***Framework***

**1.what is framework?**

* Framework is a set of rule and guideline or best practice to fallow while automating any application, in order to achieve the ease of maintenance.

**2.what type of framework?**

* In our project we use Hybrid framework.

**3.why hybrid framework?**

* Better code readability.
* Using this framework because it’s combination of two or more framework.
* For Example, method driven framework + Data driven framework.
* Data driven +method driven +modular driven.

**4.which frame Developing approach used?**

* We have to use Test Driven Development (TDD) for developing framework.

**5.components present in the framework?**

* Common Utils
* POM/Object Repository
* Test Data
* Resource
* Test Script
* Driver/XML files
* HTML Report
* Screenshot
* Maven
* Jenkins

**6.Architecture of framework?**

**7.Detail explanation on each components?**

* Common utils

1. Base class
2. Java utils
3. File utils
4. Excel utils
5. Web driver utils
6. ListenerIplementationClass
7. Retry Analyzer
8. Ipathconstants
9. Base class :- It contains all the testing configuration method as per the requirement/standard execution order.

* @BeforeSuite :- It will execute all other test annotation execute basically in this we kept database connection.
* @BeforeClass :- It will execute before class will execute normally browser launch, we kept it in Before class.
* @BeforeMethod :- it will execute before every test annotation basically login of application keep it in Before method.
* @AfterMethod :-it will execute after every test annotation basically logout application keep it in after method.
* @AfterClass :- it will execute after class will execute normally browser close we kept it in after class.
* @AfterSuite :- it will execute after all other test annotation execute basically in this we kept database connection close.

1. Java utils :- It contains some java methods like data and random number. It is used in all the script.
2. File utils :- It used to capture common data from property file which is developed using java.
3. Excel utils :- It is developed by using Apache poi, to interact with excel sheet because as per the automation rule we should kept all the test data in excel sheet.
4. Web driver utils :- It contains some driver actions like select, mouse hover action etc.. which are all used commonly in all scripts.
5. Listener Implementation :- It is a implementation class of Testng ITest Listener which is used to capture failure event in run time and capture the Screenshot in screenshot folder.
6. Retry Analyzer :- This feature of TestNG helps the user to rerun the test script whenever test is getting failed.
7. Ipathconstants :- It contains common global variable which is used across the framework in implicit-wait, excel path, Property-path and Explicit-wait.

* POM/Object Repository
* It is a collection of reusable web elements and business library which can be used to specific business or project.
* As per the rule of automation we cannot hardcode the test script so we use for pom.
* Test Data
* It is one of the components in the framework it contains the data which is required to run the framework.
* Resource
* It is one of the components in the framework which contains resources to run the framework like IE-Driver-Server, Chrome-Driver-Server, Gecko-Driver-Server and User-Guide Document.
* Test Script
* It contains collection of TestNG test script which is automated using @test. During test script development make sure generic libraries, object repository is being used.
* XML file
* It is a TestNG component used to execute all the test script in batch, parallel, group. In real time whenever we get a new build we should create testing.xml and trigger the execution.
* HTML Report
* Whenever testing execution is completed it automatically generate HTML report which helps us to know the status of application.
* Screenshots
* Whenever any test script is failed during execution we will have screenshot in screenshot folder.
* Maven – Build Management Tool
* Maven is a open source used to build automation tool from Apache software Foundation and to build , publish, and deploy several projects at once for better project management.
* Jenkins
* Is an open source automation tool written in java with plugins built for continuous integration.
* Used to build and test your software projects continuously making it easier for developers to integrate changes to the project.

**8. Phases of framework?**

1. Framework Design phase :- In this phase framework developer will design the framework which contain common utility like generic libraries, test data template, POM classes with parallel elements. This phase is executed in Sprint-1 or Release-1.
2. Framework Implementation phase :- This phase start from Sprint-2, all automation engineer participate in test script development implementation.
3. Framework Execution phase :- Execution phase is always handled by Jenkins tool, that is whenever we get a new build to testing environment JENKINS will automatically execute and send email to the concerned engineer.

**9.Advantanges of framework?**

* Test script can be re used for every new build.
* Framework provides generic reusable utility for all actions like excel utility, base class , database utility.
* Test script development is faster and easier because of reusability.
* POM design pattern is the perfect fit for agile process.
* Framework provides automatic screenshot for failed script.
* Test script is optimized.
* It helps in avoiding the hard code data.
* Multiple data sets can be executed easily.
* It saves a lot of time and efforts.

**10. What are the problems you will face without having a framework?**

* The complexity of the design of the project will be increases, because negligence of the well-organized way.
* Modification of test script is tedious.
* Cost of the maintenance of the script will be increased.
* We cannot optimize the code.
* Huge volume of data execution will be difficult.

**11. What are exceptions you have encountered in your project?**

* NoSuchElementException.
* InvalidSelectorException.
* TimeoutException.
* ElementNotVisibleException.
* ElementNotSelectableException.
* InvalidArgumentException.
* StaleElementRefranceException.