

① Sourcing of project:-

Project costing per min. cost per hours
Customer have to pay it. This payment depends
on resource utilization or well as time to
complete the project.

② Timing delivery:-

At the HTR if resource gathering &
documentations time to complete for the Project
is decided.

If company exceed the time of delivery
time than company have to pay penalty
(escalation).

③ Maintenance:-

If any problem occurs after the delivery
then company has to fix it maintenance is
the part of service provided by the company
after delivery of project.

④ Verification validation

KPO - knowledge process outsourcing (tech)

BPO - business process outsourcing (Non-tech)

⑤ Project:-

Project have two categories

Project

Critical Project

e.g. Banking Domain Project

② Resource requirement

↳ 2 (developer) : 1 (tester)

One 100 days = 50 Tester

Normal Project

① e.g. ERP system

② Resource requirement

↳ 3 (developer) : 1 (tester)

One 100 days = 50 Tester

like 300 days = 100 tester

⑥ Software Development life cycle (SDLC)

→ SDLC has two type

SDLC

Life cycle Development

Developer

Involve

→ Type of phase (stages)

→ Stages in SDLC

Life cycle Testing

Tester

Involve

① Information Gathering

② Analysis

③ Design

④ Coding or exec.

⑤ Testing

⑥ Maintenance

⑤ maintenance :-

SDLC defⁿ - It is star

→ software Development life cycle (SDLC) :-

→ It is a standard procedure to develop any software

→ why SDLC Important or Required :-

→ For Proper planning of the project to collect the information from the customer what exactly you want

⑥ Information Gathering :-

→ Information is nothing but collect the Requirement from customer

→ Business analysis is responsible to collect information of requirement.

→ It involve BRS document <Business Requirement Specification>

→ BRS is a bridge between client → developer, tester

→ BRS customer requirement are mention in his language <customer language>

⑦ Analysis :-

① Business Analyst involve in this process

② In the analysis phase SRS is a mode

- FRⁿ - Functional requirement specification
- BRⁿ - Business Requirement specification
- ③ SRS → Software requirement specification
- ④ Software SRS document made after BRⁿ
- ⑤ SRS is detailed documentation.

BRS	SRS	or FR ⁿ
<ul style="list-style-type: none"> ① Weather req. Ex Banking Project → sign up page → Home page → Acc Info → contacts → links <p>This is overall requirement gathering</p>	<ul style="list-style-type: none"> ② Same ex. → Sign up page should have → Name → Number → email → Password → Field <p>This is detailed specification which shows module units or flow.</p>	

- ⑥ SRS → Functional Requirement Specification
- ⑦ From BRS documentation SRS document get generate
- ⑧ It is prepared after the BRS Document.
- ⑨ SRS is detail or technical document about the product.
- ⑩ SRS documentation include.

⑪ Function flow diagram

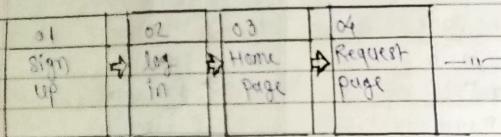
⑫ Functional requirement

⑬ Use cases

⑭ Snap shots

(i) Function Flow diagram :-

- Functional flow diagram means flow of task
- This flow shows relationship b/w the tasks.
- This give proper sequence of task
- Relationship of function means dependency of each function
- Ex: Facebook



- The functional flow diagram look like this above.
- Overall this functional flow diagram is actually a stepwise representation of software.
- Now, we have

(ii) Functional Requirement :-

- Functional requirement means attributes which are required to complete a specific function.
- Now we have sign up function
- For sign up, its requirement are;

First Name;

Last Name;

Mobile Number;

Email ID;

Password;
Submit button.

For First Name :-

- ① Name should be in character
 - ② Name do not have number
 - ③ It should not have spacer
 - ④ It should not have special symbols
- So like this, these all the requirements should get full fill in the phase.

(iii) Use Cases :-

- It is the functionality in terms of type of
- Now consider the example of online shopping
- Online shopping has users are customers & bank
- Admin of glo is company person
- Now use case for all shopping is

(1) Actor = The person / Group of people / system who interact with system

(ii) use case = It is the functionality or operations

(iii) — = Link

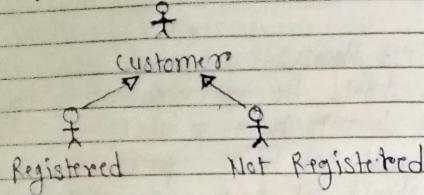
(iv) → = (i) generalization

② Now generalization is the part
③ customer can be a two type

✓ Registered

Not Registered

Q So generalization is shown as:



(v) -----> = Relationship
① Relationship is of two type.

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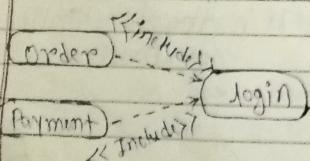
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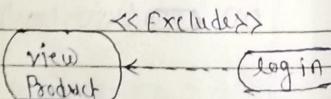
① In online shopping process customer can not order things without loged in to the system

② In the online shopping customer can view the product it is not depend upon whether is loged in or not

③ So include relation

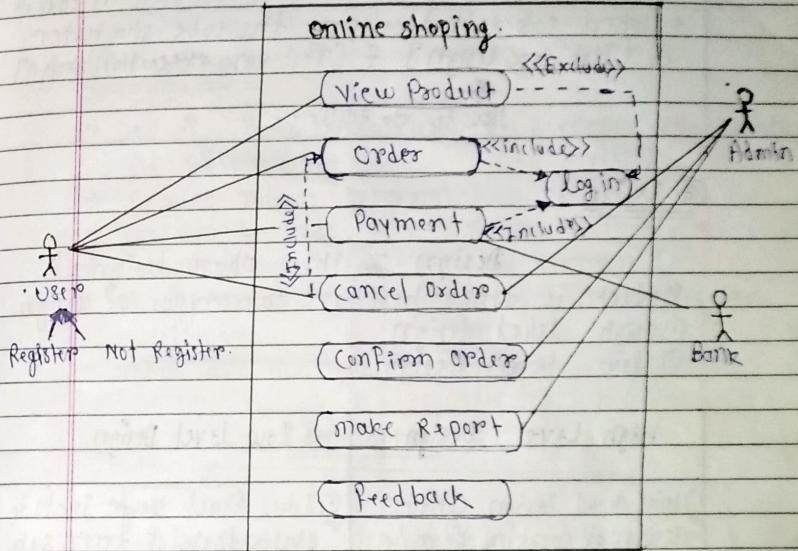


④ So exclude Relation is



Q Use case in testing is a brief description of a particular use of the software application by an actor or user.
② Use cases are made on the basis of user actions and the response of the software application to those user actions.

→ Use case for online shopping:-



(iv) Snap shot :-

→ Snapshot Nothing but screen shot
→ Snapshot are created by creat Business Analyst
→ Snapshot are visualisation of functionalities before development of product.
→ Business Analyst create snapshot by using the ~~snapshot~~ software
→ Snapshot give idea to developer that how she suppose to look like.

- * SRS is send to the developer as well as coder
 - * When coder is developing the code then tester do [Test case design] & [Test case execution Design]
- ↓
How to do testing -

(3) Design :-

Design - In this phase design of product is done - there are two types of design

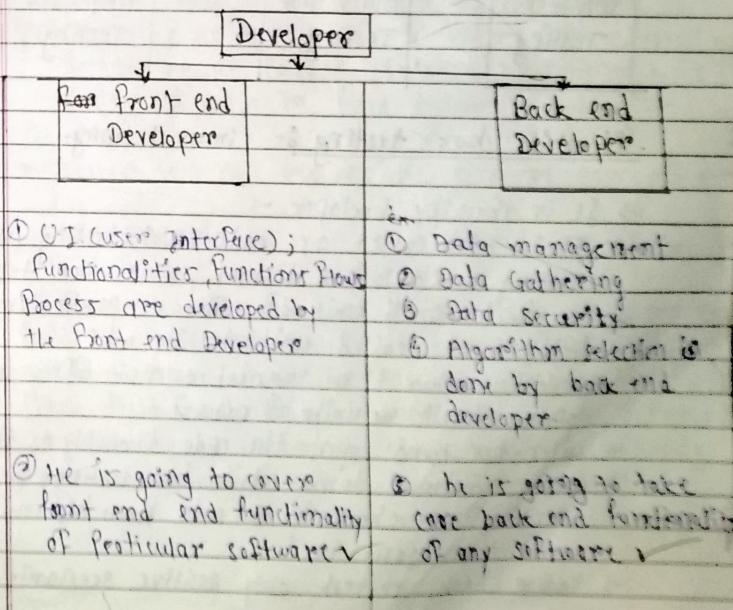
- ① High level design
- ② Low level Design

High Level Design	Low Level Design
① High level design contain design of working of main module.	① Low level design include static logic of every sub module.
② It include relation & dependency of the main modules	② It's design for working of sub module.
③ It include what & how any module do work	③ In sign up page, sign up is main module & Name, number, email are the sub module

- ④ Low level design is created by front end developer

(4) Coding :-

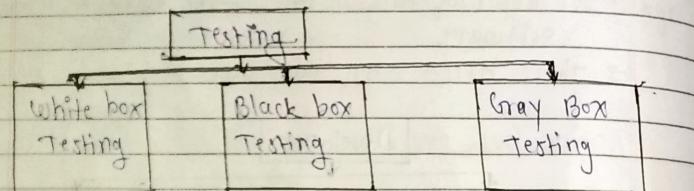
- set of program written by developer and create the software
- Coding means programming
- one line is code
- multiple lines of code is called program
- set of program written by the developer creates software
- There are two type of developer



Person / developer who can work as Front end developer as well as back end developer is called Full Stack developer.

(5) Testing :-

Testing is the process of checking completeness & correctness of the software.



(1) white box testing :- internal testing

- It is done by developer
- It is also called as code level testing, unit testing & clear box testing, glass box testing
- To check small unit of code or particular field parts called unit testing
- < codes > whether it is correct or not after developing small units of codes
- coders cannot sent the code directly to the tester without doing white box testing, he will sent after checking the code from his end and then sent it
- coding check, or test only positive scenario

→ The white box testing has purpose to test correctness & completeness of the program.

(ii) Black Box Testing :-

→ Black box testing is also known as Functional Testing or System testing

→ This testing is done by tester

→ Tester check internal functionality depend upon external functionality

→ Ex. Tester check whenever data in sign module got entered & user press sign up button, that button is process to store entered data. Tester check whether the data is stored correctly or not so here internal functionality is storing of data & external functionality is filling up data in field & submit button is process

→ Tester test the +ve as well as -ve scenario

+ve scenario

If there is mobile number field in India mob num. area of 10 digits then tester check field functionality by entering 10 digit number whether it works or not.

-ve scenario

Let us take some example the number field should not accept 9 digit or less & more than 10 digits, tester check system by entering less than 10 digit & more than 10 digits.

(III) Gray box testing :-

- Here tester is doing testing in input & output functionality of our application
- < in -> functional : out - Non functional >

(III) Gray box testing :-

- ⇒ Gray box testing is combination of white box testing & black box testing
- ⇒ Tester is involve in the gray box testing
- To do gray box testing tester needs programming knowledge
- The role of gray box tester is whenever final Software is handed over to the tester tester check functionality & if any fault is occurred in the o/p of function then tester does not report back to developer
- Instead of that tester himself solve or make change in the code

⑥ maintenance :-

- Maintenance means provide service after delivery of the project
- Companies named as tech mahindra support as well as technical support
- Non technical support is called as BPO
- Technical support is called RPO

SDLC

D) Requirement Gathering (BA → BR)

1) Analysis → SRS (B.A.)

- ↳ Functional Flow diagram
- ↳ functional requirement
- ↳ Use cases
- ↳ Snap shots

2) Design → High level (main module) low level (sub module) (design Arch.) (front end Dev.)

3) Coding → Set of program to create software

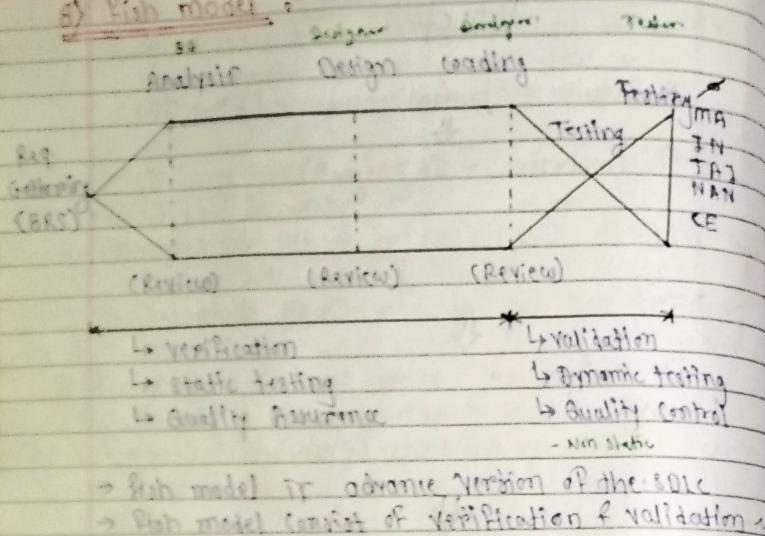
- Front end Developers
- Back end Developers
- Front end & Front end Developers / Back end front end Developers
- U.I., Function design, Site map
- Data manipulation
- Security falgo.

4) Testing → white box, Black box, Gray box.

Dev. Tester. Dev. with S.

5) Maintenance -

③ Fish model :-



④ Verification :-

- It is review process.
- Verification process is also called as quality assurance & static testing.
- In the verification BA, Designer, developer is involve.
- BA is going to review the SRS Document where it is correct or not or per customer requirements.
- Designer is going to review own design.
- Developer is going to review own code by unit wise testing.
- After rating if our code have to check

all the codes till he have to complete code and report, his report this process is called unit testing or code level testing.

→ In the static testing process responsible authority do only review checking or review.

⑤ Validation :-

- It is also called as Quality control or dynamic testing.
- In validation tester is going to check overall functionality of our application or software.
- Dynamic testing focused on quality of product.
- Black Box tester involve in validation.
- Grey box tester involve in validation.

→ Difference b/w verification and validation.

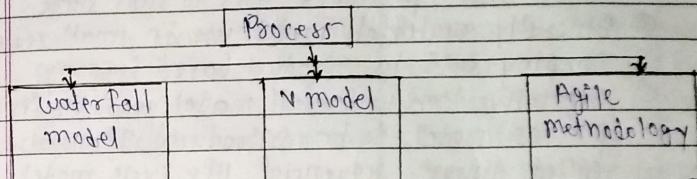
Verification	Validation
① It means are we building the software right?	① validating means are we build the right software
② It process	② End process
③ In Process	③ In validation
④ Verification defined static testing	④ It is defined dynamic testing
⑤ In verification developer, Designer, BA is involve	⑤ In validation tester is involve

Q.18 what issue you face during your project or just mention what issues you faced in your project in excel sheet?

- Ans → ① Database connectivity problem
 ② Build installation problem
 ③ Developer not communication properly

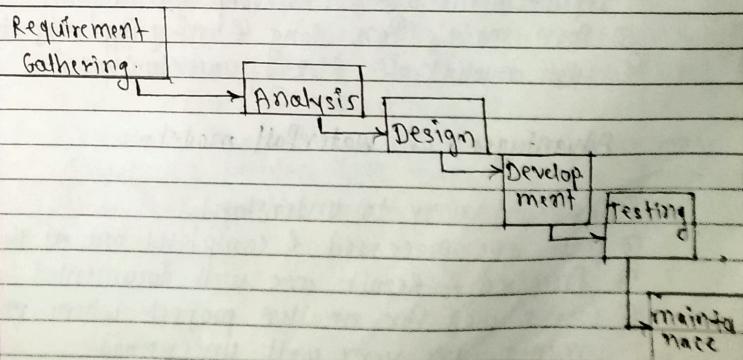
1) Process of Software Development.

→ Process for software development has 3 types.



Once 1st phase over & changes are occurred in that phase if we cannot revert back to 1st phase by paying some amount then we can't revert back to that process but by effecting any other module development.

① Waterfall Model -



① waterfall model is step by step implementation of

the SDLC

② In the waterfall model whenever 1st stage over then & then procedure goes to next stage

③ Generally waterfall model use in small scale company and in "product-base" company

④ Generally time waterfall model was the first process model to be introduced It is also called linear-sequential life cycle model

⑤ Duration of waterfall model is 3 month & fixed ex. calendar, calculator.

Which model have to use to develop product decided by company

Disadvantage of waterfall model:-

① If any requirement change then we need to start from first stage i.e. information gathering & analysis

② If it is not suitable for the project where requirement are continuously changing

③ Poor model for long on-going project

④ High amount of risk & uncertainty.

Advantages of waterfall model:-

① Simple and easy to understand

② Phases are processed & completed one at the time

③ Processed & result are well documented

④ Works well for smaller project where requirements are very well understood.

Product base
Company

① Company which makes the software or apps & give it directly to the customer are product base company

② These company provide regular update to the client to fix errors

Service base
company.

① Company which makes their SW OR app from other company & give it for client usage are service provider company

② This company do not provide direct update They send query to the product company & get the newer version.

→ How they fix errors

In waterfall model, when tester found any bugs then he do not send product back to the developer instead of doing that tester lock the bug, make report & then that day get fixed in next version of product

Ex. Samsung have these O.S. U.T, when they release their O.T. version & if some bug are occurred then they provide next version of their O.T.

(3) V-model :-

- ① V - stand for verification & validation
- ② V-model has working in which verification & validation is parallelly
- ③ V-model is that model in which development stages are mapped with testing stages
- ④ It looks like word V so it is called as V model.
- ⑤ It is used in V-model used in big organisation duration period is also three month anywhere
- ⑥ In the V-model if one stage is completed and second phase is running and change occurred in first stage then we can revert back to first phase by taking some amount from customer.

Verification (Development)

Validation (Testing)

- ① Assessment of dev. phase
- ② Test plan preparation
- ③ Requirement of phase Test

- ① Test case Design

Verification (Development)

Information Gathering & Analysis

Design of Coding

Integration (Build Installation)

Maintenance

↓ Information Gathering :- → ② Test plan preparation
③ Requirements of phase Test

④ Assessment of development phase :-

→ Assessment of development phase means to make strategy for testing

PAGE NO.	

PAGE NO.	

Validation (Testing)

- ① Assessment of dev. phase
- ② Test plan preparation
- ③ Requirement of phase Testing.

① Test case design

- ② Design phase test
- ③ Program phase Test
- ④ Test case design

① smoke testing

- ② system and function testing
- ③ User Acceptance Testing
- ④ Documentation

① DRC (Defect Removal Cycle)

② RRC (Requirement Review Cycle)

- ③ Request for changes
- ④ Regression Testing
- ⑤ Post mortem Testing

④ Assessment of dev. phase

→ In this Project manager is going to decide which methodology to be used in our testing process
e.g. Automation, manual.

② Test plan Preparation :-

- It is a project level document it is prepared by Team Leader
- By using test plan we are going to decide how much time we want to testing application
- On the basis of the test plan we are going to derive release date for project
- Test estimation is created in this phase.

③ Requirement of phase testing :-

- Phase means units
- In this part estimated requirement for phase are finalised
- Ex. Paytm continuously introduce new module are like new product so for then requirement got estimated.

① Design phase testing
② Program phase testing
③ Design test cases.

1) Design phase Testing
2) Program phase Testing

→ In design phase developer or involve designer is going to Review own design developer is involve <front end developer> because he knows the code and he can solve problem easily.

② Program phase testing :-

→ This code testing is starting from small-small unit of program this phase like white box testing developer is involve.

3) Design test Cases :-

- In this stage phase tester is going to write the test cases on the basis of requirement
- He is going to write positive as well as negative test cases.

① smoke Testing
② Integration (Build Installation)
③ system & functionality Test
④ User Acceptance Testing
⑤ Test documentation

3) Integration :-

→ Integration nothing but developer is going to connect two or more than two module.

- After connecting two or more than two module he is going to check whether it is working fine or not.
- In this developer is involve.

④ Smoke testing :-

- When tester receive build from the development team for the testing then he is going to test check whether the build is ready for testing or not.
- Only major functionalities are checked in smoke testing.

⑤ System & functional testing :-

- It is done by the tester.
- In that tester is going to check overall functionality of its application.
- ex. In smoke testing if submit button do not have any colour or any specific animated styling then also it is working it do not recognize as defect but in Functionality Testing it get term as defect.

⑥ User Acceptance Testing:-

- After system & functional testing product move to the UAT phase. In this phase product is deployed in user environment.

- Developer, Tester & User is involve.
- In this phase comes along with real time scenario.
- User is going to validate of product on basis of requirement.
- UAT is nothing but process of taking feedback from the customer.

⑦ Documentation :-

- Whenever tester done testing on any module he create the document for the testing summary.
- Test summary report (TRM)
- In test summary report include
 - ① Name of module
 - ② Total Number of test cases
 - ③ How many test cases are executed
 - ④ How many test cases are passed or fail
 - ⑤ Tester send summary request to the team leader.

Maintenance

- ① Defect Removal Efficiency
- ② Request for change
- ③ Regression testing
- ④ Post mortum testing

① Defect Removal Efficiency :-

- DRE calculated at which level tester tested the application
- DRE calculate the level of test productivity or quality
- Formula of DRE = $A / (A+B)$

where, A = Defect Found by tester

B = Defect Found during user Acceptance testing.

- The ratio of A to B consider has good testing
- 4 phase of testing environment
 - ① Development Integration testing < involve-Developer >
 - ② System Integration Testing < involve-Tester >
 - ③ User Acceptance testing < customer-Tester-Involv. >
- 0.5 to 0.8 Average testing.
Ex So here A = 9
B = 10

$$DRE = \frac{A}{A+B} = \frac{9}{9+10} = 0.9.$$

② Request for change :- or char

- It is also called change request
- If customer want some change in his product that is nothing change Request
- CR is added into the SRS document at the end for the CR (Change Request) customer have to pay extra money for this.

③ Regression testing :-

- when we add any defect then that defect is fix by the developer then tester is going to check whether the defect is fix or not. That is retesting
- Because of that defect fixing any other functionality of an application does not get impacted that we are going to check is nothing but regression testing.
- Also we are going to perform the regression testing when the product is goes from SIT to UAT & UAT to production
- In the Regression testing we are going to check major functionality of an application
- we are going to perform High priority test cases
- Also we are perform Regression testing whenever any cr come from the customer

④ Post Mortem testing:-

- It is done by white box tester
- Then hole testing is done and product is ready for realise if if product is not producing desire output then white box tester should have to check in all modules in detail

Waterfall model

① In waterfall model step move in linear way

② In waterfall model testing activity start after the development phase

③ waterfall model is continuous process

④ It is not suitable for the project where requirement are continuously changing

⑤ If any requirement change is occurred we can't revert back.

V-model.

① In V model step move in a parallel way

② In V model testing Activity start with the first stage with parallel stage.

③ V-model is simultaneous process

④ It is suitable for the project where requirement are continuously changing.

⑤ If any requirement change is occurred then we can revert back by taking some extra amount from the customer.

Scrum - Better way of building Product
- delivering product of the highest possible value

Agile Methodology :-

① What is agile ?

Agile is an interactive and incremental approach to developed any software

② Different types of Agile methodology :-

→ XP (Extreme Programming)

→ Scrum

→ Lean

→ Kanban

→ DSDM (Dynamic system Dev method)

→ PDD (Future driven dev.)

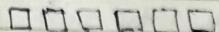
→ we are involved in scrum agile methodology

→ Frequently change in requirement does not impacted on any other phase of development

→ In V model after requirement get fixed the whole team focused on whole product development

→ In agile methodology project is divided into group of module like

ex. Project has 6 module



□□, □□, □□,

According to number of module team formation performed by product owner or scrum master

✓ model	Agile Methodology.
① customer	Stake holder
B.A.	Product owner
BRS	Product Backlog
SRS	sprint Backlog
Function Requirement in SRS	User stories
Release	Sprint
Project Manager	Scrum master.

- 7 3 actors
 - ① stake holder
 - ② Product owner
 - ③ Scrum master.

① stake holder:-

→ He is a top most body of organisation

① Architecture of Agile Methodology (pg. 1)

- He is gives the requirement to product owner
- He Has bunch of Requirement

② Product owner:-

→ Product owner is nothing but he is going to collect the Requirement from stake holder.

→ Product owner is responsible to prepare product backlog and sprint backlog.

→ He is a bridge b/w development team, testing team, & stake holder.

③ Scrum Master

→ Scrum master is a chair person of scrum meeting

→ He is going to check whether the sprint is going on smoothly or not

- 2 Backlogs Documents →
 - ① Product Backlog
 - ② sprint Backlog.

① Product Backlog:-

→ Product Backlog is nothing but product owner is going to store all requirement, user stories project in one backlog i.e. Product Backlog.

→ It is prepared by product owner

ex. if we have 10 user stories in one project
then we are going to store all 10 requirements
in one backlog

* Sprint Backlog :-

→ Prioritized the requirement

User Stories for current Sprint.

→ ex. if we have 10 user stories in whole project
then we are going to store 2 user stories
into sprint Backlog for current sprint

→ Sprint Backlog contain detail information
about the user stories

* User Stories :-

→ User stories are functional
Requirement for the module development

* Test cases :-

→ Test cases are designed by
tester on the basis of user stories

→ It is nothing but how to test particular
modules

* Estimation :-

→ It is nothing but how much
time we want to test that particular software
Estimation is done basis of 3 factors

estimation → ① knowledge

② Efforts

③ complexity

* Knowledge :-

→ It is nothing but how much
information that tester has of particular
User stories

→ whenever team Formation is done each member
of team should have knowledge about domain of
the project.

* Effort :-

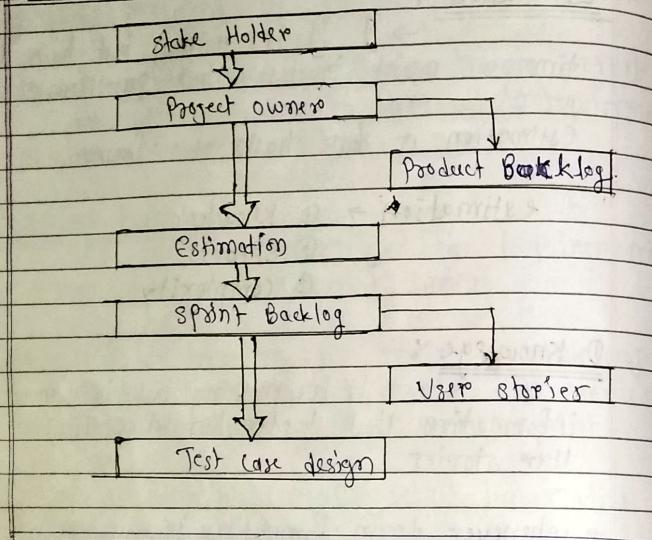
→ Under the efforts seniors decide how
much effort are required for the project

→ They decide how many resources we need to
complete that project

* Complexity :-

→ Complexity is given on the basis
of how much that particular user story
complex < in short easy, medium, hard)

XIII Architecture of Agile methodology.



Four Type of Geo ceremonies in Agile Methodology

- ① sprint grooming and planning session
 - ② scrum meeting
 - ③ sprint review meeting
 - ④ Sprint Retrospective meeting
- ⑤ Sprint Grooming and planning session :-

In Sprint grooming session product owner is going to groom the user stories to development team & Testing team.

He explain what customer want exactly, in this sprint.

In sprint planning we are going to estimate the user stories which was groomed in the grooming session.

We are going to estimate the user stories on the basis of knowledge, efforts, and complexity; in sprint planning meeting testing team give user stories point to the requirement.

User story points are nothing but how much time we want to test that User story.

(ii) Scrum meeting:-

It is a daily standup meeting in that we are going to discuss progress of our sprint.

People involve in scrum meeting, Scrum master, development team, testing team.

In that we are going to discuss what we did yesterday, what we are going to do today, & what are the road blocks or issues.

Q what we did yesterday ?

- In this we are going to tell status of our yesterday work.

Q what we are going to do today ?

- In that, what I am going to do for the day.

Q what are the road block or issue ?

- we are going to discuss difficulty in executing test case

issues :- lack of co-operation from the team

→ Defect not resolved by resolved by the developer then we are going to discuss this in scrum meeting.

(ii) Sprint Reviewing Meeting :-

- In the sprint review meeting, we are going to give the demo of the product to the stake holder.

- Means, we are explaining how we have developed the product.

- In Sprint Review meeting, stake holder, dev team, testing team, Scrum master &

Product owner is involved

- In betⁿ of the sprint we have check our Sprint is going on the right track or not

(N) Sprint Retrospective Meeting :-

- This meeting we are going to start schedule of finishing the 1st and before starting the next Sprint. In this meeting product owner, dev. team, testing team, scrum master is involved.

- In this meeting we are going to discuss what went well and what went wrong.

- If something went well then we are going to discuss how to overcome this issue in next Sprint.

2. Advantages :-

- Sprint wise delivery
- Working software is delivered frequently
- Customer, developer, tester, constantly interact with each other.
- Change Request are always welcome
- Check point after each module
- Implementation of automation

* Disadvantage :-

- less documentation.
 - There is no time for knowledge transfer in agile because sprint time is only one month
 - The project can quickly go off track if the product owner is not clear about the requirement.
 - Cost of agile methodology as compare to other models
- ⇒ Note - Retrospective meeting → database access didn't have so it takes 4 days to start test case on database.

* Advantages of Automation -

- less Resource requirement
 - less Resource means less cost
 - High Accuracy
 - less human errors
 - Required less time to complete.
- * Selenium is the main tool to do automation

* Sprint wise delivery -

- In V model
- Project duration 3 months
i.e.
- 1st Release = 3 month

3 month = 5 to 6 module

1 year = 4 Release.

→ In Agile methodology :-

1st Release = 1 month

2 months = 1 to 2 modules

1 year = 12 Release.

* Sprint wise delivery is module wise delivery or value driven methodology.

→ In Waterfall model -

1st release - 3 month

1 year - 4 Release

Ques. X

① Critical Function of Bank application ?

→ Security, Account, Transaction, Performance.

② Tool using for agility ?

→ JIRA is the perfect product management tool we are using for agile testing.

③ Scrum master is chair person of scrum meeting. JX

* User Stories

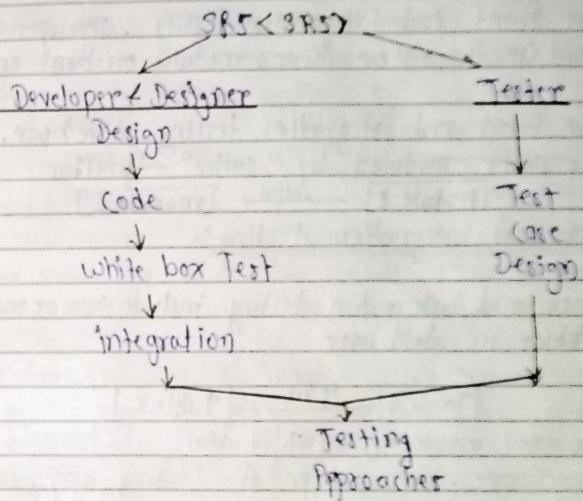
- prepare by product owner
- User Stories are nothing but Functional Requirements
- User Stories consist of two parts or containing
 - 1) Description
 - 2) Acceptance Criteria
- Description → It is the description about what you want to do & what it's desired output
- Acceptance Criteria :-

→ Different kinds of test scenarios are true then system generates correct output, otherwise system shows failure.
Ex. valid email, mobile number etc.

* Template for Description

As a <u>User type</u>	I want to	so that
<u>User type</u>	<u>process</u>	<u>benefit</u>
↓	↓	↓
Customer Purchase	what the user want to do	benefit
↓	↓	↓
Bank Customer Account	Want to Insert debit card in atm	so that It can open my account

* Integration Testing :-



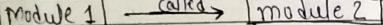
→ Integration testing is nothing but we are going to connect two or more modules & then we are going to check the functionality of connected module, whether it is working fine or not as per the customer requirement.

→ There are two types of integration testing:
① Front end integration testing
② Back end integration testing.

④ Form

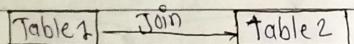
① Front end integration testing :-

→ In front end integration testing, developer connects two or more modules on front end.

→ In front end integration testing, developer connects modules by "called" function


② Back end integration testing :-

→ Back end integration testing include two or more tables in data base



→ connect module by 'Join' function

* There are three type of testing approaches:-

① Top down approach

② Bottom up approach

③ Bi-directional / Sandwich approach

① Top Down Approach :-

→ We have a main module for testing but we don't have a sub-module

→ The developer is going to create one dummy program for the sub-module.

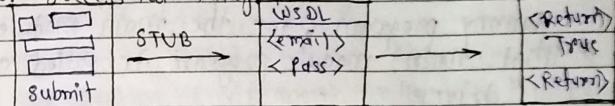
→ That dummy program nothing but "STUB"

→ That stub "STUB" is written in by developer format.

→ STUB is in XML format.

→ Request & Response in XML language.

* For successful integration



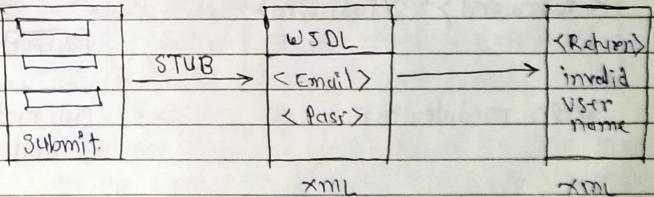
New module

XML

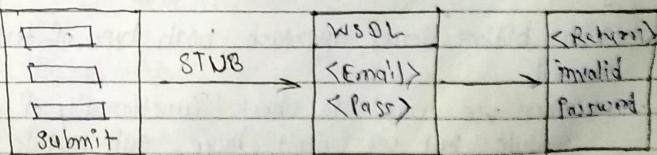
XML

→ URL for this ^{stub} module STUB in WSDL
 <web service description language>

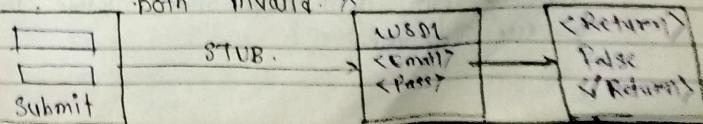
* For in case of invalid User Name.



* In case of invalid password.



* In case of user name and password are both invalid.



(ii) Bottom up Approach.

- We have a sub-module for the testing but we don't have a main module
- In that case we use bottom up approach
- To check sub module developer creates dummy program for the main module
- That main module program is called as "driver"
- It is also written in XML format

<FirstName> ?</FirstName> <LastName> ?</LastName> <Email ID> ?</Email ID> <Password> ?</Password>	User ID <input type="text"/> Password <input type="password"/> Submit
--	---

main module XML

Sub module in XML format.

driver.

(iii) Bi-Directional Approach.

- In bidirectional approach both type of testing is used.
- When we want to check functionality of main module but we don't have sub-module then we use "STUB" program.
- When we want to check functionality of sub-module but don't have main module, then we use "driver"

* ^{ze} zero level Testing :-

- Zero Level Testing is also called as smoke testing & build verification testing
- After integration testing is done we can start
- For Zero Level testing,
- Database analysis creates the test environment
- one testing environment is ready tester is going to do testing & check that whether the system is generated desired output or not.

* ^{ze} work [

- Whenever integration test ends, zero level testing starts]
- Database analysis team create a test environment
- Test environment DBA insert code
- called run the build . . .
- ex. If our project have to release in 7th month project Name is pythm then test environment is 1st 07. pythm.com . . .
- Create test environment tester do testing] X

* Tester do testing Per .

- 1) Basic core functionality
- 2) Tab Validation
- 3) Link Validation
- 4) Page Validation
- 5) GUI Testing (Graphical user interface)

① Basic Core Functionality :-

→ In that tester tests basic functionality of our application like buttons, icons etc.

→ Ex - There is submit button in sign up page then tester tested that submit button, whether it work or not.

② Tab validation :-

→ Tab validation test involves functionality of tabs

→ whenever we enter any value in tab by using on screen keyboard or physical keyboard.

→ Those characters, numbers & symbols should get generated in tab.

→ This functionality of tab is validate in tab Validation

③ Link Validation :-

→ Link Validation is the process in which sequence of interlink pages get tested.

→ Ex. If user click on flight icon then flight information page should be open.

④ Page Validation :-

→ It is also called as page navigation testing.

→ In that we click click on 'next' or 'Back' button or arrow \leftarrow, \rightarrow then page should navigate front & back.

⑤ GUI Testing :- (Graphical User Interface)

→ GUI stand for Graphical User interface

→ In this tester checks whether the page are displayed correctly or not, image should be visible clearly on the page.

→ This validation of visualization is called as graphical user interface.

* Example X [

→ Suppose we have paytm project

→ we develop module of bus ticket booking

→ we have to integrate in old module

→ Then developer it in paytm.

Sign in \Rightarrow Home page \Leftrightarrow more \Rightarrow Travel \Rightarrow ..

.. \Rightarrow Sleeper/seating \Rightarrow Time/desn \Rightarrow Book \Rightarrow ..

.. \Rightarrow Payment \Rightarrow Order ID

→ When this integration over, tester test the integration

→ This is verification of web involve in it

→ Now validation start

→ To check validation DB first create test environment.

Inf * Sanity testing :-

Difference b/w sanity smoke & sanity Testing

Smoke Testing

① smoke testing is nothing but we are going to check whether the build is ready for Testing or not

② smoke testing is performed by developer, Tester

③ smoke testing exercised the entire system end to end

④ smoke testing is nothing but normal health checkup of application

⑤ smoke testing is a part of tester(build) Acceptance Testing

⑥ smoke testing ~~per~~ is usually perform when we received a build from the developer

⑦ smoke testing is scripted

Sanity Testing:

① sanity testing is subset of Regression testing in that we are going to focus is on one particular part of our application

② sanity testing is usually performed by Tester

③ sanity testing exercised only the particular component of the entire system

④ sanity testing is a specialized checkup

⑤ sanity testing is a subset or part of regression testing

⑥ sanity testing is usually perform when any minimal changes are occurred in our application then we are going to perform Sanity test to check particular module functionality

⑦ sanity testing is not scripted

Smoke

smoke testing usually documented

check stability of Build.

Sanity testing is usually not documented

sanity testing done to check the new functionality / bug have been fixed

Focus on one particular part.