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* Software Testing :-
Testing is the process of executing software or program to find detect the errors, apply the test cases & find the required output.

* Advantages :-
1) Software is being developed according to user requirement development.
2) Removing the errors so that software will become as per requirement.
3) Number of users will increase.
4) Software Testing removes errors that leads to software / Hardware failure.
5) Software Testing ensure that the software confirms to user personel as well as business need.

* Types of Testing
1) Manual - Manual Testing include testing a software manually without using any type of automated tool or any type of script.

2) Automation - Automation Testing is a S/W Testing technique in which tester like script, or using any type of S/W.

* Roles
I) Test leader / Test Manager :-
1) Create team
2) Assign particular task
3) Understand the ~~deciplines~~ discipline of testing
~~Discipline~~

II) Test Architect :-
1) Formulate an integrated test architecture that support the testing process & create the estimation.
2) To develop short term as well as long term goals.

III) Test Designer or Tester :-
1) The role of test designer is to design the test cases, execute cases, ~~got the result~~ record result, finding error, detect solution.
design → execute → record result → finding error → detect soln.

IV) Test Automation Engineer :-
1) Role is to create automated test case script (program) that perform the test which is design by the designer

V) Software Tester :-
1) To check the s/w program, quality of program.
2) To check function of the program.

VI) Test Methodologist / Methodologist Specialist :-
1) The role is to perform all the steps sequentially
2) To provide resources to the programer.
3) It also check the quality of the s/w.

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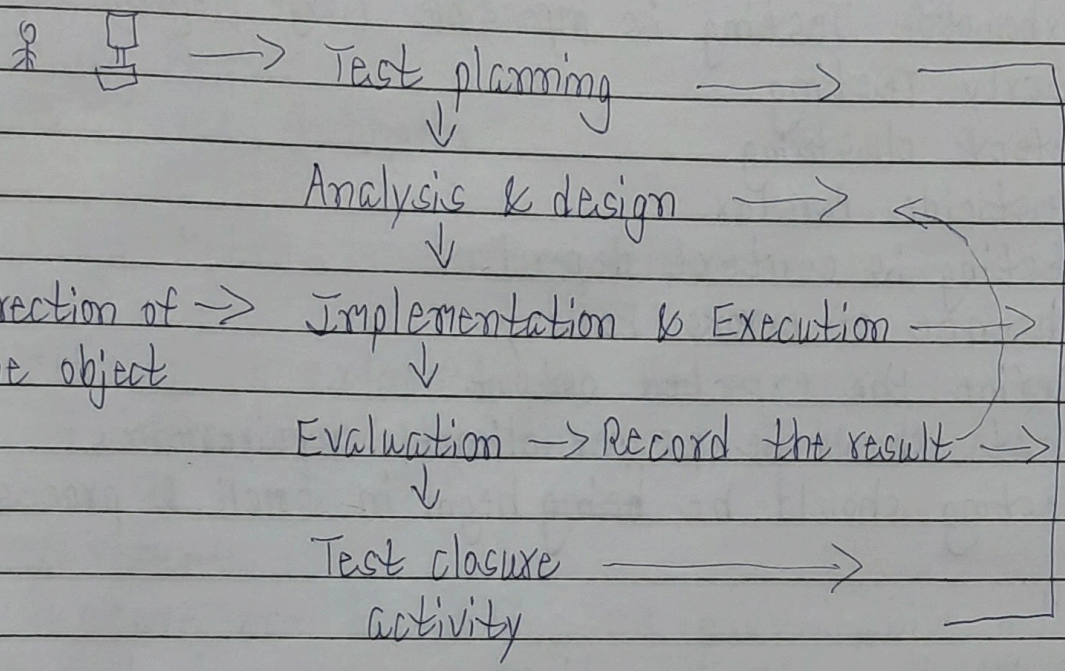
Testing process diagram



1. Fault - condition
2. Error - Syntax
3. Failure - System

★ 1) Error - Error is ~~it~~ mistake between actual value of the o/p given by the software and ≠ specified correct value of the o/p for that given input.

★ 2) Fault - Fault is the condition that causes the software or system failure in performing required function.

★ 3) Failure - Failure is the inability of the system or software to perform required function according to its specification.

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* Debugging Strategies
1) Back tracking
2) Elimination
3) slicing Program
4) Brute - Force dubbging

* Testing Metrics and Measurement
* Metrics

Metrics is extremely imp to measure the quality, cost & effectiveness of the project & processes.

* Measurement

Measure can be define as quantitative indication of amount, dimension, capacity or size of the product & process attribute.

* Metrics
1) Product Metrics
→ Project Metrics → users's requirement

→ Program Metrics

→ Productivity Metrics

2) Process Metrics → tool, programming language

* Life Cycle of Metrics
1) Analysis → identify
→ create
2) communicate → stackholders
→ Managers
→ Employee, users
3) Evaluation - The user and other employee will check the working of the software.

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4) Report - user will give feedback about the software to the creator about its working.

* characteristics
1) Economical
2) Language Independent
3) Quantitative (countable)
4) Understandable
5) Repeatable

* Measurement
1) Direct → size, speed, accuracy, storage, time.
2) Indirect → Functionality, performance, quality, ~~time~~ reliable, complexity.

* Qualities/ Activities of Measurement
1) control
2) Understand
3) Improvement

* Verification
Verification means checking the program confirmed to its specification.

* Validation
It is checking the program as implemented meets the expectation of the customer.

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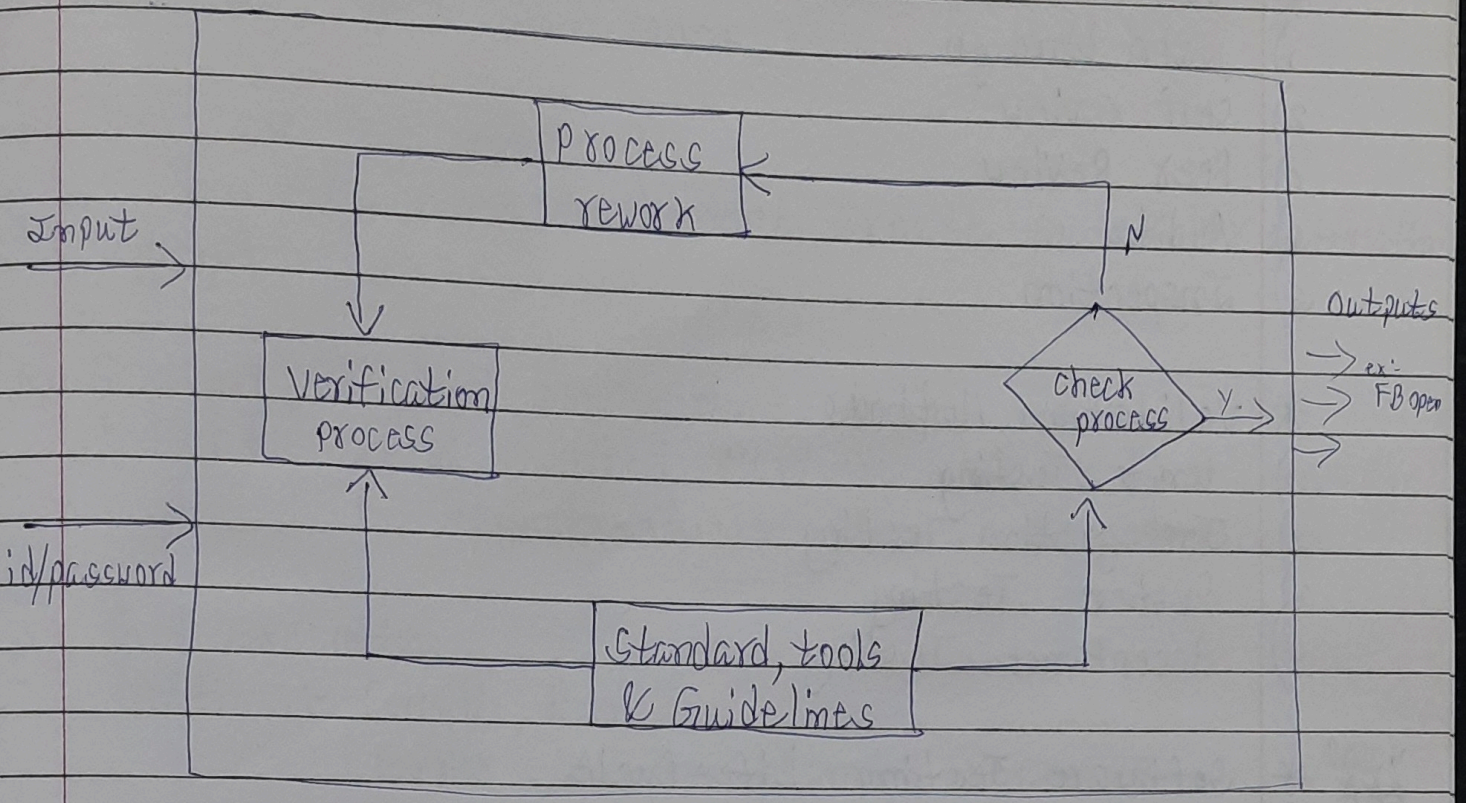
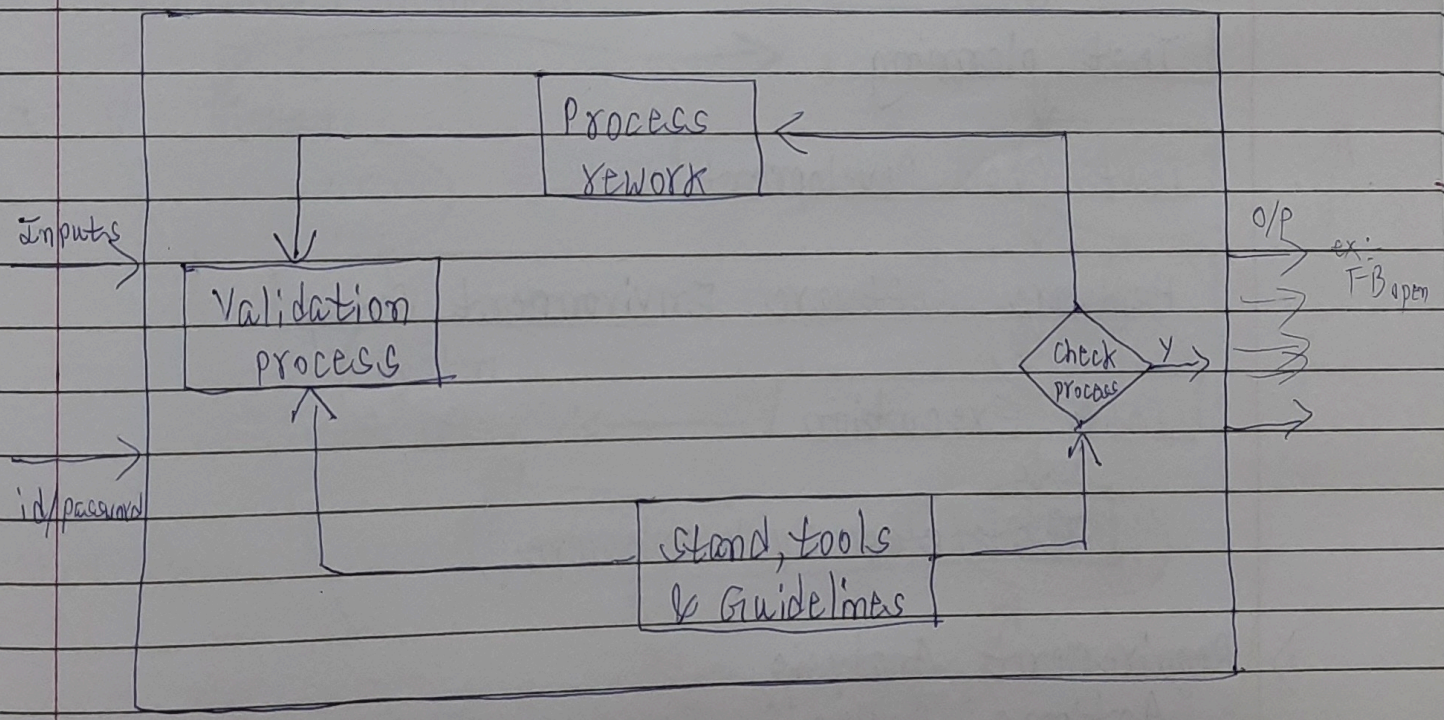
Verification & Validation



Workbench of Verification



validation

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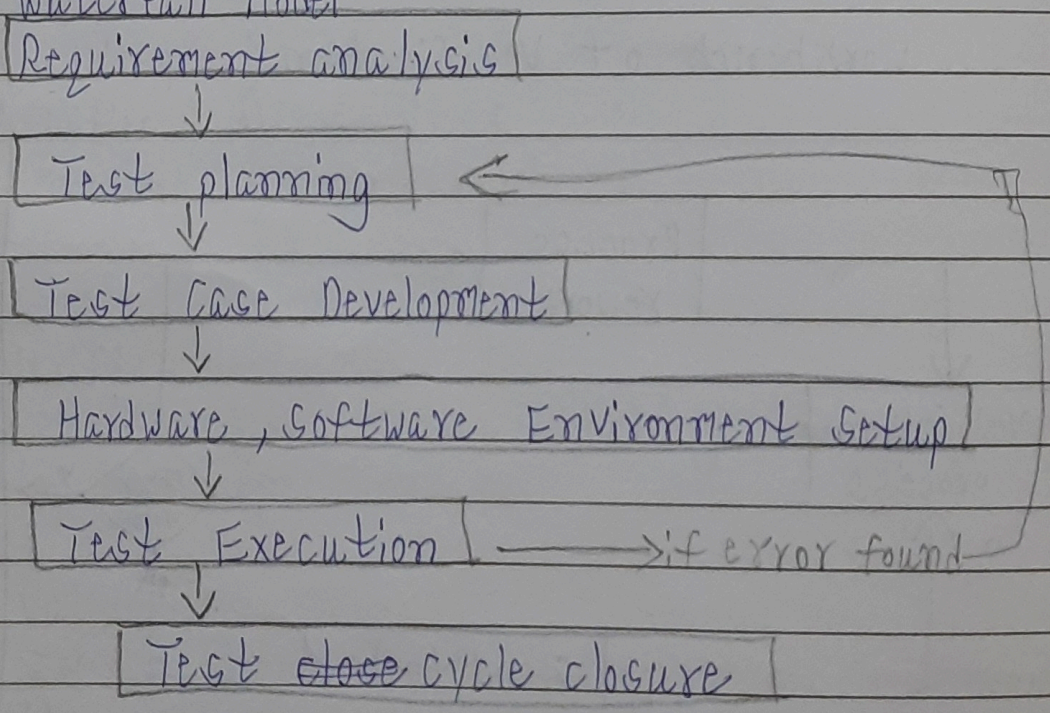
* Verification process Methods
1) Walk through
2) Self review
3) Peer ReView
4) Audits
5) Inspection

* Validation Methods
1) Unit Testing
2) Integration Testing (combination)
3) System Testing
4) Acceptance Testing

VJMP *** * Software Testing Life-Cycle
1) Waterfall Model



1) Requirement Analysis
Actions - Collecting users requirement, visiting working area, Online advertisement.

2) Test planning
Actions :- Tools, Test cases

3) Test case Development
In the case development create cases or automation Script

4) Hardware, software Environment Setup
Actions :- check required Hardware and software, knowledge of Hardware & Software is also Important.

5) Test Execution
Actions :- Compile, Run
Error → Test planning recreate

6) Test cycle closure
Actions :- Complete

5M Jan * V V Model