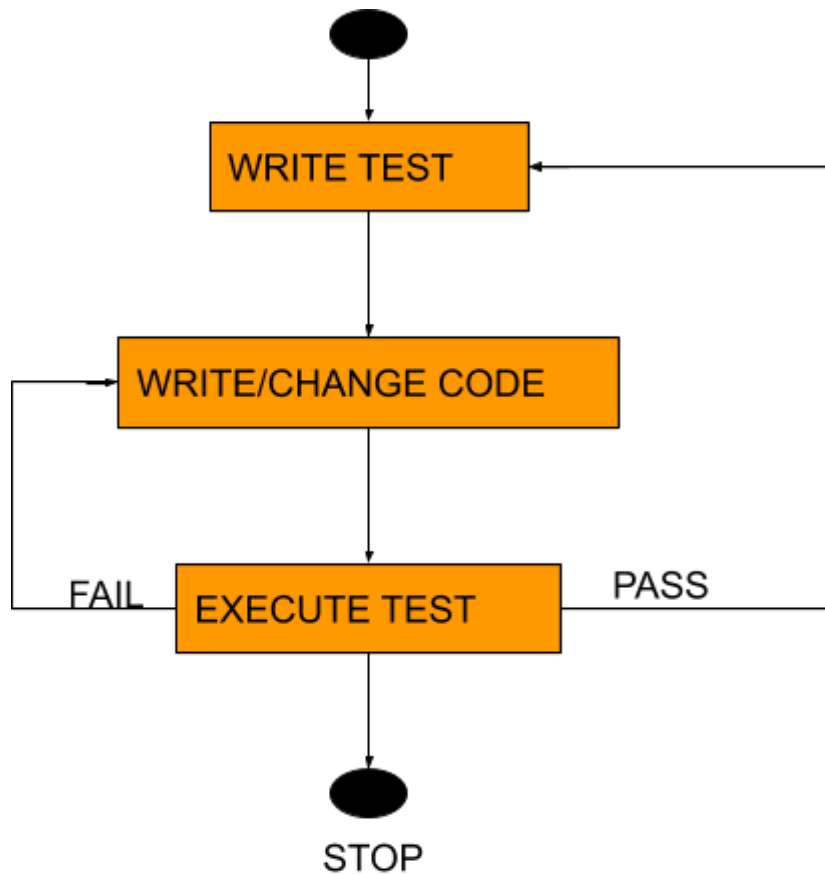


Test Driven Development

- Test-driven development starts with developing a test for each one of the features.
- The test might fail as the tests are developed even before the development.
- The development team is supposed to write code that can make test cases successful.
- It is also known as a Test First approach.



- TestNG and JUnit follow this approach.

JUnit

- JUnit is an open source Unit Testing Framework for JAVA.
- It is used for Unit Testing of a small chunk of code
- It finds bugs early in the code, which makes our code more reliable.
- JUnit is useful for developers, who work in a test-driven environment.
- To write and execute tests we need to use annotations

Requirements

- Junit jar file :-
https://drive.google.com/file/d/1SSN2uc_oPcmByUDhGRXYDNayhwF27g7Z/view
- Selenium jars

Annotations

- Annotations start with @ symbol and each annotation holds some meaning or behavior about when it will be executed.
- @Test annotation is written for the test case to be executed.

Annotation hierarchy is as:-

- @BeforeClass – Run once before any of the test methods in the class, public static void
 - @Before – Run before @Test, public void
 - @Test – This is the test method to run, public void
 - @AfterClass – Run once after all the tests in the class have been run, public static void
 - @After – Run after @Test, public void
 - @Ignore- To ignore any test method.
-
- @BeforeClass
 - @Before
 - @Test
 - @After
 - @AfterClass

TestNG

- TestNG is a open source testing framework.
- It is inspired from JUnit and NUnit with some new additional functionality that make it more powerful and easier to use.
- It provides additional annotations.
- It follows TDD approach.
- TestNG has the flexible Unit Testing by its annotations whereas JUnit don't have.
- TestNG can be easily managed by xml file(own xml file).
- TestNG is easily integrated to Jenkins by its xml.
- Support for parameters.
- Supports dependent methods testing.
- Allows to set priority.
- Allows to divide testing into groups.

Requirements

- TestNG plugin
Or
<http://beust.com/eclipse/>
- Selenium jars

Annotations

- It is a comment added to a text or method.
 - TestNG provides a wide variety of annotations.
 - Each of these annotations holds some predefined meaning.
 - Provides a clear picture of program execution.
 - Helps in code reusability.
 - Annotations start with @symbol
 - Allows us to pass additional parameters
- **@BeforeSuite**
 - @BeforeTest
 - @BeforeClass
 - @BeforeMethod
 - @Test
 - @AfterMethod
 - @AfterClass
 - @AfterTest
 - **@AfterSuite**
 - @DataProvider

- @Factory
- @Listeners

Definations

- **@BeforeSuite**
 - Runs only once before all tests from the suite.
- **@AfterSuite**
 - Runs only once after all tests from the suite.
- **@BeforeClass**
 - Runs only once before the first test method.
 - The Current Class method will be one from which it is invoked.
- **@AfterClass**
 - Runs only once when all the test methods mentioned in the current class are executed.
- **@BeforeTest**
 - Runs before any test method inside the <test> tag is run. (in testNG.xml file).
 - It runs before the execution of classes takes place.
- **@AfterTest**
 - Runs after any test method inside the <test> tag is run. (in testNG.xml file).
 - It runs after the execution of classes takes place.
- **@BeforeMethod**
 - The BeforeMethod runs before each test method.
- **@AfterMethod**
 - The AfterMethod Annotation runs after each test method.
- **@DataProvider**
 - DataProvider annotation method returns an Object[][] type value, where each Object[] can be assigned as the parameter of the test method that wants to receive the data from this DataProvider annotation method.
- **@Listeners**
 - Defines listeners on a test class.
 - The listener is an interface that modifies the default TestNG's behavior or result.
 - It "listens" to the event defined in the selenium script and respond accordingly.
 - It changes the way output is shown.

Types of listeners are:-

1. IAnnotationTransformer
2. IAnnotationTransformer2
3. IConfigurable
4. IConfigurationListener
5. IExecutionListener

6. IInvokedMethodListener
7. IMethodInterceptor
8. IReporter
9. ISuiteListener
10. IHookable

- **@Test**

- Marks a class or a method as a part of the test. Or in simple words, makes a method as the test method.

TestNg xml file

Xml file

XHTML

```
<suite name="Suite">  
  <test name="Sample Grouping">  
    <groups>  
      <define name="All">  
        <include name="Login"/>  
        <include name="Search"/>  
      </define>  
      <run>  
        <include name="All"/>  
      </run>  
    </groups>  
    <classes>  
      <class name="automationTestNG.Grouping" />  
    </classes>  
  </test>  
</suite>
```

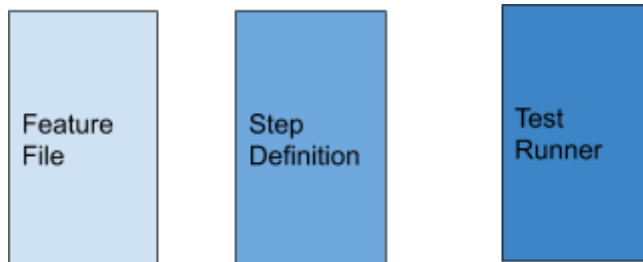
Behaviour-Driven Development

- Behaviour-Driven Development (BDD) is a collaborative approach to software development that bridges the communication gap between business and IT.
- A typical project using behavior-driven development would begin with a conversation between the developers, managers, and client to form an overall picture of how a product is intended to work.
- Behavior Driven testing is an extension of TDD. Like in TDD in BDD also we write tests first and then add application code.
- Tests are written in plain descriptive English type grammar.
- Tests are explained as the behavior of the application and are more user-focused.

Cucumber

- Cucumber is a testing framework which supports Behavior Driven Development (BDD).
- It lets us define application behavior in plain meaningful English text using a simple language called Gherkin.
- Cucumber itself is written in Ruby, but it can be used to “test” code written in Ruby or other languages including but not limited to Java, C# and Python.

Components of Cucumber



Feature File

- It is used to write test automation steps or acceptance tests.
- The steps are the application specification.
- All the feature files end with .feature extension.
- It uses keywords like
 - Scenario
 - Given
 - When
 - And
 - Then
 - And

Step Definition

- It includes a definition of each and every step of the feature file.

Test Runner

- It runs Step definitions and feature files together

Requirements:-

- Natural plugin
- Cucumber plugin

Or

<http://cucumber.github.com/cucumber-eclipse/update-site>

- Maven plugin
- Dependencies -

https://drive.google.com/file/d/11W7kIRX4ZINIOXbDtI9c55ggXI-Y_hYH/view