**BOOT CAMP LAB SPRING BATCH - 2020**

**SUB: QA AUTOMATION ENGINEERING – SELENIUM**

**Teacher : Ankur Jain**

**SUBMISSION INSTRUCTIONS:**

**ONLY 1 EMAIL MUST BE SENT TO** https://mail.google.com/mail/u/0/images/cleardot.gifhomework@peoplentech.com

1. Create a Word file to save answers to all theoretical questions, and include screen shots where you have written any program/script.
2. Export your projects from Eclipse and save them along with the word file in a **“Zip File”**.
3. Name your Zip file as:

**“AnkurJain\_StudentID \_First Name, Last Name – Week-Day Batch Bootcamp.zip”**

1. Email the Zip file to[homework@peoplentech.com](mailto:homework@peoplentech.com)

The purpose of Boot Camp is to demonstrate completion of the course successfully by utilizing hands on tools on real world projects as well as to give exposure to a collaborative process. By participating this Lab session and presenting successfully you are going to enter in the automation engineering community as a true software engineer.

The course name “Selenium” derived from a simply suite of tools name Selenium WebDriver API. But in depth of this course was heavily focused on Programming Language and other cutting edges application development tools in the last 10 weeks. During this camp, you must use all the tools and API that you have learned and should be able to set up the Framework from scratch or enhance from the existing one.

As part of the industry demand, five different domains have been chosen and those are Ecommerce, Social media, News Media, Insurance and Financial organization. Each application may have some unique features, by automating those application you are going to expand your analytical skills as well as acquiring knowledge of the tools how to tackle those edge cases.

This Lab has three parts, one is functional testing for Browser, second is functional testing for Mobile and the third part is performance testing.

You are assigned in separate groups previously during the class, so you can complete this lab as a team with each individual efforts and do the presentation at the end of the lab session.

1. **JAVA Programming**

Java is a popular programming language, created in 1995.

It is owned by Oracle, and more than **3 billion** devices run Java.

It is used for:

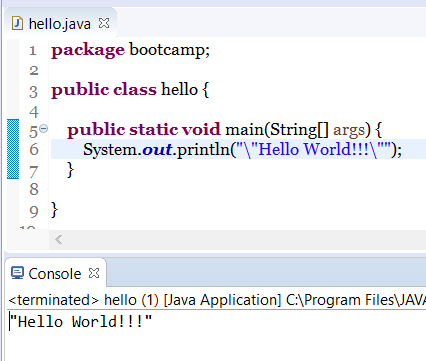
* Mobile applications (specially Android apps)
* Desktop applications
* Web applications
* Web servers and application servers
* Games
* Database connection
* Java works on different platforms (Windows, Mac, Linux, Raspberry Pi, etc.)
* It is one of the most popular programming language in the world
* It is easy to learn and simple to use
* It is open-source and free
* It is secure, fast and powerful
* It has a huge community support (tens of millions of developers)

**Create a folder in eclipse called BootCamp. Write all your programs in the specific folder (where applicable)**

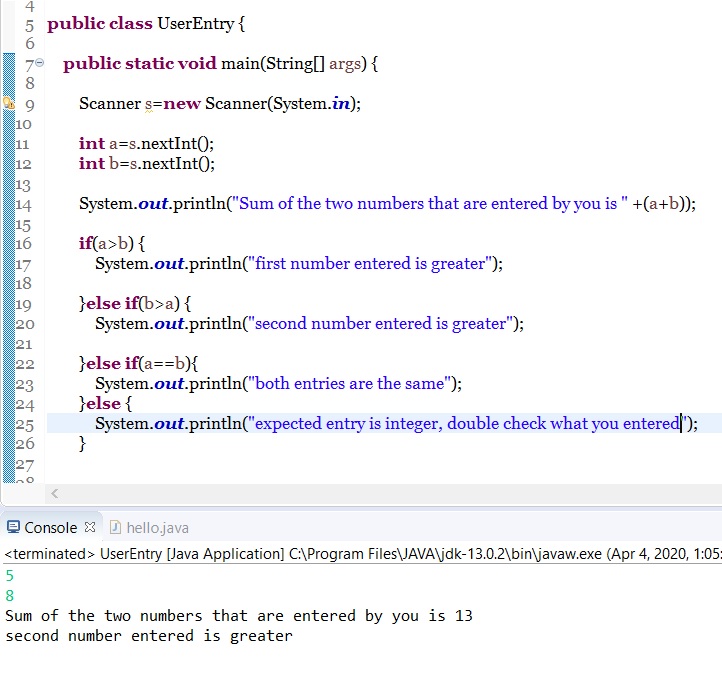
1. **Is java derived from java Script? If yes explain your answer**

There is no relation between Java and JavaScript.  
Java is **Object Oriented Programming Language** whereas JavaScript is **Object Based Scripting Language**. Object based language uses the idea of "objects".

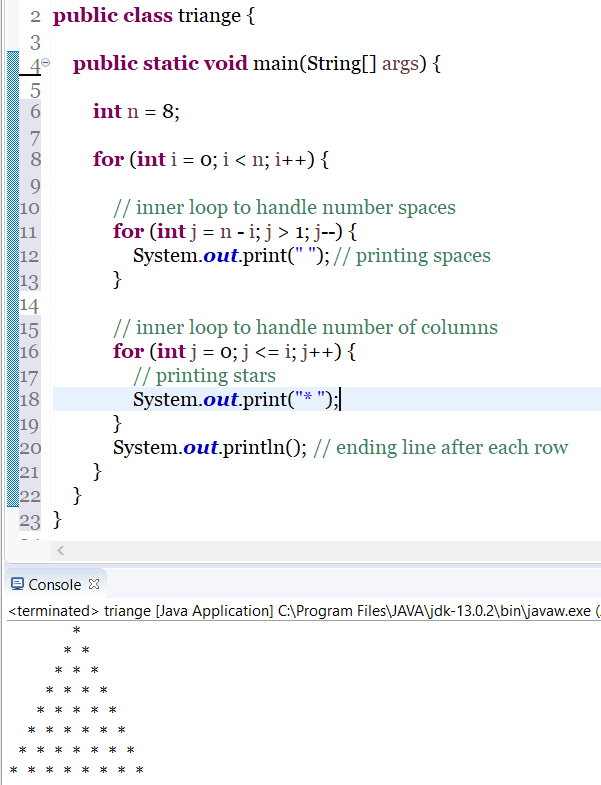
1. **Write a program in eclipse that prints “Hello World!!!”. Copy paste the entire code or take a screen shot and paste it in your answer**



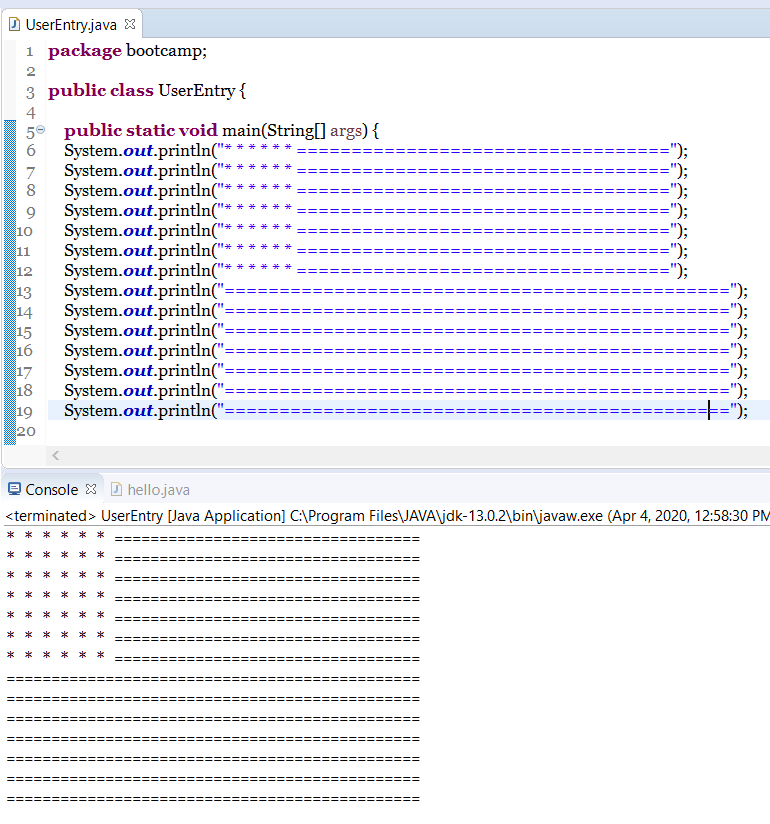
1. **Create a new program in which you ask a user to enter two numbers. Add the two numbers and print the result. Also write a logic in the same program to find out which number is greater than the other.**



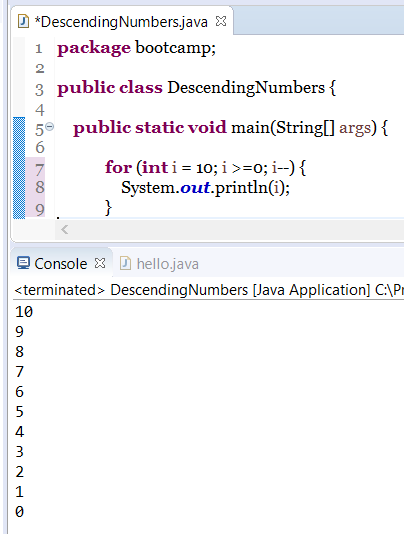
1. **Create a new program called ‘TriangleShape’. Define an integer and give value e.g. 5. Also define a character and give the value ‘\*’. Now print it out as follows**



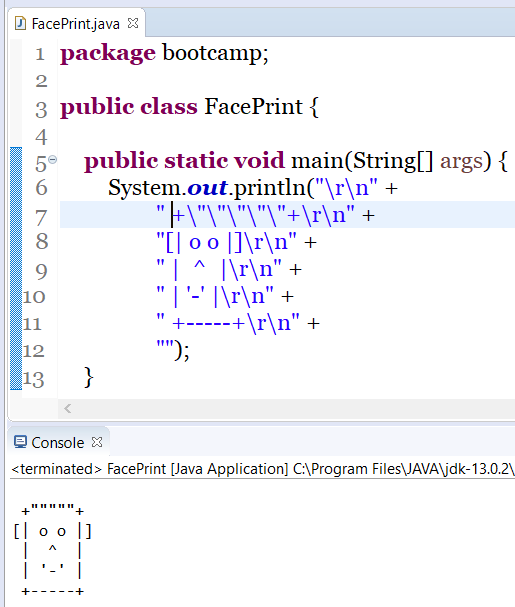
1. **Write a Java program to print an American flag on the screen.**



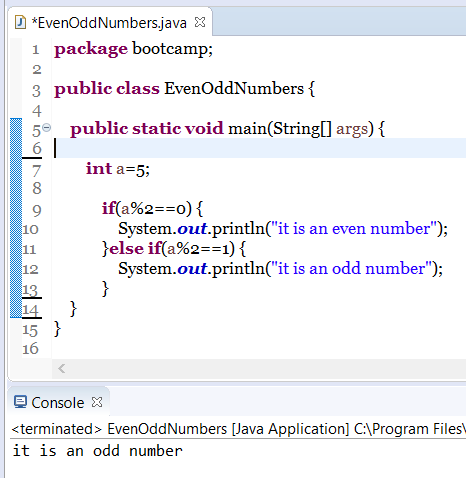
1. **Print out numbers from 10 – 1 in a descending order.**



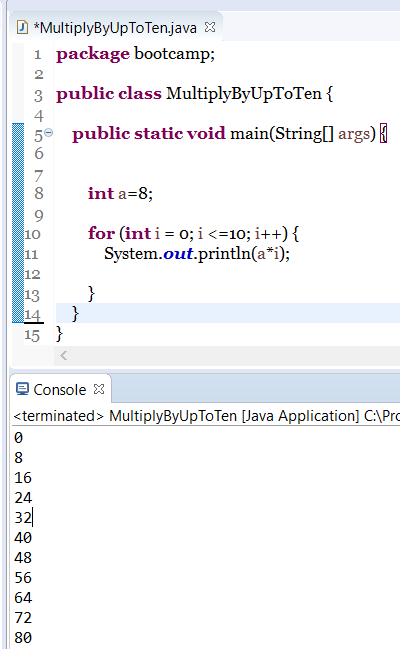
1. **Write a Java program to print a face.**



1. **Write a program where user enters a number. Find out if the number is EVEN or ODD?**



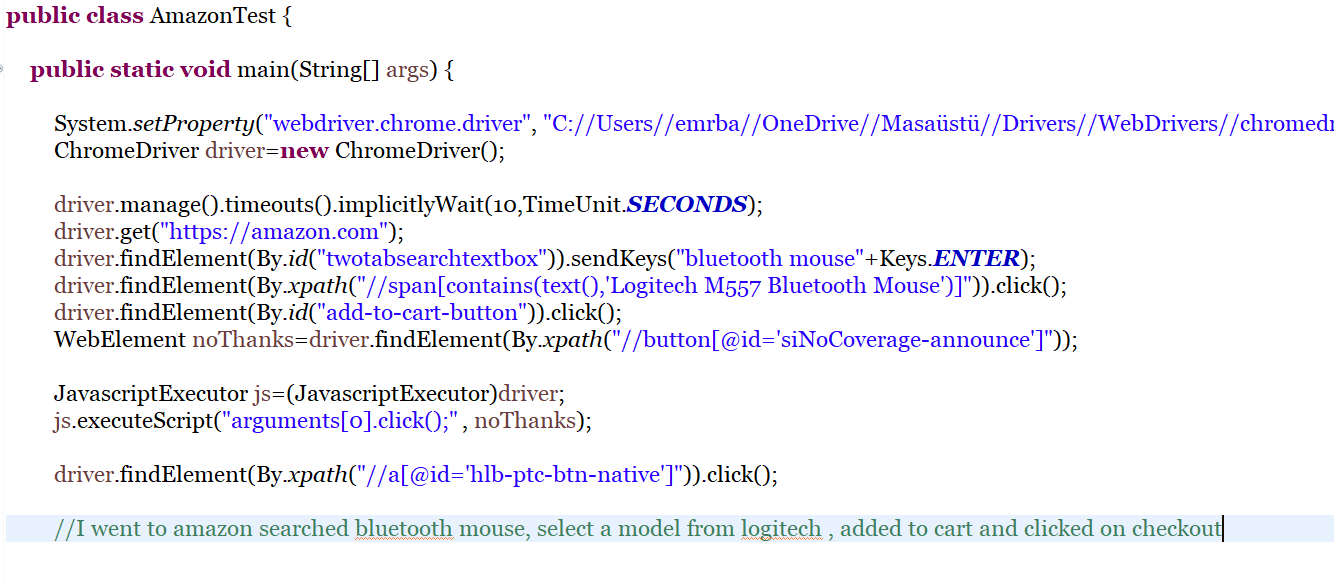
1. **Write a Java program that takes a number as input and prints its multiplication table upto 10.**



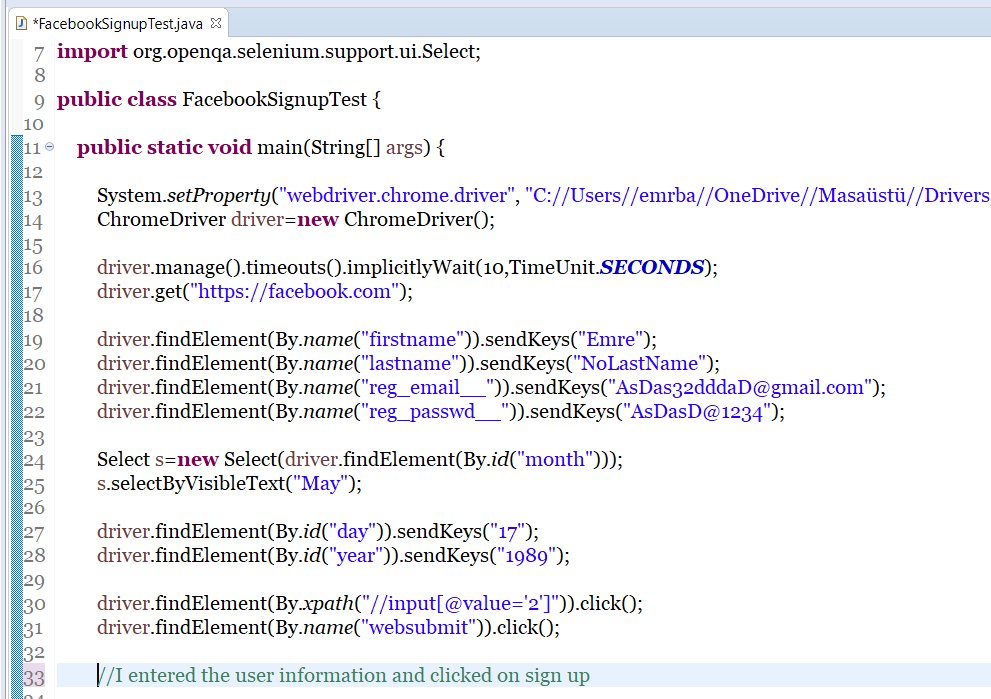
1. **SELENIUM**

**Now using above tools And infrastructure:**

1. **With all the above in your hand, create one app-module for (Amazon.com) and add more test cases besides given below.**

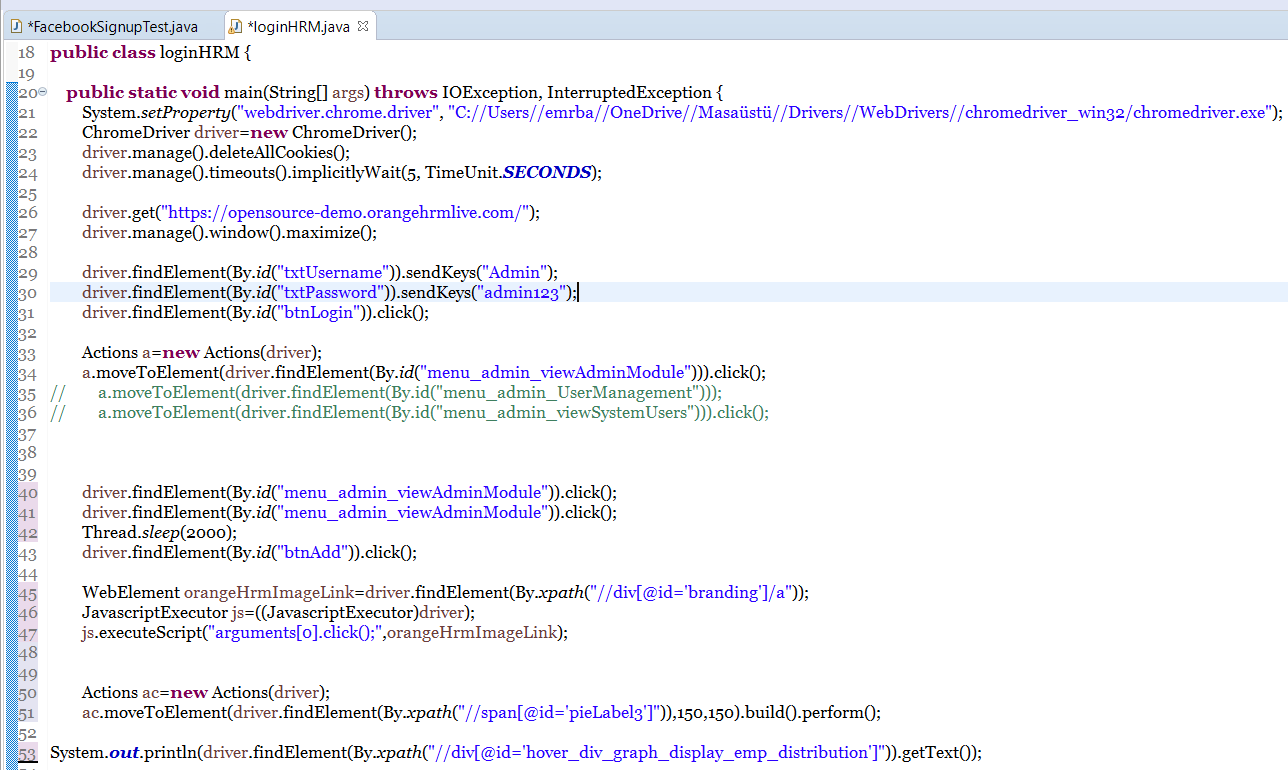


**2) Create another app-module for (Facebook.com), then import into the Framework. Please add as many test cases as possible besides given below.**



1. **Create another app-module for the (Cigna.com) and add test cases as you can think of besides given below.**

* No Cigna account so I did orangeHRM



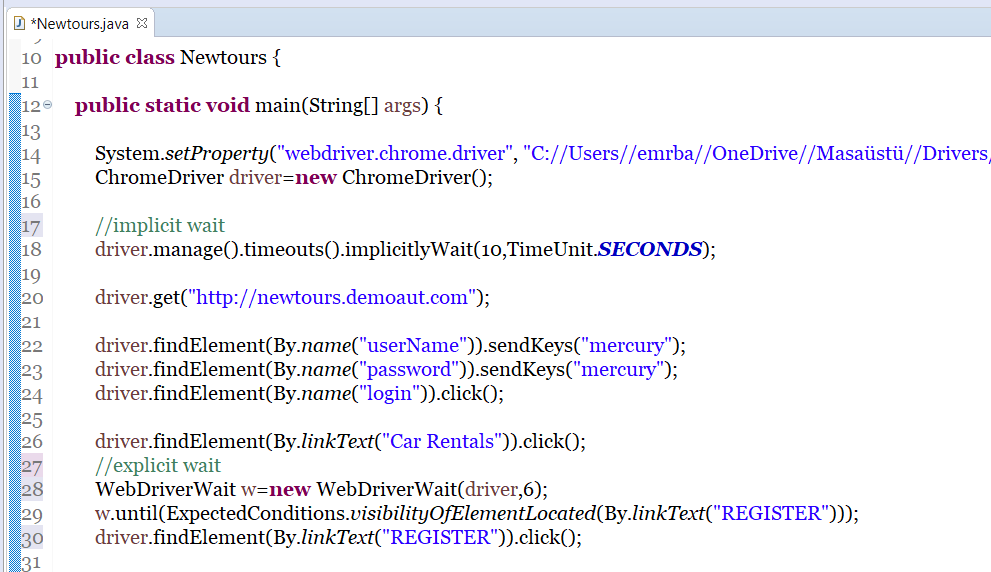
1. **Create another app-module (Citibank.com), and add test cases as you can think of besides given below.**

**For security purposes it blocks**

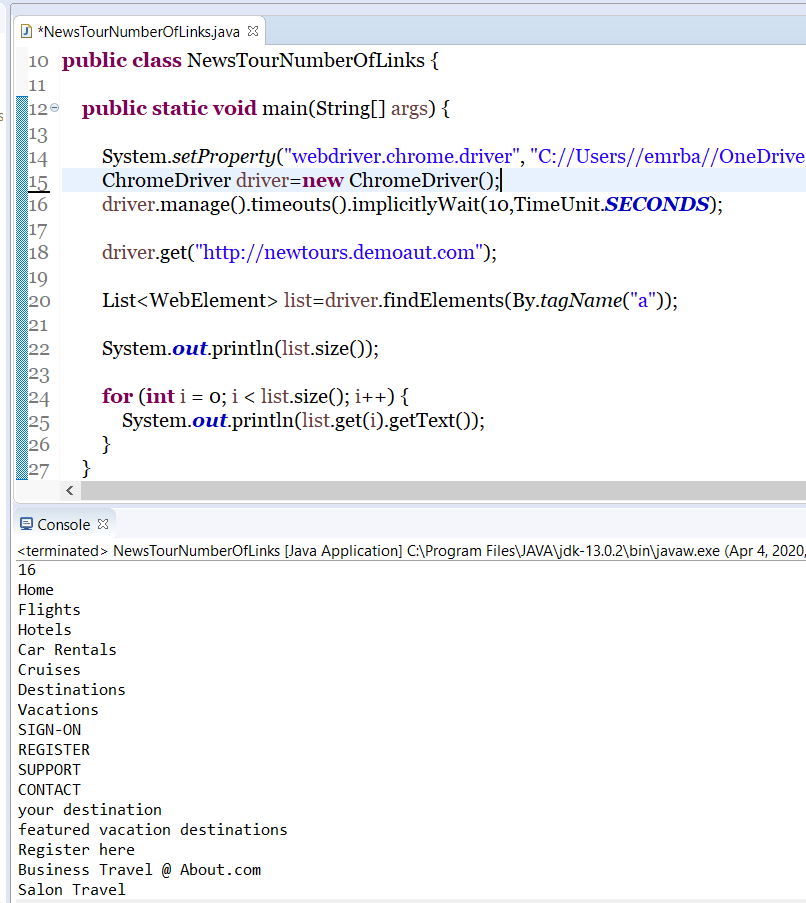


1. **What is the difference between “implicit and Explicit Wait” Create a program and invoke Chrome Browser. Go to the page “**<http://newtours.demoaut.com/>”

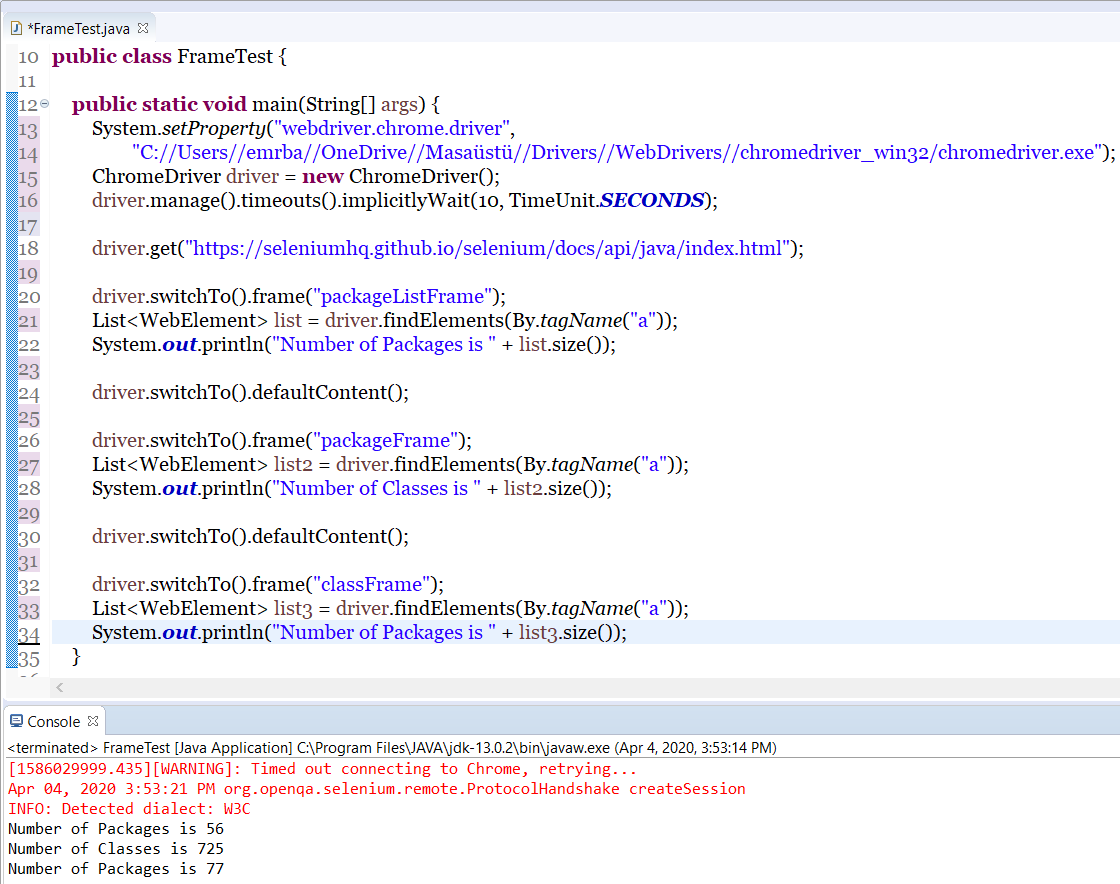
**And enter implicit wait time and then create a second program to enter Explicit wait time. While entering “User Name” as “mercury” and “Password “ also as “mercury”. And then click on the Sign-in button.**



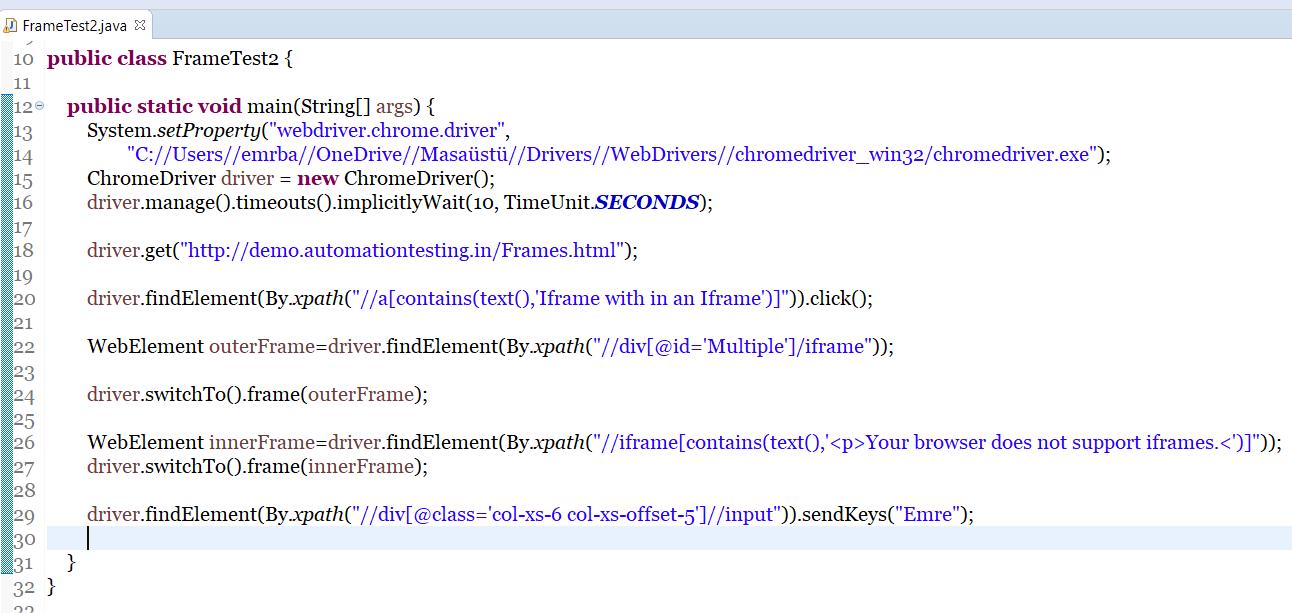
1. **Create a program where you find total number of links on a page and print those links as well. Invoke Chrome browser this time and enter URL as “**<http://newtours.demoaut.com/>”



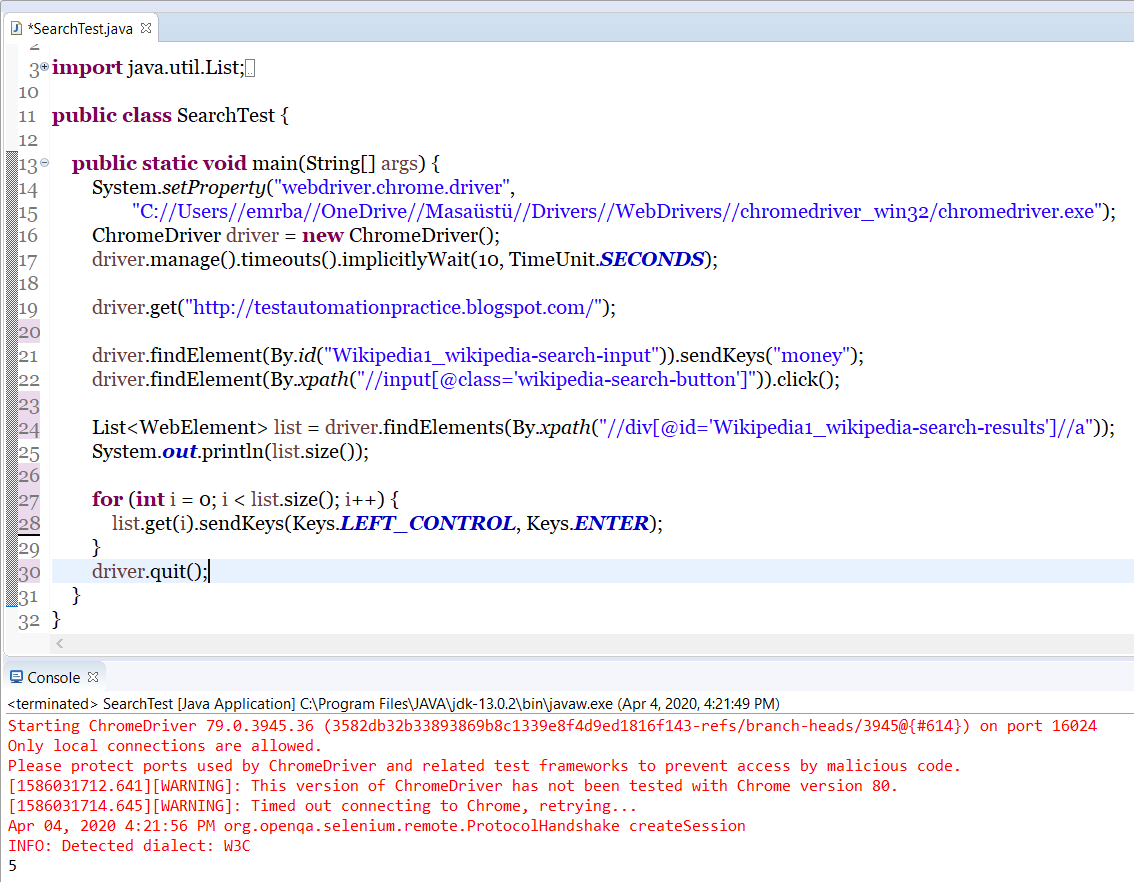
1. **Enter URL “**<https://seleniumhq.github.io/selenium/docs/api/java/index.html>**”in Chrome and test the frames. I-e package, class, tree, deprecated.**



1. **In Chrome Browser enter URL “**<http://demo.automationtesting.in/Frames.html>”

**Switch from outer frame to inner frame and enter your name in the edit box**

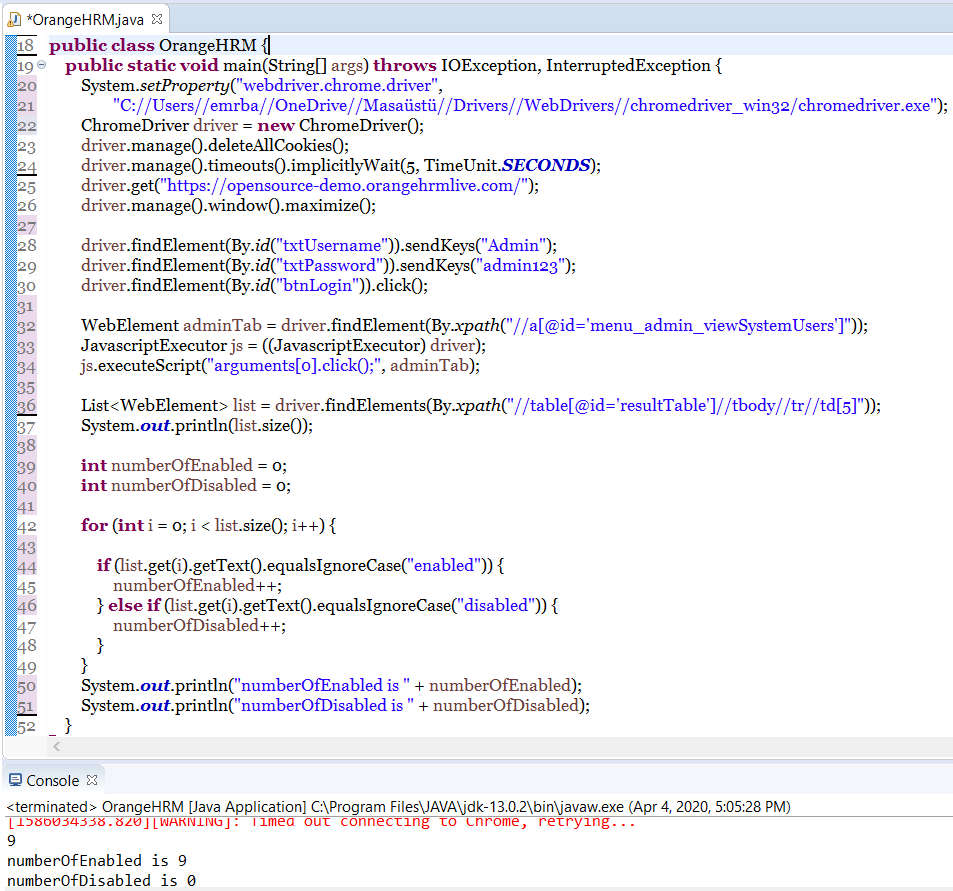
1. **Enter URL “**<http://testautomationpractice.blogspot.com/>**”and in the search button enter your name and click search button. Print out the total number of search results. Also click on every search result and open in a new window and in the end close them all with one command.**



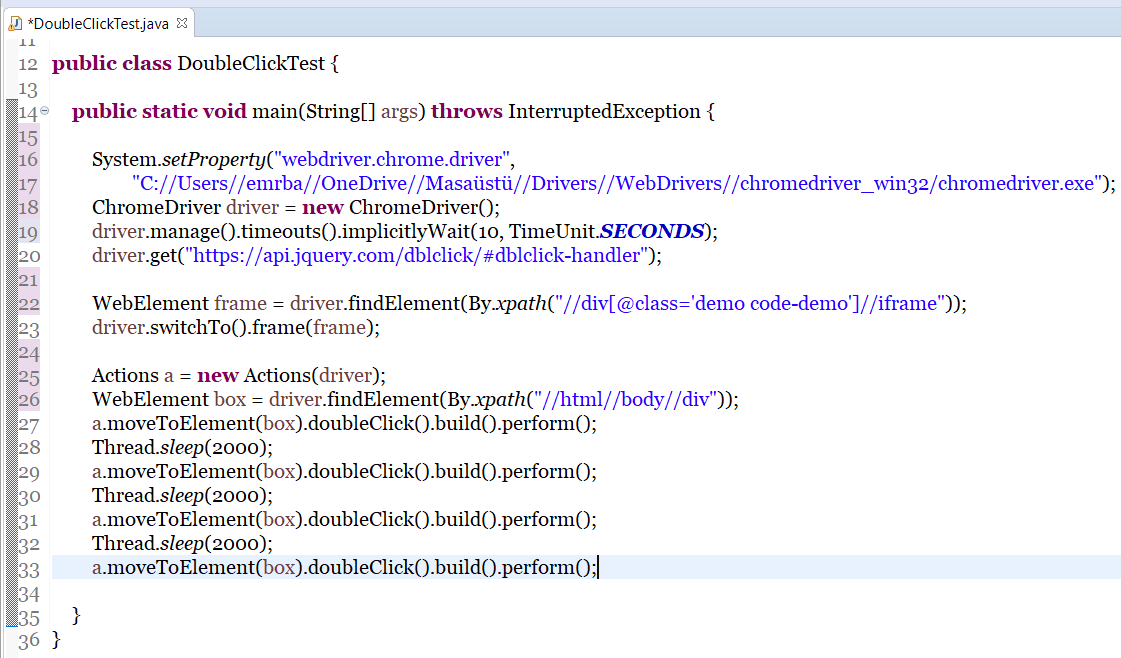
1. **Find out active and inactive employees. Enter URL**

[**https://opensource-demo.orangehrmlive.com/**](https://opensource-demo.orangehrmlive.com/)

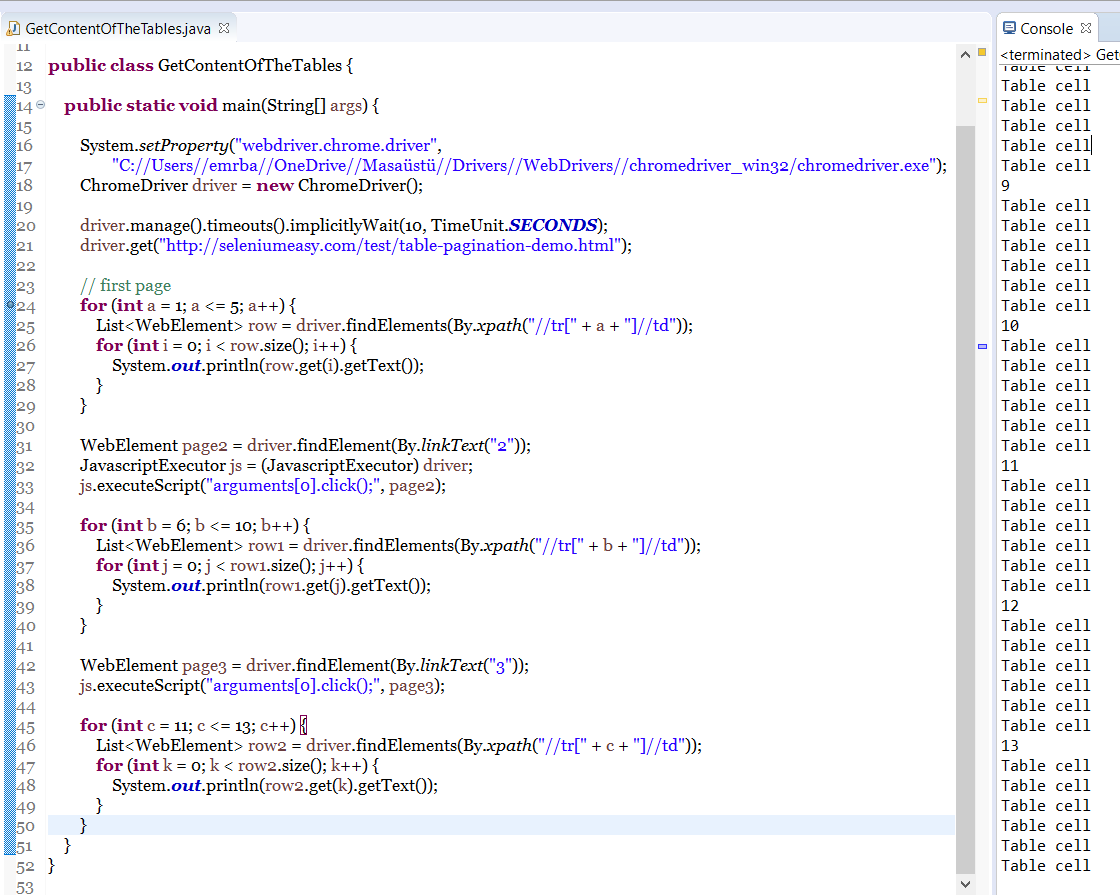
**in Chrome and MAXIMIZE windows. Enter Admin as user name and “admin123” as password. Click on Admin on the next page and then click on User Management then Users. After that find out how many employees are there in the table. Also how many active and inactive employees are there.**



1. **Double click Action. Enter URL “**<https://api.jquery.com/dblclick/#dblclick-handler>**” in Chrome Driver and find Xpath for double click the block at the bottom of the page. Double Click it at least 4 times to change colors.**

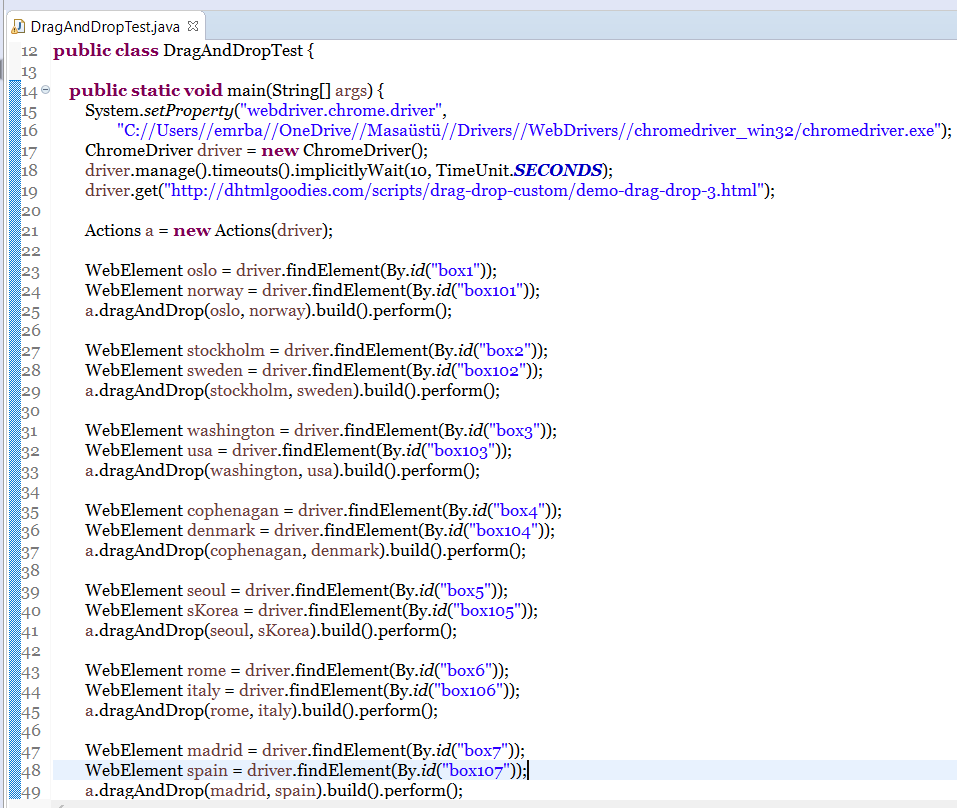


1. **Create a testcase where you get the content of an entire table and on every single page. Using Chrome driver enter URL as** [**http://seleniumeasy.com/test/table-pagination-demo.html**](http://seleniumeasy.com/test/table-pagination-demo.html)

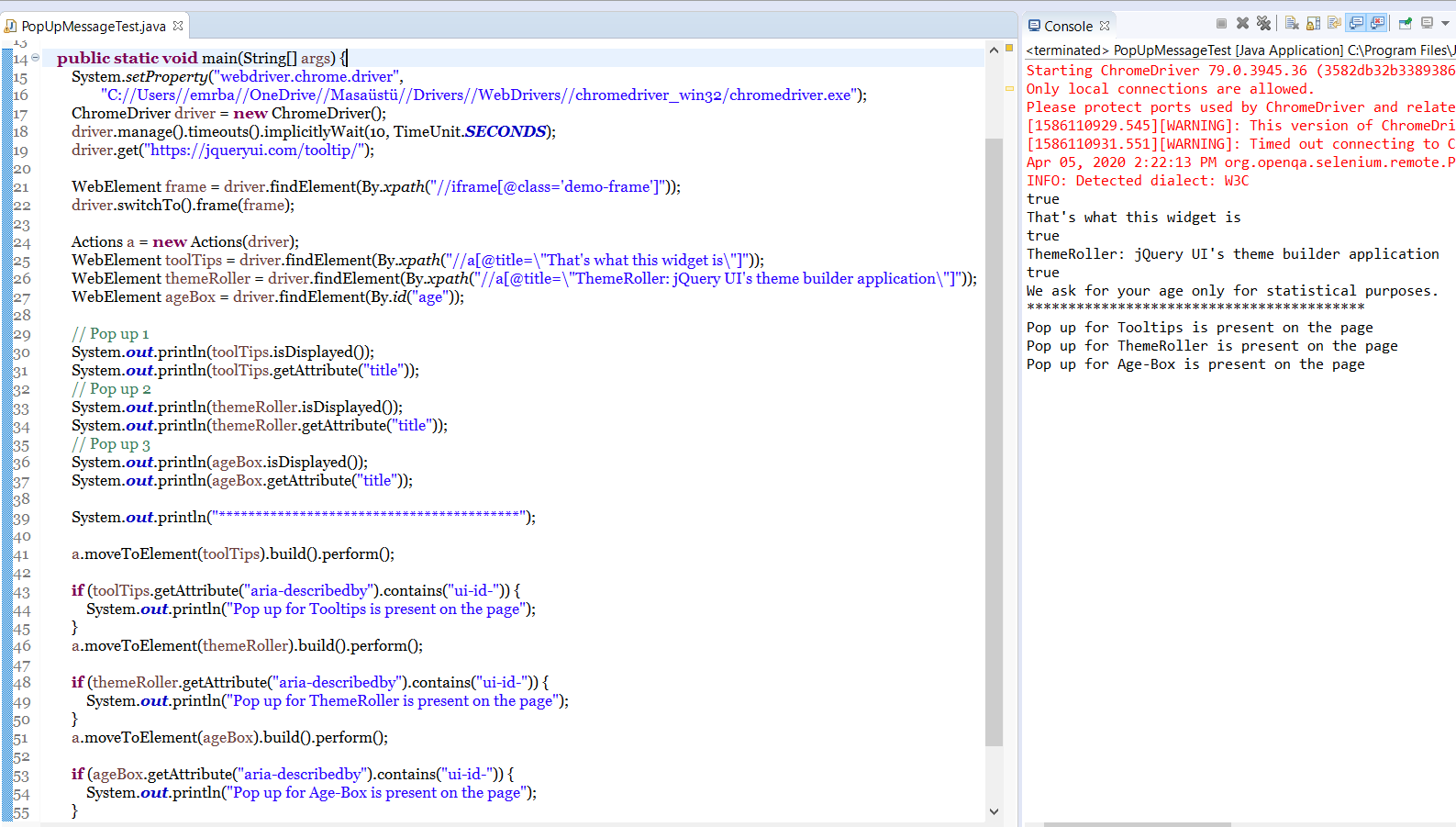


1. **Drag and Drop action:**

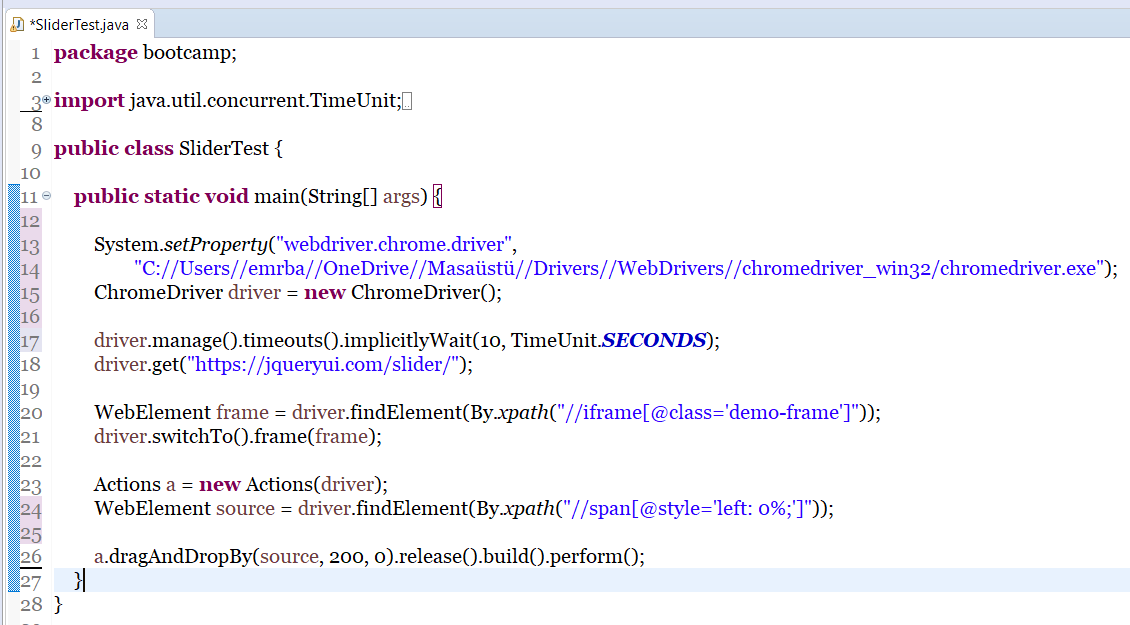
**Write a test case for drag and drop actions using chrome driver. Enter URL “** [**http://dhtmlgoodies.com/scripts/drag-drop-custom/demo-drag-drop-3.html**](http://dhtmlgoodies.com/scripts/drag-drop-custom/demo-drag-drop-3.html)**”. Match the capitals to their countries.**



1. **Write down a test case to verify the text popped on an edit box. Use if/else statement to verify the popped message. Enter** [**https://jqueryui.com/tooltip/**](https://jqueryui.com/tooltip/) **using chrome browser**



1. **Write a test case to check if the slider functionality is working or not. Enter URL** [**https://jqueryui.com/slider/**](https://jqueryui.com/slider/)



1. **SOAPUI**
2. **What are four important features of SOAPUI?**

·         4 **Important Features of SoapUI** Pro.

·         **Feature** #**1**: Point to Click (Drag & Drop):

·         **Feature** #2: Data Driven Testing.

·         **Feature** #3: Reporting.

·         **Feature** #4: Coverage **Feature** in **SoapUI** Pro.

1. **What languages does SOAPUI Support?**

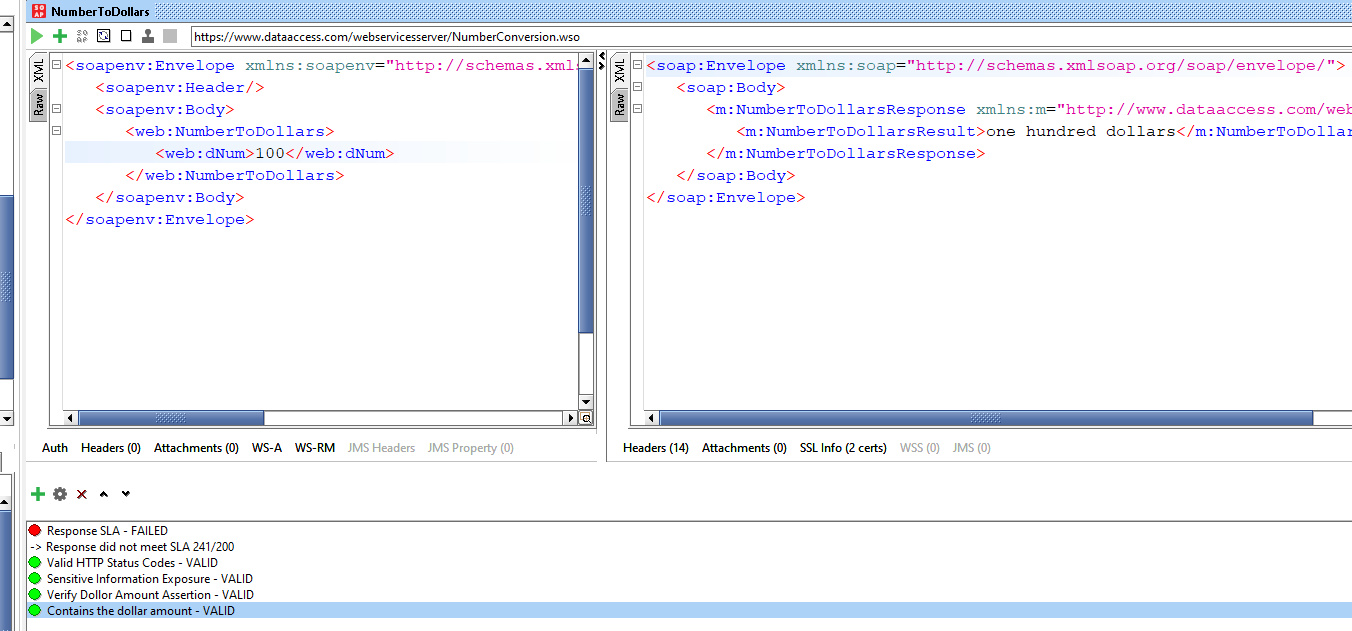
SOAP UI supports two language, Groovy and JavaScript.

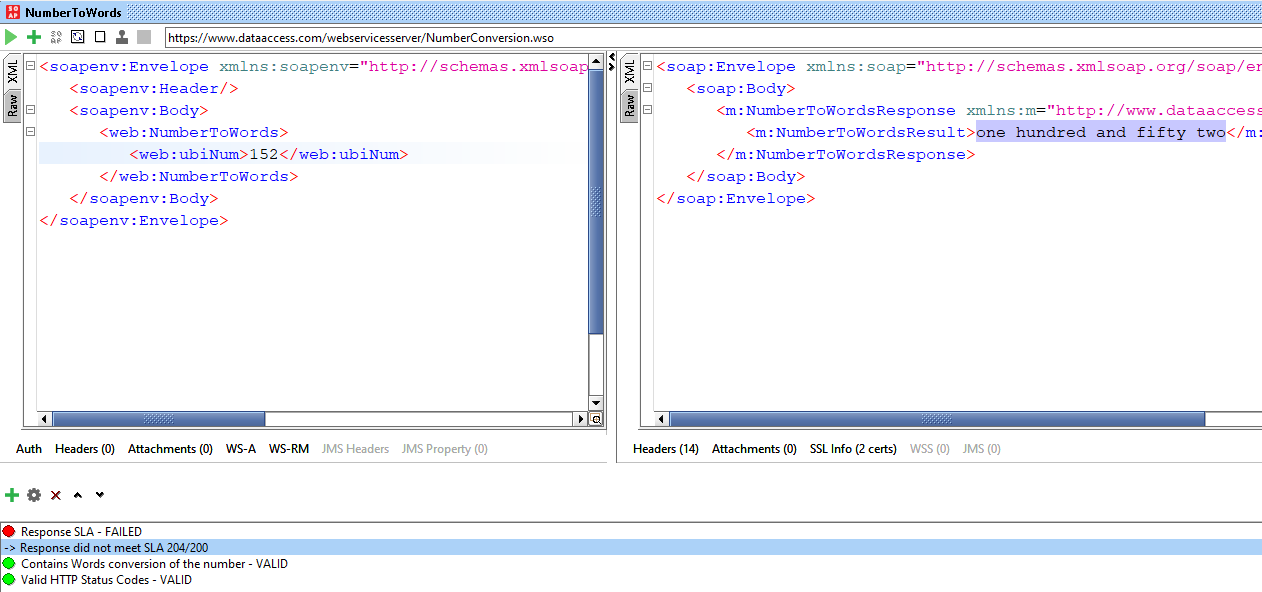
1. **Create a new SOAP Project. Enter following website inside the initial WSDL**

[**https://www.dataaccess.com/webservicesserver/NumberConversion.wso?WSDL**](https://www.dataaccess.com/webservicesserver/NumberConversion.wso?WSDL)

* **Create a Test Suite.**
* **Run test inside the TestCase for both Numbers to dollars and numbers to words**
* **Add an assertion by pasting the value in “Contains Assertion”**
* **Record the Response time.**
* **Manually fail one assertion**
* **Execute testcases in sequence and parallel**
* **Generate Documentation (report)**

**Take a few screen shots of number conversion APIs**





1. **Why do we use assertions?**

In SOAP UI assertion functionality is used to validate the response of request received by the Test Steps at the time of execution.  It is used to compare a part of message to some expected value.

Assertion types in SOAPUI includes

* Simple contains
* Schema compliance
* Simple not contains
* Soap Faults
* Response SLA
* XPath Match
* XQuery Match
* WS security status
* Script Assertion
* WS- Addressing Request or Response Assertion

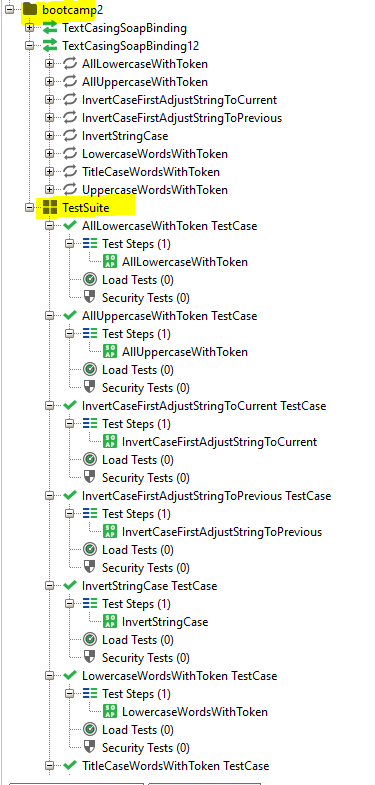
1. **Is SOAPUI used for front End Testing or Back End Testing? Explain your answer.**

API is strictly speaking not the back-end but since we are grouping everything that is not visible to the end-user as the back-end. It is back end testing.

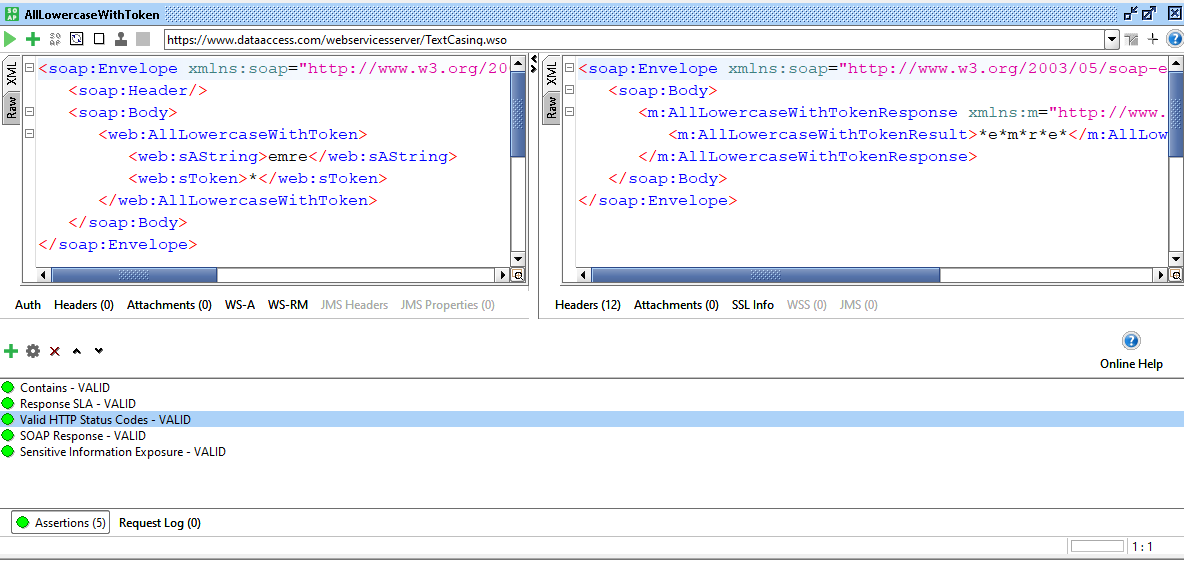
1. **Using SOAPUI Create SOAP Project with the following URL**

<https://www.dataaccess.com/webservicesserver/TextCasing.wso?WSDL>

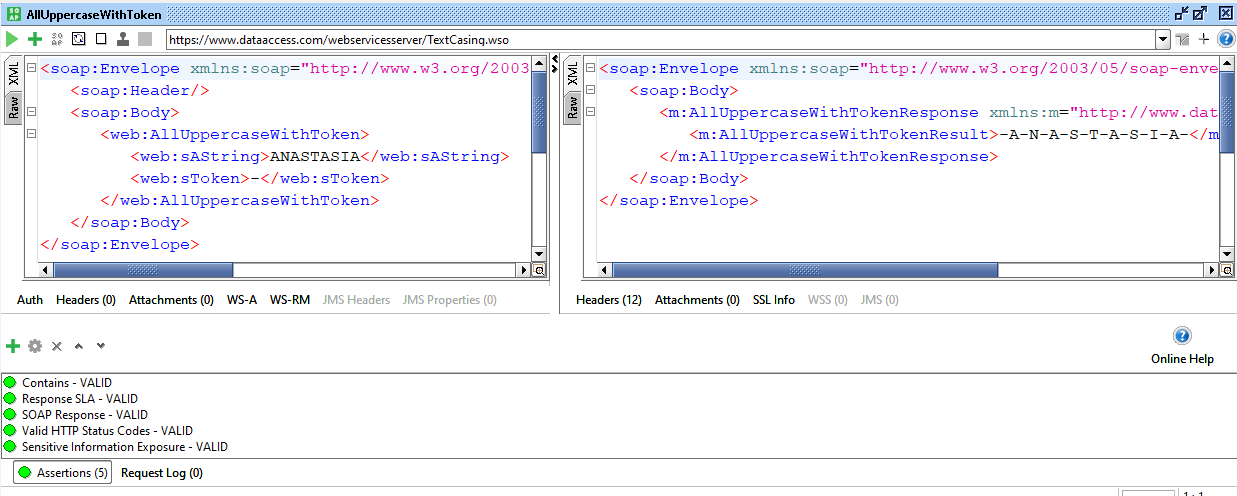
**Repeat all the steps from Question 3 except create two different types of TestCases 1- one testcase for each type of operation and single**



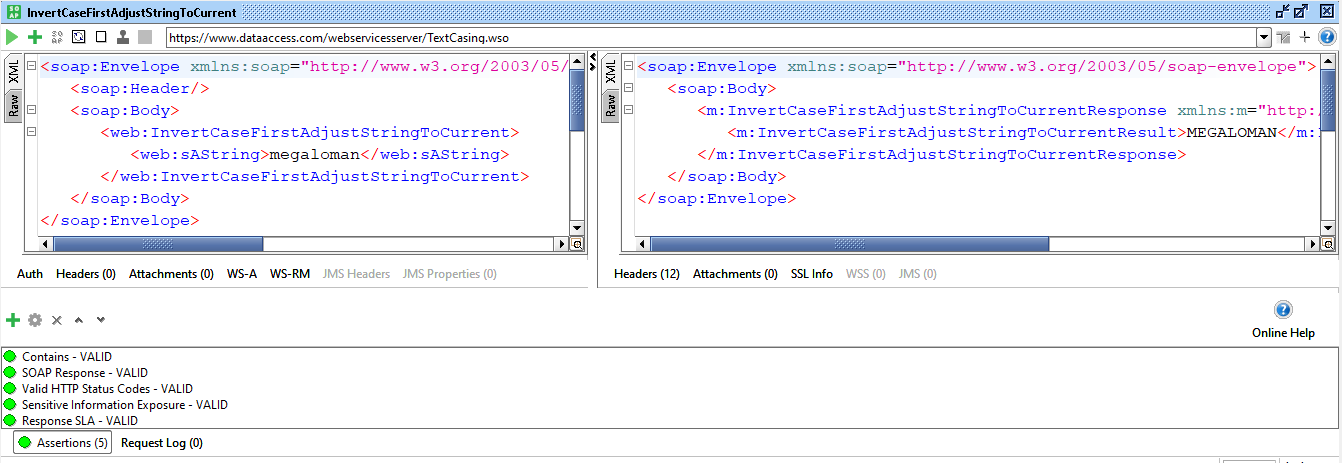
**1-**



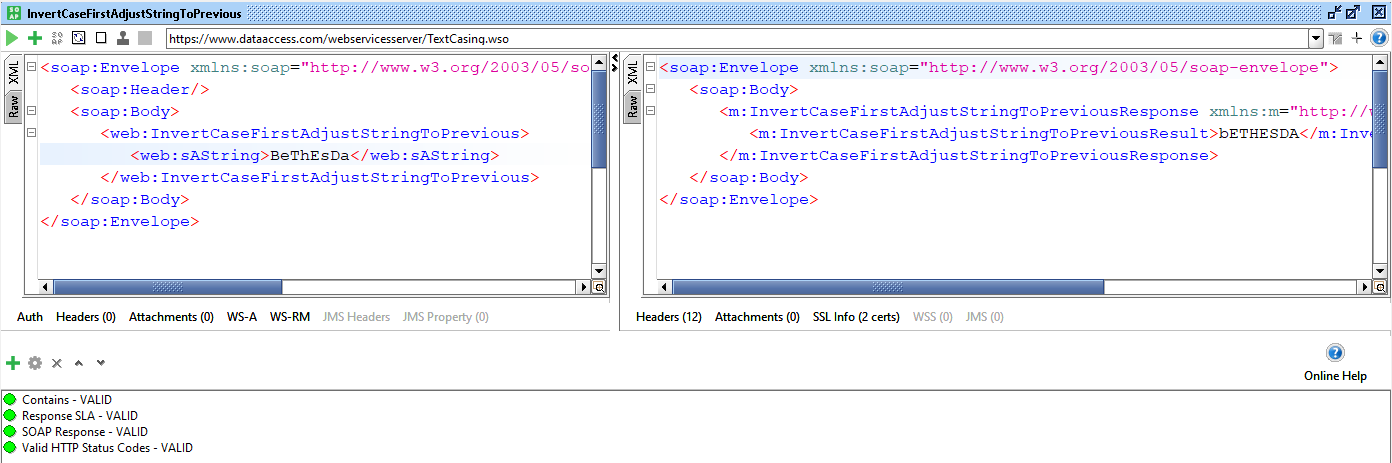
2-



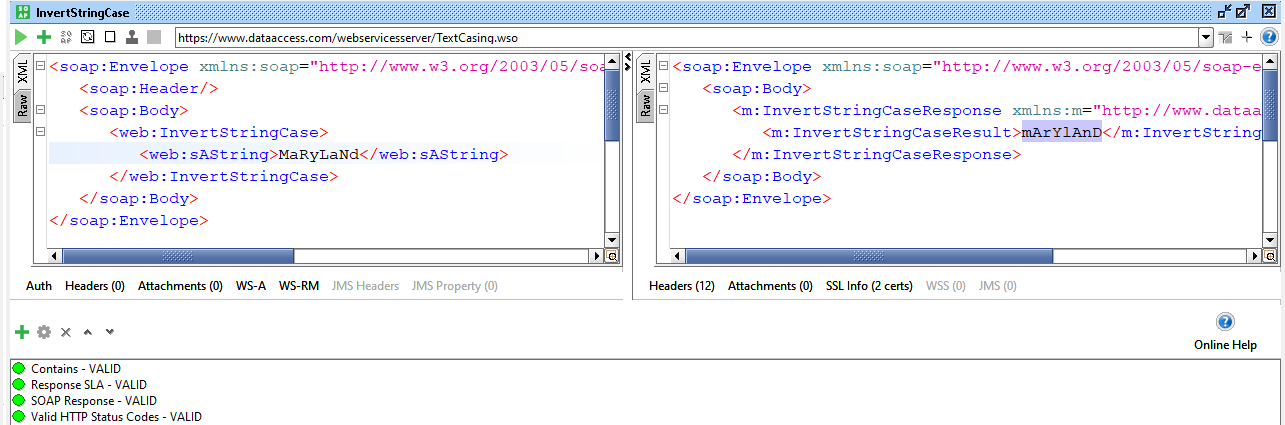
3-



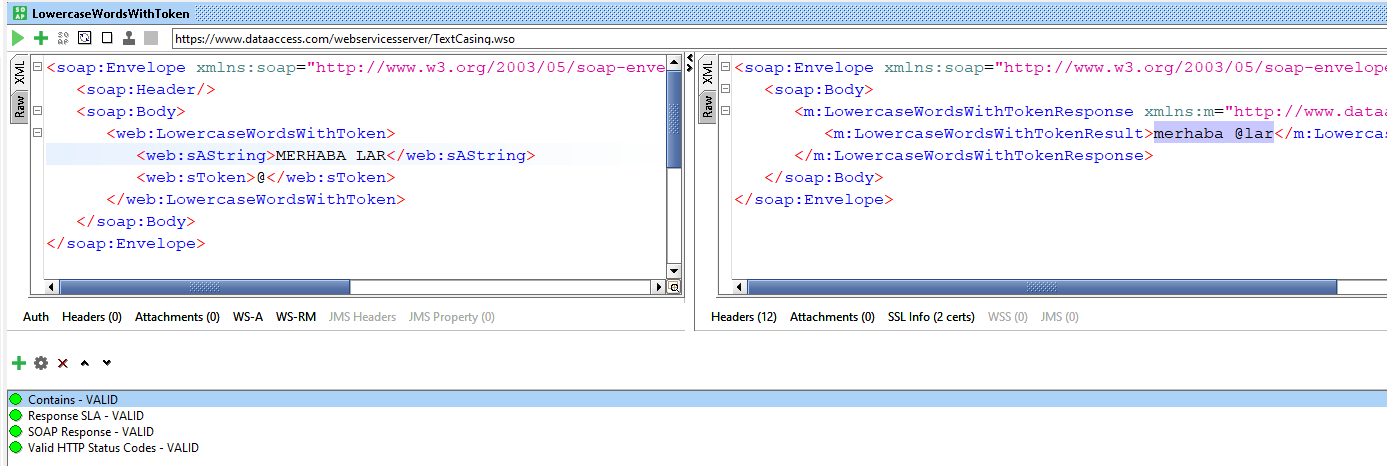
4-



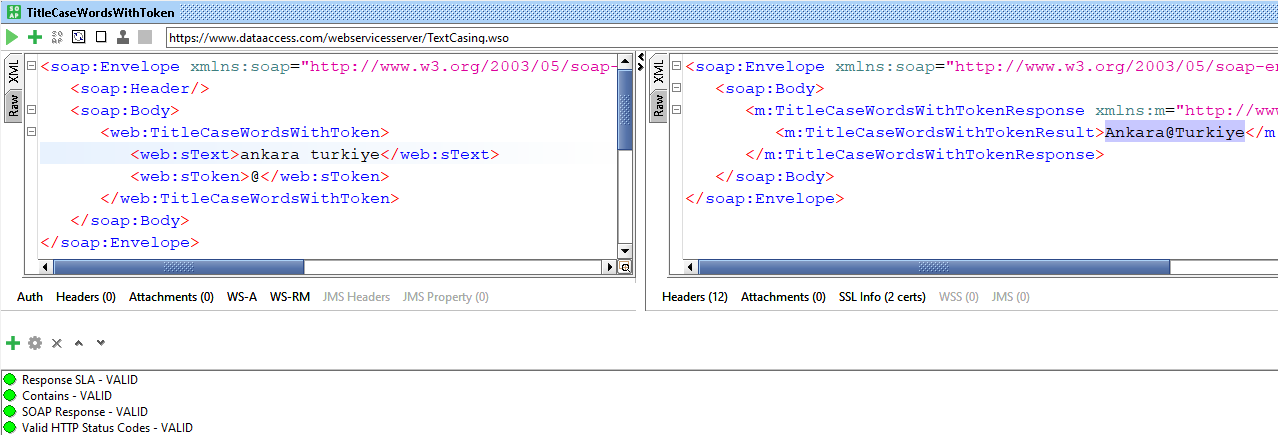
5-



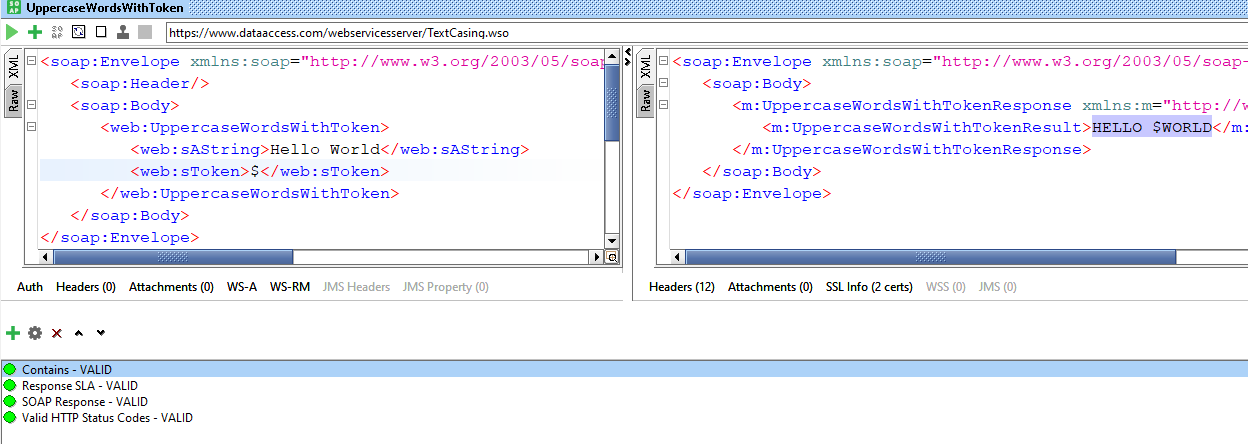
6-



7-



8-



1. **POSTMAN**
2. **What are the important features of testing in Postman?**

Postman helps you to be more efficient while working with APIs. You can build, test, and document your APIs faster, and share your work with other developers. It is much more handy and easier to use than Fiddler and SoapUI.

1. **As tester will we be using real time production data or testing on mock data?**

**Write down status code, failure response or success response in the following cases.**

1. **Create a collection in Postman called “APICollectionBootCamp” and the create requests and add them to the above collection**
2. **Create a GET request with URL** [**https://reqres.in/api/users?page=2**](https://reqres.in/api/users?page=2) **. Create two new GET requests with different values as 3 and 5 and save these GET Requests to APICollectionBootCamp**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **TCID** | **ENDPOINT** | **HTTP METHOD TYPE** | **URI** | **BODY** | **SUCCESS RESPONSE** | **FAILURE RESPONSE** | **STATUS CODE** |
| **1** | [https://reqres.in](https://reqres.in/) | GET | <https://reqres.in/api/users?page=2> | NA | Returns list of users in a page | NA | 200 |
| **2** | [https://reqres.in](https://reqres.in/) | GET | <https://reqres.in/api/users/2> | NA | Returns single user | NA | 200 |
| **3** | [https://reqres.in](https://reqres.in/) | POST | <https://reqres.in/api/users> | {  "name": "morpheus",  "job": "leader" } | {  "name": "morpheus",  "job": "leader",  "id": "256",  "createdAt": "2018-07-07T05:43:53.310Z" } | NA | 201 |
| **4** | [https://reqres.in](https://reqres.in/) | POST | <https://reqres.in/api/login> | {  "email": "peter@klaven",  "password": "cityslicka" } | {  "token": "QpwL5tke4Pnpja7X" } | NA | 200 |
| **5** | [https://reqres.in](https://reqres.in/) | POST | <https://reqres.in/api/login> | {  "email": "peter@klaven" } | NA | {  "error": "Missing password" } | 400 |
| **6** | <http://dummy.restapiexample.com/> | GET | <http://dummy.restapiexample.com/api/v1/employees> | NA | [{"id":"1","employee\_name":"","employee\_salary":"0","employee\_age":"0","profile\_image":""},{"id":"2","employee\_name":"","employee\_salary":"0","employee\_age":"0","profile\_image":""}] |  | 200 OK |
| **7** | <http://dummy.restapiexample.com/> | GET | <http://dummy.restapiexample.com/api/v1/employee/700> | na | {"id":"700","employee\_name":"%26lt%3bSCRIPT%20a%3d%60%26gt%3b%60%20SRC%3d%5c%22http%26#58%3b%2f%2fha%26#46%3bckers%26#46%3borg%2fxss%26#46%3bjs%5c%22%26gt%3b%26lt%3b%2fSCRIPT%26gt%3b","employee\_salary":"123","employee\_age":"33","profile\_image":""} |  | 200 |
| **8** | <http://dummy.restapiexample.com/> | POST | <http://dummy.restapiexample.com/api/v1/create> | {"name":"test","salary":"123","age":"23"} | {"name":"test","salary":"123","age":"23","id":"719"} |  | 200 |
| **9** | <http://dummy.restapiexample.com/> | PUT | <http://dummy.restapiexample.com/api/v1/update/21> | {"name":"test1","salary":"1123","age":"23"} | {"name":"test1","salary":"1123","age":"23"} |  | 200 |
| **10** | <http://dummy.restapiexample.com/> | DELETE | <http://dummy.restapiexample.com/api/v1/delete/700> |  | {"success":{"text":"successfully! deleted Records"}} |  | 200 |

1. **Create a POST request and save it to a new folder inside the above collection. Use following data**

**URL “** [**https://reqres.in/api/login**](https://reqres.in/api/login)**”**

**Body “{**

**"email": "peter@klaven",**

**"password": "cityslicka"**

**}”**

**Status code 200**

1. **Extra Points: Use following table and create all the requests in the table with the data given.**

**PART 6: CORE JAVA**

* + 1. **What are different types of methods in java?**

Java has three different types of methods. Programmer can develop any type of method depending on the scenario.  
  
**1. Static methods:** A static method is a method that can be called and executed without creating an object. In general, static methods are used to create instance methods.  
  
Static method can be invoked directly via class name i.e.; we don't have to create an object for a class in order to initiate static method.  
**2. Instance methods:**These methods act upon the instance variables of a class. Instance methods are classified into two types  
  
**a. Accessor methods:**These are the methods which read the instance variables i.e.; just go access the instance variables data. Generally these methods are named by prefixing with "get".  
  
**b. Mutator method:** These are the methods, which not only read the instance variables but also modify the data. Generally these methods are named by prefixing with "set".

**3. Factory methods:**A factory method is a method that returns an object to the class to which it belongs. All factory methods are static methods.

* + 1. **What is Inheritance in Java and explain the different levels of Inheritance?**

Inheritance is basically getting an existing class and changing or adding new fields or methods and creating new class with EXTENDS keyword. So, it saves time compare to rewriting from scratch also it avoids code duplication (copy pasting same code to a new file).

Your existing class is SuperClass and the one you just inherited, changed, your new class is SubClass.

One thing to remember constructors are not inherited if you need them you need to rewrite them. Also, if you have a FINAL Class you cannot inherit from final classes.

* + 1. **What is the difference between Abstract Class and Interface?**

An interface is a completely "**abstract class**" that is used to group related methods with empty bodies.

Any class that implements an interface agrees to implement all the methods of the interface.

Abstract class is similar to interface, only difference with abstract class is that after creating an object for the abstract class we don’t have to implement all the methods.

* + 1. **Explain runtime Polymorphism and compile time Polymorphism?**

**COMPILE TIME POLYMORPHISM**

Polymorphism that is resolved during compiler time is known as static polymorphism. Method overloading is an example of compile time polymorphism.  
**Method Overloading**: This allows us to have more than one method having the same name, if the parameters of methods are different in number, sequence and data types of parameters.

Method overloading is one of the way java supports static polymorphism. If, we have two definitions of the same method add() which add method would be called is determined by the parameter list at the compile time. That is the reason this is also known as compile time polymorphism.

**RUNTIME POLYMORPHISM**

It is also known as Dynamic Method Dispatch. Dynamic polymorphism is a process in which a call to an overridden method is resolved at runtime, thats why it is called runtime polymorphism.

When an overridden method is called through a reference of parent class, then type of the object determines which method is to be executed. Thus, this determination is made at run time.  
Since both the classes, child class and parent class have the same method

Which version of the method(child class or parent class) will be called is determined at runtime by JVM.

* + 1. **What are exceptions in Java and how we handle exceptions?**

An Exception is a run-time error which interrupts the normal flow of program execution. Disruption during the execution of the program is referred as error or exception. Exception Handler is a set of code that handles an exception. Exceptions can be handled in Java using try & catch.

* + 1. **What are primitive and non-primitive data-types?**

A primitive data type is pre-defined by the programming language. The size and type of variable values are specified, and it has no additional methods.

* [**boolean** data type](https://www.edureka.co/blog/data-types-in-java/#booleandatatype)
* [**byte** data type](https://www.edureka.co/blog/data-types-in-java/#bytedatatype)
* [**char** data type](https://www.edureka.co/blog/data-types-in-java/#chardatatype)
* [**short** data type](https://www.edureka.co/blog/data-types-in-java/#shortdatatype)
* [**int** data type](https://www.edureka.co/blog/data-types-in-java/#intdatatype)
* [**long** data type](https://www.edureka.co/blog/data-types-in-java/#longdatatype)
* [**float** data type](https://www.edureka.co/blog/data-types-in-java/#floatdatatype)
* [**double** data type](https://www.edureka.co/blog/data-types-in-java/#doubledatatype)

The non-primitive Java data types are created by the programmer during the coding process, they are known as the “reference variables” or “object variables” as they refer to a location where data is stored.

* + 1. **What are two-dimensional arrays?**

Multidimensional Arrays can be defined in simple words as array of arrays. The 2D array is organized as matrices which can be represented as the collection of rows and columns. However, 2D arrays are created to implement a relational database lookalike data structure.

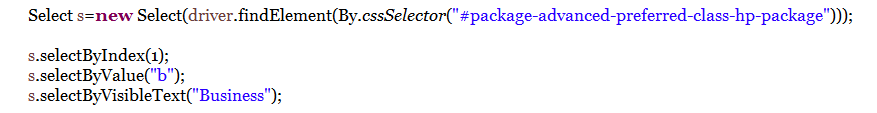
**PART 7: SELENIUM**

1. **Using Selenium work on the following demo website and create a single end to end comprehensive Testcase that includes testing the following**

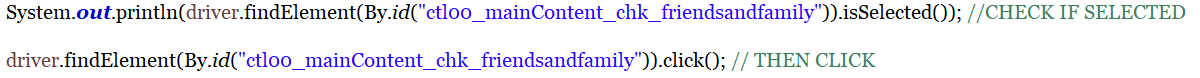
* **Radio Button**



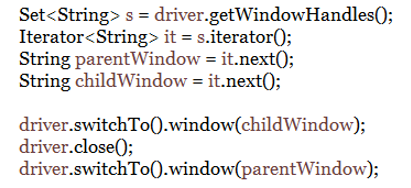
* **Select class**



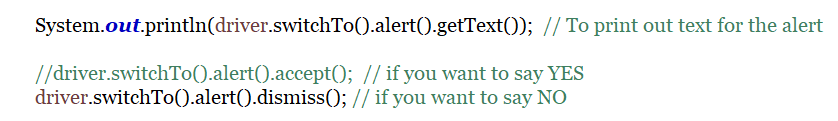
* **CheckBox**



* **Switch Window-Switch Tab**



* **Switch to Alert Box**



1. **What is Automation Lifecycle? Explain stages of Automation Lifecycle.**

* **Determining the Scope of Test Automation**
* **Selecting the Right Automation Tool**
* **Test Plan, Design and Strategy**
* **Setting Up the Test Environment**
* **Automation Test Script Execution**
* **Analysis + Generation of Test Results & Test Reports**

1. **What is Implicit Wait and Explicit Wait in Selenium? Write the Syntax for each .**

**Implicit Wait**

**Driver.manage().timeouts().implicitlywait(10,TimeUnit.SECONDS);**

* 1. Defines the wait time globally
  2. So, WAIT applies to the entire test case
  3. If you define 5 seconds implicit wait and your browser took 2 seconds to load, it will not wait until the 5 second is up.
  4. As soon as page is ready it will come out of wait and do the next action.
  5. It will only throw exception if page is not loaded in 5 seconds.

**Explicit Wait**

WebDriverWait w=**new** WebDriverWait(driver,8);

w.until(ExpectedConditions.*visibilityOfElementLocated*(By.*xpath*("xpathOfElement")));

Defines the wait time for specific Scenario/WebElement where page takes longer to load.

1. **What is Page Factory and why we use it?**

Selenium Page Factory Pattern is like an extension to [Page Object Model](http://www.seleniumeasy.com/selenium-tutorials/page-object-model-framework-introduction), but Page Factory is much enhanced model. Factory class can be used to make using Page Objects simpler and easier. We use [Page Factory pattern](https://selenium.googlecode.com/git/docs/api/java/org/openqa/selenium/support/PageFactory.html) to initialize web elements which are defined in Page Objects.

We should initialize page objects using initElements() method from PageFactory Class as below, Once we call initElements() method, all elements will get initialized. PageFactory.initElements() static method takes the driver instance of the given class and the class type, and returns a Page Object with its fields fully initialized

1. **Differentiate between Absolute and Relative X-Path, what are various types of relative x-path?**

Absolute Xpath: It uses Complete path from the Root Element to the desire element.

Relative Xpath: You can simply start by referencing the element you want and go from there.

Relative Xpaths are always preferred as they are not the complete paths from the root element. (//html//body). Because in future, if any webelement is added/removed, then the absolute Xpath changes. So Always use Relative Xpaths in your Automation.

1. **How can you make sure that your x-path is locating the unique web element?**

We can make sure the xpath is locating the unique element by using extensions such as chropath and verifying your locator find the targeted element.

Also, we can use the console of the inspect window by entering:

$x(“xpath”) and verify if the targeted element is being highlighted.

1. **Explain driver.quit(), driver.close() and Thread.sleep()?**

Driver.close() 🡪to close the current page

Driver.quit() 🡪 to close all the pages that are opened by the driver

Thread.sleep()🡪 to add specified wait time to synchronize

1. **How you will handle the web element whose locators are changing with each refresh?**

We can handle dynamic WebElements :

* 1. By using contains method in the locator and including the only part that is not changing.
  2. By using attributes for the same element that are not changing
  3. We can first find the closest element with id then traverse to the target element

1. **What are different locators in Selenium?**

* **id**
* **name**
* **className**
* **tagName**
* **linkText**
* **partialLinkText**
* **xpath**
* **cssSelector**

**PART 8: WEB SERVICES**

1. **What are Web-Services?**

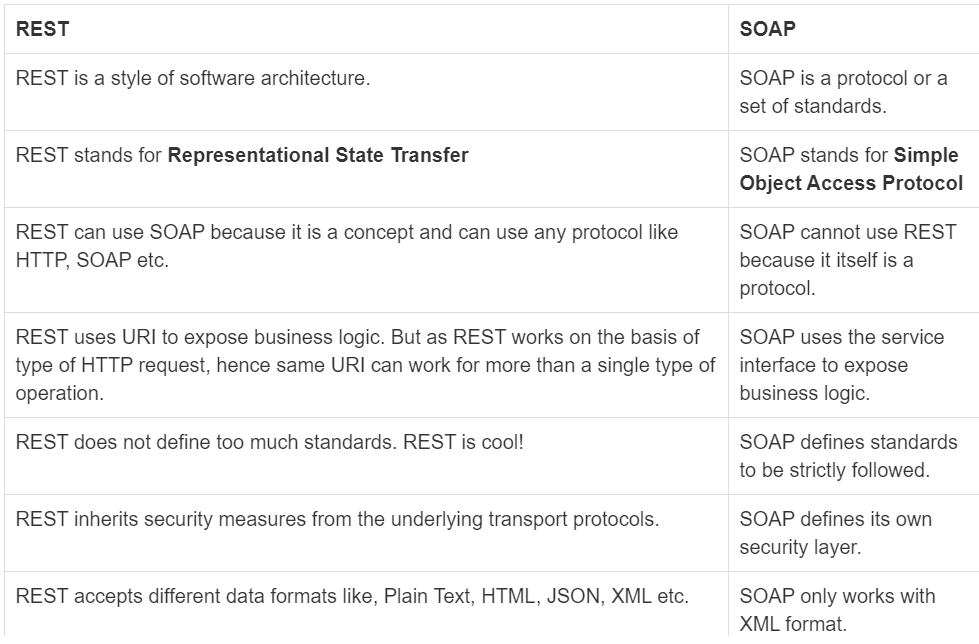
Web services are XML-based information exchange systems that use the Internet for direct application-to-application interaction. These systems can include programs, objects, messages, or documents.

A web service is a collection of open protocols and standards used for exchanging data between applications or systems. Software applications written in various programming languages and running on various platforms can use web services to exchange data over computer networks like the Internet in a manner similar to inter-process communication on a single computer. This interoperability (e.g., between Java and Python, or Windows and Linux applications) is due to the use of open standards.

1. **How many web services are there? List down their differences.**

There are two types of web services:

* SOAP Web Services
* REST Web Services

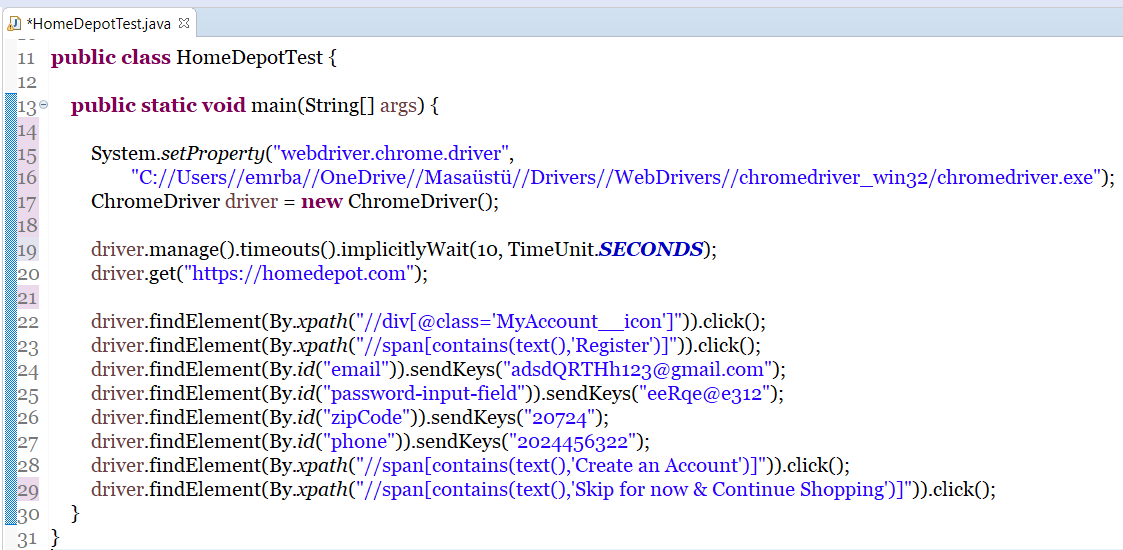


1. **What is Service Description Document? What information do you need from your team to start testing?**

**WSDL** is an XML format for describing network services as a set of endpoints operating on messages containing either **document**-oriented or procedure-oriented information. The operations and messages are described abstractly, and then bound to a concrete network protocol and message format to define an endpoint.

**PART 9: PROJECTS**

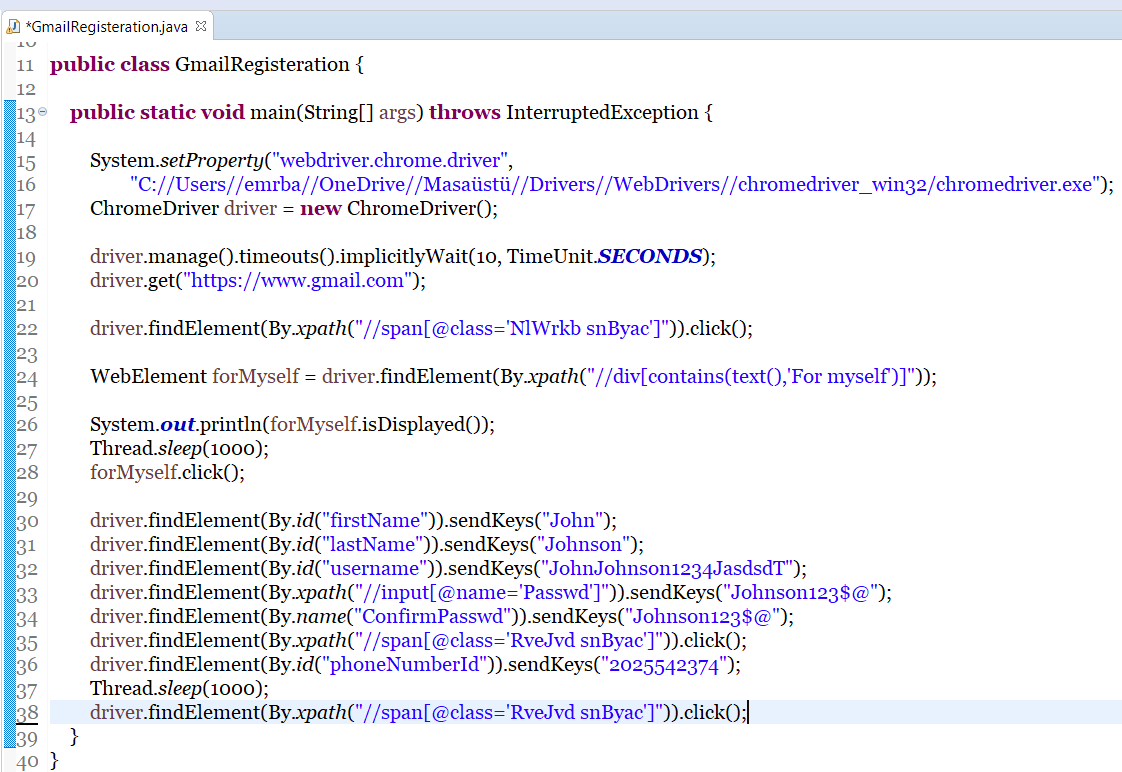
**Create a test script for registering a new account on** [**https://homedepot.com**](https://homedepot.com)



**Create a test script for registering a new account on** [**https://Facebook.com**](https://Facebook.com)

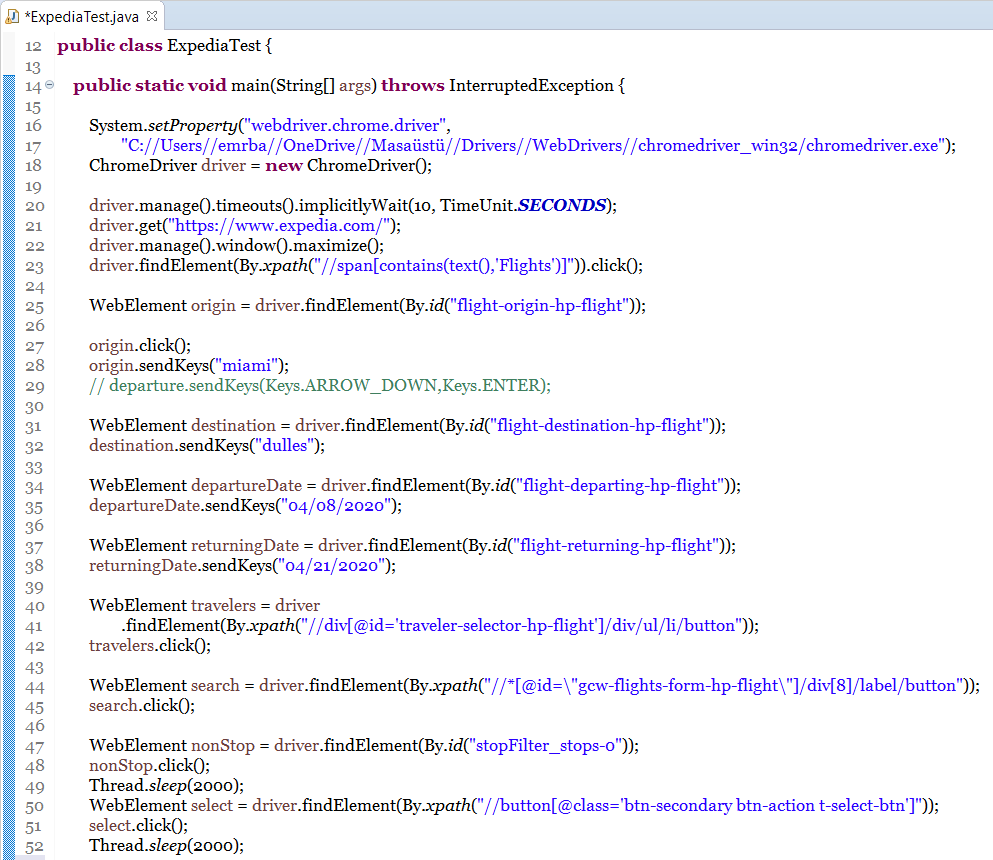


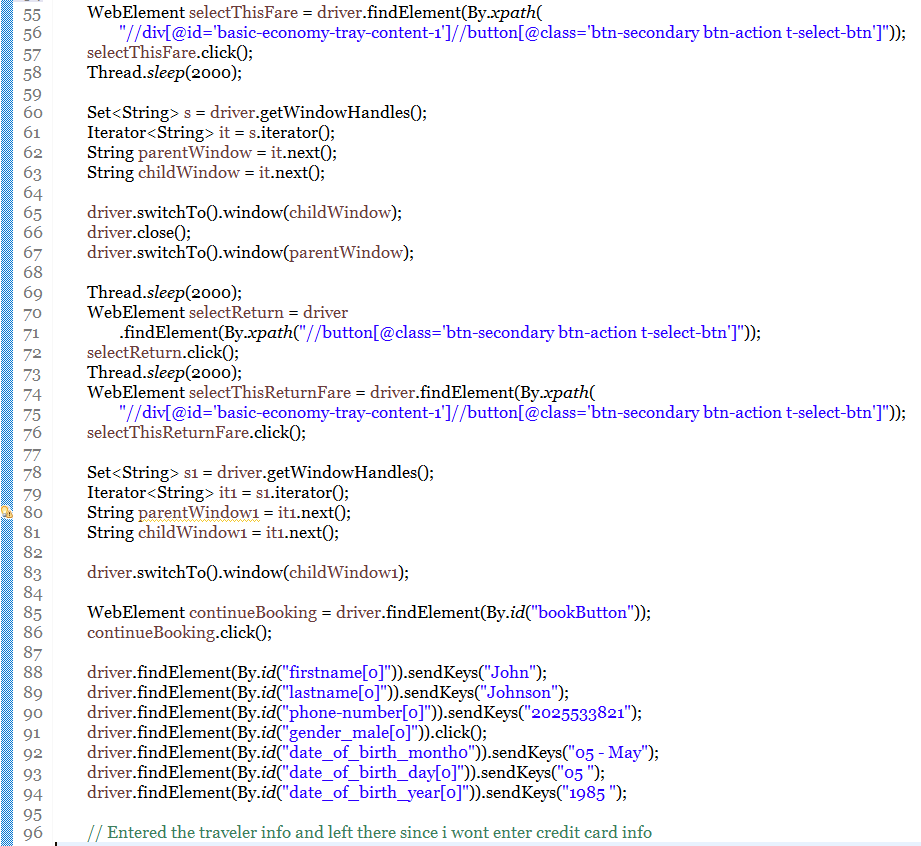
**Create a test script for registering a new account on** [**https://Gmail.com**](https://Gmail.com)



**Go to** [**https://expedia.com**](https://expedia.com) **and create a script for following steps:**

1. **Click on flights tab**
2. **Fill the form to search flight for roundtrip and click on search button**
3. **Select the flights**
4. **Click on “No thanks” for pop-up**
5. **Click on continue booking button**
6. **Fill the passenger’s information**





***\* Note: DO NOT use any personal credit card information for any exercise mentioned below.***

***\*Tip: Read each exercise completely BEFORE starting, to ensure you fully understand the requirements of each exercise.***

**SUBMISSION INSTRUCTIONS:**

**ONLY 1 EMAIL MUST BE SENT TO** https://mail.google.com/mail/u/0/images/cleardot.gifhomework@peoplentech.com

1. Create a Word file to save answers to all theoretical questions, and include screen shots where you have written any program/script.
2. Export your projects from Eclipse and save them along with the word file in a **“Zip File”**.
3. Name your Zip file as:

**“AnkurJain\_StudentID \_First Name, Last Name – Week-Day Batch Bootcamp.zip”**

1. Email the Zip file tohomework@peoplentech.com

**GRADING:**

A 90-100

A- 80-89

B+ 70-79

B 60-69

B- 50-59

C+ 40-49

C 30-39

C- 20-29

D 10-19

F 00-09