Framework

Framework definition

Framework is the set of instruction followed by every company to make automation testing engineer life easy.

Type of framework used in the project is: *Hybrid framework*

In my project the framework used is hybrid framework which consists of

1.Data Driven framework

2.Modular Driven framework

3.Method Driven framework

Reason for hybrid framework

1.It provides high code reuseability.

2.Time taken to run the testscripts by using hybrid framework is relatively less compared to other frameworks.

3.Testscript development is faster

Framework developing approach used

Approach Used is: **TDD**

Components in framework

1.CommonUtils

2.TestData

3.Resources

4.Object Repository

5.Screenshot

6.Testscript

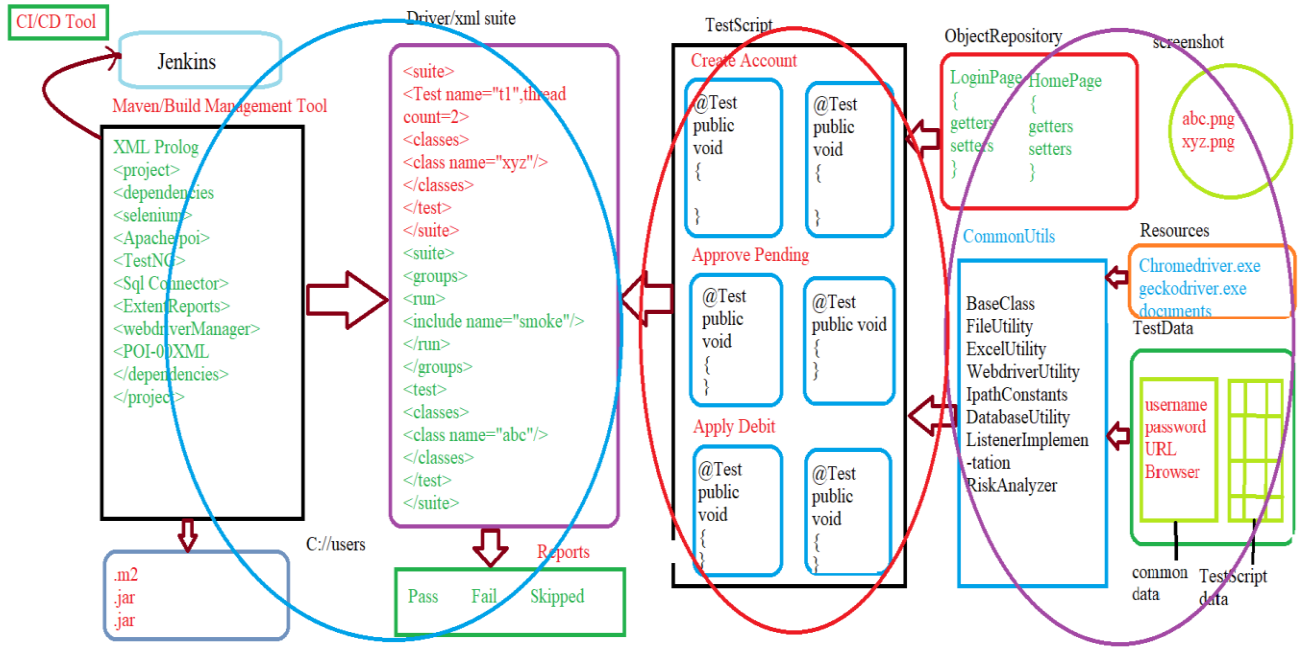
7.Driver/xml file

8.pom.xml

9.jenkins

10.Reports

Architecture



Detailed Explanation of each component

1.CommonUtils

- BaseClass
- FileUtility
- ExcelUtility
- WebDriverUtility
- JavaUtility
- DataBaseUtility
- ListenerImplementation
- RiskAnalyzer
- IpathConstants

Baseclass

BaseClass is the super most class in framework.

It contains annotations like @Beforesuite, @BeforeClass, @AfterClass, @Aftersuite,@BeforeMethod,@AfterMethod

These annotations contain pre and post condition for the testscripts like

@BeforeSuite-for database connection

@AfterSuite-to disconnect database@BeforeClass-to launch the browser

@AfterClass-to close the browser

@BeforeMethod-to login to the application

@AfterMethod-logout the application

FileUtility

As per the rule the automation the data should not be hardcoded in the testscripts because maintenance and modification of data is difficult.

FileUtility is a class which contains reusable method to get the common data from external resource.

In this common data will be stored in external resource file like commonData.properties.

ExcelUtility

ExcelUtility is developed using appache poi libraries, which is used to read the data from excel.

It contains reusable methods to get the data from excel or write the data into excel.

As per the rule the automation the test data should not be hardcoded in the testscripts because maintenance and modification of data is difficult.

JavaUtility

JavaUtility is a class of generic components where it contains java specific methods.

Java specific methods are getRandomNum(),getSysDataAndTime()

WebDrivenUtility

Webdriverutility is a class which contains webdriver specific methods

Webdriver specific methods are

- Maximizewindow()
- Waitforpageload()
- Select()
- Alertaccept()
- Cancelalert()

DataBaseUtility

It is a class in generic component which contains database specific methods like connectToDB(),closeDB(),executeQuery()

ListenerImplementation

ListenerImplementation is a class where we provide implementation for ITestListener Methods like OnTestFailure, OnTestSuccess, OnStart, OnFinish, OnTestSkipped

Using @Listerner annotation present in testng which monitors the runtime events during execution and perform appropriate action based on event type.

RiskAnalyzer

It is a feature of testng which helps the user to rerun the testscripts whenever testscript is getting failed.

In order to use this feature we have to implement RetryAnalyzer interface & override retry method.

IpathConstants

It is an interface where we will store the common data in reference variable and implement it in scripts by using reference varaiable

2.TestData

It contains two types

- CommonData
- Testscript Data

CommonData

Common datas like Url, Username, Password, Browser everything will be stored in commonData.properties file.

Properties is a java feature file where data will be stored in the form of key value pair.

The datatype should always be string.

TestScriptData

Here all the testscript data will be stored in excel because the data will be in a well organized manner.

When we want the testscript with multiple data we will be using dataprovider and all the data will be stored in excel.

As per the rule of automation, the data should not be hardcoded in the testscripts as maintenance and modification of data is a tideous job.

3.Resources

It contains driver executable by which we can launch the browser and execute the scripts

Driver executables like chromedriver.exe, geckodiver.exe.

4.Object Repository

It is a collection of elements locators and business libraries in one place and its developed using POM design pattern

As per the rule of automation, we should not hardcode elements within testscripts, we should get elements from object repository, because in agile process, modification & maintenance of elements is a tideous job.

5.TestNG

TestNG is a unit test framework, which supports java & .Net and used for unit testing, functional testing, integration testing, System testing

In case of automation, testNG will be used to develop all the scripts using testNG annotations and achieve batch execution without any manual interaction.

In testng, each @Test is considered as a testscript

6.Driver/Xml suite

A **test suite** is a collection of test cases intended to test a behaviour of software program.

In TestNG we create testng.xml based on the type of execution we want to perform.

In TestNG, we cannot define a suite in testing source code, but it is represented by one XML file, as suite is the feature of execution.

It also allows flexible configuration of the *tests* to be run. A suite can contain one or more tests and is defined by the <suite> tag.

By using this we can perform executions like batch, group, Regional, distributed parallel and cross browser.

7.Screenshot

To capture screenshot of the test cases that has been failed, TestNG provides Listeners, an interface that modifies TestNG behavior.

Listeners are implemented by ITestListener interface.

As the name suggests, Listeners “listen” to the events defined in script and behave accordingly. When the test case fails it sends the events to the listener implementation class and execute the method written for screenshot.

8.Report

TestNG Reports are the default HTML reports which are generated once the test cases are executed using TestNG.
These reports help you to identify the information about test cases and the status of a project.
TestNG reports in Selenium have three methods passTest, failTest, and skipTest to check the data about test cases.
Report generation is very important when you are doing the Automation Testing as well as for Manual Testing.

9.Jenkins

Jenkins is an open source software for continuous integration/continuous development

10.Pom.xml

Maven is a build Management tool.

It contains pom.xml which control the project.

In pom.xml we can add the thirdparty libraries dependencies so that we can make use of that libraries in the project.

Phases of framework

1.framework design phase

This the phase where all the commonutils like baseclass, fileutility, excelutility, listenerimplementation is created.

Here we will create object repository, screenshot and resources.

In the design phase all the classes which will be implemented in testscript is created.

In pom.xml we will add all the dependencies which are needed for the project to run.

This phase comes under sprint1

2.framework implementation phase

This phase starts after sprint 1.

In this phased we will make use of all the framework designs and create Testscripts based on modules.

This phase will be included in sprint 2.

3.framework execution phase

This is the phase where all the testscripts will be executed.

Here the execution is in xml suite.

This phase is in sprint 3

Advantages of framework

1.Improved test efficiency

2.Maintenance and modification of test datas,elements in pom is easy.

3.Minimal manual intervention

4.Reusability of code

5.code optimization

Problems faced without using framework

1.Increase in number of steps in testscripts

2.Rewrite the element locators and xpath again and again

3.Modification and maintainance difficult due to frequent requirement change

4.Hardcoding the testdata again and again whenever needed

5.Time taken to develop testscript is more compared to framework.

6.Testing with multiple data is difficult

Exceptions you faced

1.TestNG exception

2.AssertError Exception

3.NullPointerException

4.FileNotFoundException

5.NoAlertPresentException

6.IndexOutOfBoundException

7.UnhandledAlertException