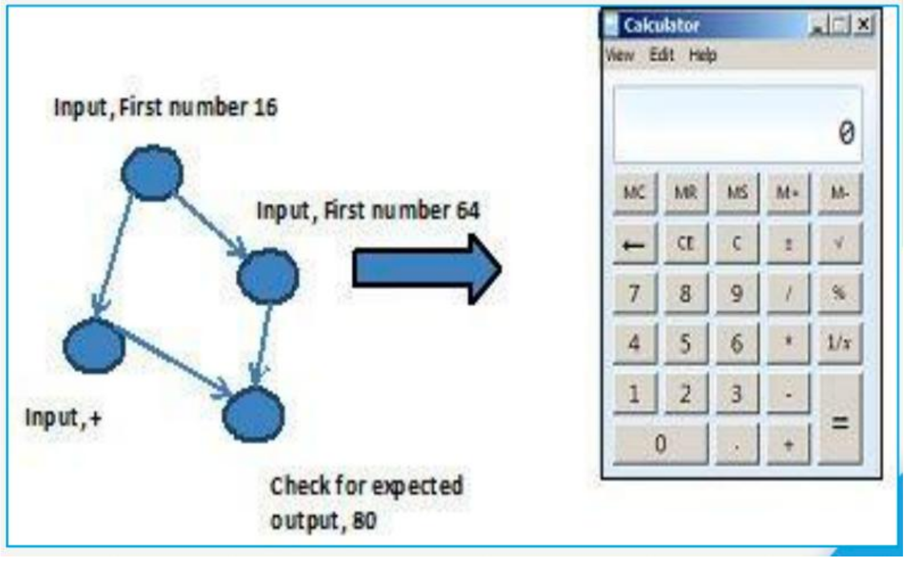
GUI testing can be done using automation tools.
This is done in two parts:
During Record, test steps are captured into the automation tool
During playback, the recorded test steps are executed on the Application under Test. Example of such tools - QTP



- **MODEL BASED TESTING**

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 (e.g. Charts, Decision tables etc)

e.g. Build a model
Determine Inputs for the model
Run the tests
Compare the actual output with the
Expected output
Decision on further action on the model



34. Write test scenarios for real objects (Pen, Pen Stand, Door, ATM, Microwave Owen, Coffee Vending Machine, Chair, Wrist Watch, Lift (Elevator), Water Bottle, Fan)

enarios_(Real_Obje

35. Write test scenarios for apps (Gmail (Receiving mail, Online shopping to buy product (Flipkart), Only Whatsapp chat messages, Whatsapp Group (generate group, Whatsapp payment)

t_Scenarios(Apps).

36. To create HLR, Test Scenario and Test cases on

Instagram (web) Login Page:
https://www.instagram.com/accounts/login/?hl=en

stCase_instagram_l

Facebook (web) Login Page: https://www.facebook.com/

stCase_facebook_lc

WhatsApp (web): https://web.whatsapp.com/

estCase_whatsappw

ArtOfTesting Contact us page: https://artoftesting.com/

TestCase_artoftestir