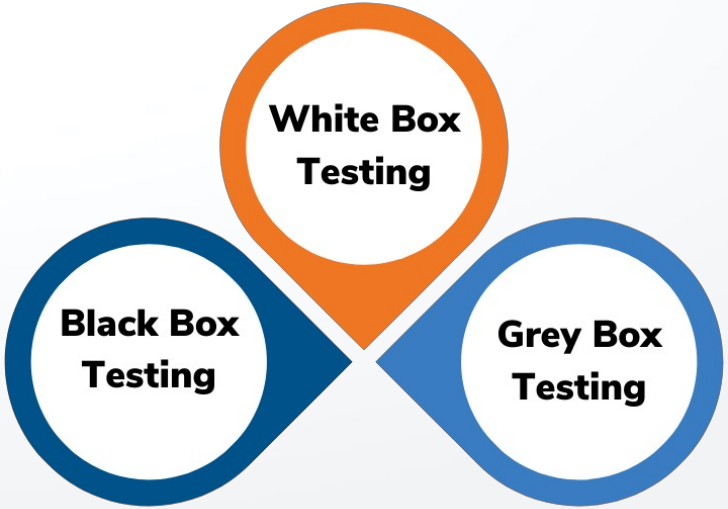
SESSION 3

QA Vs QC

- QA is Process related.
- QC is the actual testing of the software.
- QA focuses on building in quality.
- QC focuses on testing for quality.
- QA is preventing defects.
- QC is detecting defects.
- QA is process oriented.
- QC is Product oriented.
- QA for entire life cycle.
- QC for testing part in SDLC

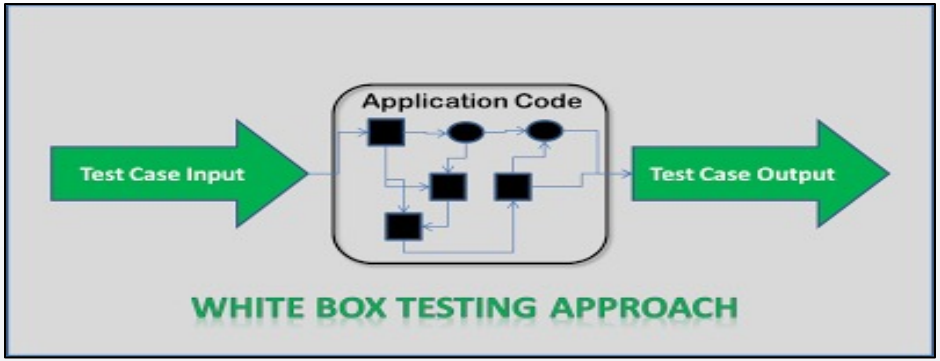
Testing Methodologies

- White Box Testing
- Black Box Testing
- Grey Box Testing



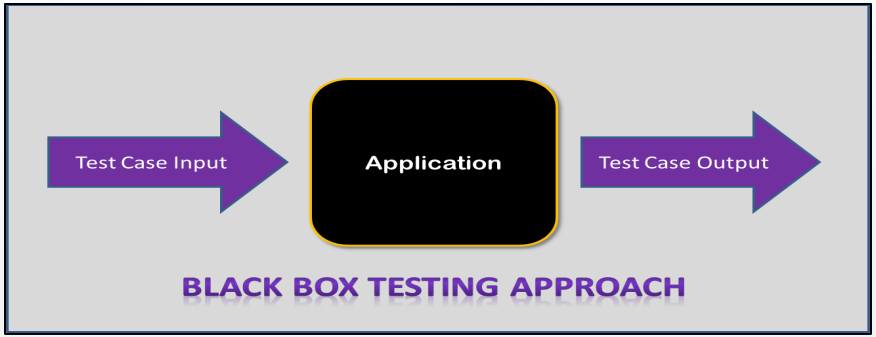
White Box Testing

- White Box Testing conducts on internal logic of the programs.
- Programming Skills are required.
- Ex: Unit Testing & Integration Testing



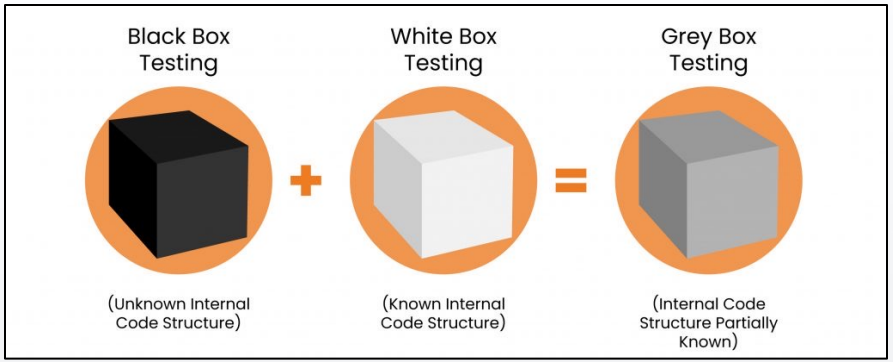
Black Box Testing

- Testing conducts on functionality of the application whether it is working according to customer requirements or not.
- Ex: System Testing & UAT Testing



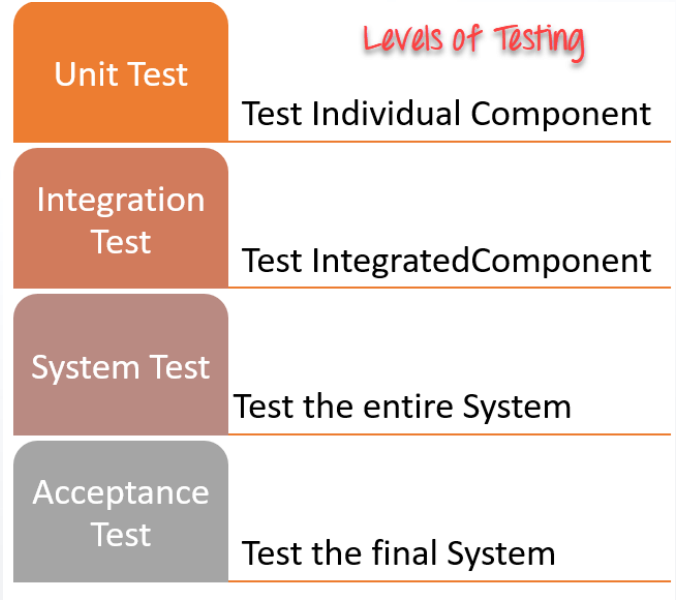
Grey Box Testing

- Both combination of white box and black box testing.
- Ex: Database Testing



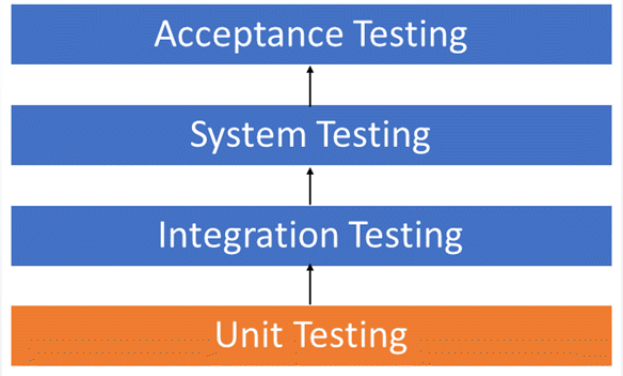
Levels Of Testing

1) Unit Testing
2) Integration Testing
3) System Testing
4) UAT Testing



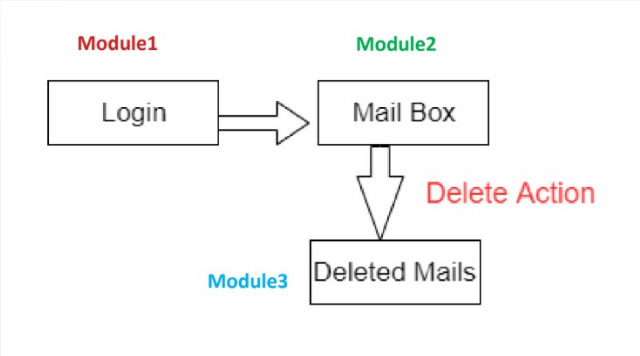
Unit Testing

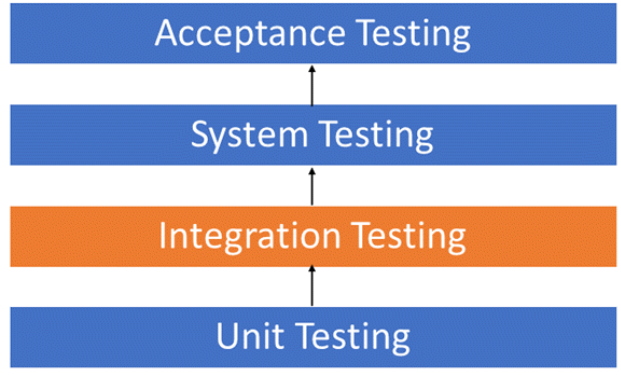
- A unit is a single component or module of a software.
- Unit testing conducts on a single program or single module.
- Unit Testing is white box testing technique.
- Unit testing is conducted by the developers.
- Unit testing techniques:
  - Basis path testing
  - Control structure testing
    - Conditional coverage
    - Loops Coverage
  - Mutation Testing



Integration Testing

- Integration testing performed between 2 or more modules.
- Integration testing focuses on checking data communication between multiple modules.
- Integrated Testing is white box testing technique.
- Example:





Integration Testing Types

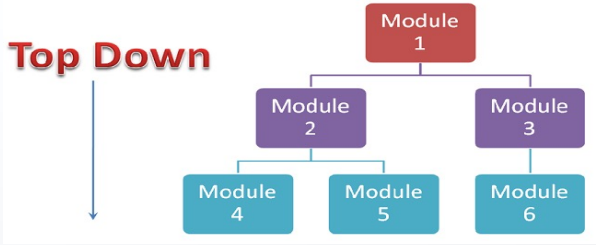
- Incremental Integration Testing
- Non- Incremental Testing

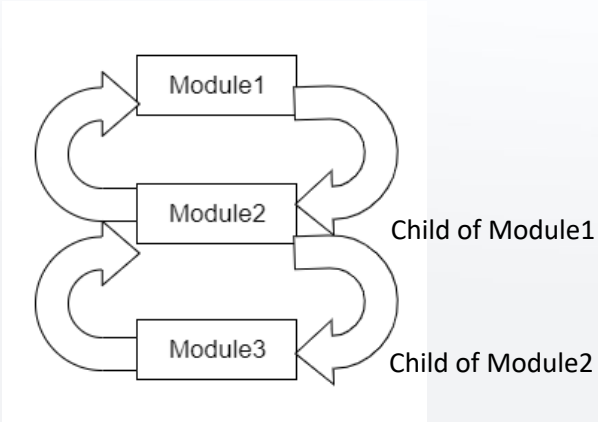
Incremental Integration

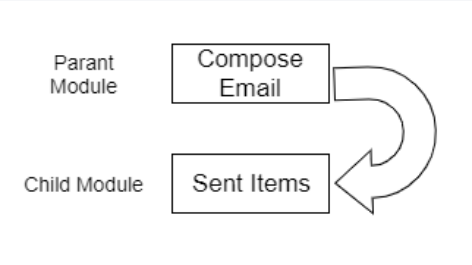
- Incremental Integration : Incrementally adding the modules and testing the data flow between the modules.
- There 3 Approaches
  - Top Down
  - Bottom Up
  - Hybrid(sandwich)

Incremental Integration (Top down Integration)

- Incrementally adding the modules and testing the data flow between the modules.
- Ensure the module added is the child of previous module.
- Takes help of stubs for testing.

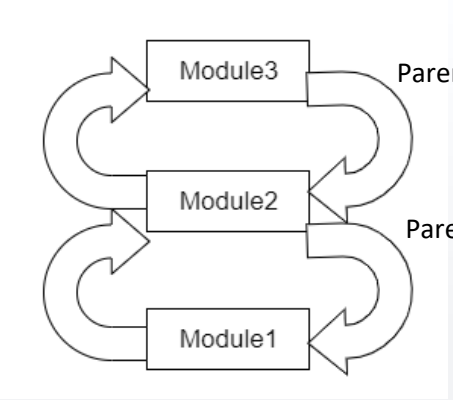


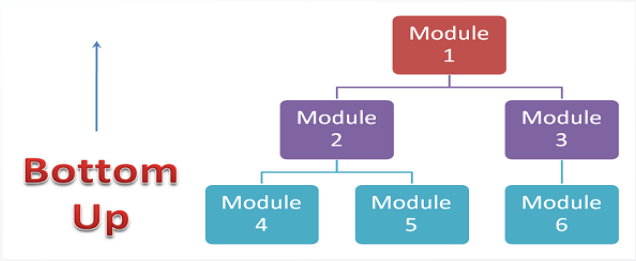


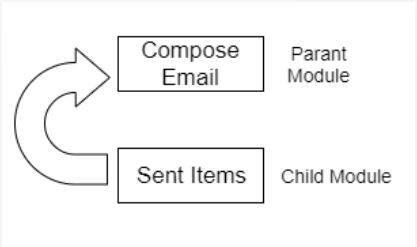


Incremental Integration(Bottom-Up Integration)

- Incrementally adding the modules and testing the data flow between the modules.
- Ensure the module added is the parent of the previous module.







Incremental Integration (Sandwich/Hybrid Approach)

- Combination of Top-Down & Bottom Up approach is called Sandwich Approach.

Non- Incremental Integration Testing/Big Bang Testing

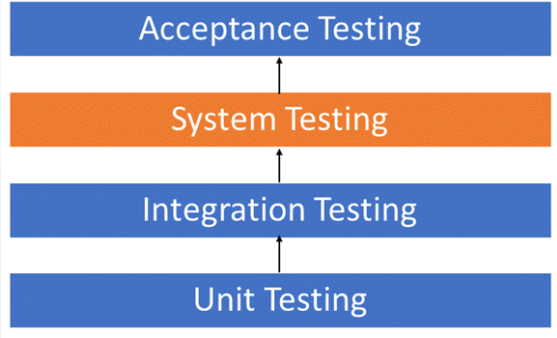
- Adding all the modules in a single shot and test the data flow between modules.
- Drawbacks:
  - We might miss data flow between some of the modules.
  - If you find any defect we cant understand the root cause of defect.

Integration Testing – Stubs & Drivers

- Stubs and Drivers are the dummy programs in Integration testing used to facilitate the software testing activity. These programs act as a substitutes for the missing models in the testing. They do not implement the entire programming logic of the software module but they simulate data communication with the calling module while testing.
- **Stub:** Is called by the Module under Test.
- **Driver:** Calls the Module to be tested.

System Testing

- Testing over all functionality of the application with respective client requirements.
- It is a black box testing technique.
- This testing is conducted by testing team.
- After completion of component and integration level testing's we start System testing.
- Before conducting system testing we should know the customer requirements.
- System Testing focusses on below aspects.
  - User Interface Testing (GUI)
  - Functional Testing
  - Non-Functional Testing
  - Usability Testing



User Acceptance Testing (UAT)

- After completion of system testing UAT team conducts acceptance testing in two levels.
  - Alpha testing
  - Beta testing