

TestNG (Test Next Generation)

- #. It reduces the dependency of java main method.
- #. TestNG is a testing framework which is designed to cover all category of tests
 - 1. Unit, Functional, End-to-End, Regression etc...
- #. It Overcome the limitation of another popular testing framework called Junit.
- #. Most of the Automation Test Engineer will use TestNG because of its advantages:-
 - 1. Generates Automatic Report.
 - 2. Support multiple Annotations which make testers life easy.
 - 3. Test Cases can be Grouped & Prioritized more easily.
 - 4. Support Parallel Execution.
 - 5. We can parameterized our selenium tests using TestNG.
 - 6. We can run only failed Test Cases using testing.xml.No need to run full test suite in case of failure.

TestNG Annotations:-

C- Class : @BeforeClass, @AfterClass

G- Groups: @BeforeGroups, @AfterGroups

S- Suite: @BeforeSuite,@AfterSuite

T- Test : @BeforeTest,@AfterTest

@Test : It plays a vital role as function annotated with @Test will consider as a Test Case.

@DataProvider

Execution Level Hierarchy of TestNG Annotations.

S-Suite : @BeforeSuite

T-Test : @BeforeTest

C-Class : @BeforeClass

M-Method : @BeforeMethod

@Test

@AfterMethod

@AfterClass

@AfterTest

@AfterSuite

Sequencing & Prioritizing

#. If we want the method to be executed in our order, then we need to use 'priority' parameter.

Example:- @Test(priority=3)

#. Sequence of execution will be in ascending order.

#. Lowest Priority test cases will be executed first.

#. There is no need of values to be consecutive.

#. We can set -ve (negative) priority as well.

#. If Priority is same, then execution will start on alphanumeric order.

How to Skip Test Cases:-

1. `@Test(enabled=false)`
 2. `@Test(invocationCount=0)`
 3. `throws new SkipException("Any Message")`
 4. `@Test(dependsOnMethods={"methodName"})`
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How to Execute Multiple Test Cases or Test Suite:-

#. Running a Test Case together is called executing a Test Suite.
#. In TestNG Framework, we need to create "testng.xml" file to create and handle multiple classes.

How to Create testng.xml file??

#. Right Click on the package where your test classes resides.
#. Select TestNG
#. Select "Convert to TestNG" option.
#. testNG.xml file will be created.
#. Open the testng.xml and observe that it has our entire test classes mentioned inside tag <classes>
#. Run this testng.xml file.

Notes:-

- #. TestNG execute test methods based on alphabetical order.
- #. `@Test(priority=num)` control the order of execution.
- #. Once you provide priority to the test methods , then order of methods is not considered.
- #. priorities can be random numbers(no need to have consecutive numbers)
- #. If you don't provide priority then default values is Zero(0).
- #. If the priorities are same then again execute methods in alphabetical order.
- #. Negative values are also allowed in priority.
- #. TestNG execute test methods only if they are having @Test annotations.

Test Case 1:

1. Login
2. Search ----- @Test
3. Logout
4. Login
5. Advance Search ----- @Test
6. Logout

Note:-

- #. There is No Rule like,we have to use all the annotations.
- #. We can used based on the Test Cases and Requirement.

1. Login--BeforeMethod
 2. Search--@Test
 3. Logout--@AfterMethod
 4. Login
 5. Advance Search
 6. Logout
-

1. Login --@BeforeClass
2. Search-- @Test
3. Advance Search-- @Test
4. Logout---@AfterClass

1. If we have 100 Test Cases in a Single Suite. So, How many Total Annotations will gets executed.

```
@BeforeSuite : 1  
@AfterSuite : 1  
@BeforeTest: 1  
@AfterTest: 1  
@BeforeClass : 1  
@AfterClass:1  
@BeforeMethod: 100  
@AfterMethod:100  
@Test:100
```

Total : 306

1. If we have 500 Test Cases in a Single Suite. So, How many Total Annotations will gets executed.

```
@BeforeSuite : 1  
@AfterSuite : 1  
@BeforeTest: 1  
@AfterTest: 1  
@BeforeClass : 1  
@AfterClass:1  
@BeforeMethod: 500  
@AfterMethod:500  
@Test:500
```

Total : 1506

Assertion

#. An Assertion is a Validation point used to verify expected vs actual result in a test case.

#. If an Assertion fails, TestNG marks the Test Case a Failed.

Types of Assertion in TestNG:-

1. Hard Assertion

2. Soft Assertion

1. Hard Assertion

#. Execution Stops immediately if the Hard Assertion fails.

#. Most Commonly Used.

2. Soft Assertion

#. Test Continues Execution even if an Soft Assertion fails.

#. Failures are reported only when assertAll() is called.

Parameterization:-

1. @DataProvider-- Data Driven Testing
2. using xml file - Parallel Testing

#. Earlier we have done the Data Driven Testing using Excel file.
#. Where we have used some methods to retrieve data from excel sheet.
#. We have used concept to retrieve data from rows and columns.

Advantages of Data Provider:-

#. We can avoid looping statement.
#. We can create n number of @Test Method and @DataProvider in a single class.

Parallel Testing using xml file:-

#. Created Test Script
#. Created xml file to run the test case.
#. passed the browser name parameter from xml file and received in setup() method.

Parallel Testing Using xml file.

1. Create Test Case.
2. Create xml file to run the test case.
3. passed browser name parameter from xml file and received in setup() method.
4. Execute test case on chrome, edge (Serial Execution)
5. Execute Test Case on chrome,edge (Parallel Execution)