**Selenium Interview Questions & Answers**

**1) What is Selenium and what is composed of it?**

Selenium is a suite of tools to automate web application testing. It is composed of….

* **Selenium IDE (Integrated Development Environment):**It is a tool for recording and playing back. It is a firefox plugin.
* **WebDriver :** WebDriver is a web automation tool that allows you to execute your tests against different browsers.

**Selenium RC :** Selenium Remote Control (RC) is a test tool that allows you to write automated web application UI tests in any programming language against any HTTP website using any mainstream JavaScript-enabled browser.

* **Grid:**With the help of Grid you can distribute tests on multiple machines so that test can be run in parallel. which helps to save the time.

**What is Automation Testing?**

Automation testing is the process of testing a software or application using an automation testing tool to find the defects. In this process, executing the test scripts and generating the results are performed automatically by automation tools. It is required when we have huge amount of [regression test cases](https://www.softwaretestingmaterial.com/regression-testing/). Some most popular tools to do automation testing are HP QTP/UFT, [Selenium WebDriver](https://www.softwaretestingmaterial.com/install-selenium-webdriver/), etc.

**What are the benefits of Automation Testing?**

This is one of the common interview questions in any Automation testing job.

1. Saves time and money. Automation testing is faster in execution.
2. Reusability of code. Create one time and execute multiple times with less or no maintenance.
3. Easy reporting. It generates automatic reports after test execution.
4. Easy for compatibility testing. It enables parallel execution in the combination of different OS and browser environments.
5. Low-cost maintenance. It is cheaper compared to manual testing in a long run.
6. Automated testing is more reliable.
7. Automated testing is more powerful and versatile. Automation tools allow us to integrate with [Cross Browser Testing](https://www.softwaretestingmaterial.com/run-selenium-tests-on-browserstack/) Tools, [Jenkins](https://www.softwaretestingmaterial.com/setup-integration-jenkins-ci-tools/), [Github](https://www.softwaretestingmaterial.com/selenium-continuous-integration/) etc.,
8. It is mostly used for regression testing. Supports execution of repeated test cases.
9. Minimal manual intervention. Test scripts can be run unattended.

10. Maximum coverage. It helps to increase the test coverage.

**How to run tests parallelly or in separate threads in TestNG ?**

We can set parallel execution in testng.xml file.

Parallel tests, classes and methods: Use parallel attribute on the <suite> tag respectively (for methods,test,classes, instances).

<suite name="My suite" parallel="methods" thread-count="5">

<suite name="My suite" parallel="tests" thread-count="5">

<suite name="My suite" parallel="classes" thread-count="5">

<suite name="My suite" parallel="instances" thread-count="5">

**How does selenium webdriver work ?**

**Selenium command** creates an HTTP Request and sends it to the server by using browser driver. Then those HTTP requests are executed on the HTTP server. and then HTTP server generates the result/status as response.

**What is an HTTP request?**

HTTP request is a request message sent by the client to the server to perform some actions on the server. **The HTTP request contains the methods are like GET , PUT or POST.**

**HTTP POST request**

We use POST to create a new resource. A POST request requires a body in which you define the data of the entity to be created.

**HTTP GET request**

We use GET to read or retrieve a resource. A successful GET returns a response containing the information you requested.

**HTTP PUT request**

We use PUT to modify/update a resource. PUT updates the entire resource with data that is passed in the body payload.

**What are the 3 parts of HTTP request?**

An HTTP request is made out of three components: request line(URI), headers and message body.

**what is sprint in selenium?**

**Sprints**: It is a set period of time to complete some specific user stories, decided by the product owner and developer team, usually 2-4 weeks of time.

**What is Sprint testing in agile?**

In **Agile** product development, a **sprint** is a set period of time during which specific work has to be completed and made ready for review. Each **sprint** begins with a planning meeting. ... During the **sprint**, the team holds daily stand-up meetings to discuss progress and solutions to challenges.

**What is an user story in agile?**

A user story is **the smallest unit of work**, it is an informal, general explanation of a software feature written from the user’s perspective.

**[What is the Selenium Web Driver Architecture?](https://www.tutorialspoint.com/what-is-the-selenium-web-driver-architecture)**

Selenium WebDriver Archetecture is it enables interaction between browsers and browser drivers. This **architecture** consists of four layers… Client Library, JSON Wire Protocol, Browsers and Browser Drivers. Client Library consists of languages like Java, Ruby, Python, C# and so on.

**what is selenium remote driver?**

**Selenium RemoteWebDriver** is a class that implements the **WebDriver** interface on the **remote server**. The browser driver classes like FirefoxDriver, ChromeDriver, EdgeDriver, etc.

**What is JSON / Jason wire protocol in selenium?**

**JSON** stands for JavaScript Object Notation. It is used to transfer data between a HTTP server and a client Library on the web. **JSON** Wire Protocol is a REST API that transfers the information between client library and HTTP server. Each BrowserDriver (such as FirefoxDriver, ChromeDriver, etc.) has its own HTTP server.

**What is TDD ?**

**Test Driven Developmen**t is a process where test cases are written before the code. It is an iterative development process. In every iteration first tests will be written for a piece of functionality and will be executed(all tests will be failed) then new code will be written to pass the tests. then test will be run again and if failed code will be refactored/fixed to pass. Process will repeat again and again until passed. When passed then new test will be written for new functionality and process repeats same way.

**Test cases will describe the function completely.**

**TDD** Process-

: first I will read the requirement..

: then I will write/add the (automation)test cases of it.

: execute the test cases (all will be failed because code not written yet)

: write the code to fix the failures

: then run the tests again to see pass or fail.

: refactor the code if failed.

: repeat the process until all the test cases passed.

: add test > execute > write code > repeat.

**What is ATDD in agile methodology ?**

Acceptance Test Driven Development, it is an extension of **TDD in agile**. it includes a type of test from the user's point of view.

**What is UAT testing process ?**

**\* (UAT)** User Acceptance Testing validates software in real-world conditions by its intended audience, UAT ensures that the application meets the end-users’ needs.

**\* UAT procedures-**

**First..**

: Product backlog - will be developed by the Product owner

: Sprint backlog – in a Sprint planning meeting Sprint backlog will be deceded.

: Development - then developers will pick the user stories to implement

: Perform UAT test - at the time of potential release of given user stories UAT (customers/end users) team will test the application and will provide feedback and feedback will be reviewd by various stakeholder. If feedback is very relavent and important and required to be fixed then it will be included to the product backlog.

**\*Excution process..**

: identifying the users -

: test preparation and design - (understand requirements/ask question for clarification, test planning, develop test scenarios/test cases)

: environment preparation - (test data, other tools and devices are ready)

: execution tests and log issues.

: bugs prioritization - bugs will be prioritized by a triage meeting with different stakeholders.

: once bugs are fixed then retest

: then test closer.

**What is syncronyzation ?**

Ans: Syncronyzation is nothing but waits. It process only one thread at a time and other threads must wait until the previous thread is finished.

**What is Test harnes ?**

Test harness is a set of tools, libraries, and procedures, used to automate the execution and evaluation of test cases.

A test harness provides a structured approach to testing by automating the setup, execution, and validation of test cases.

Test harnesses are particularly useful of large and complex software applications where manual testing is time-consuming and error-prone.

with a test harness, testers can quickly execute large volumes of test cases, identify defets, and improve the overall quality of the software

**Test harness components:**

: Testing framework- testNG, JUnit etc.

: Test data- the input data required to run test cases. data can be generated manually or using test data generators.

: Test scripts

: Test runners- testng.xml file, TestRunner file in cucumber.

**What is BDD ?**

Behavior Driven Development where the application behaviour is defined from the user’s point of view.

**What is the criteria for automation or which test cases should be automated ?**

A: data driven test cases and those test cases should be automated which are stable and repeated againand again like(smoke, sanity) and also every regression has to be automated and may be those test cases which are easy & heavy path scenario which takes lot of times manually.

I will not take much complex & lengthy test cases unnecessary that's every time the requirement changing, I will not touch that. 20/30% is fine, at least 20/30 % of time I am saving for my team.

**What are the challenges and limitations of Selenium WebDriver?**

As we all know Selenium WebDriver is a tool that automates the browser to mimic real user actions on the web. Selenium is a free open source testing tool. Some of the challenges with Selenium WebDriver are as follows

1. We cannot test windows application
2. We cannot test mobile apps
3. Limited reporting
4. Handling dynamic Elements
5. Handling page load
6. Handling pop up windows
7. Handling captcha

**What type of tests have you automated?**

Our main focus is to automate test cases to do [*Regression testing*](https://www.softwaretestingmaterial.com/regression-testing/), [*Smoke & Sanity testing*](https://www.softwaretestingmaterial.com/smoke-testing-vs-sanity-testing/). Sometimes based on the project and the test time estimation, we do focus on End to End testing.

**How many test cases you have automated per day?**

Actually it depends on Test case scenario’s complexity and length. I did automate 2-5 test scenarios per day when the complexity is limited. Sometimes just 1 or fewer test scenarios in a day when the complexity is high.

**What is a Framework ?**

A framework is a set of rules or best practices which can be followed to achieve the desired test results. There are different types of automation frameworks and the most common ones are:

* [Data Driven Testing Framework](https://www.softwaretestingmaterial.com/data-driven-framework-selenium-webdriver/)
* Keyword Driven Testing Framework
* Hybrid Testing Framework
* Page Object Model Framework

**3. Why Framework?**

In a test automation project, we do perform different tasks by using different types of files. To organize and manage all the files and to finish all the tasks in a systematic approach we use a framework.

**5. What are the advantages of using Test Automation Framework?**

1. Saves time and money. Automation testing is faster in execution
2. Reusability of code. Create one time and execute multiple times with less or no maintenance
3. Easy reporting. It generates automatic reports after test execution
4. Easy for compatibility testing. It enables parallel execution in combination of different OS and browser environments
5. Low cost maintenance. It is cheaper compared to manual testing in a long run
6. Automated testing is more reliable
7. Automated testing is more powerful and versatile
8. It is mostly used for regression testing. Supports execution of repeated test cases
9. Minimal manual intervention. Test scripts can be run unattended

10. Maximum coverage. It helps to increase the test coverage

**6. Which Test Automation Framework you are using and why?**

Some of the Test Automation Frameworks are:

* Data Driven Testing Framework
* Keyword Driven Testing Framework
* Hybrid Testing Framework
* Page object design pattern Framework.

**8. Can you explain the Framework which you have used in your Selenium Project?**

[Check this link for detailed answer](https://www.softwaretestingmaterial.com/explain-test-automation-framework/)

**9. Where you have applied OOPs in your Automation Framework?**

[Check this link for detailed answer](https://www.softwaretestingmaterial.com/oops-concept-in-automation-framework/)

**11. What are the most popular testing tools for functional testing?**

1. Selenium
2. QTP(Quick Test Professional) / UFT(Unified Functional Testing)

**12. Why do you prefer Selenium Automation Tool?**

1. Free and open source
2. Have large user base helping communities
3. [Cross-browser](https://www.softwaretestingmaterial.com/what-is-cross-browser-testing/) compatibility
4. Platform compatibility
5. Multiple programming languages supported.

**Q. you got a user story assign to you what are the activities will you do before starting testing?**

A. I will start writing test cases then I will get tescase reviewed with team members and developers. then if they give feedback for update then I have to update test cases. then I execute the test cases, and I will analyze the test result share with everyone. If there is any failure I will reports the defects to the developers and followup with that.

### **What type of test cases not to be automated?**

Types of Test Cases Not to Be Automated are

* New Functionalities
* Complex Functionality
* Unstable Functionality(data changes frequently).
* Installation and setup testing.
* We can not automate bar code
* We can not automate captcha

### **What are the advantages of the Test Automation Framework ?**

1. Reusability of code and data.
2. Easy reporting.
3. Easy maintenance.
4. Maximum test coverage.
5. Minimal manual intervention.

### **Have you created any Framework ?**

**If you are a beginner:**You can say “No, I didn’t get a chance to create framework from the scratch. I have used the framework which is already available. My contribution is mostly in creating test cases by using the existing framework.”

**If you are a beginner but have good knowledge on creating framework:** You can say “Yes, I have involved in developing framework along with other automation tester in my company.”

**If you are an experienced tester:**You can say “I have contributed in developing framework.” or You can say “Yes, I have created framework from the scratch. There was no automation process in my previous company. I designed the framework from the scratch.”

**Can you explain the Framework which you have used in your Selenium Project?**

Ans : We need to specify in and out of our Test Automation Framework such as programming **language** used, **Type of framework** used, Test Base Class (Initializing WebDriver, Implicit Waits), How we separate Element locators and tests (Page Objects, Page Factory), Utility functions file, Property files, TestNG annotations, How we parameterize tests using Excel files, How we capture error screenshots, Generating reports(Extent Reports), Emailing reports, Version Control System used and Continues Integration Tool used.

**Type of Framework:** In our project the framework we are use Data driven framework with [Page Object Model design pattern](https://www.softwaretestingmaterial.com/page-object-model/). And the components of our framework are like…

**Language:**In our Selenium Project we are using Java language. Even though Selenium supports multiple languages, we are using Java language is just because most of the automation developers have knowledge on Selenium with Java.

**Packages:** in our framework we maintain seperate packages for different types of classes. Like..

**Page package:** for all the web page related classes.

**Test package:** for all the test related classes.

**Utility package:** for all the utility classes.

**Classes... we maintain separate classes for different types of tasks. Like..**

**Page Class**: As per the Page Object Model, we maintained a seperate class for a seperate web page and that class holds the functionalities of that web page.

**Test classes:** we also maintained a Separate test class for every individual page class.

**Test Base Class:**we also maintain a Base class to store and deal with all the common functions which are repeated again and again like Initializing the WebDriver, initializing Extent Reports, creating objects of the classes , creating object of the FileInputStream and so on.

**Utility Class (AKA Functions Class):**we do maintain a Utility class to store and handle all the utility functions which are used by all the test classes like\_ actions, waits, capturing screenshots, handling windows, handling framework, handling pop-up and so on.

**Folders: we maintained separate folders for different puposes.. like..**

**Screenshots folder:**  Screenshots will be captured and stored in a this folder and also the screenshots of failed test cases will be added to the extent reports.

**Config Data folder/properties file:**I do maintain a (***config.properties***) file to store the configuration data such as browser-specific information, application URL, file path, etc.

All the details which change as per the environment and authorization such as URL, Login Credentials are kept in the *config.properties* file. Keeping these details in a separate file makes it easy to maintain.

**Test Data folder:** All the test data will be kept in an excel sheet and stored in this folder. I use [Apache POI](https://www.softwaretestingmaterial.com/handling-excel-files-using-apache-poi/) to handle excel sheets.

**Report Folder**: all the test reports are stored in this folder after test execution.

**TestNG:** I use TestNG to simplify and execute my test cases. I use TestNG for Assertions, Grouping, and Parallel execution.

**Maven:** I use Maven for build execution, and dependency purpose. Instead of adding all the selenium jar files to the project I add all the dependencies to the POM.xml file.

**Jenkins:** I use Jenkins as a CI (Continuous Integration) Tool, to execute my test cases on a daily basis and also for nightly execution. Test Results will be sent to the peers using Jenkins.

**Extent Reports:** For the reporting purpose I am using Extent Reports. It generates beautiful HTML reports. I also include the screenshots of failed test cases in my Extent Report.

**Git Repository (Version Control Tool):** I use Git as a repository to store my test scripts.

toolsqa

**What are the annotations used in TestNG ?**

Ans: @Test, @BeforeSuite, @AfterSuite, @BeforeTest, @AfterTest, @BeforeClass, @AfterClass, @BeforeMethod, @AfterMethod.

**What is the use of xpath ?**

Ans- it is used to find the WebElement in web page. It is very useful to identify the dynamic web elements.

**What are different types of locators ?**

Ans- There are 8 types of locators and all are the static methods of the By class.

By.id(), By.name(), By.tagName(), By.className(), By.linkText(), By.partialLinkText(), By.xpath, By.cssSelector().

**What is the difference between Assert and Verify?**

Ans- Assert- it is used to verify the result. If the verification fail then it will stop the execution of the that test case there itself and move the control to next @test case method.

Verify- it is also used to verify the result. If the verification fail then it will not stop the execution of that test case.

**What is the alternate way to click on login button?**

Ans- use submit() method but it can be used only when attribute type = submit.

**How do you verify if the checkbox/radio is checked or not ?**

Ans- We can use isSelected() method.

driver.findElement(By.xpath("xpath of the checkbox/radio button")).isSelected();

**How do you handle alert pop-up ?**

Ans- To handle alert pop-ups, we need to 1st switch control to alert pop-ups then click on ok or cancle then move control back to main page.

Syntax-

String mainPage = driver.getWindowHandle();

Alert alt = driver.switchTo().alert(); // to move control to alert popup

alt.accept(); // to click on ok.

alt.dismiss(); // to click on cancel.

alt.getText(); // to get alert message.

alt.sendKeys (); // to send data to alert box.

**How do you launch IE/chrome browser?**

Ans- Before launching IE or Chrome browser we need to set the System property.

//To open Chrome browser →

System.setProperty(“webdriver.chrome.driver”,”path of the chromeDriver.exe file ”);

WebDriver driver = new ChromeDriver();

**How to perform right click using WebDriver?**

Ans- Use Actions class

Actions act = new Actions(driver); // where driver is WebDriver type

act.moveToElement(webElement).perform();

act.contextClick().build().perform();

Actions act = new Actions(driver);

WebElement source = driver.findElement(By.xpath(“ -----”)); //source element which you want to drag

WebElement target = driver.findElement(By.xpath(“ -----”)); //target where you want to drop..

act.dragAndDrop(source, target).build().perform();

**How do you upload a file?**

Ans- To upload a file we can use sendKeys() method. And also using AutoIT script & Robot class.

driver.findElement(By.xpath(“input field”)).sendKeys(“path of the file which u want to upload”);

**How do you click on a menu item in a drop-down menu?**

Ans- If that menu has been created by using a select tag then we can use the methods selectByValue() or selectByIndex() or selectByVisibleText(). These are the methods of the Select class.

If the menu has not been created by using the select tag then we can simply find the xpath of that element and click on that to select.

**What is the difference between findElement and findElements?**

Ans- Both methods are abstract method of WebDriver interface and used to find the WebElement in a web page.

findElement() – is used to find the one web element. It returns single WebElement.

findElements() – is used to find more than one web element. It returns List of WebElements.

**How to get typed text from a textbox ?**

Ans- use getAttribute(“value”) method by passing arg as value.

String typedText = driver.findElement(By.xpath("xpath of box")).getAttribute("value"));

**What are the different exceptions you got when working with WebDriver ?**

Ans- ElementNotVisibleException,

ElementNotSelectableException,

NoSuchElementException,

NoAlertPresentException,

NoSuchAttributeException,

NoSuchWindowException,

TimeoutException,

WebDriverException etc.

**What are the prerequisites to run selenium webdriver ?**

Ans- JDK, Eclipse, WebDriver(selenium standalone jar file), browser, application to be tested.

**How to get the number of frames on a page?**

List < WebElement > framesList = driver.findElements(By.xpath("//iframe"));

or

List < WebElement > framesList = driver.findElements(By.tagName("iframe"));

int numOFframes = frameList.size();

**How to check if a text is highlighted on the page ?**

Ans(edureka)- By checking/comparing the color of a field and the color of background, if color is different or not-

String color = driver.findElement(By.*xpath*("//a[text()='Shop']")).getCssValue("color");

String backcolor = driver.findElement(By.*xpath*("//a[text()='Shop']")).getCssValue("background-color");

System.out.println(color);

System.out.println(backcolor);

**if**(!color.equals(backcolor)){

System.out.println("Text is highlighted!")

}

**else**{

System.out.println("Text is not highlighted!")

}

**How do u get the width of the textbox ?**

driver.findElement(By.xpath(“xpath of textbox ”)).getSize().getWidth();

driver.findElement(By.xpath(“xpath of textbox ”)).getSize().getHeight();

**How to check whether a text is underlined or not ?**

Ans- Identify by getCssValue(“border-bottom”) or sometime getCssValue(“text-decoration”) method if the cssValue is 'underline' for that WebElement or not.

ex- This is for when moving cursor over element that is going to be underlined or not-

WebElement element = driver.findElement(By.*xpath*("//a[text()='Hindi']"));

String cssValue1= element.getCssValue("text-decoration");

System.***out***.println(" before hovering, CssValue : "+cssValue1);

// none solid regb(121, ...)

Actions act = **new** Actions(driver);

act.moveToElement(element).perform();

String cssValue2= element.getCssValue("text-decoration");

System.***out***.println(" aftert hovering, CssValue : "+cssValue2);

//underline solid regb(121, ...)

**What is the use of getOptions() method ?**

Ans- getOptions() is used to get the list of selectable options from the dropdown list.

**Is WebDriver an interface or a class?-**

Ans- WebDriver is an Interface.

**FirefoxDriver is class or an interface and from where is it inherited ?**

Ans- FirefoxDriver is a class, it is inherited from remote webdriver class. It implements all the methods of WebDriver interface.

**Which is the super interface of webdriver ?**

Ans- Search Context.

**What is the difference b/w close() and quit() ?**

Ans- close() – it will close the browser where the control is.

quit() – it will close all the browsers opened by WebDriver.

**Can we enter text without using sendKeys() ?**

Ans – Yes we can enter text without using sendKeys() method. We have to use the combination of javascript and WrapsDriver classes with WebDriver extension class, check the below code-

public static void setAttribute (WebElement element, String attributeName, String value)

{

WrapsDriver wrappedElement = (WrapsDriver) element;

JavascriptExecutor je = (JavascriptExecutor)wrappedElement.getWrappedDriver();

je.executeScript("arguments[0].setAttribute(arguments[1],arguments[2])", element, attributeName, value);

    }

**There is a scenario whenever “Assert.assertEquals()” function fails automatically it has to take screenshot. How can you achieve this ?**

Ans- By using EventFiringWebDriver.

Syntax-EventFiringWebDriver eDriver =new EventFiringWebDriver(driver);

File srcFile = eDriver.getScreenshotAs(OutputType.FILE);

FileUtils.copyFile(srcFile, new File(imgPath.png));

**How do you handle https website in selenium** **?**

Ans- By changing the setting of FirefoxProfile, and desired capabilities in chrome.

FirefoxProfile profile = new FirefoxProfile();

profile.setAcceptUntrustedCertificates(false);

WebDriver driver = new FirefoxDriver(profile);

driver.get("url");

**What is the name of Headless browser.**

Ans- HtmlUnitDriver.

**What are the benefits of using TestNG?**

Ans-

a) TestNG allows us to

\* execute of test cases as group.

\* execute of test cases as Suite

\* parallel test

\* parameterized test

\* data driven test

b) TestNG Annotations are easy to understand.

c) generates logs / email-able html reports.

d) execution order can be changed

f) Re-run Failed test cases.

g) Without having main method we can execute the test method.

h) An xml file can be generated to execute the entire test suite. In that xml file we can rearrange our execution order and we can also skip the execution of particular test case.

**How do you take screen shot without using EventFiringWebDriver ?**

**Ans : I can use takesScreenshot method.**

**How do you send ENTER/TAB keys in WebDriver ?**

Ans- use click() or submit() [submit() can be used only when attribute type = ’submit’]) method for ENTER. Or use Actions class to press keys.

Actions act = new Actions(driver);

For Enter- act.sendKeys(Keys.ENTER);

For Tab - act.sendKeys(Keys.TAB);

**What is Datadriven framework & Keyword Driven ?**

Ans- **Datadriven framework-** In this Framework , while Test case logic resides in Test Scripts, the Test Data is separated and kept outside the Test Scripts.Test Data is read from the external files (Excel File) and are loaded into the variables inside the Test Script. Variables are used both for Input values and for Verification values.

**Keyword Driven framework-** The Keyword-Driven or Table-Driven framework requires the development of data tables and keywords, independent of the test automation tool used to execute them. Tests can be designed with or without the Application. In a keyword-driven test, the functionality of the application-under-test is documented in a table as well as in step-by-step instructions for each test.

**How to handle frames ?**

Ans- we can handle frames in 3 ways …

By index - driver.switchTo().frame(0);

By name or ID - driver.switchTo().frame(“frame1” or id);

By webElement - driver.switchTo().frame(webElement);

Back to main frame - driver.switchTo().parentFrame();

driver.switchTo().defaultContent();

**What is the use of AutoIt tool ?**

Ans- Some times while doing testing with selenium, we get stuck by some interruptions like a window based pop up. But selenium fails to handle this as it has support for only web based application. To overcome this problem we need to use AutoIT along with selenium script**. AutoIT is a third party tool to handle window based applications**. The scripting language used is in VBScript.

**How to perform double click using WebDriver ?**

Ans- use doubleClick() method.

Syntax- Actions act = new Actions(driver);

act.doubleClick(webelement).perform();

**How to press Shift+Tab ?**

Ans-

String press = Keys.chord(Keys.SHIFT, Keys.ENTER);

webelement.sendKeys(press);

**What is the difference b/w getWindowHandles() and getWindowHandle() ?**

Ans- getWindowHandles()- is used to get the address of all the open browser and its return type is Set <String>.

getWindowHandle()- is used to get the address of the current browser where the conrtol is and return type is String.

**How do you accommodate project specific methods in your framework ?**

Ans- 1st go through all the manual test cases and identify the steps which are repeating. Note down such steps and make them as methods and write into ProjectSpecificLibrary.

**How to check all checkboxes in a page?**

Ans-

List < webElement > chkBox = driver.findElements(By.xpath(“//a[@id='checkbox']”));

for(int i = 0; i <= chkBox.size(); i++){

chkBox.get(i).click();

}

**How do you identify the Xpath of element on your browser ?**

And- to find the xpath we use Firebug addons on firefox browser and to identify the xpath written we use Firepath addons.

Syntax- //htmltag[@attname='attvalue']

or //htmltag[text()='textvalue']

or //htmltag[contains(text(),'textvalue')]

or //htmltag[contains(@attname,'attvalue')]

**What are the flavors of selenium ?**

Ans- selenium IDE, selenium RC, Selenium WebDriver and Selenium Grid.

**Which one is better xpath or CSS ?**

Ans- xpath.

**How will you handle dynamic elements ?**

Ans- By writing relative xpath. If element is so dynamic for xpath then I use CSS selector.

**what are the different assertions or check points used in your script ?**

Ans- The common types of validations are:

a) Is the page title as expected ?

b) Validatie any logo is displayd or not ?,

c) Does text exist on the page ?

d) Does a javascript call return an expected value ?

**What is actions class in WebDriver ?**

Ans- Actions class is used to control the actions of mouse.

**What are the different attributes for @Test annotation ?**

Ans- alwaysRun, dependsOnMethods, enabled, expectedExceptions, timeOut etc.

ex- @Test(expectedExceptions = ArithmeticException.class).

@Test(timeOut = 2000).

**Can we run group of test cases using TestNG ?**

Ans- yes.

@Test(groups = {"smoke"})

**What is object repository?**

Ans- An object repository is a very essential entity in any UI automation tool. A repository allows a tester to store all the objects that will be used in the scripts in one or more centralized locations rather than letting them be scattered all over the test scripts. The concept of an object repository is not tied to WET alone. It can be used for any UI test automation. In fact, the original reason why the concept of object repositories were introduced was for a framework required by QTP.

**What is an interface ? why interface ?**

\_ An interface in java is just an outline for a class.

\_ interface lets me keep track for what I need to implement. all the methods are abstract in interface, doesn’t have body, body is provided by the sub class.

\_ but major drawback of interfaces is that I have to have every method from the interface.

\_ when we use implement keyword then it calls all the methods from interface after putting the cursor on red highlighted word ‘implement’. So we can implement all methods.

**Where do we use the interface in selenium ?**

**1. WebDriver, 2. WebElement, 3. ITestListener, 4. IRetryAnalyzer,**

**5. IAnnotationTransformer**

**1. WebDriver :**  
WebDriver webDriver= new ChromeDriver();  
To initialize our browser, WebDriver interface is used.  
  
**2. WebElement :**  
In selenium tester perform operations on elements by locating them. WebElement provides multiple methods to perform like click, submit, sendKeys, getText, getAttribute etc.  
  
WebElement element = webDriver.findElement(By.cssSelector("\*\*\*\*\*"));  
  
Now tester can perform multiple operations on element like

* element.click();
* element.clear();
* element.getAttribute("class");
* element.submit();
* element.getText();
* element.isDisplayed();

These two are the basic interfaces used in Selenium project.

**What are the oops concepts?**

Ans- **Java's Object Oriented Programming.**

a) Encapsulation,

b) Abstraction,

c) Polymorphism,

d) Inheritance.

**What is inheritance ?**

Ans- Inheritance is a relation between the classes/interfaces where one class inherits the properties from another class.

**What is difference between overload and override ?**

Ans- The methods by passing different arguments list/type is known as overloading of methods while having the same method signature with different method body is known as method overriding.

**Does java supports multiple inheritance?**

Ans- Interface supports multiple inheritance but class does not support.

**What are the different access specifiers in Java?**

Ans-

Public = can access from everywhere.

Protected = can access only from same package. Alos can be accessible from outside the package but through inheritance only. (sub class).

Default = can access only from same package.

Private = can access only from same class.

**What is test strategy?**

Ans- Test Strategy is an outline that describes the testing portion of the software development cycle.

**When do you use Selenium Grid?**

Selenium Grid can be used to execute same or different test scripts on multiple platforms and browsers concurrently so as to achieve distributed test execution.

**What are the advantages of Selenium Grid?**

It allows running test cases in parallel thereby saving test execution time.  
It allows multi-browser testing.  
It allows us to execute test cases on multi-platform.

**What is a hub in Selenium Grid?**

A hub is a server or a central point that controls the test executions on different machines.

### **What is a node in Selenium Grid?**

Node is the machine which is attached to the hub. There can be multiple nodes in Selenium Grid.

### **What are the types of WebDriver APIs available in Selenium?**

* Firefox Driver
* Gecko Driver
* InternetExplorer Driver
* Chrome Driver
* HTMLUnit Driver
* Opera Driver
* Safari Driver
* Android Driver
* iPhone Driver
* EventFiringWebDriver

### **Which WebDriver implementation claims to be the fastest?**

The fastest implementation of WebDriver is the HTMLUnitDriver. It is because the HTMLUnitDriver does not execute tests in the browser. HTMLUnitDriver takes a simple HTTP request-response mechanism for test case execution.

**What are the Programming Languages supported by Selenium WebDiver?**

* [Java](https://www.softwaretestingmaterial.com/java-tutorial/)
* C#
* Python
* Ruby
* Perl
* PHP

### **What are the Operating Systems supported by Selenium WebDriver?**

* Windows
* Linux
* Mac OS X
* iOS
* Android
* microsoft

### **What are the testing types that can be supported by selenium?**

Testing types that can be supported by Selenium are as follows:

* Functional Testing
* Regression Testing
* Retesting
* Acceptance Testing
* End-to-End Testing
* Smoke Testing
* Sanity Testing
* Responsive Testing
* Cross Browser Testing
* UI Testing
* Integration Testing

### **How many parameters can selenium commands have at minimum ?**

There are four parameters that you have to pass in Selenium are

* Host
* Port Number
* Browser
* URL

### **What are the Open-source Frameworks supported by Selenium WebDriver?**

* JUnit
* TestNG

### **When you use these locators ID, Name, XPath, Or CSS Selector?**

**ID** & **Name** locators will be used when there are unique identifiers & unique names available on the web page.  
**CSS Selector** can be used for performance and when ID & Name locators are not unique.  
**XPath** is used when there is no preferred locators.

**What are Soft Assert and Hard Assert in Selenium?**

Soft Assert: Soft Assert collects errors during *@Test* Soft Assert does not throw an exception when an assert fails and would continue with the next step after the assert statement.

Hard Assert: Hard Assert throws an AssertException immediately when an assert statement fails and test suite continues with next @Test annoted method.

Assert asert= **new** Assert();

asert.assertTrue(**false**);

SoftAssert softAssertion= **new** SoftAssert();

softAssertion.assertTrue(**false**);

**What is the difference between setSpeed () and sleep () methods?**

Both sleep() and setSpeed() are used to delay the execution speed.

**setSpeed():** It set up speed that will apply a delay time before every Selenium operation.

***Example:*** setSpeed(“5000”) – It waits for 5 seconds.

**sleep():** It set up wait only for once when called in our Selenium script.

***Example:*** sleep(5000) – It waits for 5 seconds.

### **How to launch a browser using Selenium WebDriver?**

WebDriver is an Interface. We create an Object of a required driver class such as FirefoxDriver, ChromeDriver, InternetExplorerDriver etc.,

To launch Firefox Driver:WebDriver driver = new FirefoxDriver();

Note: If you use geckodriver with Selenium, you must upgrade to Selenium 3.3. Here we have to set the property as follows

To launch Chrome Driver:WebDriver driver = new ChromeDriver();

To launch Internet Explorer Driver:WebDriver driver = new InternetExplorerDriver();

To launch Safari Driver:  
WebDriver driver = new SafariDriver();

**What is WebElement in selenium?**

WebElement in Selenium represents an HTML element. It basically represents a Document Object Model (DOM) element in a HTML document.

**Stale Element Reference Exception:**

A [stale element reference exception](https://www.softwaretestingmaterial.com/stale-element-reference-exception-selenium-webdriver/) is thrown in one of two cases, the first being more common than the second.

The two reasons for Stale element reference are

1. The element has been deleted entirely from the DOM.
2. The element is no longer attached to the DOM.

The Document Object Model (DOM) is an (API) application programming interface for HTML and XML documents.

**How to handle STALE ELEMENT REFERENCE EXCEPTION?**

Before looking how to handle Stale Element Reference Exception through Page Object Model. Let’s see what is Stale Element Reference Exception first.

Stale means old, decayed, no longer fresh. Stale Element means an old element or no longer available element. Assume there is an element that is found on a web page referenced as a WebElement in WebDriver. If the DOM changes then the WebElement goes stale. If we try to interact with an element which is staled then the StaleElementReferenceException is thrown.

**Solution 1: Refreshing the web page**

driver.navigate().refresh();

**Solution 2: Using Try Catch Block**

for(int i=0; i<=2;i++){

try{

driver.findElement(By.xpath("xpath here")).click();

break;

}

catch(Exception e){

Sysout(e.getMessage());

}

}

**Solution 3: Using webdriver wait.**

wait.until(ExpectedConditions.presenceOfElementLocated(By.id("table")));

**Solution 4: Using POM**

We could avoid StaleElementException using POM. In POM, we use **initElements()** method and **initElements()** takes the **latest address** of the web element.

**What is Implicit Wait in Selenium WebDriver ?**

Implicit waits tell the WebDriver to wait for a certain amount of time before it throws an exception. Once we set the time, WebDriver will wait for the element based on the time we set before it throws an exception. The default setting is 0 (zero). We need to set some wait time to make WebDriver to wait for the required time.

**What is WebDriver Wait In Selenium WebDriver?**

WebDriverWaitis applied on a certain element with defined expected condition and time. This wait is only applied to the specified element. This wait can also throw an exception when an element is not found.

**What is Fluent Wait In Selenium WebDriver?**

FluentWait can define the maximum amount of time to wait for a specific condition and frequency with which to check the condition, ignore specific types of exceptions before throwing an “ElementNotVisibleException” exception.

**What happen if you mix both implicit wait and explicit wait in a Selenium Script?**

As per the official Selenium documentation, it is suggested not to mix both Implicit waits and Explicit Waits. Mixing both of them can cause unpredictable wait times.

Implicit wait is defined only once in the code. It will remain same throughout the driver object instance.

Explicit wait is defined whenever it is necessary in the code. This wait will call at the time of execution. It is a conditional wait.

Explicit wait will overwrite the implicit wait where ever explicit wait is applied. So, Explicit Wait gets first preference then Implicit Wait.

**What happen if you mix both Thread.Sleep and WebDriver Waits in a Selenium Script?**

Thread.sleep() method can be used to pause the execution for specified time in milliseconds

If we use WebDriver waits along with Thread.sleep() method then webdriver will hold the execution for specified time and then will follow other wait. Test execution time will become more, if we mix both waits.

**How to get an attribute value using Selenium WebDriver?**

By using getAttribute(“value”);

It returns the value of the attribute passed as a parameter.

String attributeValue = driver.findElement(By.name("Selenium")).getAttribute("value");

System.out.println("Available attribute value is :"+attributeValue);

Output: value Selenium.

**How to click on a hyperlink using Selenium WebDriver ?**

We use click() method in Selenium to click on the hyperlink.

driver.findElement(By.linkText(“Software Testing Material Website”)).click();

**How to submit a form using Selenium WebDriver?**

We use “submit” method on element to submit a form

driver.findElement(By.id("form\_1")).submit();

Alternatively, you can use click method on the element which does form submission.

**How to press ENTER key on text box In Selenium WebDriver?**

To press ENTER key using Selenium WebDriver, We need to use Selenium Enum Keys with its constant ENTER.

driver.findElement(By.xpath("xpath")).sendKeys(Keys.ENTER);

**What is the difference between driver.get()** **and** **driver.navigate.to(“url”)?**

driver.get(): To open an URL and it will wait till the whole page gets loaded.

driver.navigate.to(): To navigate to an URL and It will not wait till the whole page gets loaded.

**How to handle hidden elements in Selenium WebDriver?**

We can handle hidden elements by using javaScript executor

JavascriptExecutor je = JavascriptExecutor(driver);

Je.executeScript("document.getElementsByClassName(‘class value’).click();");

**List some scenarios which we cannot automate using Selenium WebDriver ?**

**1. Bitmap comparison is not possible using Selenium WebDriver.**

**2. Automating Captcha is not possible using Selenium WebDriver.**

**3. We can not read bar code using Selenium WebDriver.**

**What is the difference between Page Object Model (POM) and Page Factory?**

Page Object is a class that represents a web page and hold the functionalities and members for that web page.  
Page Factory is a way to initialize the web elements that will be interact with the page object when you create an instance of it.

**How can you use the Recovery Scenario in Selenium WebDriver?**

By using “Try Catch Block” within Selenium WebDriver Java tests.

**How to Upload a file in Selenium WebDriver ?**

There are two ways which are majorly used to upload a file in Selenium. WebDriver such as using SendKeys Method and using AutoIT Script.

**How to Download a file in Selenium WebDriver?**

By using AutoIT script, I could download a file in Selenium WebDriver.

**How to connect a Database in selenium?**

I use JDBC Driver to connect the Database in Selenium (While using Java Programming Language).

**How To Resize Browser Window Using Selenium WebDriver ?**

I use ‘Dimension’ class to resize the browser window.

**How To Scroll Web Page Down Or UP Using Selenium WebDriver?**

JavaScript **scrollBy**() method scrolls the document by the specified number of pixels.

**114. What is desired capabilities?**

desired capabilities are used to set the capability to handle the SSL certificates in chrome browser.

I need to create an instance of DesiredCapabilities.

DesiredCapabilities desiredCapability = DesiredCapabilities.chrome();

**What is Continuous Integration?**

Continuous integration is a practice where developers continuously(regularly) integrate (merge) their new code or changes into a central repository, after which automated builds and tests will be run.

Some of the continuous integration tools are Jenkins, TeamCity, Bamboo, Travis, Circle Ci, Bitbucket.

We can schedule the test suite execution using these CI Tools.

**What is TestNG ?**

TestNG is a testing framework inspired from junit, I use TestNG to simplify my test cases and for test execution. I use TestNG for assertions, grouping and parallel execution.

**What is TestNG Assert and list out some common Assertions supported by TestNG?**

TestNG Asserts are used to verify the result in the middle of test run. Based on the TestNG Assertions, we will consider a successful test only if it is completed the test run without throwing any exception.

Some of the common assertions supported by TestNG are.

* assertEqual(String actual,String expected)
* assertEqual(String actual,String expected, String message)
* assertEquals(boolean actual,boolean expected)
* assertTrue(condition)
* assertTrue(condition, message)
* assertFalse(condition)
* assertFalse(condition, message).

**How to create and run TestNG.xml?**

In TestNG framework, we need to create **TestNG XML** file to create and handle multiple test classes. We do configure our test run, set test dependency, include or exclude any test, method, class or package and set priority etc in the XML file.

**Step 1: Create testng xml file**

i. Right click on Project folder > TestNG > convert to TestNG

ii. In New file wizard, add file name as ‘testng.xml‘ as shown in below given image and click on Finish button.

iii. It will add testng.xml file under your project folder.

**Step 2 : Write xml code:**

i. Now add below given code in your testng xml file.

**Note:** I can choose any name for my Test Suite & Test.

ii. After giving appropriate names, now your testNG xml file will looks like this:

The hierarchy in the testng xml file is very simple to understand.

Very first tag is the Suite tag<suite>, under that it is the Test tag<test> and then the Class tag<classes>. I can give any name to the suite and the test but I need to provide the correct name to the <classes> tag which is a combination of my **Package** name and **Test Case** name.

**Step 3 : Execute a testng xml**

Now let’s run the xml. Run the test by **right click** on the testng xml file and select **Run As** > **TestNG Suite**.

Once the execution is done, you could view test result under the TestNg console.

**How to set test case priority in TestNG?**

I use **priority** attribute to the @Test annotations. In case **priority** is not set then the tests will be executed in alphabetical order.

**What is Parameterized testing in TestNG?**

*Parameterized test* is run the same test again and again with different sets of data as parameter.

There are two ways to set these parameters:

* with *testng.xml*
* with Data Providers

**How to run a test case multiple time using testNG ?**

Ans: I can run a test case multiple time using **invocationCount** attribute in @Test annotation. Example- @Test(invocationCount=4) it will run 4 times.

**What is the use of @Listener annotation in TestNG ?**

Ans. TestNG listeners are used to configure reports and logging. One of the most widely used listeners in TestNG is ITestListener interface. It has methods like onTestStart, onTestSuccess, onTestFailure, onTestSkipped etc. We should implement this interface creating a listener class of our own. Next, we should add the listeners annotation (@Listeners) in the Class which was created.

**Have you worked on different browsers? Have you ever performed Cross browser testing?**

Ans: Yes, I have worked on different browsers like Mozilla (the most common), Chrome, and IE,

performed cross browser testing demo. But while performing cross browser testing in my automation framework. It was getting slower and data would not be going on to the proper browser.

**How do you re-run the failed test cases ?**

I can re-run the failed test cases by using the **“testng-failed.xml” file and By Implementing TestNG IRetryAnalyzer and with IAnnotationTransformer.**

**: after test execution we can see testng-failed.xml in test-output folder.**

Run this testng-failed.xml file: Right click=> Run As => TestNG Suite.

**130. Mention types of data you have handled in Selenium?**

* Excel
* CSV
* XML
* HTML
* SQL
* JSON
* YAML

**What type of test you have automated?**

Ans- Automation mainly focuses on data driven, regression testing, smoke testing, Sanity Testing and some time you can for End to End test cases.

**How to work with Chrome, IE or any other third party driver? Why we need separate driver for them?**

Ans- Selenium by default supports only Firefox browser so in order to work with Chrome and IE browser. we need to download separate drivers for them and specify the path.

**9- What is POM (Page Object Model) and what is the need of it?**

Ans- Page Object Model is a test automation design pattern.

many companies are using it because…

its easy to maintain and reduces the duplication of code.

The main advantage of Page Object Model is that if the UI changes for any page, it doesn’t require us to change any tests, we just need to change only the code within the page objects (Only at one place). Many other tools which are using selenium, are following the page object model.

The Page Object model provides the following advantages.

1. There is clean separation between test code and page specific code such as locators (or their use if you’re using a UI map) and layout.

2. There is single repository for the services or operations offered by the page rather than having these services scattered throughout the tests.

**What are the challenges you have faced while automating your application?**

Ans- Challenges faced that are as follows:

: hadling dynamic webElements.

: handling dynamic web tables.

: prioritizing the test cases.

: select right tools and framework.

**19- Have you worked with Web table (Calendar)? If yes, then what was your approach.**

Ans- Yes. First I need to analysis its web page html code for the element. To find which type of calendar it is, then I can decide how to solve this calendar by using selenium Webdriver or using JavaScript executor. It all depends on the scenario. Now a days, there would be numbers of new type of calendars. We can’t handle those by using selenium but we can handle those by using JavaScriptExecutor.

**20- Can you tell me some navigation commands ?**

Ans - Command - driver.navigate().to(appUrl);

Command - driver.navigate().forward();

Command - driver.navigate().back();

Command - driver.navigate().refresh();

**Find total number of Menus on a Webpage :**

First I need to get the list of web element for the drop down menus then get the size of the list.

List < WebElement > dropdown = driver.findElements(By.tagName("select"));

System.out.println(dropdown.size());

**Find total number of TextBoxes on a Webpage :**

List < WebElement > textboxes =

driver.findElements(By.xpath("//input[@type='text'[@class='inputtext']"));

System.out.println(textboxes.size());

**23- What is Page Load Timeout?**

**Page load timeOut** is a method that makes the script to wait until the whole page is loaded.

Because, when automation script run on the browser. Sometimes scripts are faster than the web application that time scripts looking for an element but it can’t be found because the web page not loaded completely and throws an element not found or element not visible exception. To eliminate these kind of exception

and ensuring script run smoothly for this we mention or set page load time out.

Ex: driver.manage().timeouts().pageLoadTimeout(10, TimeUnit.SECONDS);

**33- What is Firefox Profile?**

Ans: Firefox Profile is a profile that saves our personal information such as bookmarks, passwords, user preferences etc. we can create, remove, rename, and switch our profiles anytime.

**34- What are the issues or Challenges you faced while working with IE Browser?**

Ans- IE Browser is retiered at June 15, 2022.

**35- Have you ever faced any proxy issue if yes then how you handled?**

Ans:

Handle proxy in Selenium Webdriver

When I try to access some secured applications I get proxy issues so many times. Until I do not set proxy, I cannot access the application itself.

Handle Proxy in Selenium Webdriver

1- Change the proxy setting manually and open default browser.

2- Change the proxy setting using Webdriver code.

**41- What is log4j and How to generate log files in Selenium?**

Ans- Log4j: Log4j is free open source tool given by Apache foundation for creating log files It helps us to generate log file in various output target.

**46- Does Selenium support Mobile Automation if yes then How?**

Ans-Yes. But it needs some external tools to communicate with mobile app and perform automation.

There is various tool available for mobile automation. Robotium, Monkey-runner, Ranorex, Appium and UI Automator.

**48- Have you ever heard of POC? What is POC?**

Ans-

POC stands for Proof of Concept in Automation Testing.

It is just a document or some time a demo piece of code.

**49- What is ATLC (Automation Test life Cycle) ?**

Ans-

1- Automation feasibility analysis

2- Test Plan/Test Design

3- Environment Setup/Test lab setup

4-Test Script development/ Automation test case development

5-Test script execution

6- Generate test result / Analysis of result

**50- What is Automation Test Plan?**

A complete plan for Automation testing. It includes..

Section #1: Scope

Section #2: Test strategy

Section #3: Resources/roles and responsibilities

Section #4: Tools

Section #5: Schedules

Section #6: Environment

Section #7: Deliverables

Section #8: Risks

Section #9: Test data

Section #10: Reports/results

**53- Can you create a design of your framework?**

Ans- Yes.

**55- Can you create one sample script using your framework?**

Ans- No. Because it needs time to make a framework. And at the same time I did not know all the things but I can.

**67- How to disable particular test case?**

Ans-Just add an attribute enabled=false in test declaration annotation.

Ex: @Test(enabled=false)

**68- How to generate reports in TestNG?**

Ans- We just need to run an annotated TestNG annotation scripts and refresh the project you can see the test-output folder is generated in project explorer. Just click on it, and then click on to the emailable-report.html I can see the testNG report in HTML format.

**71- Can you please explain what is apache maven and Apache ant?**

**\_** Apache Maven is a build tool, I use Maven for build execution and dependency purpose.

Ans - Apache Maven: Apache Maven is a software project management and comprehension tool. Based on the concept of a project object model (POM), Maven can manage a project's build, reporting and documentation from a central piece of information.

Apache Ant: Apache Ant is a Java library and command-line tool. whose mission is to drive processes described in build files as targets and extension points dependent upon each other. The main known usage of Ant is the build of Java applications. Ant supplies a number of built-in tasks allowing to compile, assemble, test and run Java applications. Ant can also be used effectively to build non Java applications, for instance C or C++ applications. More generally, Ant can be used to pilot any type of process which can be described in terms of targets and tasks.

**72- Do you have used Maven project in your organization? If yes, then have you created build to execute your test?**

Ans- No I don’t create maven project for company. But I have created demo for it.

**76- Have you heard of Sikuli? If yes, can you please explain what exactly Sikuli does?**

Ans: Sikuli automates anything I see on the screen. It uses image recognition to identify and control GUI components. It is useful when there is no easy access to a GUI's internal or source code.

**86- What is robot class and where have we used this in Selenium?**

Ans- robot class is a class in java.. It helps to handle windows keyboard and mouse events.

**10) What is the difference between type keys and type commands ?**

Type command populates the value attribute by using JavaScript whereas .typekeys() works like actual user typing.

**18) What is same origin policy? How you can avoid same origin policy?**

The **“Same Origin Policy”** is introduced for security reason, and it ensures that the content of my site will never be accessible by a script from another site.  As per the policy, any code loaded within the browser can only operate within that website’s domain.

To avoid “Same Origin Policy” proxy injection method is used, in proxy injection mode the Selenium Server acts as a client configured **HTTP proxy** , which sits between the browser and application under test and then masks the AUT under a fictional URL.

**19) What is heightened privileges browsers?**

When the browsers are launced in a special mode are called heightened privileges, that allows the user/websites to do something which are not commonly permitted. The key difference is that the By using these browser mode, Selenium core can open the AUT directly and also read/write its content without passing the whole AUT through the Selenium RC server.

**23) Which attribute you should consider throughout the script in frame for “if no frame Id as well as no frame name”?**

I can get the list of frames by using- driver.findElements(By.xpath(“//iframe”));

This will return list of frames. Then I will create a loop.

I will need to  switch to each and every frame and search for locator which I want. Then break the loop.

**24) how to print Frame id or name**

public void getIframe(final WebDriver driver, final String id) {

final List<WebElement> iframes = driver.findElements(By.tagName("iframe"));

for (WebElement iframe : iframes) {

if (iframe.getAttribute("id").equals(id)) {

// TODO your stuff.

}

}

}

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

//Assume driver is initialized properly.

List<WebElement> ele = driver.findElements(By.tagName("frame"));

System.out.println("Number of frames in a page :" + ele.size());

for(WebElement el : ele){

//Returns the Id of a frame.

System.out.println("Frame Id :" + el.getAttribute("id"));

//Returns the Name of a frame.

System.out.println("Frame name :" + el.getAttribute("name"));

}

**27) Explain how you can login into any site if it’s showing any authentication popup for password and username?**

Pass the username and password with url

* Syntax-http://username:password@url
* ex- http://creyate:[tom@www.gmail.com](mailto:tom@www.gmail.com)

**35)  While injecting capabilities in webdriver to perform tests on a browser which is not supported by a webdriver what is the limitation that one can come across?**

Major limitation of injecting capabilities is that “findElement” command may not work as expected.

**MySql interview questions:**

**# Software testing material:**

**List of the Most Popular MySQL Interview Questions with Example Queries (Latest MySQL questions of 2020):**

**Most Frequently Asked MySQL Interview Questions**

Enlisted below are the most popular MySQL interview questions that are commonly asked in the interviews by experts.

**Q #1) What is MySQL?**

**Answer:**MySQL is an open-source DBMS which is developed and distributed by Oracle Corporation.

It is supported by most of the popular operating systems, such as Windows, Linux, etc. It can be used to develop different types of applications but it is mainly used for developing web applications.

**Q #2) What are the features of MySQL?**

**Answer:**MySQL has several useful features that make it a popular database management software.

**Some important features of MySQL are mentioned below:**

* It is reliable and easy to use.
* It is a suitable database software for both large and small applications.
* Anyone can install and use it at no cost.
* It is supported by many well-known programming languages, such as PHP, Java, C++, PERL, etc.
* It supports standard SQL (Structured Query Language).
* The open-source license of MySQL is customizable. Hence, a developer can modify it according to the requirements of the application.

**Q #3) What is the default port number of MySQL?**

**Answer:**The default port number of MySQL is 3306.

**Q #4) How can you find out the version of the installed MySQL?**

**Answer:**The version of the installed MySQL server can be found out easily by running the following command from the MySQL prompt.

**mysql> SHOW VARIABLES LIKE “%version%”;**

**Q #5) What are the advantages and disadvantages of using MySQL?**

**Answer:**There are several advantages of MySQL which are making it a more popular database system now.

Some significant advantages and disadvantages of MySQL are mentioned below.

**Advantages:**

* It is a reliable and secure database management system.
* It supports different types of storage engines to store the data and it works faster for this feature.
* It can handle millions of queries with a high-speed transactional process.
* It supports many advanced level database features, such as multi-level transactions, data integrity, deadlock identification, etc.
* Maintenance and debugging processes are easier for this software.

**Disadvantages:**

* It is hard to make MySQL scalable.
* It is not suitable for a very large type of database.
* The uses of stored routines and triggers are limited to MySQL.

**Q #6) What is the function of myisamchk?**

**Answer:**myisamchk is used to get information about MyISAM database tables.

It is also used for checking, debugging, repairing and optimizing database tables. It is better to use this command when the server is down or when the required tables are not in use by the server.

**Syntax:**

**myisamchk [OPTION] table\_name…**

The available options of this tool can be retrieved by using the following command.

**myisamchk –help**

To check or repair all MyISAM tables, the following command will be required for executing from the database directory location.

**myisamchk \*.MYI**

**Q #7) What are the purposes of using ENUM and SET data types?**

**Answer:**

**ENUM** data type is used to select any one value from the predefined list.

The value of a particular field can be restricted by defining the predefined list as the field which is declared as ENUM will not accept any value outside the list.

**SET** data type is used to select one or more or all values from the predefined list. This data type can also be used to restrict the field for inserting only the predefined list of values like ENUM.

**Example:**

Run MySQL server from the command prompt and execute the following SQL commands to know the use of ENUM and SET data type.

The following SQL commands [create a new database](https://www.softwaretestinghelp.com/mysql-create-database/) named ‘**newdb**’ and select the database for use.

|  |
| --- |
| CREATE DATABASE newdb; |
| USE newdb; |

The following SQL command will create a table named **clients** with the fields **ENUM** and **SET** data type.

|  |
| --- |
| CREATE TABLE clients (     id INT AUTO\_INCREMENT PRIMARY KEY,     name VARCHAR(50),     membership ENUM('Silver', 'Gold', 'Diamond'),     interest SET('Movie', 'Music', 'Concert')); |

INSERT queries will create two records in the table. ENUM field only accepts data from the defined list.

‘**Premium**’ value does not exist on the ENUM list. Hence, the value of the ENUM field will be empty for the second record. SET can accept multiple values and both the data will be inserted in the second record.

|  |
| --- |
| INSERT INTO clients (name, membership,interest)  VALUES ('Sehnaz','Gold', 'Music'),                   ('Sourav','Premium', 'Movie,Concert');  SELECT \* FROM clients; |

**Q #8) What are the differences between a primary key and a foreign key?**

**primary key : A primary key is a column** in a database table that has a unique value for each row within that column. It is necessary to declare the primary key on those tables that require to make a relationship among them. One or more fields of a table can be declared as the primary key.

**foreign key** : When a primary key of any table is used in another table as the primary key or any other field to make a database relation, then it is called a foreign key.

**The differences between these two keys are mentioned below:**

* The primary key uniquely identifies a record, whereas foreign key refers to the primary key of another table.
* The primary key can never accept a NULL value but foreign key accepts a NULL value.
* When a record is inserted in a table that contains the primary key then it is not necessary to insert the value on the table that contains this primary key field as the foreign key.
* When a record is deleted from the table that contains the primary key then the corresponding record must be deleted from the table containing the foreign key for data consistency. But any record can be deleted from the table that contains a foreign key without deleting a related record of another table.

**Example:**

Two tables named **manufacturers** and **items** will be created after executing the following two SQL commands.

Here, the primary key of the **manufacturer’s** table is used as a foreign key in the **items**table with the field name **manufacturer\_id**. Hence, the**manufacturer\_id** field will contain only those values that exist in the **manufacturer’s** table.

|  |
| --- |
| CREATE TABLE manufacturers (     id INT AUTO\_INCREMENT PRIMARY KEY,     name VARCHAR(50));  CREATE TABLE items (     id INT AUTO\_INCREMENT PRIMARY KEY,     name VARCHAR(50),     type VARCHAR(50),     brand VARCHAR(50),     manufacturer\_id INT,     FOREIGN KEY (manufacturer\_id) REFERENCES manufacturers(id)); |

**Q #9) What are the differences between CHAR and VARCHAR data types?**

**Answer:**A **CHAR field** is a fixed length, and **VARCHAR** is a **variable** length **field**. This means that the storage requirements are different - a **CHAR field** always takes the same amount of space regardless of what you store, whereas the storage requirements for a **VARCHAR field** vary depending on the specific string stored.

**The differences between these data types are mentioned below:**

* CHAR data type is used to store fixed-length string data and the VARCHAR data type is used to store variable-length string data.
* The storage size of the CHAR data type will always be the maximum length of this data type and the storage size of VARCHAR will be the length of the inserted string data. Hence, it is better to use the CHAR data type when the length of the string will be the same length for all the records.
* CHAR is used to store small data whereas VARCHAR is used to store large data.
* CHAR works faster and VARCHAR works slower.

***Further Reading =>>***[***MySQL Data Types***](https://www.softwaretestinghelp.com/mysql-data-types/)

**Example:**

The following SQL statement will create a table named Customers. In this table, the data type of **name**field is VARCHAR and the data type of **phone** field is CHAR.

The size of the**name** field will depend on the length of the inserted value. The size of the **phone** field will always be 14 characters even if the length of the inserted value is less than 14 characters.

|  |
| --- |
| CREATE TABLE customers (     id INT AUTO\_INCREMENT PRIMARY KEY,     name VARCHAR(50),     phone CHAR(14)) |

**Q #10) What is the purpose of using the TIMESTAMP data type?**

**Answer:**A TIMESTAMP data type is used to store the combination of date and time value which is 19 characters long.

The format of TIMESTAMP is YYYY-MM-DD HH:MM: SS. It can store data from ‘1970-01-01 00:00:01’ UTC to ‘2038-01-19 03:14:07’ UTC. By default, the current date and time of the server get inserted in the field of this data type when a new record is inserted or updated.

**Q #11) What is the difference between mysql\_fetch\_array() and mysql\_fetch\_object() ?**

**Answer:**Both mysql\_fetch\_array() and mysql\_fetch\_object() are built-in methods of PHP to retrieve records from MySQL database table.

The difference between these methods is that –

**mysql\_fetch\_array() returns the result set as an array**

**and mysql\_fetch\_object() returns the result set as an object.**

**Example:**

|  |
| --- |
| $result = mysql\_query("SELECT id, name FROM clients");    //using mysql\_fetch\_array()  while ($row = mysql\_fetch\_array($result, MYSQL\_NUM)) {      printf("ID: %s  Name: %s", $row[0], $row[1]);  }    //using mysql\_fetch\_object()  while ($row = mysql\_fetch\_object($result)) {      printf("ID: %s  Name: %s", $row-&amp;gt;id, $row-&amp;gt;name);  } |

**Q #12) How can you filter the duplicate data while retrieving the records from the table?**

**Answer:**A DISTINCT keyword is used to filter the duplicate data from the table while retrieving the records from a table.

**Example:**

The following SQL command shows all the records of the**items** table. The output shows that the table contains duplicate values in the Type field.

|  |
| --- |
| SELECT \* from items; |

The following SQL command will display the values of the **type** field by removing duplicate values.

|  |
| --- |
| SELECT DISTINCT type from items; |

**Q #13) What is the difference between NOW() and CURRENT\_DATE()?**

**Answer:**Both **NOW()** and **CURRENT\_DATE()** are built-in MySQL methods. **NOW()** is used to show the current date and time of the server and **CURRENT\_DATE()** is used to show only the date of the server.

|  |
| --- |
| SELECT now(); |

|  |
| --- |
| SELECT current\_date(); |

**Q #14) Which statement is used in a select query for partial matching?**

**Answer: REGEXP** and **LIKE** statements can be used in a SELECT query for partial matching. REGEXP is used to search records based on the pattern and LIKE is used to search any record by matching any string at the beginning or end or middle of a particular field value.

**Example:**

First, check the existing records of the ‘**clients’**table by executing the SELECT query.

|  |
| --- |
| SELECT \* FROM clients; |

Run SELECT query with REGEXP clause to search those records from the **clients** where the client name starts with ‘**S**’

|  |
| --- |
| SELECT \* FROM clients WHERE name REGEXP "^S"; |

Run SELECT query with LIKE clause to search those records from the **clients** where the client name starts with ‘**A**’

|  |
| --- |
| SELECT \* FROM clients WHERE name LIKE "A%"; |

**Q #15) Which MySQL function is used to concatenate string?**

**Answer: CONCAT()** function is used to combine two or more string data. The use of this function is here with an example.

**Example:** The following [SELECT query with CONCAT](https://www.softwaretestinghelp.com/mysql-concat-function/)() function will combine five words, ‘Welcome ‘, ‘to’, ‘SoftwareTestingHelp’,’.’ and ‘com’.

|  |
| --- |
| SELECT CONCAT('Welcome ',to ','SoftwareTestingHelp','.',com'); |

CONCAT() function can be used on any table as well. The following SELECT query will show the output by combining two fields, **brand**and **type**of **items**table.

|  |
| --- |
| SELECT CONCAT(brand,'=>',type) from items; |

**Q #16) How can you change the name of any existing table by using the SQL statement?**

**Answer:**The following SQL command is used to rename an existing table of the database.

|  |
| --- |
| RENAME TABLE old name TO new\_name |

**Example:**

The following command will show the table list of the**newdb** database.

|  |
| --- |
| SHOW TABLES; |

The following rename command will rename the table **items** by new name **products**.

|  |
| --- |
| RENAME TABLE items TO products; |
| SHOW TABLES; |

**Q #17) How can you retrieve a portion of any column value by using a SELECT query?**

**Answer: SUBSTR()** function is used to retrieve the portion of any column. The use of this function is explained here with an example.

**Example:**

Here, the first SELECT command is used to show all the records of the Products table and the second SELECT command is executed using SUBSTR function and that prints only the first five characters of the name field.

|  |
| --- |
| SELECT \* FROM products;  SELECT SUBSTR(name,1,5) FROM products; |

**Q #18) What is the purpose of using a HEAP table?**

**HEAP table works as a temporary table and it uses the hashed indexes that make it faster than any other table type.**

**Answer:**The table which uses a hashed index and stores in the memory is called the HEAP table. It works as a temporary table and it uses the indexes that make it faster than any other table type.

When MySQL crashes for any reason then all the data stored in this table can be lost. It uses fixed-length data types. Hence BLOB and TEXT data types are not supported by this table. It is a useful table for those MySQL tasks where speed is the most important factor and temporary data is used.

**Q #19) How can you add and remove any column of a table?**

**Answer:**The syntax for adding any column in an existing table is shown below.

|  |
| --- |
| ALTER TABLE table\_name ADD COLUMN column\_name column\_definition [FIRST|AFTER existing\_column] |

**Example:**

DESCRIBE command is used to show the structure of the products table.

|  |
| --- |
| DESCRIBE products; |

The following ALTER command with ADD COLUMN clause will add a new field named ‘**price’** in the table **products**.

|  |
| --- |
| ALTER TABLE products ADD COLUMN price DECIMAL(5,2); |
| DESCRIBE products; |

The syntax for removing any column from an existing table is shown below.

|  |
| --- |
| ALTER TABLE table\_name DROP COLUMN column\_name; |

**Example:**

The following ALTER command with a DROP COLUMN clause will remove the field named ‘**brand’** in the table ‘**products’**.

|  |
| --- |
| ALTER TABLE products DROP COLUMN brand; |
| DESCRIBE products; |

**Q #20) What is an index? How can an index be declared in MySQL?**

**Answer:**An index is a data structure of a MySQL table. It is used by the database search engine to find the records faster. One or more fields of a table can be used as an index key. Index key can be assigned at the time of table declaration or can be assigned after creating the table.

**Example:**

**username**and **email**fields are set as the index in the following create table statement.

|  |
| --- |
| CREATE TABLE users(          username VARCHAR(50) PRIMARY KEY,          email VARCHAR(50) NOT NULL,          password VARCHAR(50) NOT NULL,          INDEX (username, email)); |

The following command will show the index key information of the ‘**users’** table.

|  |
| --- |
| SHOW INDEXES FROM users; |

**Q #21) What is meant by a decimal (5,2)?**

**Answer:**in MySQL a decimal data type is used to store the fractional data.

The meaning of decimal (5,2) means that the total length of the fractional value is 5. The field can contain 3 digits before the decimal point and 2 digits after the decimal point. If a user adds any value larger than the defined length then it will insert 999.99 in the field.

The use of this data type is explained in the following example.

**Example:**

In the following insert query, **789.56** is inserted in the **price** field. This value is less than 1000 and the total digits with the fractional part are 5. So, this value is valid for this field.

|  |
| --- |
| INSERT INTO products (type, name, price, manufacturer\_id)  VALUES ('Mobile', 'iPhone 8', 789.56, 1);  SELECT \* FROM products; |

In the following insert query, **34789.567** is set for the price field. Then this value is greater than 1000 and the total digits with fractional parts are 8. So, the default value 999.99 is inserted in the place of 34789.567**.**

|  |
| --- |
| INSERT INTO products (type, name, price, manufacturer\_id)  VALUES('TV','Sony 32" Smart TV',34789.567, 2);  SELECT \* FROM products; |

**Q #22) What is the view? How can you create and drop view in MySQL?**

**Answer:**A view works as a virtual table, it returns a result set when it is called. An updatable view is also supported by MySQL.

How a view can be created or deleted in MySQL are shown in the following examples.

**Create View Example:**

The following statement will create a view file named ‘**client\_list**’ based on the table **clients**.

|  |
| --- |
| CREATE VIEW `client\_list` AS SELECT `name` as 'Name', `membership` as 'Membership' FROM `clients`; |

SELECT statement will display the records of **client\_list** value.

|  |
| --- |
| SELECT \* FROM client\_list; |

**DROP View Example:**

The drop view statement will delete the view file. The SELECT query will show an error after deleting the view.

|  |
| --- |
| DROP VIEW client\_list; |
| SELECT \* FROM client\_list; |

**Q #23) What is the function of mysqldump?**

**Answer:**mysqldump is used to dump one or more or all databases from the server for backup or transfer to another database server.

**Syntax:**

For a single database,

**mysqldump [OPTIONS] db\_name [TABLES]**

For multiple databases,

**mysqldump [OPTIONS] –databases DB1 [DB2 DB3…]**

For all databases,

**mysqldump [OPTIONS] –all-databases**

**Example:**

The following command will create a dump of the**‘newdb’** database and export the content of the database in the file, **newdb.sql**.

|  |
| --- |
| mysqldump --databases newdb > newdb.sql |

**Q #24) How can you change the password of a MySQL user?**

**Answer: SET PASSWORD** statement is used to change the password of a MySQL user.

**Syntax:**

SET PASSWORD FOR ‘username’@’hostname’ = PASSWORD(‘new password’);

**Example:**

The following statement will set or change the root password.

|  |
| --- |
| SET PASSWORD FOR 'root'@'localhost' = PASSWORD('123456'); |

**Q #25) What is the difference between UNIX TIMESTAMP and MySQL TIMESTAMP?**

**Answer:**Both UNIX TIMESTAMP and MySQL TIMESTAMP are used to represent the date and time value. The main difference between these values is that UNIX TIMESTAMP represents the value by using 32-bits integers and MySQL TIMESTAMP represents the value in the human-readable format.

**Example:**

A UNIX time value is used by FROM\_UNIXTIME function in the SELECT query to get the date and time value in the human-readable format.

|  |
| --- |
| SELECT FROM\_UNIXTIME (1596222320) AS 'MySQLTIMESTAMP'; |

Date and time value is used by UNIX\_TIMESTAMP function in the SELECT query to get the date and time value in the UNIX format.

|  |
| --- |
| SELECT UNIX\_TIMESTAMP ('2018-12-25 09:45:40') AS 'UNIXTIMESTAMP'; |

**Q #26) How can you import tables from a SQL file into a database by using the MySQL client?**

**Answer:**Database tables can be imported into a database from a SQL file by using the following MySQL statement.

**mysql -u username -p database\_name < sql\_filename**

**Example:**

If the root user’s password is empty, then the following command will import tables from ‘newdb.sql’ file into the database**`mydb`.**

|  |
| --- |
| mysql -u root mydb < newdb.sql |

**Q #27) What is the difference between the Primary key and the Unique key?**

**Answer:**Unique data is stored in the primary key and unique key fields. The primary key field never accepts NULL value but a unique key field accepts a NULL value.

**Example:**

In the**users’** table, the **id** field is the**primary key** and the **email** field is a **unique key**. Two records are inserted in the table where the email field is NULL for the 2nd record. The records are inserted properly as the unique field supports a NULL value.

|  |
| --- |
| INSERT INTO users (username, email, password)  VALUES('admin', 'admin@example.com', '7890'),                  ('staff', 'NULL', '1234');  SELECT \* FROM users; |

**Q #28) What is the purpose of using the IFNULL() function?**

**Answer: IFNULL()** function takes two arguments. It returns the first argument value if the value of the first argument is not NULL and it returns the second argument if the value of the first argument is NULL.

**Example:**

Here, the first argument of the IFNULL function is not NULL. So, the output is the first argument value.

|  |
| --- |
| SELECT IFNULL ("Tutorial", "fahmidasclassroom.com"); |

Here, the first argument of the IFNULL function is NULL. So, the output is NULL.

|  |
| --- |
| SELECT IFNULL ("NULL", "fahmidasclassroom.com"); |

**Q #29) What is a join? Explain the different types of MySQL joins.**

**Answer:**The SQL statement that is used to make a connection between two or more tables based on the matching columns is called a join. It is mainly used for complex queries.

**Different types of SQL joins are mentioned below:**

* **Inner Join**: It is a default join. It returns records when the values match in the joining tables.
* **Left Outer Join**: It returns all the records from the left table based on the matched records from the right table.
* **Right Outer Join**: It returns all the records from the right table based on the matched records from the left table.
* **Full Outer Join**: It returns all the records that match from the left or right table.

**Example:**

Two tables, **manufacturers** and **products** are used in this example to show the use of INNER JOIN. Here, SELECT queries are used to show the current records of these two tables.

|  |
| --- |
| SELECT \* FROM manufacturers; |
| SELECT \* FROM products; |

INNER JOIN is used in the following SELECT query where all the id and name of the products table will be displayed based on matching **manufacturer\_id** of the **products** with an **id** of the **manufacturer’s**table.

|  |
| --- |
| SELECT products.id, products.name  FROM products  INNER JOIN manufacturers ON manufacturers.id= products.manufacturer\_id; |

**Q #30) How can you retrieve a particular number of records from a table?**

**Answer: LIMIT** clause is used with the SQL statement to retrieve a particular number of records from a table. From which record and how many records will be retrieved are defined by the LIMIT clause.

**Syntax:**

LIMIT starting\_number, number\_of\_rows

**Example:**

Products table has 5 records which are displayed by the first SELECT query and the second SELECT query is used to display the records from 2nd to 3rd by using LIMIT 1, 2.

|  |
| --- |
| SELECT \* FROM products; |
| SELECT \* FROM products LIMIT 1, 2; |

**Q #31) How can you export the table as an XML file in MySQL?**

**Answer:**‘-X’ option is used with `mysql` command for exporting the file as XML. The following statement will export any table from a database as an XML file.

**mysql -u username -X -e “SELECT query” database\_name > file name**

**Example:**

The following command will export the data of the **items** table into **an xmlData.xml** file.

|  |
| --- |
| mysql -u root -X -e "SELECT \* from products" newdb > xmlData.xml |

**Q #32) What is a CSV table?**

**Answer:**MySQL table which uses the CSV storage engine is called a CSV table. Datas are stored as comma-separated values in the CSV table. MySQL server creates a data file with an extension ‘.csv’ to store the content of the CSV table.

**Example:**

The following create statement will create a CSV file named book.

|  |
| --- |
| CREATE TABLE book ( id INT NOT NULL) ENGINE=CSV; |

**Q #33) How can you calculate the sum of any column of a table?**

**Answer: SUM()** function is used to calculate the sum of any column.

**Syntax:**

SUM(DISTINCT expression)

**Example:**

Products table has a numeric field named, price. In this example, the **SUM() function** is used to calculate the total value of the **price** field.

|  |
| --- |
| SELECT \* FROM products;  SELECT SUM(price) as total FROM products; |

**Q #34) How can you count the total number of records of any table?**

**Answer: COUNT()** function is used to count the total number of records of any table.

**Syntax:**

COUNT(expression)

**Example:**

The following SELECT query is used to count the total number of records of the **products**table.

|  |
| --- |
| SELECT COUNT(\*) as `Total Records` FROM products; |

**Q #35) Explain the difference between DELETE and TRUNCATE.**

**Answer:**Both DELETE and TRUNCATE commands are used to delete the records from any database table. However, there are some significant differences between these commands. If the table contains the AUTO\_INCREMENT PRIMARY KEY field then the effect of these commands can be shown properly.

**Two differences between these commands are mentioned below.**

1. DELETE command is used to delete a single or multiple or all the records from the table. The TRUNCATE command is used to delete all the records from the table or make the table empty.
2. When DELETE command is used to delete all the records from the table then it doesn’t re-initialize the table. So, the AUTO\_INCREMENT field does not count from one when the user inserts any record.

But when all the records of any table are deleted by using TRUNCATE command then it re-initializes the table and a new record will start from one for the AUTO\_INCREMENT field.

**Example:**

The previously created user table is used in this example.

First, the SELECT query will show all the records of the user’s table. DELETE query will delete all the records from the user’s table. INSERT query will insert a new record into the user’s table. After insert, if the SELECT query executes again then it will be shown that a new **id** is calculated after the deleted **id**.

|  |
| --- |
| SELECT \* FROM users;  DELETE FROM users;  INSERT INTO users (username, email)  VALUES ('Durjoy', 'durjoy@gmail.com');  SELECT \* FROM users; |

Currently, there are two records in the user’s table and when a new record is inserted after deleting all the records then the new id is 3, and not 1.

The same queries are executed in this part, just used the TRUNCATE statement in place of DELETE. It is shown that the id value of the new record is 1.

|  |
| --- |
| TRUNCATE table users;  INSERT INTO users (username, email)  VALUES ('Farheen', 'farheen@gmail.com');  SELECT \* FROM users; |

**Q #36) What is a storage engine? What are the differences between InnoDB and MyISAM engines?**

**Answer:**One of the components of the MySQL server is the storage engine for doing different types of database operations. Each database table is created based on the specific storage engine.

MySQL supports two types of storage engines i.e **transactional and non-transactional**. InnoDB is the default storage engine of MySQL which is transactional. MyISAM storage engine is a non-transactional storage engine.

**The differences between InnoDB and MyISAM storage engines are discussed below:**

* MyISAM supports the FULLTEXT index but InnoDB doesn’t support the FULLTEXT index.
* MyISAM is faster and InnoDB is slower.
* InnoDB supports ACID (Atomicity, Consistency, Isolation, and Durability) property but MyISAM doesn’t.
* InnoDB supports row-level locking and MyISAM supports table-level locking.
* InnoDB is suitable for large database and MyISAM is suitable for a small database.

**Q #37) What is a transaction? Describe MySQL transaction properties.**

**Answer:**When a group of database operations is done as a single unit then it is called a transaction. If any task of the transactional tasks remains incomplete then the transaction will not succeed. Hence, it is mandatory to complete all the tasks of a transaction to make the transaction successful.

A transaction has four properties which are known as ACID property. These properties are described below.

* **Atomicity:**It ensures that all the tasks of a transaction will be completed successfully otherwise all the completed tasks will be rolled back to the previous state for any failure.
* **Consistency:**It ensures that the database state must be changed accurately for the committed transaction.
* **Isolation:**It ensures that all the tasks of a transaction will be done independently and transparently.
* **Durability:**It ensures that all the committed transaction is consistent for any type of system failure.

**Q #38) What are the functions of commit and rollback statements?**

**Answer:**Commit is a transaction command that executes when all the operations of a transaction are completed successfully. It will modify the database permanently to confirm the transaction.

**Syntax:**

COMMIT;

Rollback is another transactional command that executes when any of the transactional operation become unsuccessful. and undoes all the changes that are made by any transactional task to make the transaction unsuccessful.

**Syntax:**

ROLLBACK;

**Q #39) What is the difference between MyISAM Static and MyISAM Dynamic table?**

**Answer:**MyISAM Static and MyISAM dynamic are the variations of the MyISAM storage engine. The differences between these tables are mentioned below.

* All the fields of MyISAM static table are of a fixed length and MyISAM dynamic table accepts variable length fields such as BLOB, TEXT, etc.
* After data corruption, it is easier to restore the MyISAM static table than MyISAM dynamic table.

**Q #40) What is a trigger? How you can create a trigger in MySQL?**

**Answer:**One of the important features of the MySQL database is a trigger that executes automatically when a particular database event occurs.

It fires after or before the execution of an insert or update or deletes a statement. It is a very useful option when a database user wants to do some database operations automatically.

**Trigger Example:**

If you want to delete the items of a supplier from the **items** table automatically after deleting the entry of the particular supplier from the ‘**suppliers’** table then write the trigger in the following way.

**Example:**

This is an example of after delete trigger that will fire automatically when any record is removed from the **manufacturer**table and deletes all the records from the **products** table where the deleted **id** of the **manufacturer** table matches with the**manufacturer\_id** field of the **products** table.

|  |
| --- |
| DELIMITER //  CREATE TRIGGER manufacturer\_after\_delete  AFTER DELETE  ON manufacturers FOR EACH ROW  BEGIN  DELETE FROM products WHERE products.manufacturers\_id = OLD.id;  END;  // |

Bottom of Form

**Top 35 HP ALM (Quality Center) Interview Questions & Answers**

**1. What is HP ALM (Quality Center) used for? Or What are the benefits and features of Quality Center?**  
  
HP ALM/ Quality Center is a comprehensive test management tool. It is a web-based tool and supports high level of communication and association among various stakeholders (Business Analyst, Developers, Testers etc.), driving a more effective and efficient global application-testing process. Automation Tools like QTP, WinRunner &[Loadrunner](https://www.guru99.com/loadrunner-v12-tutorials.html)can be integrated with Quality Center. One can also create reports and graphs for Analysis and Tracking for Test processes.

**2. What is the difference between TestDirector and Quality Center?**

Quality Center is upgraded version of Test Director built by the same vendor Mercury (Now acquired by HP).Test Director Version 8.2 onwards is know as Quality Center. Quality Center is has enhanced Security/Test management /Defect management features when compared to Test Director.

**3. What is the difference between Quality Center and Bugzilla?**

Quality Center is a test management tool which can also manage Defects apart from other feature BugZilla is Defect Management tool only.

**4. What is the Purpose of Creating Child Requirement in TD /QC?**

By Creating Child requirements to the main requirement I can evaluate the sub requirements related to the main requirements.

You can link test sets and defects to the sub-requirements.  This helps in 100% test coverage and its analysis.

Learn More About Requirements in the Tutorial [here](https://www.guru99.com/hp-alm-requirements-specifications.html)

**5. What is Test Lab?**

In order to execute a Test Case (Developed in the Test Plan Module) either manual or automated it needs to imported into Test Lab Module. In sum, Test Cases are created in Test Plan Module while they are executed in Test Lab Module.

**6. What is meant by Instance?**  
A Test Case imported from Test Plan module to Test Lab module is called an *Instance* of that test case. It is possible to have multiple instances of the same Test Case in the Test Lab Module.

**7. Is it possible to maintain test data in Quality Center?**  
Yes. I can attach the test data to the corresponding test cases or I can create a separate folder in test plan to store the data.

**8. How to ensure that there is no duplication of bugs in Quality Center?**

In the defect tracking window of QC, there is a “*find similar defect*” icon. When this icon is clicked after writing the defect, if anybody else has entered the same defect then it points it out.

**9. What will be the status in Quality Center if you give "Suggestion" to the Developer?**

This is a trick question.

You can give "Suggestion" to the developer using the Comments sections provided in QC. This is will not change the current status of Defect in QC. In sum, the status of the defect remains the same, as that before giving suggestion to the developer.

**10. How will you generate the defect ID in Quality Center?**

The Defect ID is automatically generated after clicking Submit button.

Learn More about Defect Creation in Quality Center in [here](https://www.guru99.com/hp-alm-defect-management.html)  
  
**11. Is 'Not covered' and 'Not run' status the same?**  
Not Covered status means all those requirements for which the test cases are not written whereas Not Run status means all those requirements for which test cases are written but are not run yet.

**12.How to import test cases from Excel / Word  to Quality Center?**

1.Install and Configure the Microsoft Excel / Word Add-In for Quality Center.

2. Map the Columns in  Word / Excel spreadsheet with Columns available  in  Quality Center

3.Export the data from Word/Excel to Quality Center Using Tools >Export to Quality Center Option in Word/Excel.  
4. Rectify errors if Any.

**13. Can we export the file from Quality Centre to Excel / Word. If yes then how?**

Yes.

Requirement tab– Right click on main Req/click on export/save as word, excel or other template. This would save all the child requirements  
  
Test plan tab: Only individual test can be exported. No parent child export is possible. Select a test script, click on the design steps tab, right click anywhere on the open window. Click on export and save as.  
  
Test lab tab: Select a child group. Click on execution grid if it is not selected. Right click anywhere. Default save option is excel. But can be saved in documents and other formats

Defects Tab: Right click anywhere on the window, export all or selected defects and save excel sheet or document.

**14. What is Business Component  ?**

In Quality center A **business component** is a reusable unit that: Performs a specific task in a **business process Testing** (BPT).

**15. How can we save the tests Executed in test lab?**

The tests after been executed, are automatically saved when the user clicks on "END RUN" in the Test Lab module. Learn More About Running a Test Case in QC in the Tutorial [here](https://www.guru99.com/hp-alm-test-lab.html)

**16. How to export test cases from QTP into QC?**

To export test cases from QTP to QC, you first need to establish QTP-QC connection

1)  In QTP, Go to File > Quality Center Connection.

2)  Enter QC URL project name/domain/username/password and click on Login. QTP is now connected to QC.

Next you can select the save the QTP Script in QC.

3)  In QTP, Select File Menu > Save As > Save in QC

4 ) Select the Folder in QC where you want to save the QTP Script

6) Click OK to Save.

**17. How to use QTP as an automation tool in Quality Center ?**

You need to install QTP add-in in Quality Center (Usually done by Quality Center Administrator). You then create and store QTP scripts in QC.

Learn more about using QTP in Quality Center in Tutorial [here](https://www.guru99.com/hp-alm-integrate-uft.html)

**18. How to switch between two projects in Quality Center ?**

In QC 9.0 and above I can switch between two projects by select Tools>Change Projects>Select Project.

In other version, you will need to log-off and log-in again.

**19. What is the main purpose to storing requirement in Quality Center?**

You store requirements in Quality Center for following reasons

a) *To ensure 100% coverage :* You can create and track test cases for the requirements stored in Quality Center to ensure all the requirements are tested.

b) *Easy Change Management :* If any requirement changes during course of test case creation , the underlying test case is automatically highlighted and Test Engineer can change the test case to suite the new requirement.

e) *Ease of Tracking :* Using Advanced Reporting & Graphs provided by QC , Managers can determine various metrics useful in project tracking and monitoring.

**20. What is Coverage status, what does it do?**

Coverage status is percentage of test execution covered at a given time.

For Example, if you have 100 test cases in a project and you have executed 35 test cases than your coverage status of the project is 35%

Coverage status helps keep track of project deadline.

**21. Explain the architecture of Hp-ALM the new version of Quality Center?**

* HP ALM client
* ALM server/Application server
* Database servers- Site administration schema, Lab project and Project schema

**22. Mention what are the different edition for HP ALM?**

The different edition of HP ALM includes

* **HP ALM essentials:** It is for the corporates that need the basic features for supporting their entire software life cycle
* **HP QC enterprise edition:** This version is used by corporates more commonly who use ALM more testing purposes.  It also provides integration with UFT
* **HP ALM performance center edition:** This license is best suitable for organizations who would like to use HP ALM to drive HP-Load runner scripts.  It helps the users to manage, maintain, execute, schedule and monitor performance tests.

**23. Mention what is ALM workflow?**

ALM workflow includes

* Release Specification
* Requirement Specification
* Test Planning
* Test Execution
* Defect Tracking

**24. Explain why do we need management of release and cycles in ALM?**

* There are many releases for a specific product
* Each release is segregated into a number of cycles
* Each release has also have a pre-defined scope and milestone associated with it
* There is a specific number of test cases and requirements associated with it
* Upon executing tests, the defects are mapped and logged to the corresponding tests after which we can trace requirements and defects

Hence we need release and cycle Management…

**25. Explain how you can customize the defect management cycle in Quality Center?**

I need to gather all the features related to defect management like defect origin, version, defect details, etc.

 By modifying options I can customize the defect management cycle in Quality Center.

I need to gather all the features that have to be part of the defect management like defect origin, version, defect details, etc.  Later in QC using the modify options, one can change the defect modules accordingly.

**26. Mention what is the advantage of Quality Center?**

* Quality Center is referred as a complete test management tool
* It is a web-based tool and backs up high level of communication among various stake-holders (Developers, Business Analyst, Testers and so on) driving a more efficient and effective global application-testing process
* With Quality Center automation tools like QTP, WinRunner and LoadRunner it can be integrated.  For analysis and tracking for test processes, it can also create reports and graphs.

**27.   Mention what is Test Lab module in Quality Center?**

Test Lab module helps the tester to execute the created tests.  Using this module one can schedule, run and analyze and post defects.

**28.   Mention how many types of tabs are there in Quality Center and explain them?**

**Requirement:**To track the customer requirements

**Test Plan:**To store the test scripts and design the test cases

**Test Lab:**To track the results and execute the test cases

**Defect:**To track down the logged defects and log a defect

**29.  Mention what does Dashboard Analysis consist of?**

The dashboard analysis consists of two views

* **Analysis View:**  It consists of the analysis tree by using that project manager and testers can arrange all of their analysis items, like-graphs, excel reports and project reports
* **Dashboard View:** It consists of the dashboard tree by using that managers or testers can arrange dashboard pages, that can arrange multiple graphs that was formed in the analysis tree and manifest them in a single view

**30.   Mention what is Sprinter in HP-Alm?**

Sprinter offers advanced functionality and tools to make manual testing more effective and efficiently. It allows you to accomplish these tasks without disrupting your test flow. With the help of sprinter, you can execute many of the repetitive and tedious tasks of manual testing automatically. It includes many tools that can help you to detect and submit defects.

**31.   Mention what is sprinter-data injection?**

* By using sprinter ‘inject’ icon I can inject the test data into the application by matching column names with the field names of the application
* I can insert multiple set of data directly into the application with respective matching fields at one go
* Choose the row that you want to insert and tap on the inject icon which directly inject the data into the corresponding fields

**32. Mention how sprinter tools are helpful?**

Sprinter tools are helpful in many ways like

* Smart Defect:
* New Defect:
* Add Defect Reminder :

**33.   Explain how one can map a single defect to more than one test script?**

By using the “associate defect” option in TestDirector I can assign the same defect to the multiple test cases.

**34.  Explain how you can add requirements to test cases in Quality Centre?**

There are two types of requirements available in Quality Center

* Parent Requirements
* Child Requirements

**35. What are the predefined groups and permissions in HP ALM?**

1. Developer
2. Project Manager
3. QA Tester
4. TD Admin
5. View

Git

[Top 45 GIT Interview Questions & Answers](https://career.guru99.com/top-40-interview-questions-on-git/)

**1)      What is GIT?**

GIT is a distributed version control system and source code management (SCM) system with an emphasis to handle small and large projects with speed and efficiency.

**2)      What is a repository in GIT?**

A repository contains a directory named .git, where git keeps all of its metadata for the repository. The content of the .git directory are private to git.

**3)      What is the command you can use to write a commit message?**

The command that is used to write a commit message is “git commit –a”.  The –a on the command line instructs git to commit the new content of all tracked files that have been modified. You can use “git add<file>” before git commit –a if new files need to be committed for the first time.

**4)      What is the difference between GIT and SVN?**

The difference between GIT and SVN is

a)      Git is less preferred for handling extremely large files or frequently changing binary files while SVN can handle multiple projects stored in the same repository.

b)      GIT does not support ‘commits’ across multiple branches or tags.  Subversion allows the creation of folders at any location in the repository layout.

c)        Gits are unchangeable, while Subversion allows committers to treat a tag as a branch and to create multiple revisions under a tag root.

**5)      What are the advantages of using GIT?**

a)      Data redundancy and replication

b)      High availability

c)       Only one.git directory per repository

d)      Superior disk utilization and network performance

e)      Collaboration friendly

f)       Any sort of projects can use GIT

**6)      What language is used in GIT?**

GIT is fast, and ‘C’ language makes this possible by reducing the overhead of runtimes associated with higher languages.

**7)      What is the function of ‘GIT PUSH’ in GIT?**

‘GIT PUSH’ updates remote refs along with associated objects.

**8)      Why GIT better than Subversion?**

GIT is an open source version control system; it will allow you to run ‘versions’ of a project, which show the changes that were made to the code overtime also it allows you keep the backtrack if necessary and undo those changes.  Multiple developers can check out, and upload changes and each change can then be attributed to a specific developer.

**9)      What is “Staging Area” or “Index” in GIT?**

Before completing the commits, it can be formatted and reviewed in a special area known as ‘Staging Area’ or ‘Index’.

**10)   What is GIT stash?**

**GIT ‘stash’** command is used to save the current the working directory and index for later. So, when you come back you can start working from there.

**11)   What is GIT stash drop?**

**Git ‘stash drop’** command is used to remove item from the list, It will remove the last added stash item by default, and it can also remove a specific item if you include as an argument.

**12)   How will you know in GIT if a branch has been already merged into master?**

Git branch—merged lists the branches that have been merged into the current branch

Git branch—-no merged lists the branches that have not been merged

**13)   What is the function of git clone?**

The git clone command creates a copy of an existing Git repository. To get the copy of a central repository, ‘cloning’  is the most common way used by programmers.

**14)   What is the function of ‘git config’?**

The ‘git config’ command is a convenient way to set configuration options for your Git installation.  Behaviour of a repository, user info, preferences etc. can be defined through this command.

**15)   What does commit object contain?**

a)      A set of files, representing the state of a project at a given point of time

b)      Reference to parent commit objects

c)       An SHAI name, a 40 character string that uniquely identifies the commit object.

**16)   How can you create a repository in Git?**

In Git, to create a repository, create a directory for the project if it does not exist, and then run command “git init”. By running this command .git directory will be created in the project directory, the directory does not need to be empty.

**17)   What is ‘head’ in git and how many heads can be created in a repository?**

A ‘head’ is simply a reference to a commit object. In every repository, there is a default head referred as “Master”.  A repository can contain any number of heads.

**18)   What is the purpose of branching in GIT?**

The purpose of branching in GIT is that you can create your own branch and jump between those branches. It will allow you to go to your previous work keeping your recent work intact.

**19)   What is the common branching pattern in GIT?**

The common way of creating branch in GIT is to maintain one as “Main“

Branch and create another branch to implement new features. This pattern is particularly useful when there are multiple developers working on a single project.

**20)   How can you bring a new feature in the main branch?**

To bring a new feature in the main branch, you can use a command “git merge” or “git pull command”.

**21)   What is a ‘conflict’ in git?**

A ‘conflict’ arises when the commit that has to be merged has some change in one place, and the current commit also has a change at the same place. Git will not be able to predict which change should take precedence.

**22)   How can conflict in git resolved?**

To resolve the conflict in git, edit the files to fix the conflicting changes and then add the resolved files by running “git add” after that to commit the repaired merge,  run “git commit”.  Git remembers that you are in the middle of a merger, so it sets the parents of the commit correctly.

**23)   To delete a branch what is the command that is used?**

Once your development branch is merged into the main branch, you don’t need

development branch.  To delete a branch use, the command “git branch –d [head]”.

**24)   What is another option for merging in git?**

“Rebasing” is an alternative to merging in git.

**25)   What is the syntax for “Rebasing” in Git?**

The syntax used for rebase is “git rebase [new-commit] “

**26)   What is the difference between ‘git remote’ and ‘git clone’?**

‘git remote add’  just creates an entry in your git config that specifies a name for a particular URL.  While, ‘git clone’ creates a new git repository by copying and existing one located at the URI.

**27)   What is GIT version control?**

With the help of GIT version control, you can track the history of a collection of files and includes the functionality to revert the collection of files to another version.  Each version captures a snapshot of the file system at a certain point of time. A collection of files and their complete history are stored in a repository.

**28)   Mention some of the best graphical GIT client for LINUX?**

Some of the best GIT client for LINUX is

a)      Git Cola

b)      Git-g

c)       Smart git

d)      Giggle

e)      Git GUI

f)       qGit

**29)   What is Subgit? Why to use Subgit?**

‘Subgit’ is a tool for a smooth migration SVN to Git. Subgit is a solution for a company -wide migration from SVN to Git that is:

a)      It is much better than git-svn

b)      No requirement to change the infrastructure that is already placed

c)       Allows to use all git and all sub-version features

d)      Provides genuine stress –free migration experience.

**30)   What is the function of ‘git diff ’ in git?**

‘git diff ’ shows the changes between commits, commit and working tree etc.

**31)   What is ‘git status’ is used for?**

As ‘Git Status’ shows the difference between the working directory and the index, it is helpful in understanding a git more comprehensively.

**32)   What is the difference between the ‘git diff ’and ‘git status’?**

‘git diff’ is similar to ‘git status’, but it shows the differences between various commits and also between the working directory and index.

**33)   What is the function of ‘git checkout’ in git?**

A ‘git checkout’ command is used to update directories or specific files in the working tree with those from another branch without merging it in the whole branch.

**34)   What is the function of ‘git rm’?**

‘git rm’ is used to remove the files from the staging area and also off your disk.

**35)   What is the function of ‘git stash apply’?**

When you want to continue working where you have left your work, ‘git stash apply’ command is used to bring back the saved changes onto the working directory.

**36)   What is the use of ‘git log’?**

‘git log’ is used to find the project history- by author, date, content or history.

**37)   What is ‘git add’ is used for?**

‘git add’ is used to add the file changes in your existing directory.

**38)   What is the function of ‘git reset’?**

‘Git Reset’ is used to reset the index. as well as the working directory to the state of your last commit.

**39)   What is git Is-tree?**

‘git Is-tree’ represents a tree object including the mode and the name.. of each item and the SHA-1 value of the blob or the tree.

**40)   How git instaweb is used?**

‘Git Instaweb’ automatically directs a web browser and runs webserver with an interface into your local repository.

**41)   What does ‘hooks’ consist of in git?** This directory consists of Shell scripts which are activated after running the corresponding Git commands.  For example, git will try to execute the post-commit script after you run a commit.

**42)   Explain what is commit message?**

Commit message is when you commit a change. Git provides you a text editor where you can enter the modifications made in commits.

**43)   How can you fix a broken commit?**

“git commit—amend” is used to fix any broken commit, you will use the command By running this command, you can fix the broken commit message in the editor.

**44)   Why is it advisable to create an additional commit rather than amending an existing commit?**

There are couple of reason

a)      The amend operation will destroy the state that was previously saved in a commit.  If it’s just the commit message being changed then that’s not an issue.  But if the contents are being amended then chances of eliminating something important remains more.

b)      Abusing “git commit- amend” can cause a small commit to grow and acquire unrelated changes.

**45)   What is ‘bare repository’ in GIT?**

To co-ordinate with the distributed development and developers team, especially when you are working on a project from multiple computers ‘Bare Repository’ is used. A bare repository comprises of a version history of your code.

**46)   Name a few Git repository hosting services**

* Pikacode
* Visual Studio Online
* GitHub
* GitEnterprise
* SourceForge.net

Jenkins

**Top Jenkins Interview Questions**

Enlisted below are some of the most popular Jenkins Interview Questions that have been answered by experts.

**Q #1) What is Jenkins?**

**Answer:**Jenkins is a free open source Continuous Integration tool and automation server to monitor continuous integration and delivery. It is written in Java.

It is known as an automated Continuous Delivery tool that helps to build and test the software system with easy integration of changes to the system. Jenkins follows Groovy Scripting.

Also, it enables developers to continuously check in their code and also analyze the post-build actions. The automation testers can use to run their tests as soon as the new code is added or code is modified.

**Q #2) What are the features of Jenkins?**

**Answer: Jenkins comes with the following features:**

1. Free open source.
2. Easy installation on various operating systems.
3. Build Pipeline Support.
4. Workflow Plugin.
5. Test harness built around JUnit.
6. Easy upgrades.
7. Rapid release cycle.
8. Easy configuration setup.
9. Extensible with the use of third-party plugins.

**Q #3) What are the advantages of Jenkins? Why we use Jenkins?**

**Answer:**Jenkins is used to continuously monitor the large code base in real-time. It enables developers to find bugs in their code and fix them. Email notifications are made to the developers regarding their check-ins as a post-build action.

**Advantages of Jenkins are as follows:**

* Build failures are cached during the integration stage.
* Notifies the developers about build report status using LDAP (Lightweight Directory Access Protocol) mail server.
* Maven release project is automated with simple steps.
* Easy bug tracking.
* Automatic changes get updated in the build report with notification.
* Supports Continuous Integration in agile development and test-driven development.

**Q #4) Mention some of the important plugins in Jenkins?**

**Answer: Plugins in Jenkins includes:**

* Gits
* Maven 2 Project
* HTML Publisher
* Copy Artcraft
* Join
* Green Balls
* Amazon EC2

**Q #5) What is Continuous Integration in Jenkins?**

**Answer:**Continuous integration is the process of continuously checking-in the developer’s code into a version control system and triggering the build to check and identify bugs in the written code.

**This is a very quick process and also gives them a chance to fix the bugs. Jenkins is one such continuous integration tool.**

In software development, multiple developers work on different software modules. While performing integration testing all the modules are being integrated together. It is considered as the development practice to integrate the code into the source repository

Whenever the programmer/developer makes any change to the current code, then it automatically  
gets integrated with the system running on the tester’s machine and makes the testing task easy and speedy for the system testers.

**Continuous Integration comprises of:**

* Development and Compilation
* Database Integration
* Unit Testing
* Production Deployment
* Code Labeling
* Functional Testing
* Generating and Analyzing Reports

**Q #6) What is the difference between Hudson and Jenkins?**

**Answer:**There is no difference between Hudson and Jenkins. Hudson was the former name of Jenkins, after going through several issues the name was changed to Jenkins.

**Q #7) What is Groovy in Jenkins?**

**Answer:**Groovy is the default scripting language that is being used in the development of JMeter Version 3.1.

Currently Apache Groovy is the dynamic object-oriented programming language that is used as a scripting language for the Java platform. Apache Groovy comes with some useful features such as Java Compatibility and Development Support.

**Q #8) Which command is used to start Jenkins?**

**Answer: You can follow the below-mentioned steps to start Jenkins:**

1. Open Command Prompt
2. From the Command Prompt browse the directory where Jenkins. war resides
3. Run the command given below:

D:\>Java –jar Jenkins.war

**Q #9) What is Jenkinsfile?**

**Answer:**The text file where all the definitions of pipelines are defined is called Jenkinsfile. It is being checked in the source control repository.

**Q #10) What is the difference between Continuous Integration, Continuous Delivery, and Continuous Deployment?**

**Answer:**The diagrammatic representation given below can elaborate on the differences between Continuous Integration, Continuous Delivery, and Continuous Deployment more precisely.

**Q #11) What is Jenkins Pipeline? What is a CI CD pipeline?**

**Answer:**The pipeline can be defined as the suite of plugins supporting the implementation and integration of continuous delivery pipelines in Jenkins.

Continuous integration or continuous delivery pipeline consists of build, deploy, test, release pipeline. The pipeline feature saves a lot of time and error in maintaining the builds. Basically, a pipeline is a group of build jobs that are chained and integrated in sequence.

**Q #12) What are Scripted Pipelines in Jenkins?**

**Answer: Scripted Pipeline follows Groovy Syntax as given below:**

In the above syntax, the**node** is a part of the Jenkins distributed mode architecture, where there are two types of node, **Master** which handle all the tasks in the development environment and the**Agent**is being used to handle multiple tasks individually.

**Q #13) What are Declarative Pipelines in Jenkins?**

**Answer:**Declarative Pipelines are the newest additions to Jenkins that simplify the groovy syntax of Jenkins pipelines (top-level pipeline) with some exceptions, such as:

No semicolon to be used as a statement separator. The top-level pipeline should be enclosed within block viz;

**The above code has 3 major elements**

* **Pipeline:**The block of script contents.
* **Agent:** Defines where the pipeline will start running from.
* **Stage:** The pipelines contain several steps enclosed in the block called Stage.

**Q #14) What is SCM? Which SCM tools are supported in Jenkins?**

**Answer:**

* SCM stands for Source Control Management.
* SCM module specifies the source code location.
* The entry point to SCM is being specified as jenkins\_jobs.scm.
* The job specified with ‘scm’ attribute accepts multiple numbers of SCM definitions.

**Jenkins supported SCM tools include:**

* CVS
* Git
* Perforce
* AccuRev
* Subversion
* Clearcase
* RTC
* Mercurial

**Q #15) Which CI Tools are used in Jenkin?**

**Answer: Jenkins supported the following CI tools:**

1. Jenkins
2. GitLab CI
3. Travis CI
4. CircleCI
5. Codeship
6. Go CD
7. TeamCity
8. Bamboo

**Q #16) Which commands can be used to start Jenkins manually?**

**Answer: You can use the following commands to start Jenkins manually:**

1. **(Jenkins\_url)/restart:** To force restart without waiting for build completion.
2. **(Jenkin\_url)/safeRestart:** Waits until all the build gets completed before restarting.

**Q #17) Which Environmental Directives are used in Jenkins?**

**Answer:**Environmental Directives is the sequence that specifies pairs of the key-values called Environmental Variables for the steps in the pipeline.

**Q #18) What are Triggers?**

**Answer:**Trigger in Jenkins defines the way in which the pipeline should be executed frequently. PollSCM, Cron, etc are the currently available Triggers.

**Q #19) What is Agent Directive in Jenkins?**

**Answer:**The Agent is the section that specifies the execution point for the entire pipeline or any specific stage in the pipeline. This section is being specified at the top-level inside the pipeline block.

**Q #20) How to make sure that your project build does not break in Jenkins?**

**Answer:**You need to follow the below-mentioned steps to make sure that the Project build does not break:

1. Clean and successful installation of Jenkins on your local machine with all unit tests.
2. All code changes are reflected successfully.
3. Checking for repository synchronization to make sure that all the differences and changes related to config and other settings are saved in the repository.

**Q #21) What is the difference between Maven, Ant, and Jenkins?**

**Answer: Maven vs Jenkins:**

Maven is a build tool like Ant. It consists of a pom.xml file which is specified in Jenkins to run the code. Whereas, Jenkins is used as a continuous integration tool and automates the deployment process. The reports of the builds can be used to set a mark for continuous delivery as well.

**Q #22) How will you define Post in Jenkins?**

**Answer: Post** is a section that contains several additional steps that might execute after the completion of the pipeline. The execution of all the steps within the condition block depends upon the completion status of the pipeline.

The condition block includes the following conditions – **changed success, always, failure, unstable and aborted.**

**Q #23) What are Parameters in Jenkins?**

**Answer:** Parameters are supported by the Agent section and are used to support various use-cases pipelines. Parameters are defined at the top-level of the pipeline or inside an individual stage directive.

**Q #24) How you can set up a Jenkins job?**

**Answer: Setting up a new job in Jenkins is elaborated below with snapshots:**

**Step 1:**Go to the Jenkins Dashboard and log in with your registered login credentials.

**Step 2:**Click on the**New Item**that is shown in the left panel of the page.

**Step 3:**Click on the**Freestyle Project**from the given list on the upcoming page and specify the item name in the text box.

**Step 4:**Add the **URL to the Git** Repository.

**Step 5:**Go to the **Build section and click on the Add build step => Execute Windows batch command.**

**Step 6:** Enter the command in the **command window** as shown below.

**Step 7:** After saving all the settings and changes click on **Build Now.**

**Step 8:** To see the status of the build click on **Console Output.**

**Q #25) What are the two components (pre-requisites) that Jenkins is mainly integrated with?**

**Answer: Jenkins integrates with:**

1. Build tools/ Build working script like Maven script.
2. Version control system/Accessible source code repository like Git repository.

**Q #26) How can You Clone a Git Repository via Jenkins?**

**Answer:** To create a clone repository via Jenkins you need to use your login credentials in the Jenkins System. To achieve the same you need to enter the Jenkins job directory and execute the **git config** command.

**Q #27) How can you secure Jenkins?**

**Answer: Securing Jenkins is a little lengthy process, and there are two aspects of securing Jenkins:**

**(i) Access Control** which includes authenticating users and giving them an appropriate set of permissions, which can be done in 2 ways.

* **Security Realm**determines a user or a group of users with their passwords.
* **Authorization Strategy** defines what should be accessible to which user. In this case, there might be different types of security based on the permissions granted to the user such as Quick and simple security with easy setup, Standard security setup, Apache front-end security, etc.

**(ii) Protecting Jenkins users from outside threats.**

**Q #28) How to create a backup and copy files in Jenkins?**

**Answer:** In Jenkins, all the settings, build logs and configurations are stored in the JENKINS\_HOME directory. Whenever you want to create a backup of your Jenkins you can back up **JENKINS\_HOME** directory frequently.

It consists of all the job configurations and slave node configurations. Hence, regularly copying this directory allows us to keep a backup of Jenkins.

You can maintain a separate backfile and copy it whenever you need the same. If you want to copy the Jenkins job, then you can do so by simply replicating the job directory.

**Q #29) What is the use of Backup Plugin in Jenkins? How to use it?**

**Answer:** Jenkins Backup Plugin is used to back up the critical configurations and settings in order to use them in the future in case of any failure or as per the need of time.

**The following steps are followed to back up your settings by using the Backup Plugin.**

**Step 1:**Go to the Jenkins Dashboard and click on **Manage Jenkins.**

**Step 2:**Click on **Manage Plugins**that appears on the next page.

**Step 3:**Go to **Available Tab**on the next page and search for **ThinBackup.**

**Step 4:**Once you choose the available option, it will start installing.

**Step 5:**Once it is installed the following screen will appear, from there choose **Settings.**

**Step 6:** Enter the necessary details like backup directory along with other options as shown on the below screen and save the settings. The backup will be saved to the specified **Backup Directory.**

**Step 7:** Go to the previous page to test whether the backup is happening or not by clicking on **Backup Now**as shown in the below image.

**Step 8:** At last, you can check the Backup Directory specified in the ThinBackup Settings. (Step 6) to check the whole backup

**Q #30) What is Flow Control in Jenkins?**

**Answer:** In Jenkins, flow control follows the pipeline structure (scripted pipeline) that are being executed from the top to bottom of the Jenkins file.

**Q #31) What is the solution if you find a broken build for your project?**

**Answer: To resolve the broken build follow the below-mentioned steps:**

* Open console output for the build and check if any file change has missed.

**OR**

* Clean and update your local workspace to replicate the problem on the local system and try to resolve it (In case you couldn’t find out the issue in the console output).

**Q #32) What are the basic requirements for installing Jenkins?**

**Answer: For installing Jenkins you need the following system configuration:**

1. Java 7 or above.
2. Servlet 3.1
3. RAM ranging from 200 MB to 70+ GB depending on the project build needs.
4. 2 MB or more of memory.

**Q #33) How can you define a Continuous Delivery Workflow?**

**Answer:** The flowchart below shows the Continuous Delivery Workflow. Hope it will be much easier to understand with visuals.

**Q #34) What are the various ways in which the build can be scheduled in Jenkins?**

**Answer: The build can be triggered in the following ways:**

1. After the completion of other builds.
2. By source code management (modifications) commit.
3. At a specific time.
4. By requesting manual builds.

**Q #35) Why is Jenkins called a Continuous Delivery Tool?**

**Answer:** We have seen the Continuous Delivery workflow in the previous question, now let’s see the step by step process of why Jenkins is being called as a Continuous Delivery Tool:

1. Developers work on their local environment for making changes in the source code and push it into the code repository.
2. When a change is detected, Jenkins performs several tests and code standards to check whether the changes are good to deploy or not.
3. Upon a successful build, it is being viewed by the developers.
4. Then the change is deployed **manually** on a staging environment where the client can have a look at it.
5. When all the changes get approved by the developers, testers, and clients, the final outcome is saved **manually**on the production server to be used by the end-users of the product.

In this way, Jenkins follows a **Continuous Delivery approach** and is called the **Continuous Delivery Tool.**

**Q #36) Give any simple example of Jenkins script.**

**Answer: This is a Jenkins declarative pipeline code for Java:**

These are some of the frequently asked questions in the Jenkins interview, you can practice them as part of your preparation for the interview.

We advise you to practice some Jenkins scripts before attending an interview. Also for detailed information and processes in Jenkins please check [Jenkins](https://jenkins.io/doc/).

### **Conclusion**

The above-mentioned interview questions are being asked during Jenkins Software Configuration Management and DevOps interview as Jenkins is also considered as an important tool in the DevOps program.

The real-time Jenkins interview questions listed in this article can be referred by beginners, professionals as well as job seekers who are looking for a good opportunity or a technical position in Jenkins.

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POSTMAN

**1) What is Postman?**

The Postman is a highly popular API testing tool that helps the development team create, share, and test an API. The Postman tool provides a GUI interface to the API and a command-line utility for experienced testers.

**2) What is an HTTP request?**

An HTTP request is a program that the client makes to a name host located on a server. It works as a communication interface or a request-response protocol between a client and server. The primary use of the HTTP request is to access a resource on the server. To initiate the HTTP request, the client uses components of a URL (Uniform Resource Locator) that also includes the information needed to access the resource.

**3) State The Core Components of an HTTP Response?**

In Postman, every HTTP response contains four key elements.

Response/Status Code- There are response code issues by a sever for client’s request, as 404 means Page Not Found.

HTTP Version- HTTP version name. For example, HTTP v2.2

Response Header- It included information for the HTTP response message. For example. The content length, date, status, server type, etc.

Response Body – It contains the data which a client requested from the server.

**4) Why do we use Postman?**

Here are some most prominent reasons for using Postman:

It is free to use software which is helpful for API testing

It helps you to manage the end-to-end lifecycle of API

It offers Runtime Service that helps manage API collections, workspaces, environments, and different examples.

You can also integrate Postman with CI/CD tools like Circle CI, Jenkins, etc.

It has a vast community forum that can easily address any technical issues you face while using the tool.

**5) What is API?**

Application Programming Interface (API) is a software interface that enables two applications to interact with each other without any user intervention. It is a collection of software functions and procedures. API is defined as a code that helps two different software communicate and exchange data with each other.

6) What are the important authorization methods supported by Postman?

Postman offers the following API request authorization options

1) API Key,

2) Oauth 1.0 and 2.0,

3) Basic auth,

4) Digest auth,

5) Bearer Token,

6) AWS Signature,

7) Hawk Authentication,

8) NTLM Authentication.

7) How do you log variable values in Postman?

Using Console I can log the varable values in Postman.

command: console.log(pm.variables.get("guru99"));

8) Postman is available as a native desktop app for?

Postman API testing tool is currently available for Mac, Windows (32-bit / 64-bit), and Linux (32-bit / 64-bit)

9) What is the History tab in Postman?

History tab contains all the requests that has been executed, you can clear whenever you want.

10) What is Basic Auth in Postman?

In Postman, Basic Auth is an authorization method provided for HTTP users, like web browsers to enter username and password. After entering the username and password that you can associate with the request.

11) What is a binary form in POST methods?

Post binary form is designed to send the information in a format that is impossible to enter manually. These options are used while sending larger files like CSV files, etc.

12) What is the main difference between Authorization and authentication?

Here are a few differences between authorization and Authentication:

Authorization is the act of allowing or permitting someone, whereas authentication is proving that something is genuine.

Authentication always comes first, while authorization comes after authentication.

Authorization is open to anyone with permission, whereas authentication requires you to have a password.

13) What is the Payload in Postman?

The Payload is the body of your request and response message. When making an API request, it contains the data you send to the server. You can send and receive Payload in various formats, for example, JSON or XML.

14) What is a collection in Postman?

Collection is a group of requests. It also allows you to systematically arrange the requests into folders.

15) What is a Pre-Request script?

Pre-request scripts are **a piece of code(java script) that will run before the execution of a request**.. It allows you to do pre-processing tasks like setting variable values, parameters, headers, and body data.

16) How the Postman variables are accessed?

The Postman variables are always accessed by using the variable name:

{{variable name}}

17) What is the meaning of the term environment in Postman?

The environment in Postman is a set of key-value pairs. We can create multiple environments and switch them with a click of a button.

18) Why does Postman never accepts any other encoding apart from Base64?

beacause base64 transform the data into the text and send it as HTML data. Moreover, we must rely upon the same 64 characters in any encoding language.

19) Which kind of encoding does Postman accepts for authorization credentials?

Postman only accepts Base64 encoding, which is provided inbuilt in Postman. Otherwise, it would benefit when you use 3rd party websites that help you to convert the credentials into base64.

20) What are the different scopes of an environment variable in Postman?

scopes are: global, collection, environment, data, and local.

priority : local - data - environment - collection - global

Scope of a variable in Postman is defined as the boundaries it can access.

Here are important scopes of an environment variable in Postman:

Local Scope: This type of variable can be accessed only in the environment in which it was created

Global Scope: This type of variable can be accessed globally in any environment or no environment.

21) Is it possible to import local variables in Postman Monitors?

Postman monitors allow you to import local variables but not global variables.

22) What is the Postman execution order for a collection?

For all the requests in a collection, the scripts will execute in the following given order:

Step 1) A pre-request script associated with a collection will run before every request.

Step 2) A pre-request script associated with a folder will run before every request in a specific folder.

Step 3) A test script associated with a collection will run after every request.

Step 4) A test script associated with a folder will run after the request in the specific folder.

23) Can you have two global scope variables with the same name in Postman?

No, the global scope never has duplicate/same names, while variables having local scope can have the same name in various environments.

24) How do you access postman variables?

You can log the variable values in the console by using the command:

console. Log (pm. Variables.

25) What is the use of the collection in Postman?

In Postman, a collection is used to group similar requests. It helps you to arrange requests systematically into folders.

26) How can you use POSTMAN to generate random numbers in a specific range?

In your Pre-request script define your variable with:

pm.globals.set('randomNum', Math.floor(Math.random() \* 5));

Then in your URL call your variable in the URL like so:

Output:

{{randomNum}}

27) How do you remove local variables?

Local variables are automatically removed once the tests have been executed.

28) What is ‘Postman Collection runners?

Postman Collection Runner is used to execute a Collection having multiple requests together in a specified secuence. it is used to perform Data-driven testing with different sets of data. The Collection Runner does not produce any Response Body.

It helps visualize details of each iteration and test results.

29) What do you mean by postman monitors?

Postman Monitors is used to monitor the status of the performance of our APIs. Collection-based monitors enable us to run API test scripts, chain together multiple requests, and validate critical API flows.

30) Why saving your work in the Postman cloud is not advisable?

Because it may cause a security breach. You should not save your work in Postman as your business details do not remain confidential. Moreover, saving your on-Postman cloud may cause a security breach as it requires sign-in. Therefore, saving your work in the Postman cloud is not advisable.

31) What are the standard rules of an API test design?

Here are the key principles of an API test design:

Setup: Create objects, start services, and initialize data.

Execution: Apply API or the scenario, including logging

Verification: It is use for evaluating the result of the execution

Reporting: Indicates Pass, failed, or blocked status

Clean up: Pre-test state

32) What is the Team workspace in Postman?

A Team workspace is a synergetic environment for users where many programmers may develop APIs, provides feedback, and collaborate on the same pools of requests. It also helps to synchronize and collaborates all the team’s work in one place.

33) What is the 301-status code?

301 status code represents a permanent redirect from one website page to another. It tells the search engines that the old page has become outdated, and the engine has to index the new page or URL.

34) What is status code 201?

Status code 201 is created only when a resource is successfully created using a PUT or POST request. It returns a link to a newly created one with the help of the location header.

35) What is the procedure to remove local variables?

The local variables can be automatically removed when you have executed and completed the tests.

36) What is Pre-Request Script in Postman?

In Postman, a pre-request script is a set of rules that runs before executing a request.

37) How are Query Parameters different from Path Variables?

In Postman, Path Variables are used to identify specific resources, and Query Parameters are used to sort or filter the resources.

38) What are the main drawbacks of Postman?

Here are some cons/ disadvantages of using Postman:

Postman cannot process more than 1000 API requests.

It is not easy to manage the collections and requests in a massive size project.

Postman is not an ideal API tool for workspace management in the form of code as there can be lots of code duplication while handing the dynamic API requests.

39) What are some of the JS libraries available in Postman?

Some JS libraries available in Postman are

1) Lodash

2) Moment

3) GUID

40) What is GUID?

GUID is short for Global Unique Identifier. It is hexadecimal digits that are separated by hyphens. This Postman identifier GUID solves the purpose of uniqueness.

41) How can you view log requests and responses in Postman?

You can use the Postman Console window to view request logs and response logs.

42) What is the importance of setNextRequest in Postman?

setNextRequest is used to define the workflow. It is needed to change the order of the execution of the requests.

43) What test code allows you to check whether the response status is 200 or not?

Following is a test code to check whether the response status is 200 or not:

tests[“Status Code is 200”] = responseCode.code == 200;

44) What do you understand by ScratchPad?

Scratch Pad is a place which is provided by Postman that helps you work without the need to connect with Postman servers.

45) How can you iterate a request 100 times in Postman?

I can iterate a request 100 times in Postman by using Collection Runner.

46) What would happen if {{$randomInt}} dynamic variable is added?

You need to add a random integer between 0 and 1000.

47) How do you access variable values from a file inside pre-request and test scripts?

data.var\_name

data['var\_name']

48) Can you read the Postman Chrome application to read and write cookies?

No, it is impossible to read and write cookies using the app.

49) Which programming language is used for Postman tests?

JavaScript is used for Postman tests.

50) Which tool can be used to run Postman Collections in Jenkins?

Newman can be used to run Postman Collection in Jenkins. this helped us to improve the visibility for the changes and update our tests with proper mocks.

**Why Use Postman?**

1. Accessibility – To use Postman tool, one would just need to log-in to their own accounts making it easy to access files anytime, anywhere as long as a Postman application is installed on the computer.

2. Use of Collections – Postman lets users create collections for their Postman API calls. Each collection can create subfolders and multiple requests. This helps in organizing your test suites.

3. Collaboration – Collections and environments can be imported or exported making it easy to share files. A direct link can also be used to share collections.

4. Creating Environments – we can create different environments and can use for the same collection. parameterization will take place here.

5. Creation of Tests – Test checkpoints such as verifying for successful HTTP response status can be added to each API calls.

6. Automation Testing – Through the use of the Collection Runner or Newman, tests can be run in multiple iterations saving time for repetitive tests.

7. Debugging – Postman console helps to check what data has been retrieved making it easy to debug tests.

8. Continuous Integration –supports continuous integration, development practices are maintained.

**How to use Postman to execute APIs**

Below is the Postman Workspace. Let’s explore the step by step process on How to use Postman and different features of the Postman tool!

1. New – This is where you will create a new request, collection or environment.

2. Import – This is used to import a collection or environment. There are options such as import from file, folder, link or paste raw text.

3. Runner – Automation tests can be executed through the Collection Runner. This will be discussed further in the next lesson.

4. Open New – Open a new tab, Postman Window or Runner Window by clicking this button.

5. My Workspace – You can create a new workspace individually or as a team.

6. Invite – Collaborate on a workspace by inviting team members.

7. History – Past requests that you have sent will be displayed in History. This makes it easy to track actions that you have done.

8. Collections – Organize your test suite by creating collections. Each collection may have subfolders and multiple requests. A request or folder can also be duplicated as well.

9. Request tab – This displays the title of the request you are working on. By default, “Untitled Request” would be displayed for requests without titles.

10. HTTP Request – Clicking this would display a dropdown list of different requests such as GET, POST, COPY, DELETE, etc. In Postman API testing, the most commonly used requests are GET and POST.

11. Request URL – Also known as an endpoint, this is where you will identify the link to where the API will communicate with.

12. Save – If there are changes to a request, clicking save is a must so that new changes will not be lost or overwritten.

13. Params – This is where you will write parameters needed for a request such as key values.

14. Authorization – In order to access APIs, proper authorization is needed. It may be in the form of a username and password, bearer token, etc.

15. Headers – You can set headers such as content type JSON depending on the needs of the organization.

16. Body – This is where one can customize details in a request commonly used in POST request.

17. Pre-request Script – These are scripts that will be executed before the request. Usually, pre-request scripts for the setting environment are used to ensure that tests will be run in the correct environment.

18. Tests – These are scripts executed during the request. It is important to have tests as it sets up checkpoints to verify if response status is ok, retrieved data is as expected and other tests.

**HTTP response status codes**

1. (100 – 199) information response

2. (200 – 299) request successful

3. (300 – 399) u r redirected to another resources.

4. (400 – 499) bad request

5. (500 – 599) server error

…………………………………………………………………..

**Top Rest Assured Interview Questions (2023)**

Rest Assured Interview Questions and Answers

Q: What is REST Assured ?

Ans:

REST Assured is a Java library RESTful APIs testing. It is extensively used to test web applications that are based on JSON and XML. Also, all methods are completely supported, including GET, PUT, POST, PATCH, and DELETE.

Q: Why is REST-assured being used instead of Postman to automate RESTful services?

Ans:

Below are few of the advantages of using REST Assured over Postman:

For the REST-assured, we can customise the reports. on the other hand, Postman, does not allow us to customise the reports.

Code can be reused in REST assured, as it is a Java client, whereas code reusability is not possible in Postman.

For each collection, we can only submit one data file to the Postman automation runner. However, there is no such restriction for REST-assured.

Q: What is Request Specification in Rest Assured?

Ans:

RequestSpecification in Rest Assured can be used to group together common request specs and turn them into a single object. This interface has methods for defining the base URL, base path, headers, and other parameters. To obtain a reference for RequestSpecification, we must use the given() function of the RestAssured class. We can't make an object out of RequestSpecification because it's an interface. Its implemented class is RequestSpecificationImpl.

Q: How to use Request Specification in Rest Assured?

Ans:

RequestSpecification reqSpec = RestAssured.given();

reqSpec.baseUri("http://localhost:8080")

reqSpec.basePath("/employees");

Alternatively, rather than repeatedly invoking RequestSpecification Reference, we may utilise the builder pattern as seen below:-

RequestSpecification reqSpec =

RestAssured.given()

.baseUri("http://localhost:8080")

.basePath("/employees");

Q: Why do we use static import in Rest Assured?

Ans:

Static import is a Java programming language feature that allows members (fields and methods) that have been scoped as public static within their container class to be used in Java code without mentioning the class in which the field has been defined.

package com.techgeeknext.controller;

import org.testng.annotations.Test;

/\*\*

\* this is static import to avoid writing

\* into front of every method call of RestAssured

\*/

import static io.restassured.RestAssured.\*;

public class EmpControllerTest {

@Test

public void testGetEmployees() {

// with static import

given();

// without static import

/\*\*

\* import io.restassured.RestAssured;

\* RestAssured.given();

\*/

}

}

Q: What is rest assured method chaining?

Ans:

In object-oriented programming languages, method chaining is a typical syntax for invoking numerous method calls. Each method returns an object, allowing multiple calls to be chained together in a single line without the need for variables to hold interim results.

For example:

in rest assured all methods chained together with dots is called method chaining.

given()

.baseUri(baseUri)

.queryParam(parameterName, parameterValues)

.accept(contentType).

.when()

.then();

Q: What is client server architecture?

Ans:

The client-server model defines how a server gives resources and services to one or more clients. Web servers, mail servers, and file servers are examples of servers. So, the Client requests something, and the Server fulfils the request.

Q: What is REST?

Ans:

REpresentational State Transfer is the acronym for REpresentational State Transfer. It means that when a RESTful API is invoked, the server will send a representation of the status of the requested resource to the client. The operation you want the server to perform on that resource, expressed as an HTTP method.

Q: What is JSON?

Ans:

JSON (JavaScript Object Notation) is a text-based standard for describing structured data that is based on JavaScript object syntax. It's often used in web applications to send data to server and client.

Key-Value pairs are used to represent data in JSON Object as below:

{

"id" : 1,

"username" : "TechGeekNextUser",

"role" : "Admin"

}

Q: How to configure Rest-Assured with Eclipse or any other IDE?

Ans:

Below are the steps to configure Rest-Assured in IDE.

Download and setup Java.

Setup TestNG in Eclipse

Download Rest-Assured jar files -> Under Current direct downloads -> Download rest-assured-\*-dist.zip

In Eclipse, IntelliJ, create new Java Project and add External Jars ( Rest-Assured downloaded jar)

Q: Write a code to test REST API using Rest Assured?

Ans:

public class EmployeesTest {

@Test

public void GetAllEmoloyees()

{

// base URL to call

RestAssured.baseURI = "http://localhost:8080/employees/get";

//Provide HTTP method type - GET, and URL to get all employees

//This will give respose

Response employeesResponse = RestAssured.given().request(Method.GET, "/all");

// Print the response in string format

System.out.println(employeesResponse.getBody().asString());

}

}

Q: What are the ways and how to validate the response of REST API in Rest Assured?

Ans:

Response is an interface available io.restassured.response package.This interface contains many methods, majority of which can be used to extract parts from the received response. Below are some method of response which we can use to validate the received response:

**Status Code**: getStatusCode() is used to validate the response. It is an integer values, if it valid response will return 200.

Response employeesResponse = RestAssured.given().request(Method.GET, "/all");

//validate the resonse using Assert

Assert.assertEquals(200, employeesResponse.getStatusCode());

**Status Line**: getStatusLine() is used to validate the response. It contains 3 part i.e. Http Protocol version, Status Code (Integer) and Status Code (String) like HTTP/1.1 200 OK.

Response employeesResponse = RestAssured.given().request(Method.GET, "/all");

//validate response using Assert and checking with response StatusLine

Assert.assertEquals("HTTP/1.1 200 OK", employeesResponse.getStatusLine());

Refer Spring Boot Rest Assured Example to understand how to extract and validate the response.

Q: What is the best way to keep sensitive data out of the log in rest assured?

It is now available to blacklist headers using blacklistHeader method in REST Assured 4.2.0 ensuring that they are not displayed in the request or response log. One or more headers can be blacklisted. A blacklist is used to prevent sensitive data from being included in the log.

Set<String> headers = new HashSet<String>();

headers.add("X-REGION");

headers.add("content-type");

given().

baseUri("http://localhost:8080").

header("X-REGION", "NAM").

// blacklist headers

config(

config.logConfig(LogConfig.logConfig().blacklistHeaders(headers)))

// blacklist multiple headers

//config(config().logConfig(LogConfig.logConfig().blacklistHeader("Accept","set-cookie"))).

log().all().

when().

get("/employees").

then().

assertThat().

statusCode(200);

Q: What is jsonPath in Rest Assured?

Ans:

JsonPath (io.restassured.path.json.JsonPath) is a simple way to get values from an Object document without having to use XPath. When retrieving an object from the document, it follows the Groovy GPath syntax. It can be thought of as a JSON-specific version of XPath. As an example, consider the following Object document.

{ "company": {

"employee": [

{ "id": 1,

"name": "TechGeekNextUser1",

"role": "Admin"

},

{ "id": 2,

"name": "TechGeekNextUser2",

"role": "User"

},

{ "id": 3,

"name": "TechGeekNextUser3",

"role": "User"

}

]

}

}

Response employeesResponse = RestAssured.given().request(Method.GET, "/all");

JsonPath jsonPathObj = employeesResponse.jsonPath();

//get a list of all employees id:

List<String> employeeIds = jsonPathObj.get("company.employee.id");

//get the first employee name:

String empName = jsonPathObj.get("company.employee[0].name");

Refer Spring Boot Rest Assured Example to understand how to use JsonPath to extract the specific object from the response.

Q: How to log the request and response in case of validation failed in Rest Assured?

Ans:

If a test validation fails, log().ifValidationFails() logs everything in the request and response.

/\*\*

\* Log the request and response details if validation fails.

\*/

@Test

public void testIfValidationFails() {

given().

baseUri("http://localhost:8080").

header("X-REGION", "NAM").

log().ifValidationFails().

when().

get("/employees").

then().

log().ifValidationFails().

assertThat().

statusCode(200);

}

Q: How to use Path Variable with GET rest endpoint in Rest Assured?

Ans:

Considering id as path variable in GET Rest end point url - http://localhost:8080/employee/{id}.

Example : http://localhost:8080/employee/33

Output:

{

"id": 33,

"name": "User-1",

"role": "Admin"

}

Pass 33 value to path variable id in the given program.

@Test

public void testGetEmployeeWithPathParam() {

Response empResponse = given().

baseUri("http://localhost:8080").

contentType(ContentType.JSON).

pathParam("id", "33").

when().

get("/employee/{id}").

then().

log().all().

assertThat().

statusCode(200).

extract().

response();

JsonPath jsonPathObj = empResponse.jsonPath();

Assertions.assertEquals(jsonPathObj.getLong("id"), 33);

Assertions.assertEquals(jsonPathObj.getString("name"), "User-1");

Assertions.assertEquals(jsonPathObj.getString("role"), "Admin");

}

Q: How to find all employees ids from 15 to 300 using Rest Assured jsonPath?

Ans:

Response employeesResponse = RestAssured.given().request(Method.GET, "/all");

JsonPath jsonPathObj = employeesResponse.jsonPath();

//get all employees id between 15 and 300

List<Map> employees = jsonPathObj.get("company.employee

.findAll { employee -> employee.id >= 15 && employee.id <= 300 }");

Q: How to send a POST Request in Rest Assured?

Ans:

@Test

public void testPostEmployee() throws JSONException {

JSONObject empParams = new JSONObject();

empParams.put("name", "TechGeekNextUser44");

empParams.put("role", "Supervisor");

given()

.contentType(ContentType.JSON)

.body(empParams.toString())

.log().all()

.when()

.post("http://localhost:8080/employee")

.then()

.assertThat().statusCode(200)

.body("name", equalTo("TechGeekNextUser44"))

.body("role", equalTo("Supervisor"))

.log().all();

}

Q: What is Serialization and Deserialization in Java?

Ans:

Serialization is a process to convert an object's state into a byte stream.

Deserialization is a process to convert back the byte stream to the actual Java object in memory. The object is kept alive through this approach.

Q: How to deserialize a response JSON as List of POJO in Rest assured?

Ans:

In below ways we can deserialize a response JSON as List of POJO in Rest assured:

List<Employee> returnedEmployees = Arrays.asList(response.getBody().as(Employee[].class));

In version 3.0.2 (io.restassured):

JsonPath jsonPath = RestAssured.given()

.when()

.get("/employee/get/all")

.then()

.assertThat()

.statusCode(Response.Status.OK.getStatusCode())

.assertThat()

.extract().body().jsonPath();

List<Employee> Employees = jsonPath.getList("", Employee.class);

Google's Gson library

Gson gson = new Gson();

List<Employee> returnedEmployees = gson.fromJson(jsonStr, new TypeToken<List<Employee>>(){}.getType());

Q: What is the Array slice operator in JsonPath in Rest Assured?

Ans:

The array slice operator is a way to extract certain objects from Json. What if, in the case of employees, we wanted to get every alternate employee in the Json? We'll need the Array, Slice operator for this. [StartIndex: EndIndex: Steps] is the syntax of the Array Slice operator.

$..employee[1,4,2]

$..['employee'][1,4,2]

Q: How can we get size of JSON array in Rest assured?

Ans:

JSON Response:

------------------

{

"Status": 200,

"ORG": {

"EMPLOYEES": [

{

"id": 1,

"name": XYZ,

"role": "ADMIN"

},

{

"id": 2,

"name": ABC,

"role": "USER"

},

{

"id": 3,

"name": AAA,

"role": "USER"

}

]

}

}

// base URL to call

RestAssured.baseURI = "http://localhost:8080/employees/get";

//Provide HTTP method type - GET, and URL to get all employees

//This will give respose

Response employeesResponse = RestAssured.given().request(Method.GET, "/all");

//use JsonPath from Rest-Assured to get list of employee id

List<String> employees = employeesResponse.jsonPath().getList("ORG.EMPLOYEES.id");

System.out.println(employees.size());

Q: How to log in case of error in response in Rest assured?

Ans:

In Rest Assured, there is way to logs everything with log().ifError() if there is an error in the response.

/\*\*

\* Log if Error exist

\*/

@Test

public void testLogIfError() {

given().

baseUri("http://localhost:8080").

header("X-REGION", "NAM").

log().all().

when().

get("/employees").

then().

log().ifError().

assertThat().

statusCode(200);

}

**Most Frequently Asked Cucumber Interview Questions**

**Q #1) Explain Cucumber shortly.**

**Answer:** Cucumber is a tool that is based on Behavior Driven Development (BDD) methodology.

The main aim of the Behavior Driven Development framework is to make various project roles such as Business Analysts, [Quality Assurance](https://en.wikipedia.org/wiki/Quality_assurance), Developers, etc., understand the application without diving deep into the technical aspects.

**Q #2) What language is used by Cucumber?**

**Answer:**[Gherkin](https://github.com/cucumber/cucumber/wiki/Gherkin) is the language that is used by the Cucumber tool. It is a simple English representation of the application behavior. Gherkin language uses several keywords to describe the behavior of applications such as Feature, Scenario, Scenario Outline, Given, When, Then, etc.

**Q #3) What is meant by a feature file?**

**Answer:** A feature file is a high-level description of an Application Under Test (AUT). The first line of the feature file must start with the keyword ‘Feature’ followed by the description of the application under test.

A feature file may include multiple scenarios within the same file. A feature file has the extension .feature.

**Q #4) What are the various keywords that are used in Cucumber for writing a scenario?**

**Answer:** **Mentioned below are the keywords that are used for writing a scenario:**

* Given
* When
* Then
* And

**Q #5) What is the purpose of a Scenario Outline in Cucumber?**

**Answer:**Scenario outline is a way of parameterization of scenarios. This is ideally used when the same scenario needs to be executed for multiple sets of data, however, the test steps remain the same. Scenario Outline must be followed by the keyword ‘Examples’, which specify the set of values for each parameter.

**Q #6) What programming language is used by Cucumber?**

**Answer:** Cucumber tool provides support for multiple programming languages such as Java, .Net, Ruby etc. It can also be integrated with multiple tools such as Selenium, Capybara, etc.

**Q #7) What is the purpose of the Step Definition file in Cucumber?**

**Answer:** A step definition file in Cucumber is used to segregate the feature files from the underlying code. Each step of the feature file can be mapped to a corresponding method on the Step Definition file.

While feature files are written in an easily understandable language like, Gherkin, Step Definition files are written in programming languages such as Java, .Net, Ruby, etc.

**Q #8) What are the major advantages of the Cucumber framework?**

**Answer:** Given below are the advantages of the Cucumber Gherkin framework that make Cucumber an ideal choice for rapidly evolving [Agile methodology](https://www.softwaretestinghelp.com/agile-scrum-methodology-for-development-and-testing/) in today’s corporate world.

* Cucumber is an open-source tool.
* Plain Text representation makes it easier for non-technical users to understand the scenarios.
* It bridges the communication gap between various project stakeholders such as Business Analysts, Developers, and Quality Assurance personnel.
* Automation test cases developed using the Cucumber tool are easier to maintain and understand as well.
* Easy to integrate with other tools such as [Selenium](https://www.softwaretestinghelp.com/selenium-tutorial-1/) and Capybara.

**Q #9) Provide an example of a feature file using the Cucumber framework.**

**Answer:** Following is an **example** of a feature file for the scenario ‘Login into the application’:

**Feature:** Login to the application under test.  
**Scenario:** Login to the application.

* Given Open the Chrome browser and launch the application.
* When the user enters the username onto the UserName field.
* And User enters the password into the Password field.
* When the user clicks on the Login button.
* Then validate if the user login is successful.

**Q #10) Provide an example of a Scenario Outline using the Cucumber framework.**

**Answer:** The following is an **example** of a Scenario Outline keyword for the scenario ‘Upload a file’. The number of parameter values to be included in the feature file is based on the tester’s choice.

**Scenario Outline:** Upload a file

Given that the user is on upload file screen.  
When a user clicks on the Browse button.  
And user enters <filename> onto the upload textbox.  
And user clicks on the enter button.  
Then verify that the file upload is successful.

**Example:**

|filename|  
|file1|  
|file2|

**Q #11) What is the purpose of the Behaviour Driven Development (BDD) methodology in the real world?**

**Answer:** BDD is a methodology to understand the functionality of an application in the simple plain text representation.

The main aim of the Behavior Driven Development framework is to make various project roles such as Business Analysts, Quality Assurance, Developers, Support Teams understand the application without diving deep into the technical aspects.

**Q #12) What is the limit for the maximum number of scenarios that can be included in the feature file?**

**Answer:** A feature file can contain a maximum of 10 scenarios, but the number can vary from project to project and from one organization to another. But it is generally advisable to limit the number of scenarios included in the feature file.

**Q #13) What is the use of Background keyword in Cucumber?**

**Answer:** Background keyword is used to group multiple given statements into a single group. This is generally used when the same set of given statements are repeated in each scenario of the feature file.

**Q #14) What symbol is used for parameterization in Cucumber?**

**Answer:** Pipe symbol (|) is used to specify one or more parameter values in a feature file.

**Q #15) What is the purpose of Examples keyword in Cucumber?**

**Ans:** Examples keyword is used to specify values for each parameter used in the scenario. Scenario Outline keyword must always be followed by the keyword Examples.

**Q #16) What is the file extension for a feature file?**

**Answer:** File Extension for a feature file is .feature. A feature file is ideally written in a notepad file and is saved with the extension feature.

**Q #17) Provide an example of a step definition file in Cucumber.**

**Answer:** Step definition corresponding to the step “Open Chrome browser and launch the application” may look like the code mentioned below:

@Given("^Open Chrome browser and launch the application$")

public void openBrowser()

{

driver = new ChromeDriver();

driver.manage().window().maximize();

driver.get("www.facebook.com");

}

**Q #18) What is the purpose of the Cucumber Options tag?**

**Answer:** Cucumber Options tag is used to provide a link between the feature files and step definition files. Each step of the feature file is mapped to a corresponding method on the step definition file.

**Below is the syntax of Cucumber Options tag:**

@CucumberOptions(features="Features",glue={"StepDefinition"})

**Q #19) How can Cucumber be integrated with Selenium WebDriver?**

**Answer:** [Cucumber can be integrated with the Selenium Webdriver](https://www.softwaretestinghelp.com/selenium-webdriver-cucumber-selenium-tutorial-31/) by downloading the necessary JAR files.

**Given below are the list of JAR files that are to be downloaded for using Cucumber with Selenium web driver:**

* cucumber-core-1.2.2.jar
* cucumber-java-1.2.2.jar
* cucumber-junit-1.2.2.jar
* cucumber-jvm-deps-1.0.3.jar
* cucumber-reporting-0.1.0.jar
* gherkin-2.12.2.jar

**Q #20) When is Cucumber used in real-time?**

**Answer:** Cucumber tool is generally used in real-time to write acceptance tests for an application. It is generally used by non-technical people such as Business Analysts, Functional Testers, etc.

**Q #21) Provide an example of Background keyword in Cucumber.**

**Answer:**

**Background:** Given the user is on the application login page.

**Q #22) What is the use of Behavior Driven Development in Agile methodology?**

**Answer:** The advantages of Behavior Driven Development are best realized when non-technical users such as Business Analysts use BDD to draft requirements and provide the same to the developers for implementation.

In Agile methodology, user stories can be written in the format of feature file and the same can be taken up for implementation by the developers.

**Q #23) Explain the purpose of keywords that are used for writing a scenario in Cucumber.**

**Answer:**

* **“Given”** keyword is used to specify a precondition for the scenario.
* **“When”** keyword is used to specify an operation to be performed.
* **“Then”** keyword is used to specify the expected result of a performed action.
* **“And”** keyword is used to join one or more statements together into a single statement.

**Q #24) What is the name of the plugin that is used to integrate Eclipse with Cucumber?**

**Answer:**Cucumber Natural Plugin is the plugin that is used to integrate Eclipse with Cucumber.

**Q #25) What is the meaning of the TestRunner class in Cucumber?**

**Answer:** TestRunner class is used to provide the link/connection between the feature file and the step definition file. The next question provides a sample representation of how the TestRunner class will look like. A TestRunner class is generally an empty class with no class definition.

**Q #26) Provide an example of the TestRunner class in Cucumber.**

**Answer:**

Package com.sample.TestRunner

importorg.junit.runner.RunWith;

importcucumber.api.CucumberOptions;

importcucumber.api.junit.Cucumber;

@RunWith(Cucumber.class)

@CucumberOptions(features="Features",glue={"StepDefinition"})

public class Runner

{

}

**Q #27) What is the starting point of execution for feature files?**

**Answer:** When integrated with Selenium, the starting point of execution must be from the TestRunner class.

**Q #28) Should any code be written within the TestRunner class?**

**Answer:**No code should be written under the TestRunner class. It should include the tags @RunWith and @CucumberOptions.

**Q #29) What is the use of features property under the Cucumber Options tag?**

**Answer:**Features property is used to let the Cucumber framework identify the location of the feature files.

**Q #30) What is the use of glue property under the Cucumber Options tag?**

**Answer:** Glue property is used to let the Cucumber framework identify the location of step definition files.

**Q #31) What is the maximum number of steps that are to be written within a scenario?**

**Answer:** 4-5 steps.

Jira Questions

1. What is Jira ?

A. jira is a software for planning, tracking, reporting and releasing of a project. Jira was started as a software development tool to support agile development methodology.

2. what is an issue in Jira ?

A. Jira issue is a Task for the team in order to complete and deliver a project. Different types of Jira issues are – task, story, bug, epic (Jira software for developer). Task and sub task for (Jira core). service request , Incident, problem, changes (for Jira service desk).

3. what are the tabs in Jira ?

A. Dashboard – to view the system dashboard or manage a new dashboard,

Project – to access, import, and create a new project,

Issues – to search, filter and manage issues,

Boards – to access scrum or Kanban boards for the project been created,

Tests – to manage the test related artifacts,

Create – to create different types of issues.

Search – to search the issues.

4. what is gadgets in Jira ?

A. gadget displays the summaries of the Jira project and issues data on Jira dashboard.

5. How to create a new dashboard ?

A. Dashboard – manage dashboard – create new dashboard. Then add a new gadget.

6. what is Jira marketplace ?

A. (dropdown on right top corner) Jira marketplace is a marketplace where we can install available add-ons.

7. what is a Jira Project ?

A. Jira project is a collections of issues like task, story, bug, epic, sub task .

Its a single place to manage my work of the project.

Every project has a workflow. Issues follow the workflow from creation to completion.

8. what are the types of Jira project ?

A. there are three types of Jira project/applications.

i) Jira software for development project.

ii) Jira core for business project.

iii) Jira service desk for any help desk project/application.

9. what are the materials of a Jira project ?

A. materials are :

Users – team members.

Issues – task, story, bug, epic, sub task etc.

Workflows – processes for each task.

Versions – releases like (1.0, 1.1 etc).

Components – software projects components are like database, ui etc.

Data – information / status of the project.

10. what is scrum ?

A. scrum is a frame work for agile development methodology. Jira project support two types of framework – scrum and Kanban. Scrum is very suitable for sprint development.

11. what is Kanban ?

A. Kanban is a framework for agile development methodology. Jira project support two types of framework – scrum and Kanban. Kanban is very suitable for continuous workflow / software development.

12. how to create/setup a project in Jira ?

A. on Jira home page – project – create project – select project – next – select issue type – do name for project and key will be automatically set. Key can be customized.

Project can be imported from an existing one. New project also can be created using shared configuration.

13. how to edit or delete a project in Jira ?

A. \*(setting) button top right corner – project – select project – edit / delete a project.

14. what is Epic in Jira ?

A. an epic is simply a type of issue in Jira. Epic is used for large user stories. Epic might take several sprint to complete. Epic issue is only available in Jira software. To create an epic issue – on home page – create – select issue type epic – create.

15. what is Jira story in Jira ?

A. user story is a piece of work that can be delivered in the defined sprint cycle. To create a story – on home page – create – select issue type story – create. Then to see epic stories … go to board – MOP board. New epic story also can be created here.

16. how to create a task in Jira ?

To create a task – on home page – create – select task as issue type from dropdown.

17. what sub task in Jira ?

A. a sub task is smaller part of big task. To create a sub task go home page – issues – select any story from dropdown list – you can see sub task – click on (+) icon.

18. how to create a bug in Jira ?

A. To create a bug – on home page – create – select task from issue type as bug.

19. what is an issue template ?

A. issue template is used to create different types of issue like task, story, epic, bug etc.

20. how to search issues in Jira ?

A. home page – issues – search for issues.

21. how to search all issue types of a project in Jira using basic search ?

A. home page – issues – search for issues – project all – select project.

22. 21. how to search a particular issue types of a project in Jira using basic search ?

A. home page – issues – search for issues – project all – select project – type all – select issue type.

23. how to search all Jira issues assigned to you ?

A. home page – issues – search for issues – assignee all – current user.

24. how to search particular Jira issues assigned to you ?

A. home page – issues – search for issues – assignee all – current user – issue type – select type of issue.

25. how to search issue by reporter in Jira ?

A. home page – issues – search for issues – more – reporter.

26. how to search issue by status in Jira ?

A. home page – issues – search for issues – status – select preferred one.

27. how to search issue by date in Jira ?

A. home page – issues – search for issues – more – select date.

28. how to reset/save search criteria filter ?

A. home page – reset as you need – save as.

29. how to transition an issue in Jira ?

A. home page – boards – select project board – drag and drop an issue from column to another column. Or home page – boards – select project board – open an issue – go to the issue – select preferred option.

30. how to close or dissolve an issue in Jira ?

A. home page – boards – select project board – drag and drop an issue from progress column to done column.

Or home page – boards – select project board – open an issue – go to the issue – select done option.

31. how to find completed issue in Jira ?

A. home page – issues – search for issues – project all – select project – status.

32. how to edit an issue in Jira ?

A. home page – boards – select project board – open an issue – go to the issue – edit/update.

33. how to see the issue activity in Jira ?

A. home page – dashboard – open the issue.

34. how to track/log an issue in Jira ?

A. me page – boards – select project board – open an issue – more – log work.

35. how to create sub task for story in Jira ?

A. me page – boards – select project board – open an issue – more – create sub task – create.

36. how to link an issue in Jira ?

A. home page – create – linked issue.