Introduction To Software Testing

Index

- Definition
- Why Software Testing is important?
- Software Testing Types
- Software Testing Levels
- How to write a test case?

Definition

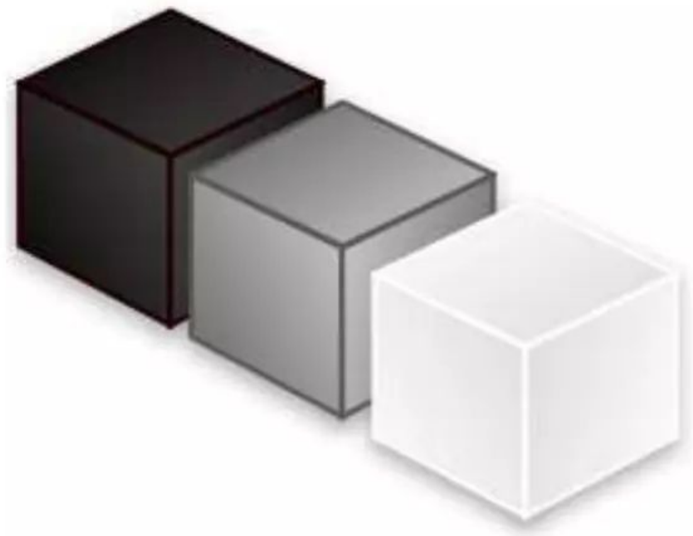
- Software testing is a process used to identify the correctness, completeness and quality of developed computer software. It includes as set of activities conducted with the intent of finding errors in software so that it could be corrected before the product is released to the end user.

Why Software Testing is important?

Software Testing Types

Software testing types

- White box Testing
- Black box Testing
- Gray box Testing



WHITE BOX TESTING

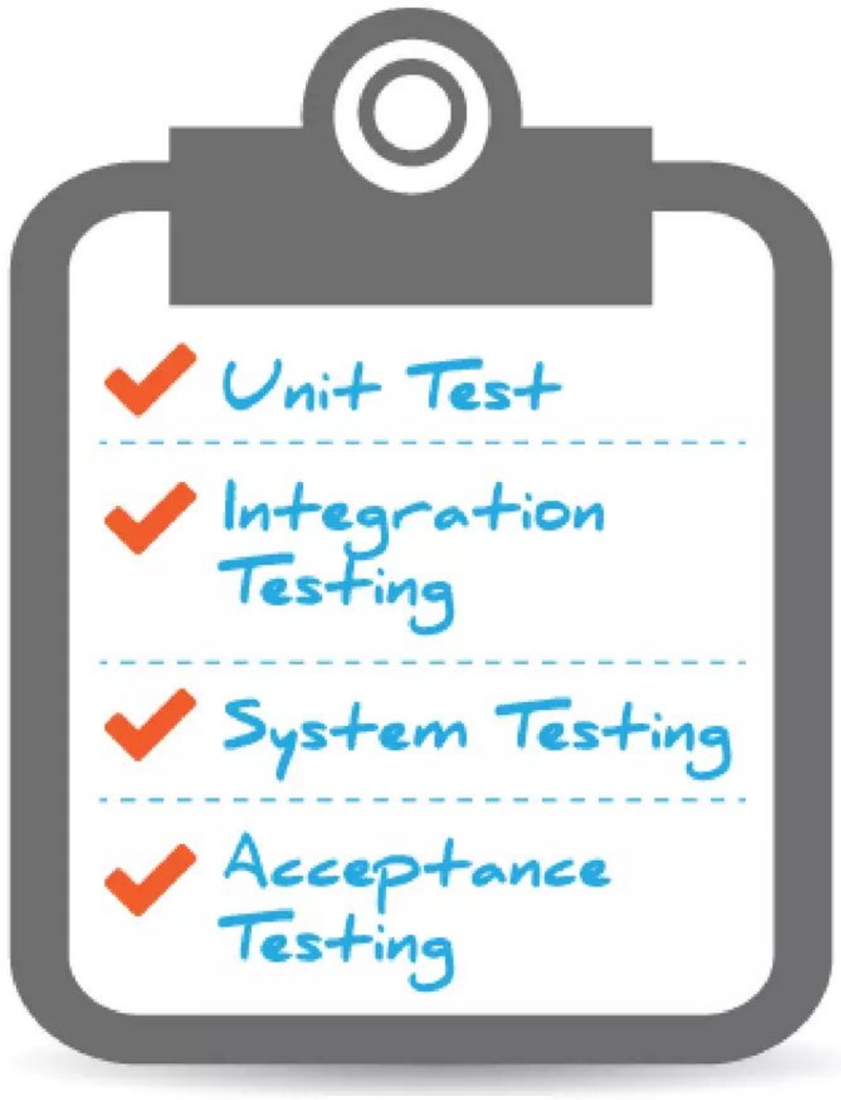
- White box testing is also called glass testing or open box testing. In order to perform white box testing on an application, the tester needs to possess knowledge of the internal working of the code.
- The tester needs to have a look inside the source code and find out which unit/chunk of the code is behaving inappropriately.

Black box Testing

- The tester only knows the inputs and what the expected outcomes should be and not how the program arrives at those outputs.
- The tester does not ever examine the programming code and does not need any further knowledge of the program other than its specifications.

Gray box Testing

- Gray box testing, also called gray box analysis, is a strategy for software debugging based on limited knowledge of the internal details of the program. A gray box is a device, program or system whose workings are partially understood.



Software Testing Levels

Unit Testing

- Unit is the smallest testable part of an application.

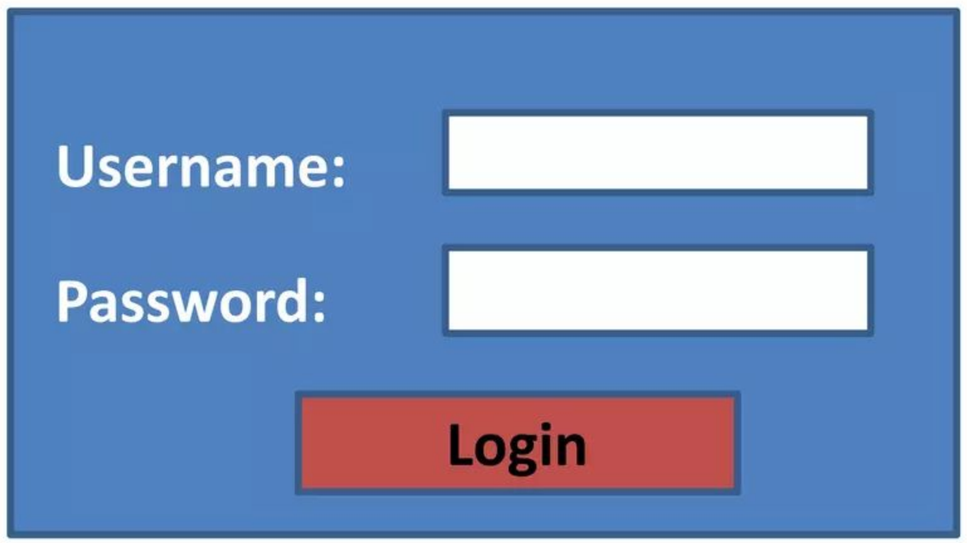
- Unit tests are created by programmers or occasionally by white box testers during the development process to ensure that code meets its design and behaves as intended.

- Unit tests find problems early in development cycle.

- In object oriented programming a unit could be a class or an individual method or a standalone module.

Example

- Consider the login module



Typical unit test cases are:

1. Credentials are valid
2. Credentials are invalid
3. Empty textboxes

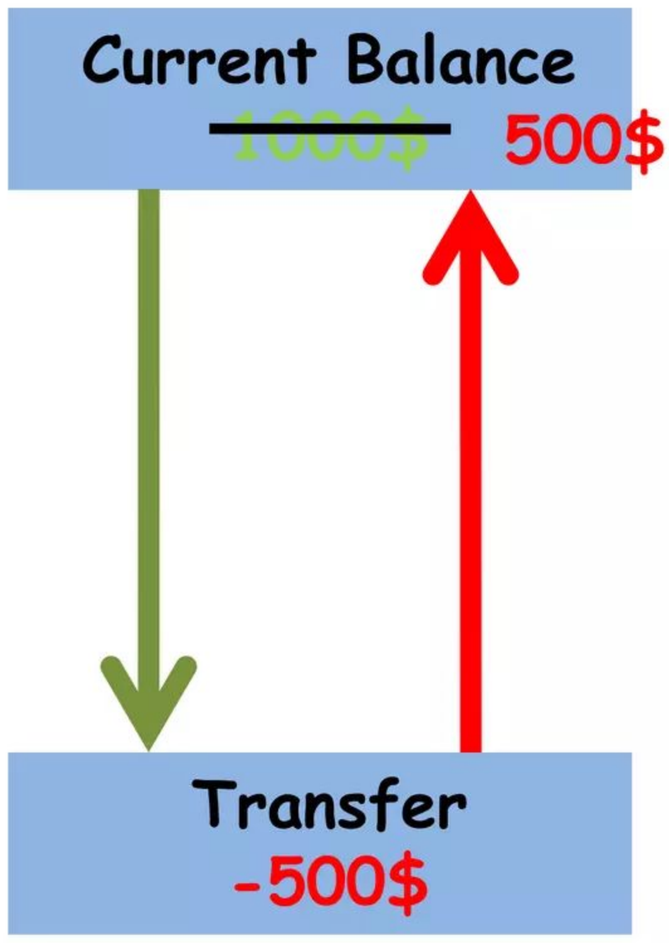
Integration Testing

- Integration testing combines unit tested modules and tests how they interact

- Any errors discovered when combining units are likely related to the interface between units.

Example (balance transfer scenario)

- In a banking application user is using current balance module. His current balance is 1000$.
- User also used transfer module to transfer 500$ to another account.
- When transfer is done current balance must be 1000 – 500 = 500$



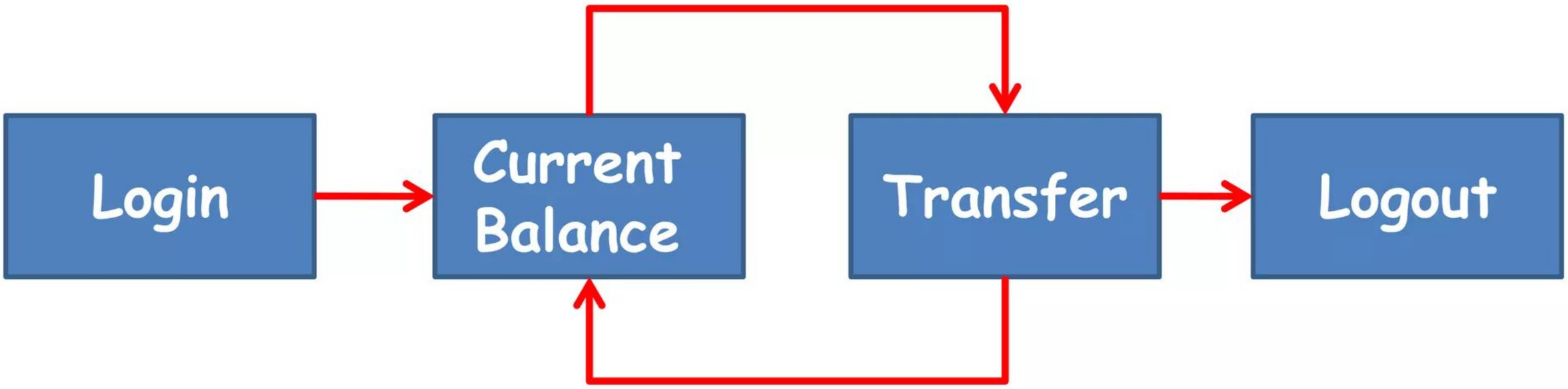
System Testing

- System testing involves the external workings of the software from the user's perspective.

- Testing is done by a professional testing agent on the completed software product before it is introduced to the market.

- System testing falls under the black box testing category of software testing.

Example (Banking Application)

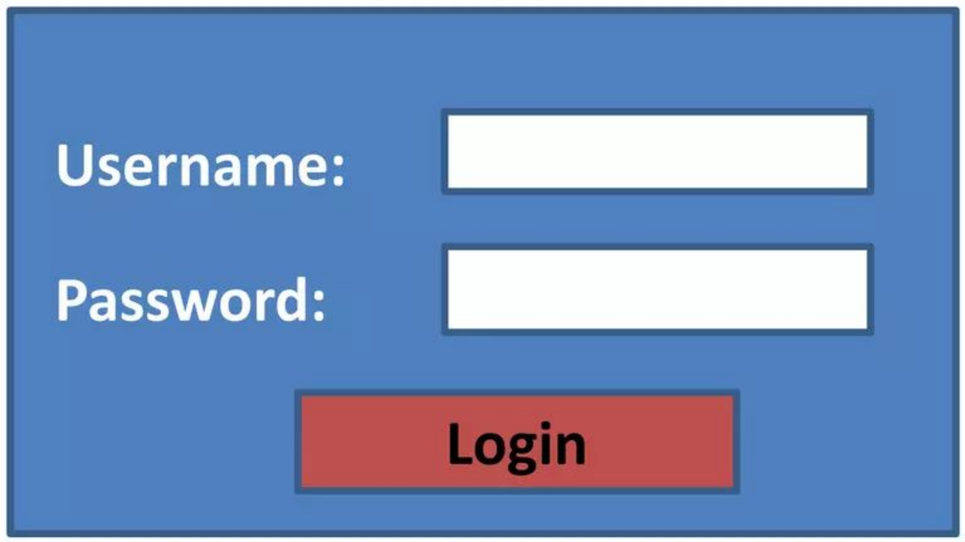


Acceptance Testing

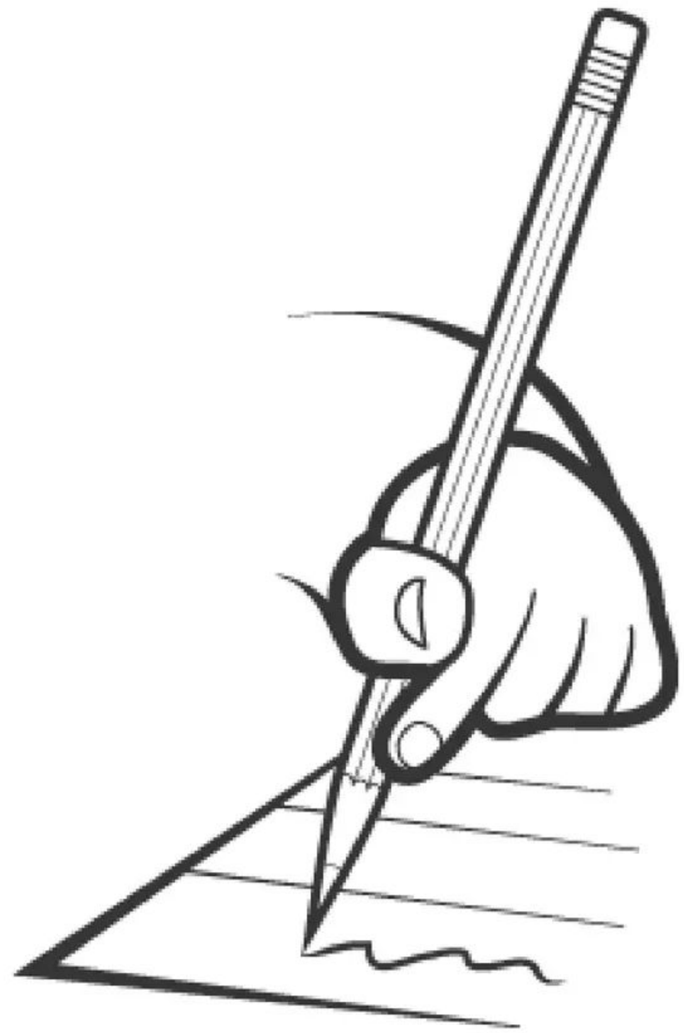
- Acceptance testing is usually done at client location by the client.

- Focus of Acceptance testing is not to find defects but to check whether the system meets the client requirements.

Example (Login)



- Acceptance Test can be done in 2 ways:
  - A small set of employees credentials
  - A small set of customers



How to write a test case?

- Consider The “Check login functionality” test scenario.
- There are many possibility to check this scenario:
    1. Check response on entering a valid user and password
    2. Check response on entering an invalid user or password
    3. Check response on entering empty values
- These possibilities are called test cases.

- Consider the test case **“Check response on entering a valid user and password”**
- This test case needs input values:
  - » Username: alaa
  - » Password: 123456
- The Expected Result is: Login successful
- We must specify test steps for each test case.

- For this example test steps are:
  1. Launch application
  2. Enter agent name
  3. Enter password
  4. Click Ok button
- Each Test case may have pre-conditions and post-conditions:
  - Pre: Application must be installed successfully
  - Post: Login Date and Data must be stored in a database.

- When test steps are finished Actual Result must be documented.

- If Actual Result is equal to expected result the test case is passed. If not, test failed

Test Steps

Test Scenario	Test Case	Pre Conditions	Test Step	Test Data	Expected Result	Actual Results	Pass/ Fail
Check Login Functionality	Check response on Entering valid Agent Name & Password	Flight Reservation Application must be installed	1. Launch Application 2. Enter Agent Name 3. Enter Password 4. Click OK button	Agent Name : guru99 Password : MERCURY	Login must be successful.	Login Successful	Pass

Any Question?