Overview

Manual Testing – Fundamentals of Software Testing part –II

Software Testing Techniques

Black Box Testing Techniques and White Box Testing Techniques

Test Artifacts

Test Planning , Test Case writing and Execution , Defect Tracking and Test Reporting
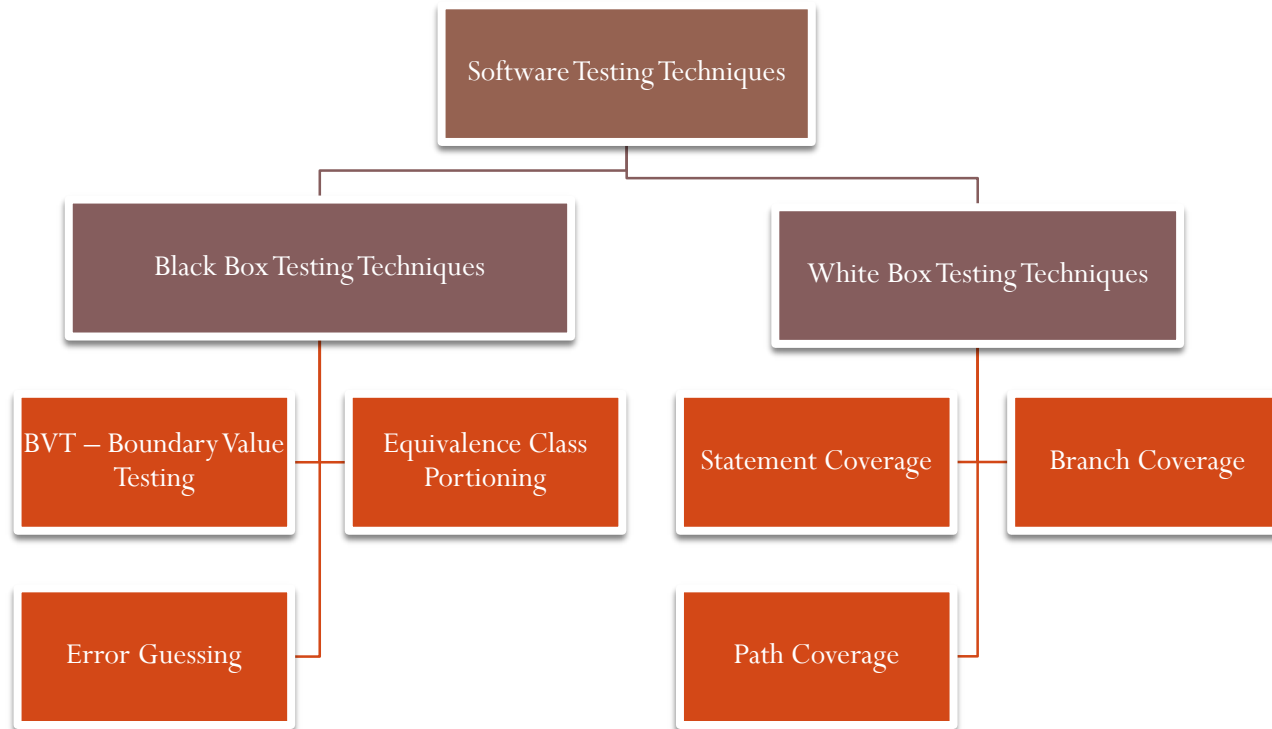
STLC

Software Testing Lifecycle

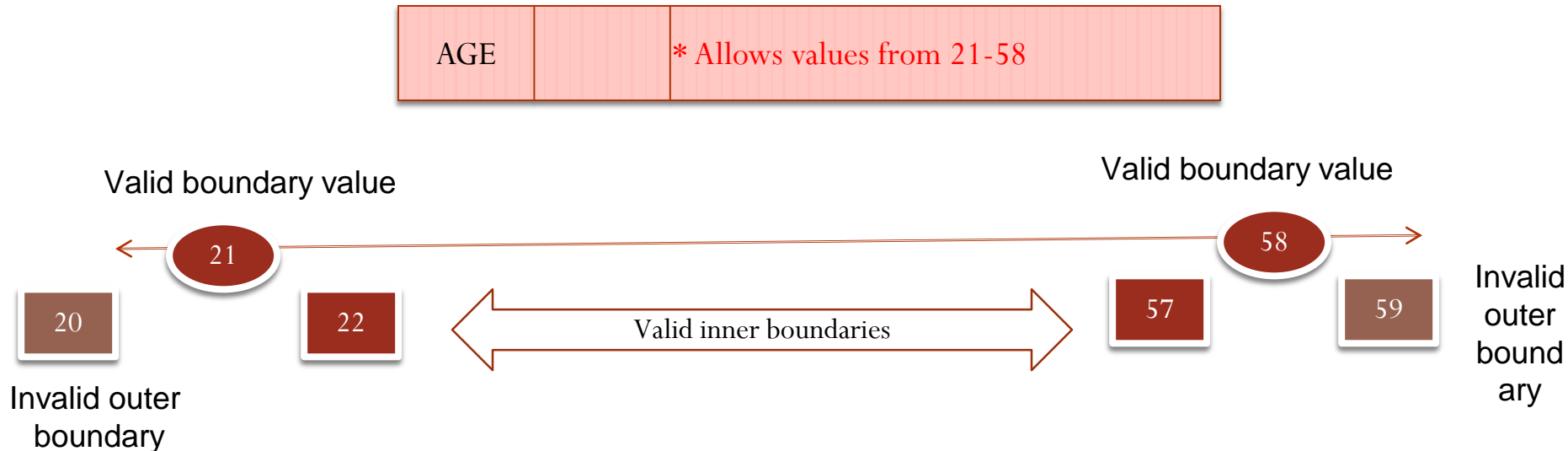# Software Testing Techniques

Software Testing Techniques

How to perform different Types of Testing !

Software Testing Techniques

Black Box Testing Techniques

White Box Testing Techniques

BVT – Boundary Value Testing

Equivalence Class Portioning

Statement Coverage

Branch Coverage

Error Guessing

Path Coverage

Boundary value testing technique

Black Box Testing Techniques

➕ Boundary Value Testing technique focuses on testing the inputs with boundaries and inner and outer boundaries

➕ E.g. for below requirement

AGE		* Allows values from 21-58

Valid boundary value

Valid boundary value

21

58

20

22

Valid inner boundaries

57

59

Invalid outer boundary

Invalid outer boundary

Equivalence class portioning

How to perform different Types of Testing !

 It divides the input data of software into different equivalence data classes.
E.g. for below requirement – Pizza values can not be zero and two digits and up to
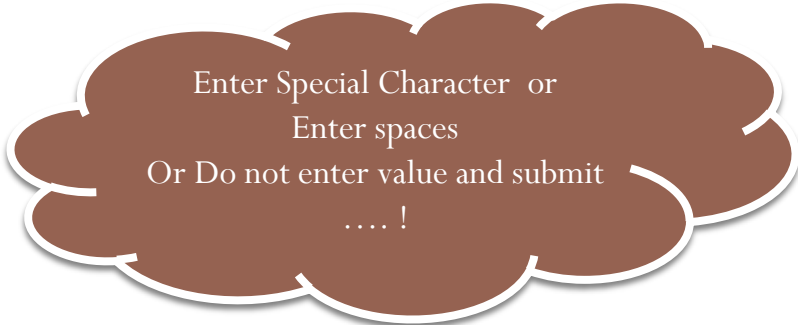10 – Here we need to test all invalid two digit values and one three digit

Pizza		* Allows values from1 to 10

Invalid	Valid		Invalid		Invalid
0	1	10	11	99	100
Partition#1	Partition#2		Partition#3		Partition#4

Error guessing

How to perform different Types of Testing !

- It is mainly based on perception and experience..
- Guess about possible bugs or skipped areas etc

Enter Special Character or
Enter spaces
Or Do not enter value and submit
…. !

Pizza	⊙	* Allows values from1 to 10

Code Coverage Techniques

White Box Testing Techniques

INPUT X & Y

Z = X + Y

IF C>100

PRINT "Program is completed "

END IF

IF X>50

PRINT "Program is pending" END IF

Statement Coverage : If all statement are covered then it is 100% statement coverage

Branch Coverage : If l statement 3 is false then line 4 will not be executed witch means until all branches are covered all 100 % statement is impossible

Path Coverage : If there are loop statements or combination of decision statements then path coverage is used – This ensures all branch and statement coverage together

Important Software Testing Artifacts

Testing artifacts

- Test Case
- RTM
- Defect
- Test Summary Report
- Test Plan

Test Case

🔱 A test case is a document which has below fields and it is executed to check fulfillment against a specific requirement

Test Case ID	TC_001	RequrimentID	REQ_001		
Created By	Sandip	Reviewed By	Sneha	Priority	High/Medium/Low

S #	Prerequisites:
1	Access to Chrome Browser
2	

S #	Test Data
1	Userid = sandipakolkar
2	Pass = Welcome@12345

Test Title   Verify on entering valid userid and password, the user can login

Step #	Step Details	Expected Results	Actual Results	Pass / Fail / Not executed / Suspended
1	Launch https://gmail.com	Site should open	As Expected	Pass
2	Enter Userid & Password	Credential can be entered	As Expected	Pass
3	Click Submit	Customer is logged in	As Expected	Pass

RTM - Requirement traceability matrix

✛ Requirement Traceability Matrix (RTM) is a table (mostly a spreadsheet) which shows if each requirement has a respective Test case / cases to make sure if the requirement is covered for testing

REQUIREMENTS TRACEABILITY MATRIX							
Project Name: Online Banking Application							
Business Requirements Document BRD		**Functional Specification Document FSD**			**Test Case Document**		
Business Requirement ID#	**Business Requirement / Business Use case**	**Functional Requirement ID#**	**Functional Requirement / Use Case**	**Priority**	**Test Case ID#**	**Execution Status**	**Defect#**
BR_1	Log in Module	FR_1	Log in using user name and password	High	TC#001 TC#002	pass	
		FR_2	Log in using PIN		TC#003 TC#004	pass	
		FR_3	Reset the password if password forgot	High	TC#005 TC#006	Fail	Defect# 1234
BR_2	Fund Transfer Module	FR_4	Transfer fund to same bank payee	High	TC#007 TC#008	pass	
		FR_5	Transfer fund to other bank payee	High	TC#009	pass	
		FR_6	Transfer using IMPS	Medium	TC#010 TC#011	pass	
		FR_7	Transfer using RTGS	Medium	TC#010 TC#011	pass	

Bug/Defect

➕ Bug or defect is nothing but difference between actual and expected behavior

Defect ID	TC_001	RequrimentID	REQ_001		
Created By	Sandip	Severity	High/Medium/Low	Priority	low/Urgent

Defect Title	User can log in even user enters non existing user name
Defect Description	
Steps to Reproduce	1.Launch https://gmail.com 2.Enter Userid which does not exists 3.Enter any password 4.Click Submit and verify that user is able to log in
Expected Result	Application should not allow user to log in and show message saying "User Does not Exists !"
Actual Result	User is logged in successfully though user does not exist
Logs	
Screenshots	

Priority and Severity

✦ Severity is the impact of bug and defect on end users business
✦ Priority is how it is important to fix the defect at this point

Severity

	HIGH	LOW
HIGH	Key Feature Failed E.g. Transfer fund button is not working in bank application	Basic feature is not working E.g. Logo of company is misspelled – then it will have large business impact
LOW	Bank live chat feature is corner feature and in it unable to sent expression symbol	Cosmetic Bug E.g. Font of message is not as expected

Priority
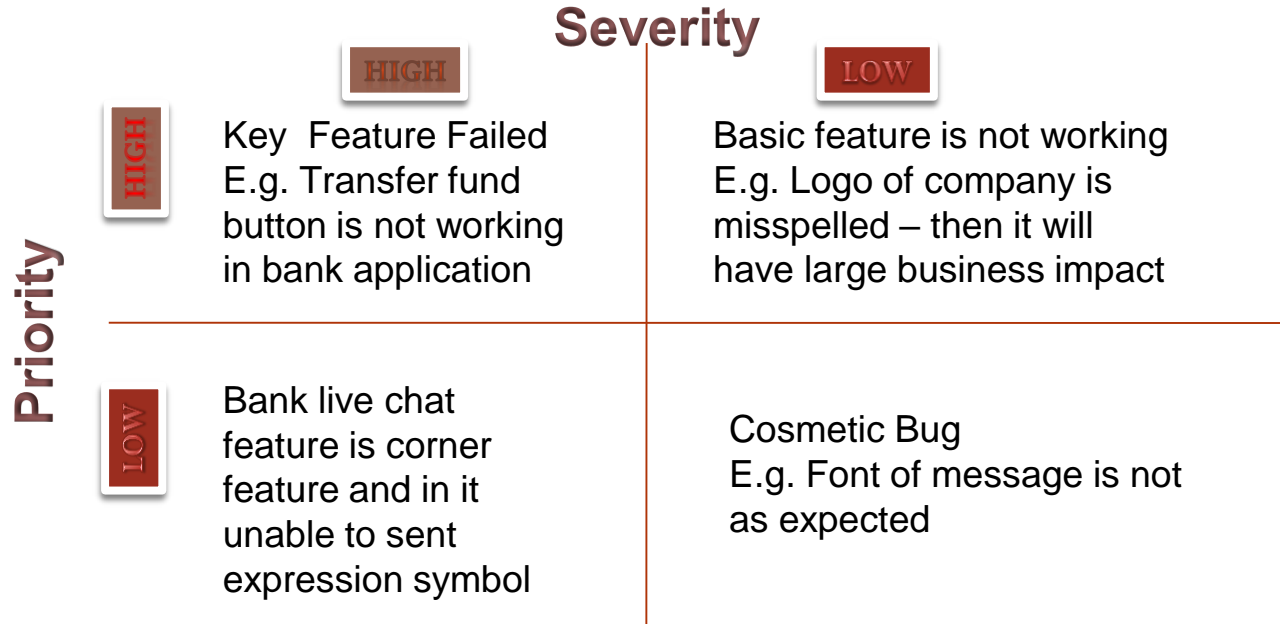
Bug or Defect Life Cycle
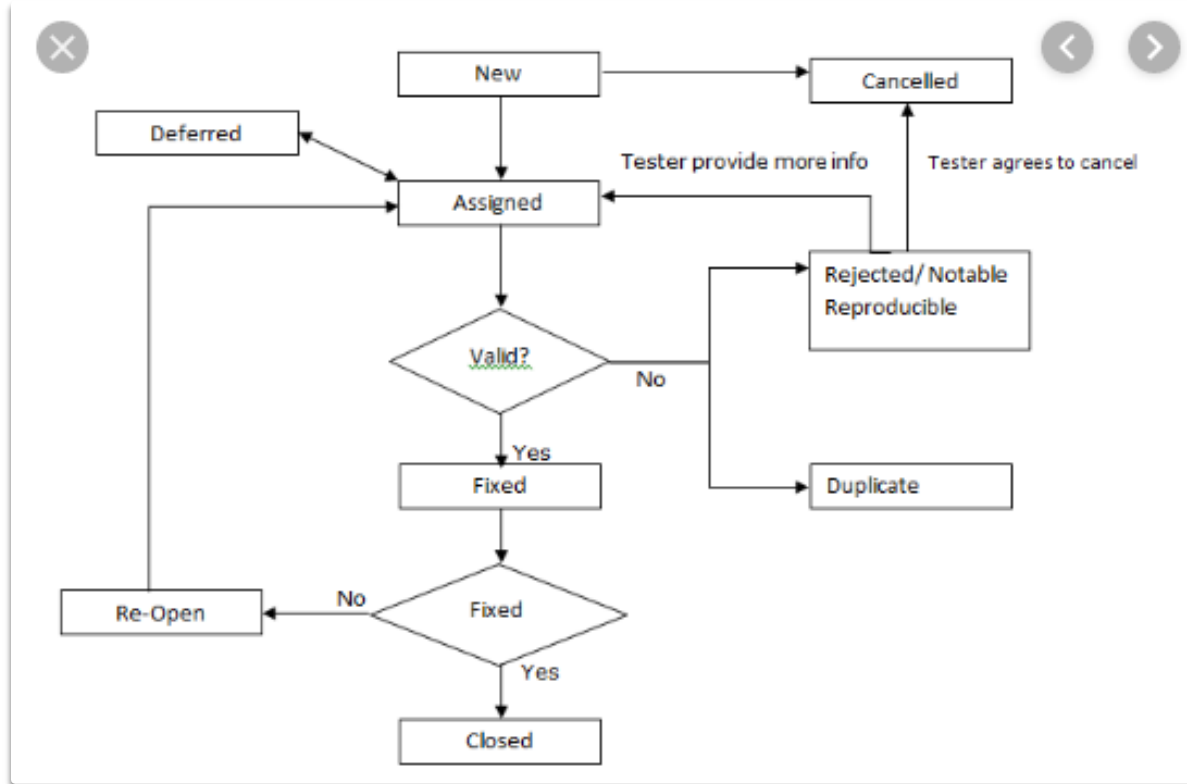
Test Report

- **Test Report** is a document which contains. A summary of **test** activities and final **test results**.
- Evaluate the quality of the **tested** product.
- Make a decision on the software **release**
- E.g. Test Case and bug Report

Test Cases Executed	Total Pass	Total Failed
100	95	5

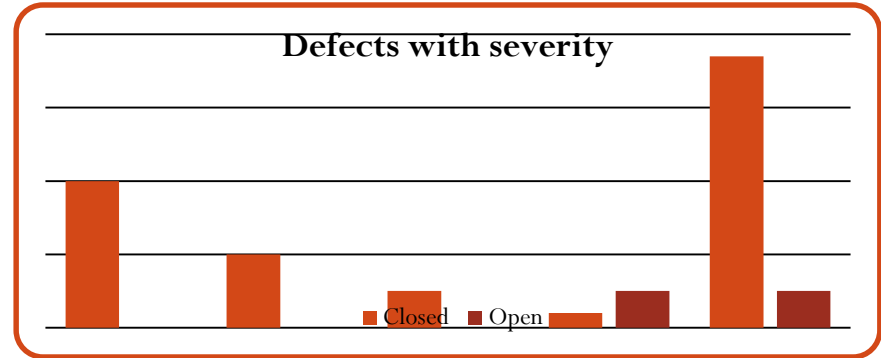|		Severity				
		Critical	Major	Medium	low	Total
Status	Closed	20	10	5	2	37
	Open	0	0	0	5	5
					Total	42

Test Pass Vs Fail

- Test Cases Executed
- Series1, Total Pass
- Total Failed
- Series1, Total Failed, 5, 3%
- Series1, Total Pass, 95, 47%
- Total Cases Executed, 100, 50%

Defects with severity

- Closed
- Open
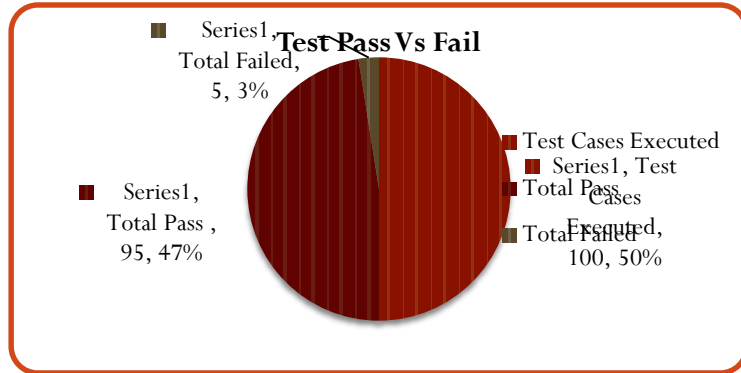
Test Plan

Document which mentions what to test and How to Test .

Srno.	Sections	Description	Example
1	Introduction	A brief introduction about the project and to the document.	This is Test plan to Test Online Bank Application
2	Features to be tested	A feature that needs to tested on the test ware.	Log in and Log out Fund Transfer Open Fixed Deposit Live Chat for customer cupport
3	Features not to be tested	Identify the features and the reasons for not including as part of testing.	Fund transfer using IMPS not in Scope Open flexible FD is not in scope
4	Approach/Strategy	Details about the overall approach to testing.	Unit and Integration Testing , Functional Testng , Regression Testing , Performance Testing , Security Testing
5	Entry and Exit Criteria	Documented whether a software item has passed or failed its test.	Entry Criteria : Unit Test Pass and Build Smoke Test successful Exit Criteria : All Test Passed All Requirements covered as per RTM No Blocker and critical defects All major ,minor open defects are postponed

Test Plan

Test Case , Defect , Test Plan , Test Report

Sr.No.	Sections	Description	Example
6	Test deliverables	The deliverables that are delivered as part of the testing process, such as test plans, test specifications and test summary reports.	Test Plan Test Cases RTM Test Summary Report
7	Test Environmental requirements	Defining the environmental requirements such as hardware, software, OS, network configurations, tools required.	Windows 10 Chrome , Mozila and Opera browsers
8	Roles and Responsibilities	Lists the roles and responsibilities of the team members.	Sandip - Test Manager Sneha - Tes Lead Uttam - Test Enginner Neha - Test Engineer Vipin - Performance Tester Ravish - Security Tester

Test Plan

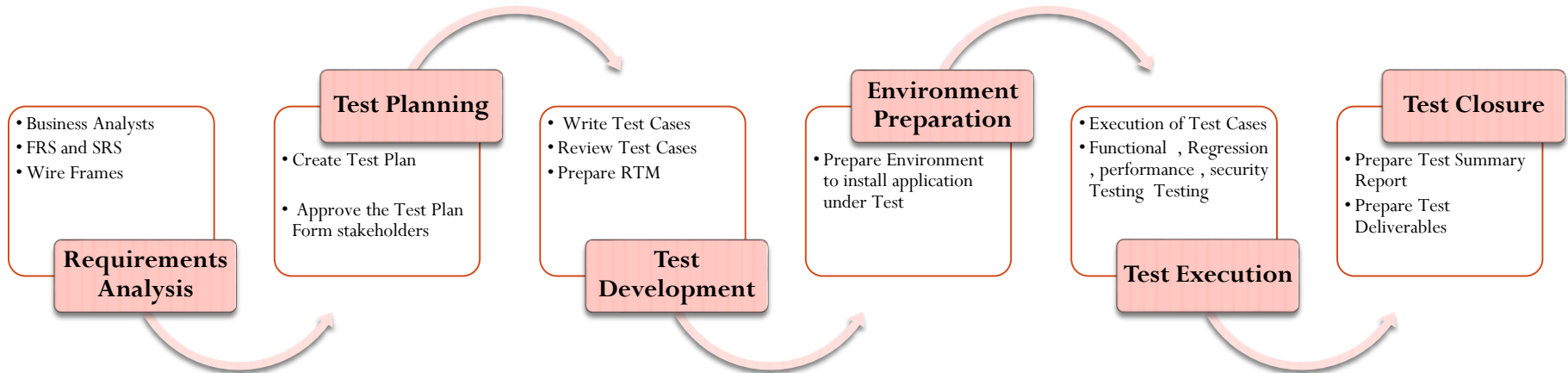| Sr.No.	Sections	Description	Example
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Test Plan

Sr. No.	Sections	Description	Example
9	Schedule	States the important project delivery dates and key milestones.	Functionalty Testing Start Date Functionalty Testing End Date Development functionality code Freez Date Regression Testing Start Date Regression Testing End Date
10	Risks and Mitigation	High-level project risks and assumptions and a mitigating plan for each identified risk.	Risk : Test hardware may be provided late from vendor Mitigation Plan : Test with virtual environment and do santy testing on the environment when get avaliable Risk : Skilled performance Testing person is not avaiable Mitigation Plan : Train the existing team member and start performance testing at earliest n SDLC
11	Approvals	Captures all approvers of the document, their titles and the sign off date.	Test Plan Approved by Product Owner , Project Manager, Delivery Manager and all stakeholders

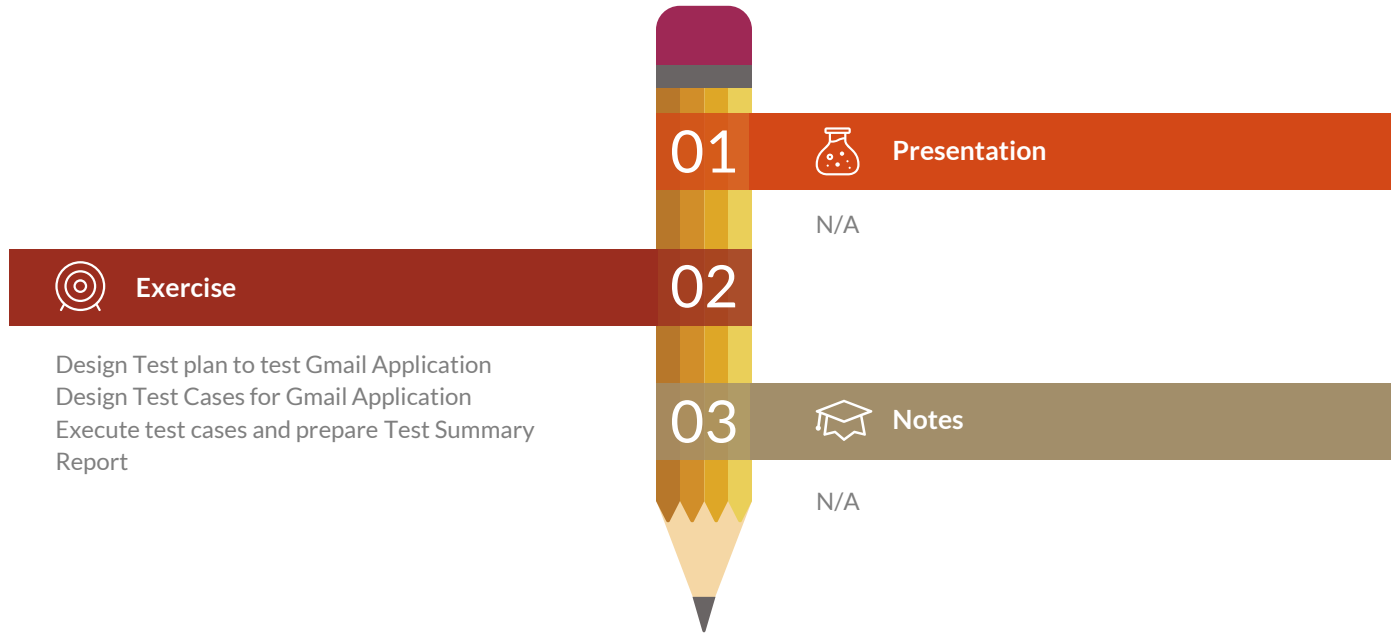# Software Testing Life Cycle (STLC)

What is STLC ?

Software Testing Lifecycle

Requirements Analysis
- Business Analysts
- FRS and SRS
- Wire Frames

Test Planning
- Create Test Plan
- Approve the Test Plan Form stakeholders

Test Development
- Write Test Cases
- Review Test Cases
- Prepare RTM

Environment Preparation
- Prepare Environment to install application under Test

Test Execution
- Execution of Test Cases
- Functional , Regression , performance , security Testing Testing

Test Closure
- Prepare Test Summary Report
- Prepare Test Deliverables

Session **Content**

01 Presentation

N/A

Exercise

02

Design Test plan to test Gmail Application
Design Test Cases for Gmail Application
Execute test cases and prepare Test Summary
Report

03 Notes

N/A

Recap

01

Software Testing Techniques
Black Box Testing Techniques and White
Box Testing Techniques

02

Test Artifacts
Test Planning , Test Case writing and
Execution , Defect Tracking and Test
Reporting

03

STLC
Software Testing Lifecycle

Now

Next

01

**Core Java for Selenium Automaton
Testing part –I**
Basics of Core Java , Java Object Oriented
Concepts , Collection Framework ,
Exception Handling etc

Any questions?