

Selenium Interview Question

1) What is selenium?

Ans - Selenium is a UI automation tool which will help us to automate the GUI. It will not support desktop application.

2) Does Selenium support automation of pages made in PHP and HTML?

Ans- It is independent of language, it can automate any pages made in any language.

3) Does selenium support automation of application made in only java?

Ans- No, it can only automate web applications.

4) Does selenium have execution engine?

Ans- No. It means selenium can not execute its own script by itself. Because for the execution of selenium scripts, we need to rely on 3rd party tool like TestNG or JUnit sometime Java main() method. We usually don't prefer main() method for their execution as we cannot avail many testing feature via it and also will not get report for their execution.

5) Does selenium has excel reading methods?

Ans- No, Selenium API doesn't have any such methods. If you want to read data from external source like property files or excel file, you need to use apache-poi or JExcel (apache poi is easy to use than JExcel) for excel and properties class for property file.

6) What are components of selenium?

Ans- It mainly has 4 components- Selenium IDE, Selenium RC, Selenium Grid and Selenium WebDriver.

A) Selenium IDE is a simple record and playback kind of tool which comes as an add-on for Mozilla Firefox and Chrome. It is used for prototype testing. Test cases written in IDE can be exported in many programming languages like Ruby, Java, C#, etc. Edit and Debug options along with record are also available. It is an excellent tool for beginners to understand the syntax of Selenium WebDriver. Selenium IDE records multiple locators for each element it interacts with. If one locator fails during playback, the others will be tried until one is successful. Selenium IDE requires no additional setup other than installing the extension on your browser.

B) Selenium RC: Selenium RC (Remote Control) was the first tool of Selenium Suite. Earlier it was known as JavaScript Executor. RC was the tool which made Selenium famous in the market.

It was the first tool which provided the support for multiple programming languages (JAVA, Ruby, Perl, PHP, Python, and C#).

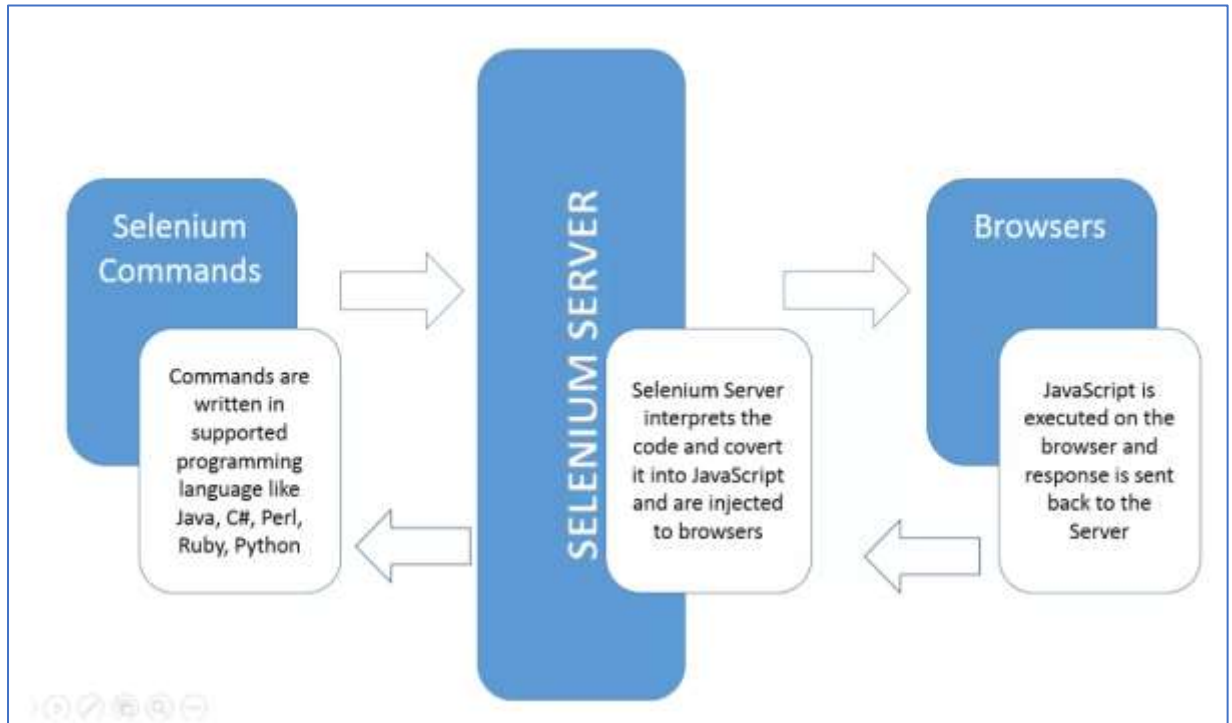
It also supported almost all the major vendors of Browsers like Mozilla Firefox, Google Chrome, Internet Explorer. All the browsers which support JavaScript can be automated using this tool.

Selenium RC is also known as Selenium 1.

The architecture of Selenium RC:

In Selenium RC, there is a manual process called **Selenium Server** is mandatory to start before execution, which acts as a middleman between the code and the browser.

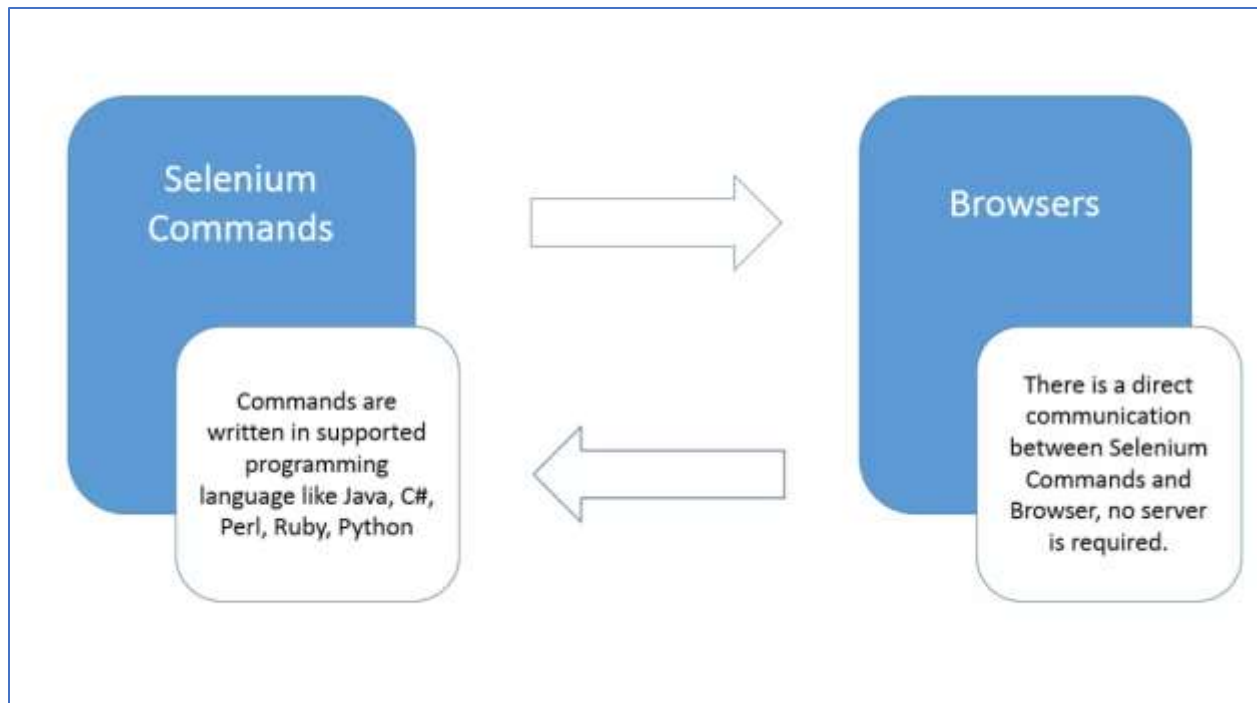
The commands (API's) are sent to Server. It interprets the command and converts it into JavaScript and then JavaScript is injected to the browser. Now the browser executes the javascript and responds to a server, which again interprets the command and returns to code in the respective language.



Selenium RC is deprecated now.

C) Selenium WebDriver: It is very powerful. Because of many limitations with RC, WebDriver was developed. It does not require any manual process like Selenium Server. There is a direct communication between code and browser.

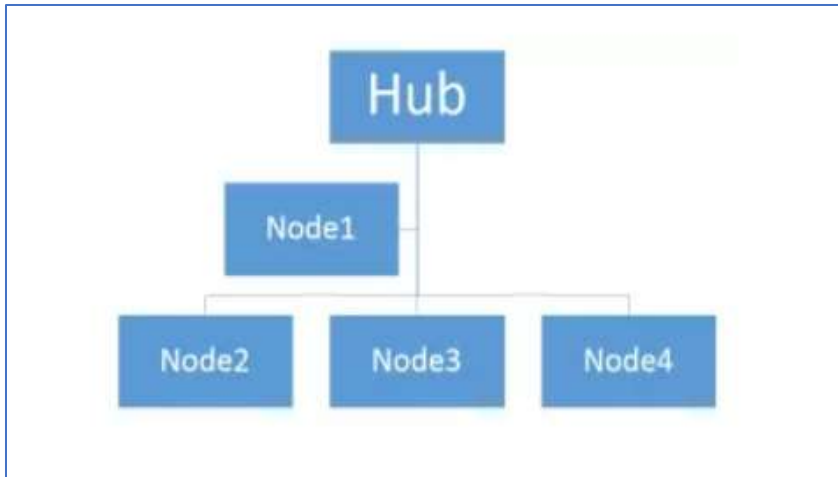
- Features of Selenium WebDriver:
- Open source
- Supports all the key vendors of the browser like Mozilla Firefox, Internet Explorer, Google Chrome, Safari, etc.
- Support Multiple languages like C#, JAVA, Ruby, Perl, Python, and PHP.
- Supports multiple platforms like Linux, Windows, MAC, etc.
- No middleman like Selenium RC server is required.
- Easy to remember API's.
- Easy to integrate with Testing frameworks.
- Framework Development.
- Parallel Testing capabilities.



- D) Selenium Grid: It is the last component of the selenium suite and is used for parallel testing or distributive testing. It allows us to execute test scripts on different machines at same time on different browser from your machine. There is a Hub which controls the execution on various machines, and there are multiple nodes on which actual implementation is done.

It is the last component of the selenium suite and is used for parallel testing or distributive testing. It allows us to execute test scripts on different machines at same time. There is a Hub which controls the execution on various machines, and there are multiple nodes on which actual implementation is done. This is master- slave relationship.

The Architecture of Selenium Grid: In Grid one of the systems is created as Hub. Hub works as a central point controlling all the nodes. Nodes are an actual machine on which execution is done.



7) What are the limitations of selenium?

Ans:

a) It supports testing of only web-based applications.

b) We cannot directly test mobile applications using it, we need to use 3rd party tool like Appium integration with selenium. Appium is “cross-platform”: It facilitates cross platform testing for both iOS and Android using the same API. Appium is open source. You don’t need source code of app to automate it. It is server written in NodeJS. Through Appium you can test automatically your mobile application either on emulator or on real device. Appium server reads the command coming in from test Java code and executes that command on real device as well as on emulator.

Basic configuration for it-

Install at least JAVA 8, Microsoft .Net framework 4.5, Android SDK (API level 17 or higher), Developer options enabled and Install Appium on your machine.

Jar needed-

Selenium java, Appium Java client and Gson jar.

- A. We created a new Java project in Eclipse and added/build above mentioned JAR files in your project.

- B. Add the Android apk file path in our code.
- C. Set the above-mentioned device capabilities.
- D. Initialize WebDriver instance with AndroidDriver as the path for Appium server through which they can connect to each other.
- E. Now find elements and perform action on those elements. You can find an element's id by launching the uiautomationviewer tool available in Android SDK tools folder. You need to take a screenshot of the device and hover mouse on that particular element.
- F. Quit your driver.

```
File app= new File("apk-file-path");
DesiredCapabilities capabilities= new DesiredCapabilities();
capabilities.setCapability("deviceName", "your-device-name");
capabilities.setCapability("platformVersion", "platform-version");
capabilities.setCapability("platformName", "platform-name");
capabilities.setCapability("app", app.getAbsolutePath());
Webdriverdriver = new AndroidDriver(new
URL("http://127.0.0.1:4723/wd/hub"),capabilities);
driver.findElement(By.id("username-element")).sendKeys("username");
driver.findElement(By.id("password-element")).sendKeys("password");
driver.findElement(By.id("password-element ")).click();
driver.quit();
}
```

Steps to execute automation script:

- A. Launch Appium server.
 - B. Execute the above java code from Eclipse.
 - C. Now it will start executing script on real device or on emulator
- C) Captcha and Barcode is not supported by selenium. At the time of registration in the application, they have captcha or Barcode which can not be read by selenium.
- D) For report generation, we need to use 3rd party tools like TestNG and Junit or extents report.

E) As selenium is a free tool, you get very less support whenever you get any error or exception or configuration issue as there is no ready vendor support though the user can find numerous helping communities.

F) User is expected to possess some prior language experience.

8) What are the different types of locators?

Ans- ID, ClassName, Name, TagName, Linktext, Partial linktext, XPath and CSS selector.

9) What does mean by implicit wait?

Ans- If webdriver cannot find an element in the document object model(DOM), then it will wait for defined amount of time for the element to appear in the DOM. An implicit wait is to tell WebDriver to poll the DOM for a certain amount of time when trying to find an element or elements if they are not immediately available. The default setting is 0.

Once set, the implicit wait is set for the life of the WebDriver object instance.

It is applicable for the entire page. Driver will wait till 60sec to make sure that all element on page get loaded. If the element is not available within the specified Time an NoSuchElementException will be raised.

driver.manage().timeouts().implicitlyWait(60, TimeUnit.SECONDS)

10) What does mean by explicit wait?

Ans- Unlike implicit wait, you can write custom code or conditions for wait before proceeding further in the code. WebDriverWait by default calls the ExpectedCondition every 500 milliseconds until it returns successfully.

When to use: If element takes a long time to load. Also, used to check property of an element (presence, clickability. etc).

- There can be instance when a particular element takes more than a minute to load.

- In that case you definitely not like to set a huge time to Implicit wait, as if you do this your browser will going to wait for the same time for every element.

- To avoid that situation you can simply put a separate time on the required element only.

- By following this your browser implicit wait time would be short for every element and it would be large for specific element.

We can wait for particular element on the page to get displayed.

WebDriverWait wait= new WebDriverWait(driver, 60);

Wait.until(ExpectedConditions.elementToBeSelected(driver.findElement(By.xpath(""))));

Let's say you have situation you have page and that has been loaded, there is an 3rd party advertisement which can comes on your page after 5ses, with this explicit wait we can wait for that advt. but can't be possible with implicit wait.

ExpectedConditions class has following methods-

elementToBeClickable(By locator),

elementToBeSelected(WebElement element),

textToBePresentInElement(By locator, String text)

titleContains(String title)

Note: Explicit wait will not wait for 60 sec, the moment when that advt. appears on that page it will come out from wait time and start executing the script onwards. Same is the case with implicit wait, it will come out once the page gets loaded.

11) What is pooling interval?

Ans- Another kind of WebDriverWait. Where we can say that what is the frequency of pooling. In case of explicit wait, your driver will check for web element for every 500 milliseconds. But in the pooling interval-

WebDriverWait wait= new WebDriverWait(driver, 60);

Wait.pollingEvery(5, TimeUnit.SECONDS)

Wait.until(ExpectedConditions.elementToBeSelected(driver.findElement(By.xpath("")))));

It will check for webelement for every 5 seconds. Check at 5 sec, 10 sec ,15sec...60sec.

12) What is the fluent wait?

Ans- •Let's say you have an element which sometime appears in just 1 second and some time it takes minutes to appear.

•In that case it is better to use fluent wait with polling mechanism, as this will try to find element again and again until it finds it or until the final timer runs out.

•It tries to find the web element repeatedly at regular intervals (as specified in polling period) of time until the timeout or till the object gets found. It can define the maximum amount of time to wait for a specific condition and frequency with which to check the condition before throwing an "ElementNotVisibleException" exception.

There is another explicit wait mechanism. It can be achieved in 2 ways-

1) WebDriverWait 2) Fluent wait.

It will find the web element repeatedly at regular intervals of time until the timeout or till the objects get found.

Wait wait = new FluentWait(WebDriver reference)

.withTimeout(Duration.ofSeconds(SECONDS))

.pollingEvery(Duration.ofSeconds(SECONDS))

.ignoring(Exception.class);

/below one is deprecated code. Use the above one

Boolean wait= new FluentWait<WebDriver>(driver)

.withTimeout(60, TimeUnit.SECONDS)

.pollingEvery(5, TimeUnit.SECONDS)

.ignoring(NoSuchElementException.class)

.until(ExpectedConditions.elementToBeSelected(driver.findElement(By.xpath(""))))

To poll for every 5 seconds upto 60 seconds to find the web element. When ever we poll, we will get exception till the element is not present and we should ignore such exception.

13) Why synchronization in a test is required?

Ans- When tests are run, the application may not always respond with the same speed. For example- it might take a few seconds for progress bar to reach 100percent, a status message to appear, a button to become enabled and a window or pop-up message to open.

You can handle these anticipated timing problems by synchronizing your test to ensure that selenium webdriver will wait until your application is ready before performing a step.

14) Disadvantage of using implicit wait?

Ans- Suppose you need to test app where "getting the list of hotels" in city take 5 seconds but "getting list of hotels in country" takes 15 seconds. Due to this we will increase our implicit wait time from 5 sec to 15 seconds. Now in future, if due to some technical glitches or some performance coding issues, your wait time for scenario- "getting the list of hotels" increases from 5 sec to 10-13 sec, then we are not able to catch this bugs via our test scripts. Later on it will be questioned by our QA manager. And if we reduce the wait time, "getting list of hotels in country" will get fail. So this issue can be resolved using explicit wait. Implicit wait define wait time globally. Using explicit wait,

we will be maintaining wait time as per the specification given by developer. And if a wait time for any page increase, then it can be easily identified.

However implicit wait will slow down your tests if application responds normally as it will wait for each element appearing in the DOM and increase the overall execution time. It is recommended to avoid or minimize the use of it. Try to handle synchronization issues with an explicit wait which provides more control when compared with implicit wait.

In big framework, combination of implicit and explicit wait is best solution for synchronization issues.

15) How to implement custom wait code?

Ans- ***WebElement message= (new WebDriverWait(driver, 5))***

```
.until(new ExpectedCondition<WebElement>(){  
  
    public WebElement apply(WebDriver d){  
  
        Return d.findElement(By.id("page4")  
  
    }})
```

Here we created a custom conditions, which returns the webelement object once the inner findElement() method locates the element within a specified timeout.

Useful in some scenario like

A) based on events and action performed, the value of element attribute might change at runtime like a disabled textbox gets enabled based on user's rights.

```
Return d.findElement(By.id("username")).getAttribute("readOnly").contains("true");
```

Here ExpectedConditions will wait for Boolean return value based on the attribute value of an element.

B) Waiting for DOM events. The web application may be using a JavaScript framework such as jQuery for AJAX and content manipulation. For ex- jQuery is used to load the big JSON file from server asynchronously on the page. While jQuery is reading and processing this file,

A test can check its status using ACTIVE attribute. Here custom wait is implemented.

JavaScriptExecutor js= (JavaScriptExecutor) d;

Return (Boolean) js.executeScript("return jQuery.active== 0")

16) When we have to use the fluent wait?

Ans- Now in some case, HTML is same for

17) Thread.sleep?

Ans- your sleeping your thread for particular time. Thread.sleep(2000) will pause the execution for complete 2 sec even though the page is ready or will load in 1sec. It is not part of a webdriver, part of java. Advised not to use in the framework.

18) What is page load timeout?

Ans- When you are doing driver.get(), we load the URL. Here we can supply the timeout. It can be achieved

- The pageLoadTimeout limits the time that the script allots for a web page to be displayed.
- If the page loads within the time then the script continues.
- If the page does not load within the timeout the script will be stopped by a TimeoutException.

19) What is JavaScript wait?

Ans- *ExpectedConditions<Boolean> javaScriptWait= new ExpectedConditions<Boolean>(){*

Public Boolean apply(Webdriver driver){

*Return ((JavaScriptExecutor)driver).executeScript("return
document.readyState").equals("complete");*

}

}

Try{

System.out.println("Waiting for page to get load..");

WebDriverWait wait= new WebDriverWait(driver,60);

Wait.until(javaScriptWait);

}Catch(Throwable error){

System.out.println("timeout as page is not loaded after "+60+"seconds");

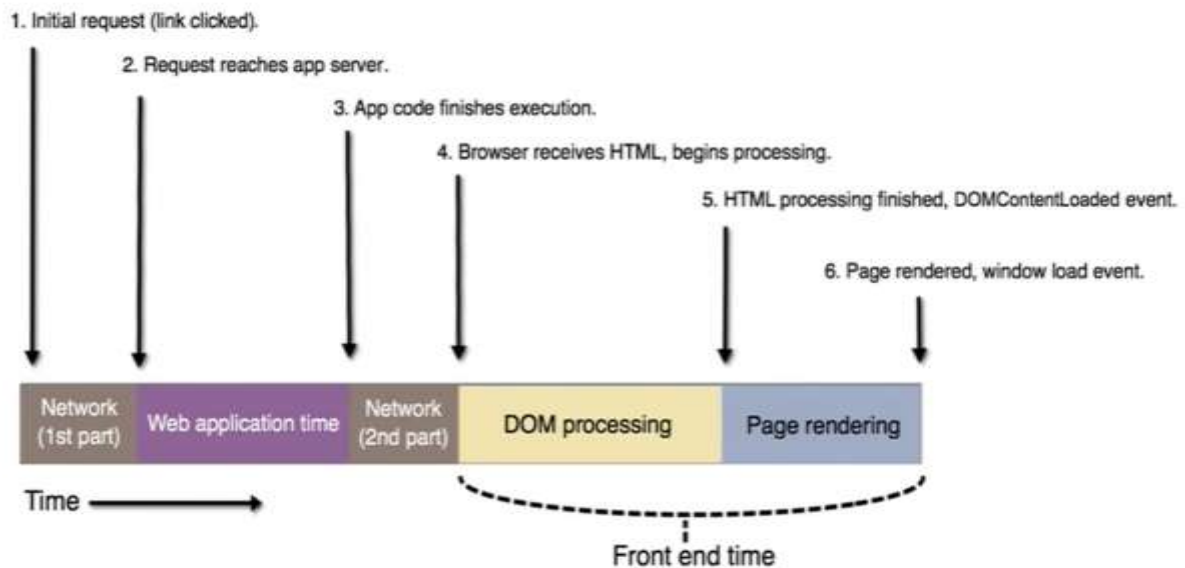
Asser.assertTrue(true," timeout as page is not loaded after "+60+"seconds");

}

20) What is DOM?

Ans- It is an application programming interface (API) for valid HTML and well-formed XML documents. It defines the logical structure of documents and the way a document is accessed and manipulated.

Page load timeline



- A page load begins when a user selects a hyperlink, submits a form, or types a URL in a browser. This is also referred to as the **initial request** or the **navigation start**. The user's action sends a **request** across the network to the web application server.
- The request reaches the application for processing. (The request may take some time to start being processed. This could be the result of **request queuing** or it could be other factors.)
- The app finishes processing and sends an HTML **response** back across the network to the user's browser. This is sometimes referred to as **response start** or **first byte**.
- The user's browser receives the HTML response and starts to process the Document Object Model, or **DOM**.
- The DOM finishes loading; this point is known as **DOM ready**. Using the DOM, the user's browser starts to render the page.
- The page finishes rendering in the user's browser and the **window load event** fires. (For pages that use asynchronous loading, some elements may continue to load after the window load event occurs.)

When we call a webpage, we get a HTML which is then converted into DOM so that we can call or work with web element.

Now when a Javascript source file is included in a webpage via HTML <script> tag, there are some script tags which are calling some file. The processing /loading of included file has to be complete first before anything happens on the page. The script is supposed to complete first then any more of such included file is rendered/executed. This we call synchronous loading.

Asynchronous loading-> Sometime we specifically want Javascript source files to load asynchronously. Means while some page is getting rendered, at the same time specified included file in your javascript is also get processed but we will not wait for this script to complete its processing but we will do both the things simultaneously or we may wish that once my page is loaded/rendered then you can run the script later on. This may be handy for files from external sources where we don't want our including pages to suffer the consequences of: slow connection speed, heavily loaded external servers or waiting for timeouts on external servers that aren't even there at the moment. Here we want files which are from external sources to get executed inside the JavaScript later on once the page gets rendered then use asynchronously loading.

For these cases, HTML <script> element has 'async' and 'defer' attributes. Defer requests means loading of specified file occurs after the included page has finished loading. While Async request means that loading of specified file occurs concurrently (or at least independent of) included page.

Implicit wait: Will wait for the element which are getting loaded asynchronously (i.e. after page has been loaded/rendered)

Page Load time: Will wait until complete page gets loaded, not for those elements which are getting loaded asynchronously.

21) How to enter data in text box

Ans- locate the textbox using driver.findElement() and then use ***sendKeys()*** to enter the text.

22) How to click on link?

Ans- - locate the textbox using driver.findElement() and then use ***click()***

23) How to check the element is displayed or not

Ans- - locate the textbox using `driver.findElement()` and then use ***isDisplayed()***. It returns true if element is present but if it is not present, it will throw an exception, we need to handle using try-catch exception. Write "return false" in catch block.

24) How to make sure checkbox is selected or not?

Ans- locate the checkbox using `driver.findElement()` and there is a method ***isSelected()*** which will return true if it is selected else false. But if element is not present, it will throw an exception, we need to handle using try-catch exception. Write "return false" in catch block.

2nd option is to get attribute whose values get changes if checkbox is getting selected. So locate the checkbox using ***driver.findElement(By.xpath("")).getAttribute("class").contains("checked")***- it is checked then its class name should have "checked" text. If yes then return true else false. It can be any text. Just verify in HTML.

25) What is method to find all elements on UI?

Ans- ***driver.findElements()*** is used. Like getting all anchor tag , use `By.tagName("//a")`

26) How to get the current URL of window?

Ans- ***driver.getCurrentUrl()***

27) How to get the title of page?

Ans- ***driver.getTitle();***

28) How to get window id on runtime? Means how to get the link of all the windows. And how to manage multiple windows?

Ans- ***Set<String> windowIds= driver.getWindowHandles();*** //no duplicate entry is possible with SET Return a set of window handles which can be used to iterate over all open windows of this WebDriver instance by passing them to switchTo().Options.window()

Iterator<String> itr= windowIds.iterator();

ArrayList<String> ids=new ArrayList<String>(); //to store all the windows id. Other wise we again need to traverse

While(itr.hasNext()){

Ids.add(itr.next());

}

// Suppose I clicked on link and it opens 3 window, I want to go to the 3rd link.

driver.switchTo().window(ids.get(2));

now we can perform some task on 3rd window.

//to close 3rd window and move to 2nd window.

Driver.close();

driver.switchTo().window(ids.get(1));

//come to parent window.

Driver.close();

Driver. switchTo().window(ids.get(0));

29) How to maximize the window?

Ans- ***driver.manage().window().maximize();***

30) How to get co-ordinate of window?

Ans- ***Point point= driver.manage().window().getPosition();***

Int x= point.getX();

Int y=point.getY();

Similarly, we can get the position of web element on the UI.

Locate that element using ***Point point= driver.findElement(By.xpath()).getLocation()*** with respect to left window.

Int x= point.getX(); Int y=point.getY();

31) How to do the mouseover?

Ans- We have to make the object of action class-

Action action=new Action(driver);

Action.moveToElement(driver.findElement(By.xpath()))).build().perform() -> now action will be perform

32) How to do drag and drop

Ans- ***action.dragAndDrop(Source, target)*** -> both are the webelement.

2nd option is ***action.clickAndHold(source)*** -> this is the location of the element where I will go and click the element and hold. After that ***action.moveToElement(target)*** -> where you want to move. After move to target then release it on the target then build and perform.

action.release(target).build().perform()

Action.clickAndHold(source).moveToElement(target).release(target).build().perform()

3rd option is using keyUp and KeyDown()-

Action.moveToElement(source).keyDown(Keys.CONTROL).moveToElement(target).keyUp(Keys.CONTROL).build().perform()

33) How to the double click in selenium?

Ans- ***action.moveToElement(driver.findElement(By.xpath(""))).doubleClick();***

34) How keys class works?

Ans- What ever function you know in keyboard, can be performed by selenium. You have keys class in selenium which will perform keyboard related function.

Like Press enter -> action.sendKeys(Keys.ENTER);

Press F6 -> action.sendKeys(Keys.F6)

35) How to work with alert?

Ans- ***Alert alert= driver.switchTo().alert();***

Alert.accept();

Alert.dismiss(); //dismiss the alert

36) How to work with iframe?

Ans- Count no of frames presents in your application-

Driver.findElements(By.tagName("iframe")).size();

// can switch to frame based on the index, name and webelement.

Driver.switchTo().frame(0) // switch to 1st frame.

Driver.switchTo().frame("auto") // by the name

Driver.switchTo().frame(driver.findElement(By.xpath())) //Based on the web element

37) How to work with select?

Ans- ***Select select=new Select(driver.findElement(By.xpath()))*** //make a object of this class , pass the webelement on which select box you want to work.

There are also 3 methods

Select.selectByIndex(0) //select by 1st index

Select.selectByValue("valuesName"); //see the values in HTML tag

Select.selectByVisibleText("textname"); //values visible on the UI.

We have deselect also.

Select.deselectAll(); //everything will get the deselected.

Select.deselectByValue("valueName")

Select.deselectByIndex(0);

Select.deselectByVisibleText("textName")

38) how to execute the java script?

Ans- there are two ways for this

A) *EventFiringWebDriver* is a class and is used to wrap your *webdriver* around to throw events

EventFiringWebDriver eventFiringWD= new EventFiringWebDriver(driver);

eventFiringWD. executeScript("document.getElementById(\"idName\")");

eventFiringWD. executeScript("document.getElementById(\"inputSuccess\").value=\"text\"");

Selenium WebDriver provides an API for tracking the various events that happen when test scripts are executed using WebDriver. Many navigation events get fired before and after a WebDriver internal event occurs (such as before and after navigating to a URL and before and after browser back-navigation), and these can be tracked and captured.

B) Via JavaScriptExecutor

JavaScriptExecutor js=

((JavaScriptExecutor)driver).executeScript(("document.getElementById(\"inputSuccess\").value = \"text\");

39) How do you read values from the properties file?

Ans-a) create one property file **"or.properties"**

b) I will make the object of property class-

Properties OR = new Properties();

C) Create the object of the file as your properties is a file

File file= new File(System.getProperty("user.dir")+"Relative path to your properties file");

User.dir will give you path for current project.

D) Create a object of FileInputStreamReader as I want to read the all data as a stream of data in one go.

FileInputStreamReader reader= new FileInputStreamReader(file);

E) **OR.load(reader)** -> will load the input stream and Reads a property list (key and element pairs) from the input byte stream.

F) To read that, supply the keys

OR.getAttribute("username");

40) What are the java script functions for selenium object location?

Ans- In xpath, you have following JS functions

Following-sibling, preceding-sibling, starts-with(), ends-with(), contains(), following, preceding.

In CSS, you have these functions-

Nth-child(1), \$ (start-with), ^ (ends-with)

41) How many test scripts do you write in a day?

Ans- We can say that if the methods i.e. page Functions are designed, then we can write 5-6 scripts. If there is only UI verification (we have to just the verify the element on the UI, assertion verification or some validation on UI pages) then we can write 8-10 scripts. We write means we make sure that script will execute in all the browsers supported by the application. But if there is end -to-end scenario need to be implemented then we can write max 1-2 scripts (Start from the homepage and go till the last page, let say in ecommerce- start from the homepage, select the product, go to the basket , go to the payment page and do the payment because methods are not ready, we need to write the page functions. then we call the methods and then run the scripts.

42) What are your roles and responsibilities?

Ans-

- I. Involved in evaluating Selenium for Web UI Automation. (In any company, when ever we start the automation, first we evaluate the tool whether this tool is fit for our application or not)
- II. Involved in designing and implementing a Selenium web Driver automation framework built using Selenium web Driver + TestNG as Execution Engine. (Involved in the framework design)
- III. Involved in designing automation scripts.
- IV. Performed automated Regression testing of the designed scripts, in coordination with manual testing team so whenever there is any failure happens through the automation, will inform to manual team and they do cross check)

- V. Updated and maintained various test artifacts in the Test Automation Framework depending on the changes required. (So whenever any requirement change, your locator will changes, your scripts will change, I do maintain the scripts and the locators)

43) How many team members do you have in your team?

Ans- This can be 1,2 or 10. Any ans can be fine

44) Is it possible to automate in sprint?

Ans- Yes, These days companies are following agile method where generally they make a sprint of 2 weeks. In this you will get a new feature. So you need to test the feature, once there is no bug then you go ahead with the automation of that feature. Then you can run automated sprint. So within two weeks, we can test the feature and then automate it and make sure that it can work for other sprints also.

45) How do you execute scripts?

Ans- There could be lot of ans for that.

- a) You can execute the script through testNG.
- b) You can schedule the jobs through Jenkins that will trigger the script based on time which you have scheduled. Generally company follows it. And whenever there is build deployment, the job will get triggered automatically.
- c) You can execute through bat file. You can make the bat file for the script and you can trigger the bat file.

46) What is source code management for you?

Ans- Github, Jenkins or other SVN. 99percent of the company keep their code in central repository like Github.

47) Do you do parallel testing?

Ans- **`<suite name="basicAnnotations" parallel="classes" thread-count="3">`**

Through testNG, we do parallel testing. Here now I can run 3 classes under this suite in 3 different methods.

48) What challenges you face in automation?

Ans- Say that-

- a) Challenge was how do you write method that should work irrespective of changes in the UI. To defining the proper method
- b) To handle dynamic objects like ID, class that keep on changing. To handle them, I need to use selenium functions /CSS functions like startsWith/endsWith/ following-preceding concepts. If you done some hardcoding, it will not work in the future
- c) Execution was a challenged. How do you make sure that all of your test scripts get executed.
- d) The way you define the structure for the framework. Whether your framework is good enough to accept any changes or not. Lets say today you are using selenium v3.0, suddenly selenium 5.0 comes in the market. Now whether the framework is flexible enough to adopt the challenge or not. You should always design the framework where you should not touch the test scripts, you should touch only the methods, your supporting functions or UI page functions.
- e) To make sure that 100% of test scripts should pass. That was a challenge because in automation, when you run test scripts in the bulk, you could not guarantee all of the script will pass. That all depends on how well you have designed your scripts Whether you have handled proper wait conditions or proper assertion or not.

49) What are the methods of excel reader you have used?

Ans- In any excel workbook , it has lot of sheet. Here we are using apache-poi.

- a) 1st we create the object of workbook by writing

FileInputStream inputStream= new FileInputStream("relative path to the excel file")

XSSFWorkbook workbook= new XSSFWorkbook(inputStream)

- b) Get the sheet, create an object of sheet.

```
Int index= workbook.getSheetIndex("loginTest");
```

```
XSSFSheet sheet= workbook.getSheetAt(index);
```

- C) Get the 1st row.

```
XSSFRow row= sheet.getRow(0)
```

count no of active rows (having content) in the sheet.

```
int totalRows = sheet.getLastRowNum();
```

count the no of active columns in rows. Will Return the last logical cell in the row PLUS ONE, or -1 if the row does not contain any cells.

```
int totalCols = sheet.getRow(0).getLastCellNum();
```

- D) To get the cell, use this **XSSFCell cell= row.getCell(3)**

- E) To get the data from excel file-

```
If(cell.getCellType()= Cell.CELL_TYPE_STRING)
```

```
Cell.getStringCellValue()
```

```
Else if (cell.getCellType()= Cell.CELL_TYPE_NUMERIC)
```

```
Cell.getNumericCellValue()
```

```
Else if (cell.getCellType()= Cell.CELL_TYPE_BOOLEAN)
```

```
Cell.getBooleanCellValue()
```

50) In which framework you have worked?

Ans- Don't say that I know 3 or 4 frameworks. Call out only those frameworks in which you are good at it. Call out any one of them- I have worked with Page Object/Data driven/Hybrid/keyword driven framework and try to justify that- like what ever components in framework, explain them one by one then advantage of using that framework and how it will solve the problem.

51) What was your challenge during framework design?

Ans- Say that main challenge is to find the proper structure of the framework. Whenever we get any application to automate, the 1st step is to create the design the framework. So we need to identify all the right component which will fulfill our current requirement as well as future requirements.

Why future? Because your framework should be very flexible. You should not design a framework by thinking that “ok today I have 10 scripts and if it is working fine then my work is done here.” Here I am not thinking my framework going forward will expand. We can have 1000 testscripts, there is lot more handling, there will be lot more integration with 3rd party tool, there will be integration with other frameworks. Always think how we can enhance the framework, what are challenges that may come in future which we can now be handled by the framework. Like avoiding hardcoding in the framework.

2nd challenges is during the design of the framework how you are writing libraries, how you are writing page functions so that we can cover maximum user scenarios (positive and negative both – like uploading campaign file in “import/update json”) and automate them and how you are writing listener classes. Sometime you make some member static, sometime private, sometime default without knowing that, you should not why you are making that member static/final/private/default/public because tomorrow if there is any enhancement or changes in framework, your testscripts will not be compatible for that, 2nd thing is lot of time we do hardcode (like in response, URL), we should avoid that because tomorrow if there is any changes, or let say you are migrating your framework to one from other framework, then migration should be easy.

53)- What source code management tool you have used?

Ans- I have used Git repositories, others are SVN repositories, perforce, teamforge for my source code management. There should be repositories where you will be push your code and other person can clone your code from that repositories. Also tell them how that repositories works- like in case of git – We can push the code, pull the code and we can rebase, we can resolve the conflicts, we can merge, we can check out the project.

54) How many team members were there in your automation team?

Ans- Always say that in my company we follow Agile method or in my company, we have small no of teams and same person is possible for the functional, automation and performance testing. So in my module or my scrum team, there are 7 team members and out of that there are 2 QE members

Whose responsibilities is starting from the functional to automation and to performance and final delivered the feature/product to end-users/markets. There is no more separate automation team in any organization except few companies.

55) How many browsers you have covered during your execution?

Ans- Always say 2- 3 browser. People don't go over 2 browsers. I covered chrome, Firefox/IE. 98 percent of companies only covered 1 browser. Because the purpose of automation is to ensure that existing functionality of the product is working fine, you are not bother for the browser. What we need to consider while testing in other browser is only- UI alignment of web elements is proper or not but functionality when you execute in 1 browser, will remain same in 2nd browser also. And UI alignment is very minor issue (priority-3). These days UI developers' team is not bother about UI alignment issue. And though UI alignment is not proper but still your automation script will pass as the object is present.

56) how did you manager to execute in the multiple browser?

Ans- Say that, Selenium GRID's will take care of that running your script in multiple browser. And if you don't how to work on GRID, then always say that we used to trigger our scripts through JENKINS

And we had 2 Virtual machines. In one VM (virtual machine), we use to run the script through Firefox while in other, we used chrome. In 10% of company, there give you that infrastructure where you can configure GRID. If not used VM, say that in my company we don't have GRID concept because there are limitations, we hardly have 2 VM and GRID comes into the picture when you have multiple servers associated with your master computer which will command all your slave system to execute the test scripts.

57) How many scripts do you automate in a day?

Ans-there is no certain answer for this. It can be 10,20 and it can be also 1. It all depends on the scenario. When you are automating end-to-end scenario or integration script, it may take more than 1 day sometimes. 2nd answer is how good framework you have. Whether you have all page libraries

ready or not, whether you have written all the methods or not. If everything is ready, you can do 10 or 15 also. In my one project, I used to write 15 to 20 automation scripts as it was UI verifications.

58) How many scripts you have automate till the day?

Ans- There is no hard and fast rule for this. You can say whatever no it suites to you like 2000 which runs every week. Because main purpose of automation is to reduce the time for the regression testing. Whenever we have a new release, we run the automation to ensure that our existing functionalities is not broken.

59) In how many OS, you have run the automation scripts?

Ans- If you know how to run the scripts in multiple OS then call out their names otherwise say that I have worked on windows OS only. And my application was limited to windows OS. It depends on application requirements.

60) which execution engine you have used?

Ans- Selenium has no execution engine so we use testNG or Junit for executing our automation scripts.

61) Have you used parallel testing?

Ans- yes, via the help of testNG because in testNG, we have a facility where we can define the classes and the thread counts- How many threads we want. So, in one short, multiple script will get executed based on the thread count. Thread count is 10 so 10 script will get executed.

62) have you used GRIDs?

Ans- No, I have not. Usually it came into the picture when you have around >5000 test scripts and you have regression lifecycle of 1 week or 3 days and you have to execute everything. So, in that case one system will not work out. In this case, we need to distribute the load, we have to connect multiple VM's. In my company or project, we don't have and if I have given opportunity, I will know

That and work on that.

Note: Interviewer is not bother about how many frameworks you have worked upon, they wants to know how good you for designing the framework, what is your thinking abilities, how can you approach and think about the problem statement.

63) How do you execute only the failed test cases?

Ans- When you run test scripts via testNG, it will generate failed testNG suite in the test output report. 2nd thing is that we had retry listener classes and it will take care of it. We just need to configure it with testNG suite so whenever any failure happened, we can define max count- how many counts it should re-triggered.

64) how do you capture screenshot at the runtime?

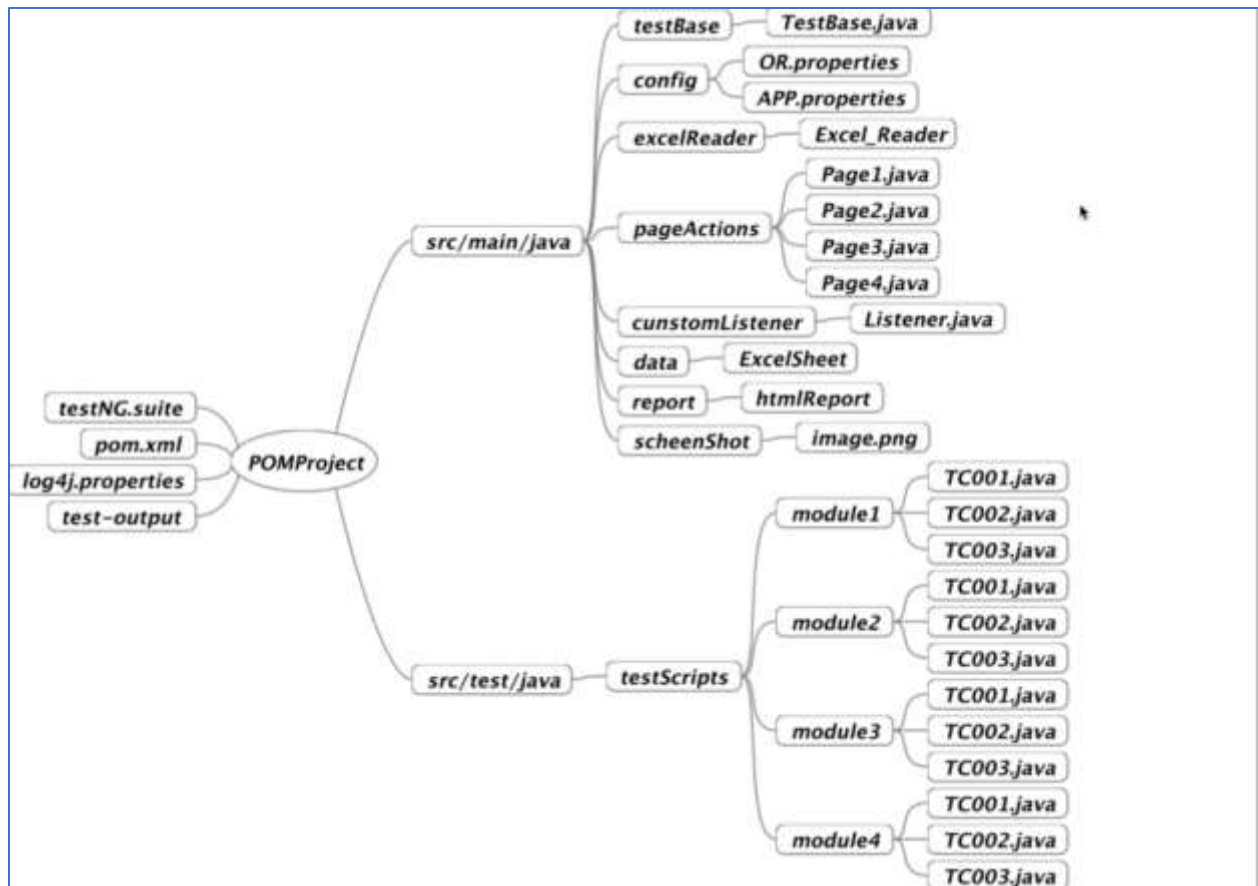
Ans- 1 way is you can capture the screenshot via the listener class. 2nd way is you need to design the script in such a way that whenever any failure is happened, it should go to the catch block. There you can write the code to capture the screenshot. Also, we need to use the link screenshot to the emailed report so whenever any failure is happened, the screenshot gets attached to the report.

Note: None of the framework can be designed by alone, any framework means 300-400 testscripts which will have 1000 of page libraries/ methods which alone you could not write. There will be excel readers, there will be lot of listener classes and lot of other supporting methods and classes which alone you can not write. You can say that major contribution was mine. This was my idea and team has implemented. Don't try to say that everything is done by me in the framework. It is always a group of team members to design the framework. There lot of review happened when you designed the framework or write the scripts.

Note: Grid configuration is one time activity. We have 1 master system and our Jenkins job is to invoke the master system and that master system used to trigger the scripts in the multiple VM's. Don't say these are GRID configurations.

65) Explain the structure of your automation project?

Ans- Consider this is a maven project, your project structure looks like this.



Say that “**POMProject**” is my root and it has 2 sub-package- src/main/java and src/test/java.

Src/main/java- will only have Java code which will support our framework or help us to execute our framework, we will not be write any test scripts.

Src/test/java- we only have testscripts which we will execute through testNG or Junit.

Then explain each one of the components in src/main/java.

- A) **Testbase:** In this, we explain -> As we know that every testcase has certain parameters which is common across all. For this we need to design the TestBases. So, what is testbases? – What happens when you are working in selenium, you are writing 100 of testscripts and in every testscripts,

reading the data from the properties file, navigating to the browser, maximizing the browser, then you have some wait conditions like implicit/explicit wait, you are reading data from other external sources, you can not repeat and write same code in every testscripts, hence we designed testbase file where we will have implemented all these things and other activities which testcase requires and it will help in reducing the redundant code from every testscripts. It will help us to drive our testscripts, it is base of testscripts where we will take important decisions like which browser is to instantiate. And every testscript will extend this testbase file.

- B) **Config file “OR.properties”** : Whenever we do our testscripts, there are certain parameters which are fixed for all the testscripts. Like username, password, your application URL and your web browser. These are fixed and we will write them in “OR.properties” file. What is need of that? -> This property will be consumed by every testscripts. Also if in your framework, there is DB connectivity, DB has certain set of properties, it also has DB URL, DB username, DB password, DB Drivers. Everything you can write here.
- C) **Config file “APP.properties”**: In this, we write application specific text which is required later on for some verifications. Let say you have an application and in your page, there is 100 lines of string which manually you cannot go and read line by line and make sure that it will match for every release. What we can do is – we can write such strings here in this file, and whenever we are verifying then we can take data from this properties file and verify it.
- D) **Excel reader**: Whenever we do automation, we supply data from the external sources either it can be excel file or properties file. It will help us in reading the data from the excel sheet and to supply this data to the testscripts. Because there are some testscripts who requires the data from the external sources, so for them we create excel reader folder which has all excel reader classes.
- E) **Page Actions**: Your applications consist of no of pages which is module. Like on Flipkart website, we have men, women, kids, kitchen, toys and other modules. Or when we have to buy something from the Amazon, then there are following page we traversed- first we go to “homepage” then we click on the item, then we go to “product details” page and then we do “add to basket” which is also a separate page then we go to “checkout” page and in last we go to “payment” page. These 5 pages are common for all the modules (men, women, kids, kitchen, toys). And for every page, write a java

Class that will have all the method which will help us to design the scripts.

Homepage will have methods like- `navigateToMen()`, `navigateToWomen()` and `loginToApplication`, `clickOnProduct()`, `mouseoverOnProduct()` and there will lot of methods on Homepage.

Likewise, we have methods on ProductDetails page like `selectTheRange()`, `selectTheSize()`, `selectTheType()` and whatever options you see on product details page, you can make a method of it.

In page AddToBasket, there will be methods like `addMoreItems()`, `continueShopping()`, `removeFromBasket()`, `verifyBasket()`, `verifyPriceInBasket()` and lot others.

In Payments page, we have methods for types of payment like credit card, debit card, netbanking, wallet.

All the methods we write in the pages.

- F) Custom listener:** this is very important. When we are running 1000 of testscripts, we don't know when failure will happen, its very unpredictable. This listener class will help us whenever there is an failure, it will capture the screenshot and it will attach to your testNG report. Even whenever we want to write some message before or after the script execution, then we can do this via the help of this listener class and it will be applicable for all test scripts.
- G) Data:** It contains an excel sheet for different testscripts like for login, registration and some other excel sheet. This folder will have only data content either excel sheet or xml files but not properties files (these will be placed under the config file)
- H) Report:** Whenever we run the automation testscripts, then at the end of the script, we need to have beautiful report. So we need to generate the report, whatever custom report we write except testNG, we can write in the report folder.
- I) Screenshot:** Whenever any failure happens, testcase is getting passed, you want to capture the screenshot as a matter of evidence or proof. So, we make one folder for it which will store all the screenshots.

- J) TestScripts:** Generally whatever pages you make in your projects, based on the pages you will have corresponding scripts also. Every page can have “n” no of scripts. We will again design them modulewise like Homepage, payment, Addtobasket module. And every module can have “n” no of testscripts. TC1, TC2, TC3...
- K) TestNG.xml:** At the project level, we need to write testNG suite file. Let’s say you have 100 of testscripts. In java, you can not run all of your testscripts in one go, so this testNG will support you to run all your 100 scripts in one go.
- L) Pom.xml:** Since it is a maven project, it will help us to download all the required jars files to support the project.
- M) Log4j.properties:** This will help us to log the required logs, whatever we want to logs. Let say we are performing 100 of steps and when the script has been passing or failed, you would like to know what steps has been performed. That you can achieve via this.
- N) Test-output:** the html files which has been generated by testNG.

Agile process in software testing:

66) Agile is a process, it’s not a model because it is sustained rule and the regulations which company follow it and which can change company to company. There is no hard and fast rule that we need to stick with certain process, basically it is a standard practice which has been performed by the company based on their product development cycle and the release cycle. So let’s say one company A which follows certain set of Agile process may not be similar with the company B which follows certain set of agile process unlike what we have in waterfall model, spiral model where we have some set which every company is used to follow it. Every product is not fit in waterfall, VnV spiral model. To overcome this, we as a industry came together with agile process and you can adopt based on your requirement, your product which you want to developed.

Now in the process, any feature development or any story is divided into the pieces. For ex- like you are working on payment page of ecommerce website. Now payment module is a big module so you designed subtask- one person will work on credit card, one will work on debit card, other person works

on Net-Banking, other person will work on integration with different banks and some other developers will work on COD. Now once it has divided into the no of task, we can either assign it to dev team or QE team, depend on team how they want to do it.

Now question is

67) how do we decide the task? How do we decide the features?

Ans- This is completely depend on the market. What market needs in the product? May be some features are very important, but we decided to hold this feature as of now and go with the feature which market wants. So, Agile process is completely driven by the market plus it's also depend on what is more important.

68) How do we decided team? What is team structure in the agile process?

Ans- In agile process, there will be small team which comprises of 5-7 team members. But again, it will change from company to company. One team will have one scrum master, developers and testers. So the scrum master role is whether we are following the rules or not in the agile process? Whether deliverables which is a feature or story, divided among QE and developer, is getting released on time or not? He will also drive your sprint? He makes sure everybody has the task and activity and everybody should assign their designated work within the deadline.

Generally, in agile process, most of company follows 4-cycle which means there will be FF1 (feature freeze 1), FF2, FF3 and CF (code freeze) and then release the feature to the market.

Now in FF1, lets say we have 10 story points which means we have 1 big feature which has 10 story points or to precise we have 10 things to develop, now these 10 tasks will be divided in the team. Everybody will start working on that, dev team will start with coding and at the same time, QE will work how he will test, he will work on test strategies, he will work on the testcases, he will work on the automation strategies. Generally, any feature freeze will be of 2 weeks or can be of 1 week depends on no of feature we want to design and release to the market. In 2 weeks, dev team will start with the coding and the moment one feature has been designed, it will be delivered to the QE team without any wait.

QE or Quality team work is to make sure that feature should be functionally fine and after that QE team needs to design the automation test scripts or web service test scripts or performance test scripts, that depends on the feature requirements. There are some features we cannot do performance, there are some features it requires web service automation only, there are some features which require UI automation only or some requires both service as well as UI automation. After 2 weeks finished, again team will meet and they retrospect about what are the features we have planned and what are the features we have finished. So, we check what we have targeted, we have achieved or not. May be some feature which was planned but it has not been designed or has designed but it has not been tested. So, that feature is going to be backlog item for the next sprint cycle. In next sprint FF2, we will take this backlog item along with new features, again we start working on them. Same thing which has happened in FF1 will be happened here too. Now in FF3, if there is any backlog item from the FF2, we will take them item here and also, we will plan for some more story points/feature. Once FF3 overs, we will have code freeze. Here we will not do any code development, we will be only make sure that whatever we have code in last 3 cycles is working fine or not or in other words, we will perform regression test. In regression test, we will make sure that whatever we have designed new is not breaking along with the existing design, that also not break. Also, in CF we don't do functional testing because in every release or cycle, we are writing the automation scripts (in FF1, in FF2, in FF3). Now in CF, we will run entire automation scripts whatever we have written in last 3 cycles to make sure that nothing is breaking as well as we will run existing automation suite also, to make sure that they are also working fine. Then if all are fine, the release will go to the production then released to the market.

69) How we do automation in the sprint cycles?

Ans- Earlier when the feature is stable only then we will do the automation. But it is now different nowadays. Now in the same sprint, you have to do functional testing as well as automation testing. The moment you get the feature i.e. when ever we planned for any feature and developers starts writing the code, then at the same time, QE start developing automation prototype (automation dummy code), he develops all the methods and scripts and the moment he get feature delivered by the development team, he will change the locators as well as make some changes in scripts little bit then execute it.

In case of service automation, it is entirely different. It will start once you get the service delivered by the developer then at that time you will automate that thing and execute it. So UI automation in this way is quite challenging in comparison to service automation. You have to write the locator and if some testcase are failing, you need to re run them as they may not be the actual failures, and this is not the case with the service automation where we get the result fast and here fails means fails so no need to rerun them.

But you need to do functional testing first so that you make sure that it is working fine and then develop the automation script. In every sprint, you have to repeat the same. Just in CF, you don't do any functional testing and you only do automation testing and that how you release product to the market. If you start doing functional testing in CF, then we cannot release the product in the market and concept of agile will not work.

Let say during CF, you got some bug and you reported then developer fixed it and you get new build or released version and again you have to run the regression script. Now suppose you have CF for 1 week, and already 3 days are over, you got a bug and dev has fixed it and now say you don't have as you can't do the regression within a day. This is a last-minute change, this is up to you how you take a call whether you can go to your product manager or scrum master and say that I am not confident in that, we should not release it to the market as we are seeing a potential risk. The team will disable the feature in that release. That's what we do in agile process, every feature is flag-based. Based on the flag, they can enable or disable. We will take that feature in the next release or some company what they do- they will release all the feature which are working fine and whatever we have disabled, they will take some time. In that time, QE team do entire automation, they will verify the bug and then they will make a dot release/patch only for that feature. But only they do for the critical feature. In agile process, there is no extra time for the automation, you have to do in the same time.

70) After the sprint over in the agile process, team will meet and retrospect all the stories, did we missed something? Analyze what went well and what you would have done better? And based on the feedback from this, we can enhance the second release. In every release, we do that. Your scrum master

will driver this meeting and he will go through the feature which was designed, developed and delivered.

And he will go through those features which was designed but not developed or not even designed itself and he will try to make a point like why it has been missed out? Whether we have over estimated or whether the time was not enough or whether the team is lagging? And based on that retrospect point, he will talk to some other resources or in next release we will not plan the feature which we cannot fulfill. Generally, we don't want to keep the backlog as clearing backlog in IT companies is very tough, it will keep on grow.

The burndown chart is very important as it will tell when you have planned the feature, when you have started developing it and when you have finished. Sometimes what happens, the sprint cycle is of 2 weeks, you don't do anything for 1st week while in 2nd week, you did all feature, you coded, and you delivered to the QE team and now QE team has no time so this everything will get caught in bundle chart. And the management will look into that.

70) How do you learn Automation?

Ans- First check which languages are supported by applications. Learn java, then selenium, Jenkins and the source code management like Github, SVN. Once you learn the production, then you need to know product functionalities, then learn application flow. After one two months then start automation.

71) How to explain the project in interview?

Ans- 1st talk about the project architecture means what are the layers you have in your project. Project doesn't mean the UI layer. Like in Amazon, UI side of Amazon is one layer and backend side of Amazon is another layer which the database is and 3rd layers is the inventory layer where sells team will get all the order which has been placed. First explain about the project. Say that my application has 3 layers -UI, frontend and inventory where we generate invoice or report. Then talk about the project. My project has homepage, product details page, basket page, billing and shipping page and then the payment page. This is my application flow.

72) How many test scripts you have automated?

Ans- I automated around 200 testscripts roughly. Also, we do have functional test scripts as we cannot automate any application entirely. Maximum automation we can do 60 to 70 percent. To run them, we have done Jenkins configurations. We used to schedule the Jenkins jobs.

73) Have you used Selenium GRID?

Ans- We have installed multiple Jenkins jobs in multiple VM's and we used to trigger the test scripts in multiple VM's. We have configured the email service so once our execution is done, it will send an email to the recipient or the stakeholders. We send them report of the execution.

74) Automation in agile?

Ans- Agile is the process of your organization how they want to deliver the product to the market. It will differ from one company to another. Let's say we need to deliver 40 stories or features in build 1507 of product. So, we divided these 40 stories into 4 sprints of 2 weeks where in sprint 1, we have planned for 10 features. In agile we have small scrum team which are responsible for designing and delivering the product to the market. Let's say in one sprint we have 5 team members, out of them 3 are dev and 2 are QE. The moment when they deliver the stories to the QE members in the sprint 1 which is of 2 weeks. These QE members first will do functional testing, write and test the functional scenarios. And once the functional is done, he will do the automation in the same sprint for that feature. While doing the functional testing, QE might get some issues which they report instantly and in some time, it will get fixed by the dev team. This process continues in this sprint.

In some of scenarios, we do performance testing based on the requirement and features. In sprint 1, we have planned 10 stories, out of them 8 are finished and 2 are backlogs which will carry forward to next sprint 2. In sprint 2, we have planned for 15 stories and also get 2 backlogs from last sprint. In sprint 2, QE's are not going to test what has been designed in sprint 1. Their priority is whatever is designed and developed in sprint 2, should work fine and automation is ready, performance if requires, should be done. Let's say we have finished all 17 stories in sprint 2. There is no backlog here

Now in sprint 3, we have planned for remaining 15 stories. Again QE's will do functional testing, automation and performance of sprint 3 features, will not touch the features from sprint 1 and sprint 2 here as they have been tested in the respective sprints. One story can have multiple tasks.

In sprint 4, there is no new development, here the role of all engineers is to make sure that all the features which are designed in sprint 1, 2 and 3 are as per the requirements, it should be tested and bug free, should be working based on input which has come as a part of requirement. We are going to execute all automation test scripts which we have designed in sprint 1, 2 and 3. Here performance is mandatory as we have integrated all the features, mainly we skip performance testing in sprint 1, 2 and 3, and do it in sprint 4. In sprint 4, we are doing the regression via running our automation suite. No functional testing will be done in this phase. Whatever bugs you get, you will report to the dev team and they will fix it and give back to you. Again you re-test.

Now what happens and it happens most of the time, you could not finish all 40 stories which you have planned for build 1507, you are able to finish only 35 stories after sprint 4, so remaining 5 stories will be your backlog and will go in next build 1508.

Sometimes people call sprint 1 as feature freeze-1 (FF1), sprint 2 as FF2, sprint 3 as FF3 and sprint 4 as code freeze (CF). Some companies call- sprint 1 as 1507.1, sprint 2 as 1507.2, sprint 3 as 1507.3 and CF as 1507.4. So it depends on the company how they manage this.

Now sometimes what happens, there will be backlog from the automation side. Let's say you have 10 stories in sprint 1, you have tested all of them functionally but couldn't have done the automation for all 10 stories so those stories will go as backlog automation to next sprint 2. If it couldn't finish here also, then they will shift to sprint 3 but you need to justify in retrospect meeting so that we should not repeat the same in the release 1508.

1 story/features can have multiple tasks. It's up to your scrum team to decide how many tasks they have to create for each story. It's sprint planning which is done by scrum master or scrum members (mostly all those 5 members which are involved in developing and testing the features in sprints)- How many

stories we need to consider in each sprint, what happens when there is a backlogs, what happens when we could not achieve the targeted plans.