**Testing:**

Testing is use to find the defect or error or bugs in application without main file or main class. using testing we check actual and expected output. If both match test is pass else fair.

Testing

Black box testing :

Input Process output

White box testing :

Input Process Output

**Unit testing :** Unit testing is a type of white box testing. Which help to test individual component of application. Generally unit means independent code work inside function/ methods. Using unit testing we need to check function functionality working not.

In JS

function addNumber(a,b) {

var sum = a+b;

return b;

}

In Java

class Operation {

public int add(int x, int y) {

int sum = x+y;

return sum;

}

}

Unit Testing in Java.

**Junit** : Junit is third party framework which provide set API which help to do unit testing for java code.

Junit 3.x

Junit 4.x

Junit 5.x version

**Test NG** : Test next generation : which also help to do unit testing as well as integration testing.

**Selenium with Test NG**

JavaScript testing:

**Jasmine**

**Node JS** Mocha with Chai

React JS: **JEST**

Angular: **Jasmine with Karma**

**Core Java program Unit testing using Version 4.x version**

By default eclipse IDE provided Junit plugin.

**Junit test case :** it is a type of test class which contains more than one test method with **@Test** annotation which help to testing particular method functionality working or not.

**Junit test suite**

**Testing hook function**

**Annotation**

**@BeforeClass : this method execute only once before test case class.**

**@Before : it will execute before each test function**

**@AfterClass : it will execute after all test function**

**@After : it will execute after all test functions.**

**Test suite :** it is a type of class which help to run more than on test case class.

**Junit 5.x version**

Junit 5.x version support Java 8 features.

Unit 5.x version we use different modules as Jupiter, Vintage and Platform modules.

Mock the object or layer

Service layer can mock to DAO layer

Dao layer can mock to Database

Controller layer can mock to Service layer

View technology can mock to rest api or controller

**Spring boot testing**

Spring boot provided Junit 5.x dependencies starter.

TestNG: Test NG is another Testing framework base upon Unit testing and nUnit testing.

Test Ng: Testing for next generation. Light weighted framework. Test NG we can use for unit testing as well as integration testing.

**Selenium automation** testing tool: Using Selenium we can do the Testing for UI page(Web application develop using any language using html, jsp, asp, php, angular, react js).

Selenium is base upon DOM concept. Selenium provided driver concept to load the web page on browser(we need to configure browser driver). It provided DOM related functions to access particular tag or elements contents using class selector, id selector, name selector, css selector. Then we get the value of that particular tags.

We need to integrate **JUnit or Test NG** tool. Because tool or framework provided assert function/ method to check actual and expected output.

Selenium support all language like Java, python, JavaScript etc.