

Software Testing is the process used to identify the correctness, completeness & quality of developed computer software.

TESTING

Error:

Error is human state that produces the incorrect result.

Fault:

State of software caused by error

Bug: Presence of error in software

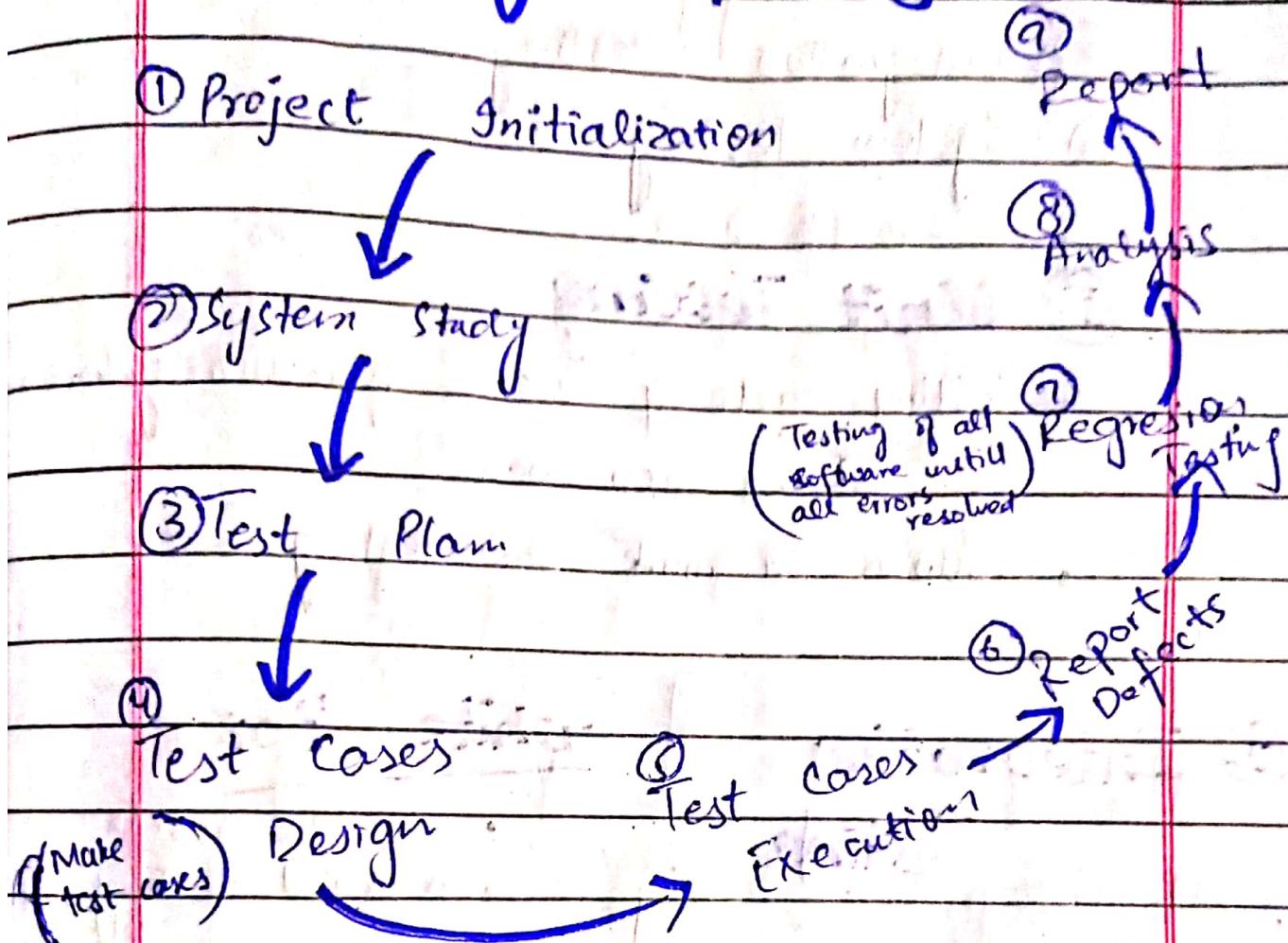
Failure: Deviation of software from expected result

A person makes an **Error**

That creates a **fault** in software

That can cause a **failure** in operation

Testing Life Cycle



• System Study :

Study of system after development

• Test plan

Proper documentation about developed software
→ test use cases

Levels of Testing

- ① Unit Testing
- ② Integration Testing
- ③ System Testing

① Unit Testing

- Testing each & every functionality/module of each box.
- Follows a white box testing

② Integration Testing

Testing made by combining different units.

- we have two approaches in integration testing

(I) Top-down

(II) Bottom-up

white Box

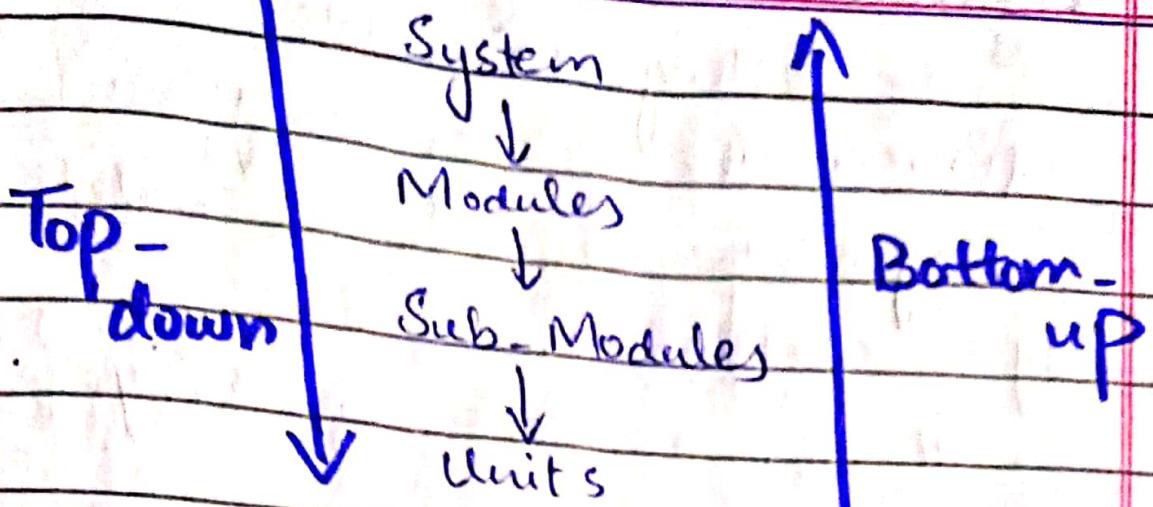
- can see inside
- backend Testing

Black Box

- can only see outside
- frontend Testing

Grey Box

- we firstly test the front end
- then backend



Stubs & Drivers

Stubs & drivers both are dummy modules
 & are created only for software test purposes.

Stubs

- used in top-down approach
- ~~Stubs are temporarily used~~ when situation occurs that major module is ready to test but sub-modules are not ready.

Drivers

- used in bottom-up approach
- drivers are temporarily used when the upper-level modules are not ready yet.

③ System Testing

Testing the whole software. The purpose of system testing is to evaluate the end-to-end system specifications.

- It is a black box testing

Types of Testing

- (1) Unit Testing
- (2) Integration Testing
- (3) System Testing
- (4) Usability Testing
- (5) Performance Testing
- (6) Security Testing
- (7) Smoke Testing
- (8) Alpha Testing
- (9) Beta Testing
- (10) Acceptance Testing
- (11) Regression Testing
- (12) Monkey Testing

(4) Usability Testing:

- Software must be tested in a way that it is user-friendly
- Interface
- look attractive
- Easy to use
- less complexity
- Effective speed

(5) Performance Testing

(loading, stress, data testing, Testing volume, Testing)

In performance, you break the system.

- Stress Testing is from upper limit (to estimate peak load)
- Load Testing is from lower limit (to estimate performance)
- Data Volume testing is to find the maximum limit of data volume of application

(6) Security Testing

Testing how well the system protects against any unauthorised access, viruses.

i.e. anyone try to login to my account (username, password)

(7) Smoke Testing

- small input
- testing only main functions / crucial functions of a program
- without bothering finer details

(8) Alpha Testing:

- Software tested by employees of software house
- Testing perform by the persons who are not the developers but work at software house

(9) Beta Testing:

- Testing perform by general public but not by the employees of software house.
- Testers may or may not be experts.

(10) Acceptance Testing:

- Testing of all user level requirements
- It is determined ^{that} whether or not the customer will accept the software.
- Its goal is to verify that the software is ready to perform the functions for which it is built.

(11) Regression Testing

If any bug found while testing the software, fixed it.

- And determined whether or not it had created any new problem in software.
- Again if any bug is traced, resolved it until the whole software is error free.

(12) Monkey Testing

Testing the software randomly like hitting irregular keys and try to breakdown the system!

- There is no specific test cases & scenarios for monkey testing.

Verification & Validation

Verification

- Is the product Right?
- The process of checking that the software meets its specifications

Validation

- Is it the right Product?
- The process of checking whether the specifications fulfills the customer's requirements

Bug

→ is it a valid
bug?

New ←



→ Assigned



→ Resolved

Reopen

verify

closed ←

Functional Testing

- Integration
 - Usability
 - Smoker
 - Regression
 - Monkey
 - Destructive
 - Recovery
 - Acceptance
- In destructive testing, you provide too much leading to destroy or crash the system
- Or
- in recovery, you recover your destroy or destructure System

Non-Functional Testing

- Performance
- Stress
- Security
- Accessibility
- Load Testing
- Data Testing

Unit Testing

Login page

Email

Password

Sign-in

Email shall be correct

• Password shall have 8 characters

{ Alphabets
Numbers
Special Characters }

- * Every function will have a separate table

Testing

Test Data	Expected Result	Actual Result	Result
abc@gmail.com	Accepted	Accepted	Pass
abc@	Rejected	Rejected	Pass
abc@gmail	Rejected	Rejected	Pass
abc@.com	Rejected	Rejected	Pass

Test Data	Expected Result	Actual Result	Result
123ABC!	Accepted	Accepted	Pass
123	Rejected	Rejected	Pass
ABC	Rejected	Rejected	Pass
123ABC	Rejected	Rejected	Pass
123*#	Rejected	Rejected	Pass

Test Data	Expected Result	Actual Result	Result
User click on sign-in button	User should be signed in	Accepted	Pass

Integration Testing

Test Data	Expected	Actual	Result
User sign-in to the account (after entering credentials)	User shall be signed in	User have signed in Successful	Pass
User account does not exist	User shall move to successful sign-up page	Successful	Pass
User entered wrong email	User shall not sign in	Successful	Pass
User entered wrong password	User shall not sign in	Successful	Pass
User forgot email	User shall not sign in	Successful	Pass
User forgot password	User shall move to recover pass-page	Successful	Pass
Email field is empty	User shall not sign in	Successful	Pass
Password field is empty	User shall not sign in	Successful	Pass

System Testing

Test Case ID: 001 Test Case Description: Sign-in
Created by: XYZ Reviewed by: ABC Version: 1.0

QA Test Log: ABC reviewed the testing performed by XYZ. Eg asked him to revo.

Tester name: XYZ Date: 1/2/3 Status: Pass

Pre-requisite:

(i) Internet connection

(ii) Account exists

Test Data:

email = abc@gmail.com

password = 1234567

Test Scenario: User must be able to sign-in to the system

Sr#	Steps	Expected Action	Actual Result	Status
1	Enter credentials	Credentials entered	As expected	Pass
2	Click sign-in button	logged-in	As expected	Pass

Post Condition: User is signed-in & able to search products