

UI Test Automation using Selenium WebDriver

Presented By:

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Selenium WebDriver



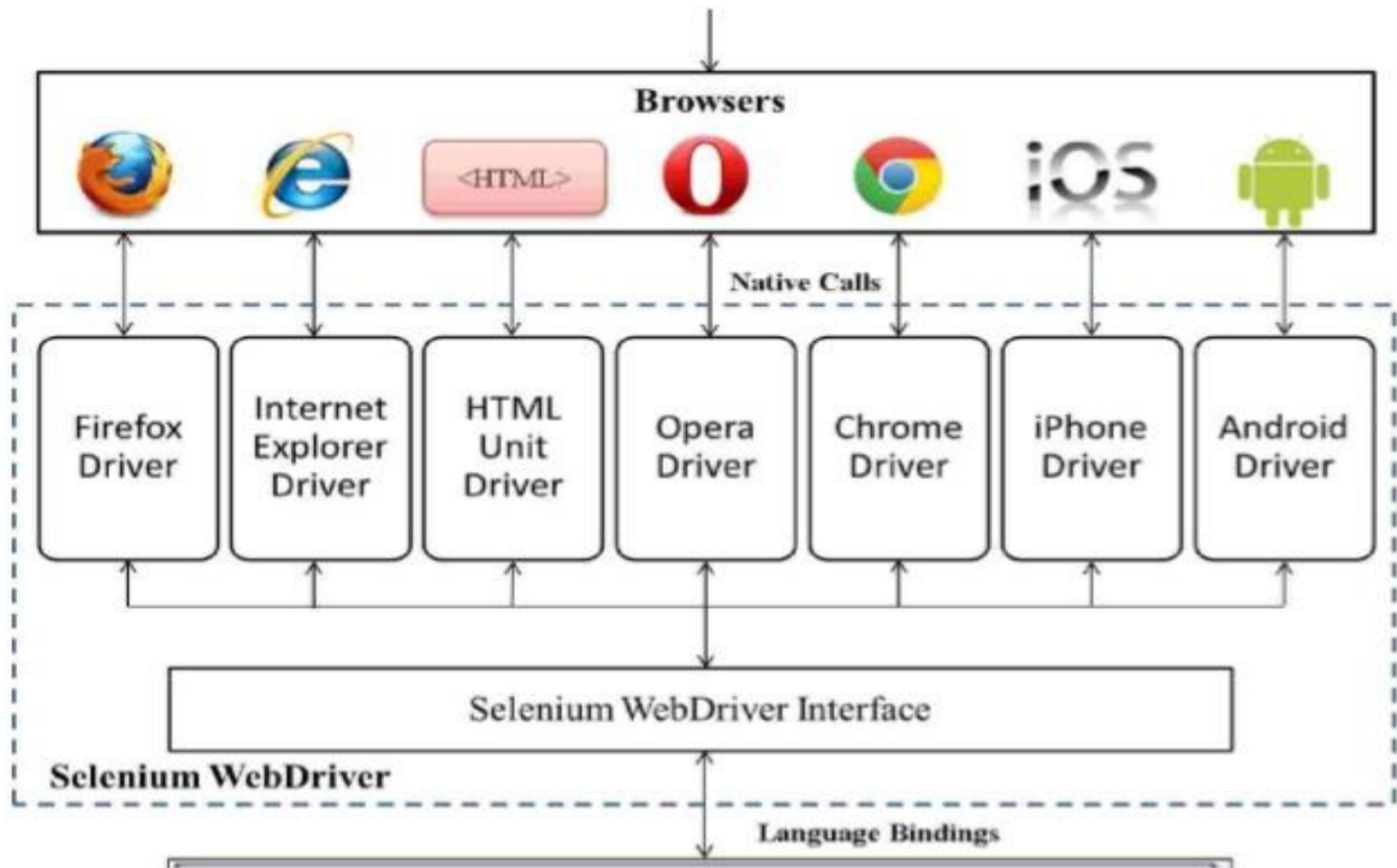
- A tool for automate web application testing - to verify that all the functions are working as expected
- Object oriented and friendly API - make a test easier to read and maintain
- Support multiple programming language - Java, C#, Python, Ruby, PHP, Perl...

Selenium WebDriver Supports...



Architecture of WebDriver

(WebDriver Interface and Implementing Class)



Methods & Locators

Methods: “findElement” is a method of Webdriver interface that can identify an element in the webpage

Locators:

1. `By.id(arg)`
2. `By.name(String)`
3. `By.xpath(String xpathExpression)`
4. `By.cssSelector(String Selector)`
5. `By.linkText(String linkText)`
6. `By.partialLinkText(String linkText)`
7. `By.className(String className)`
8. `By.tagName(String Name)`

Tool for Finding Web Elements

Firebug: <http://getfirebug.com/>

← → ↻ getfirebug.com

What is Firebug?
Introduction and Features

Documentation
FAQ and Wiki

Community
Discussion forums and lists

Get Involved
Hack the code, create
extensions



Firebug

Web Development Evolved.

Install Firebug
for Firefox, 100% free and open source

[Source](#) [Firebug Lite](#) [Extensions](#)



The most popular and powerful web development tool

- ✓ Inspect HTML and modify style and layout in real-time
- ✓ Use the most advanced JavaScript debugger available for any browser
- ✓ Accurately analyze network usage and performance
- ✓ Extend Firebug and add features to make Firebug even more powerful
- ✓ Get the information you need to get it done with Firebug.

[More
Features »](#)



Introduction to Firebug

Firebug pyroentomologist Rob Campbell gives a quick introduction to Firebug.

[Watch now »](#)

[More Screencasts »](#)

UI Test for VR Website

VR: Buy train tickets online... X +

https://www.vr.fi/cs/vr/en/frontpage

Search

Most Visited Arduino Radar Project ... Getting Started PTV Sports Live Strea... Goodbye Summer Chil... Learn Finnish - words f... StudyInTurku - Opiske... 40 easy ways to make ... 50languages English U...

VR Sign in Register FI RU SV Search VR.fi

Tips and offers Timetables and routes Services Tickets Customer Service Veturi

Finland and Russia CarTrain Season and multi-tickets Multi-ticket seat booking Hotels

FROM TO

DEPARTURE 13:27 03.04.2016 Departure

GET THE PRICE AND BUY A TICKET

VETURI Login to Veturi Live train updates

€ Tips and offers Price calendar

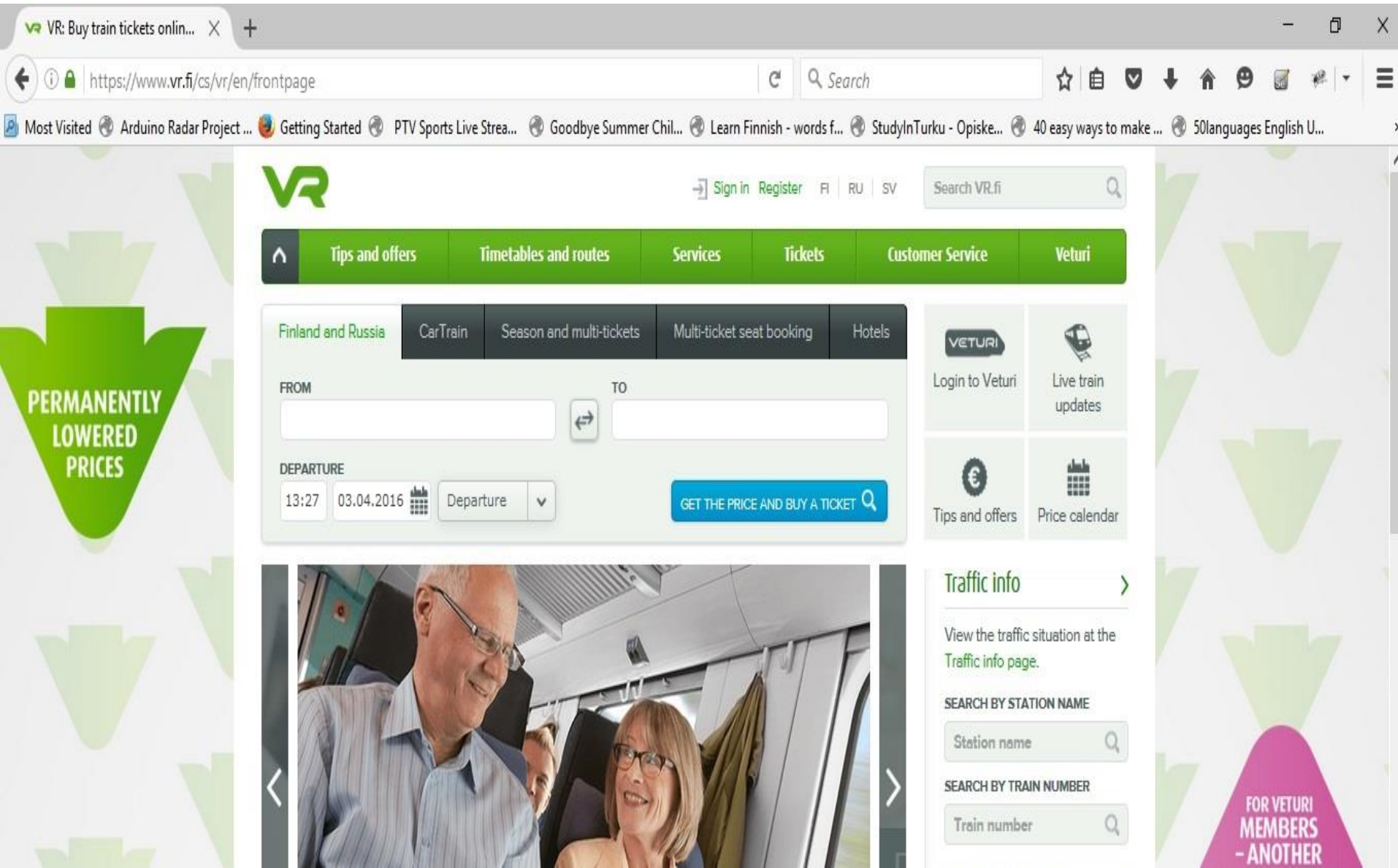
Traffic info View the traffic situation at the Traffic info page.

SEARCH BY STATION NAME Station name

SEARCH BY TRAIN NUMBER Train number

PERMANENTLY LOWERED PRICES

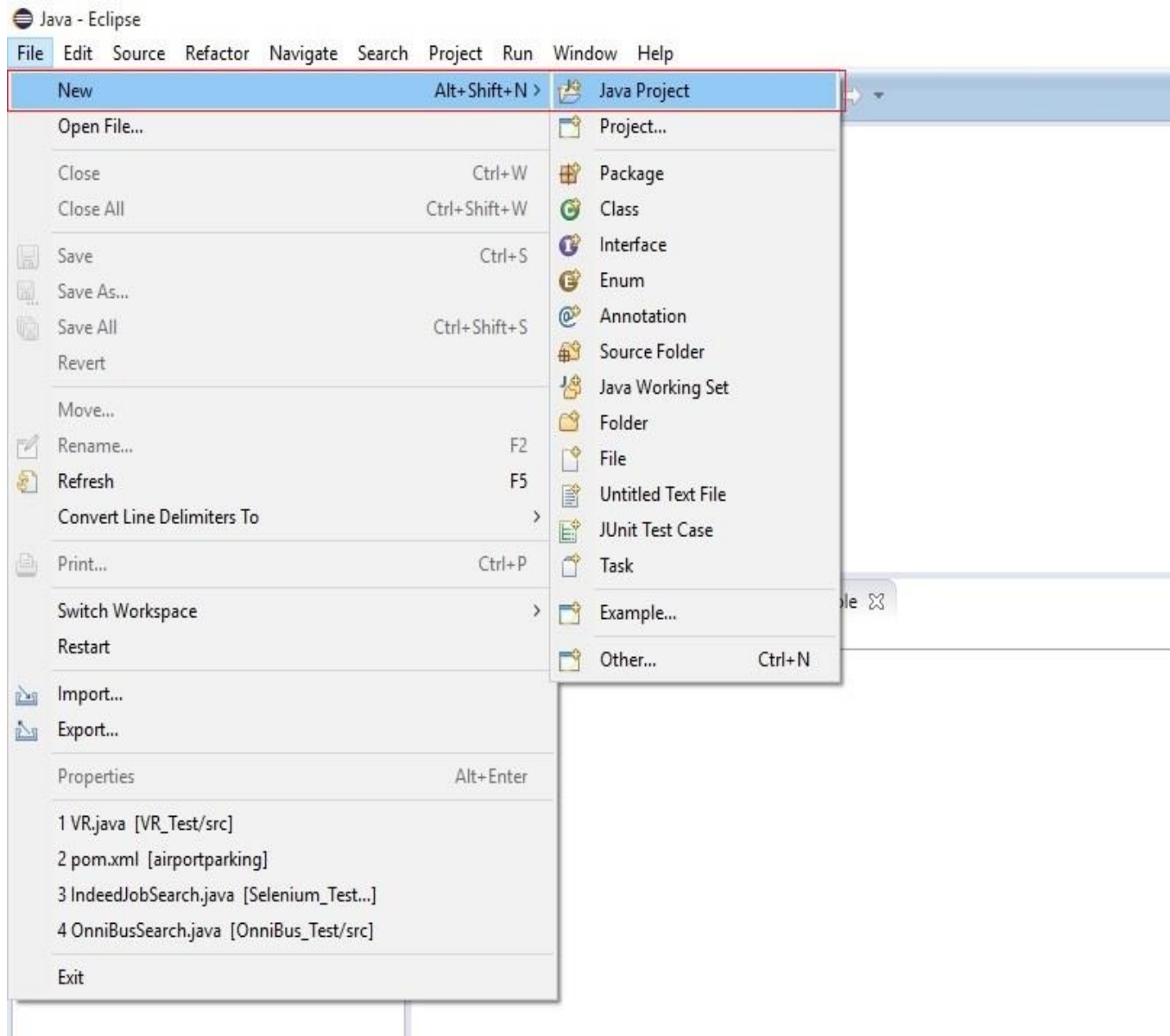
FOR VETURI MEMBERS - ANOTHER



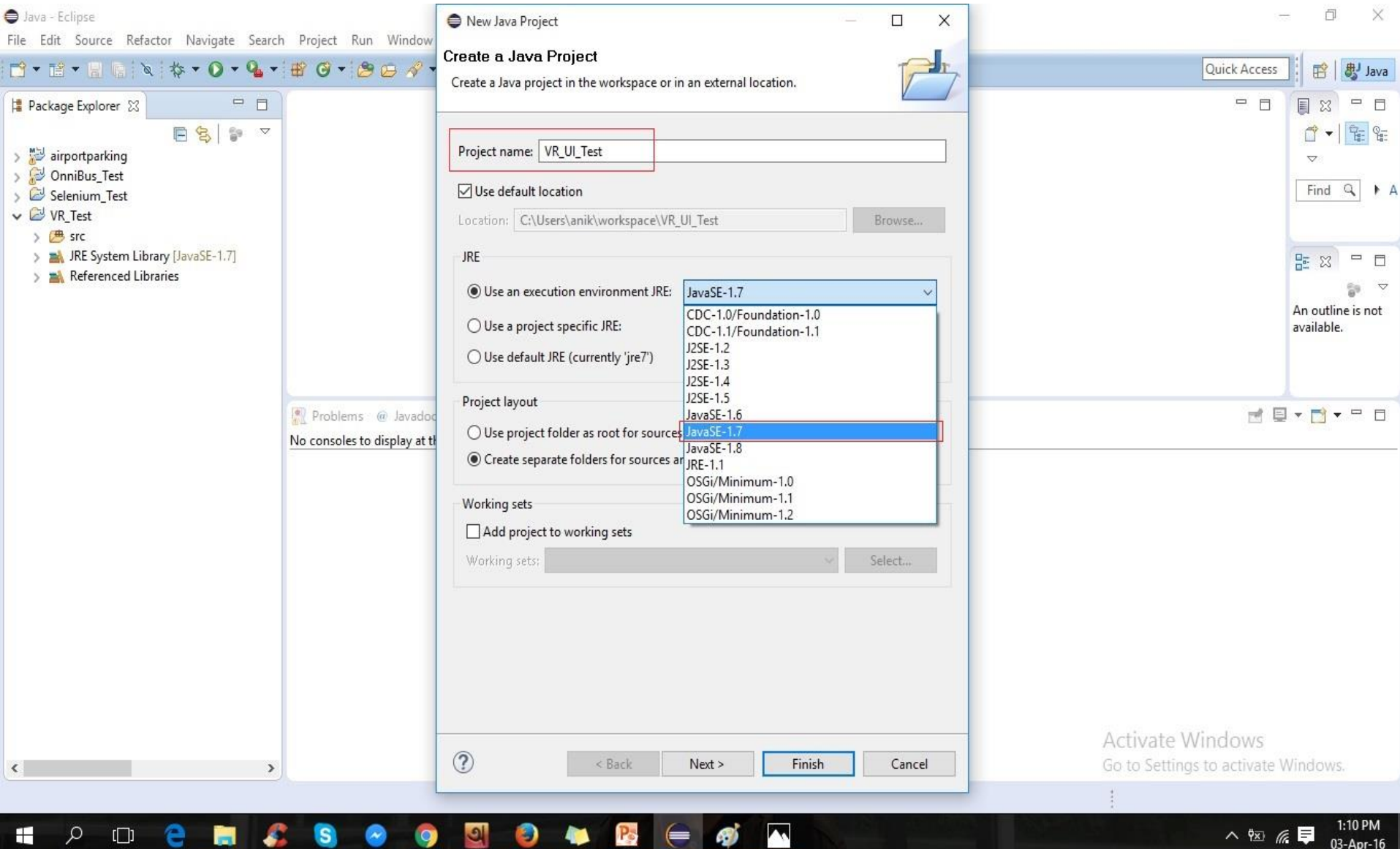
Work Flow

- ✓ Create new project for Testing
- ✓ Go to the VR site using Firefox
- ✓ Give input in “From” text box
- ✓ Give input in “To” text box
- ✓ Click on “Get the Price”
- ✓ Print the search result

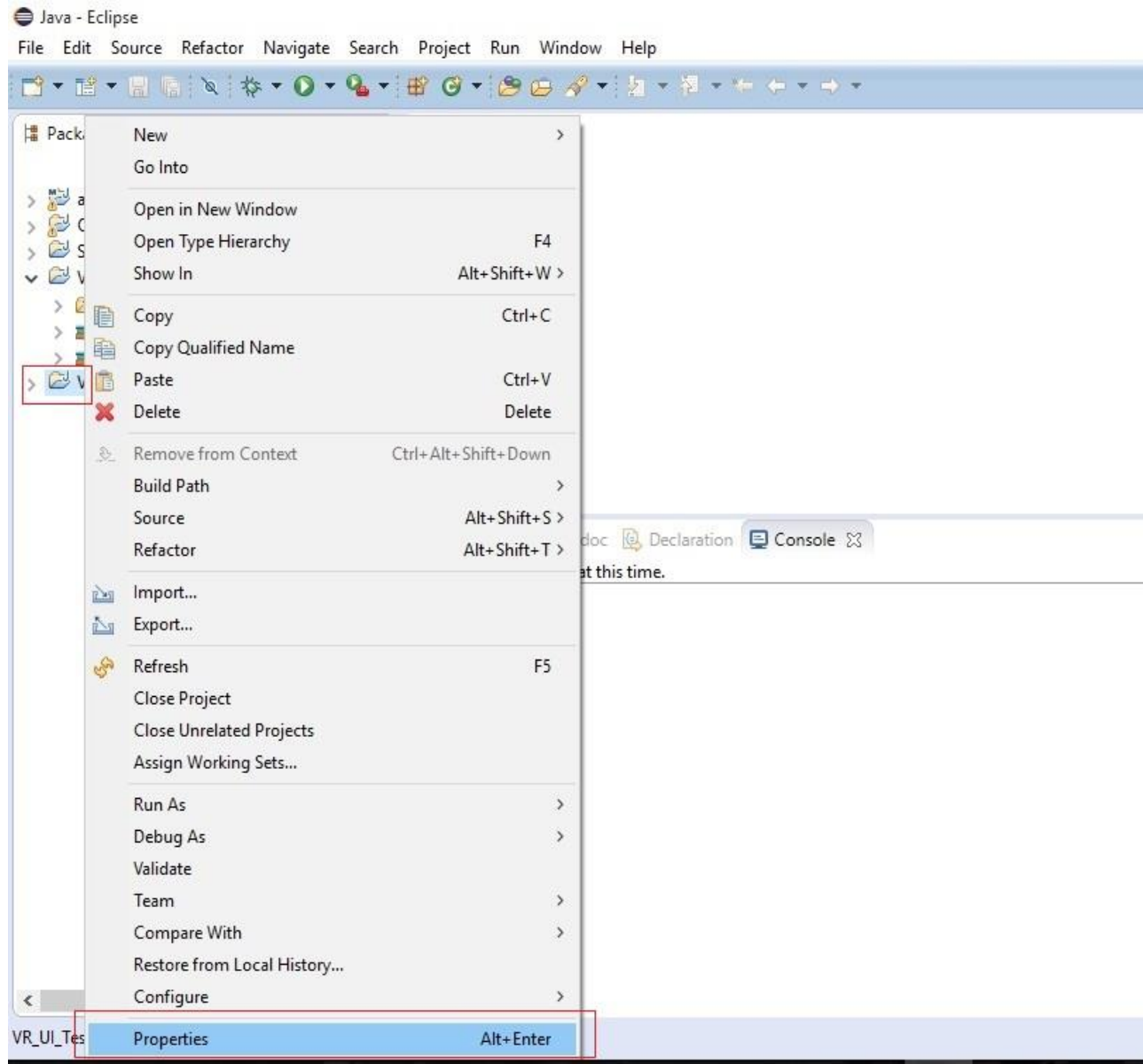
Create New Project



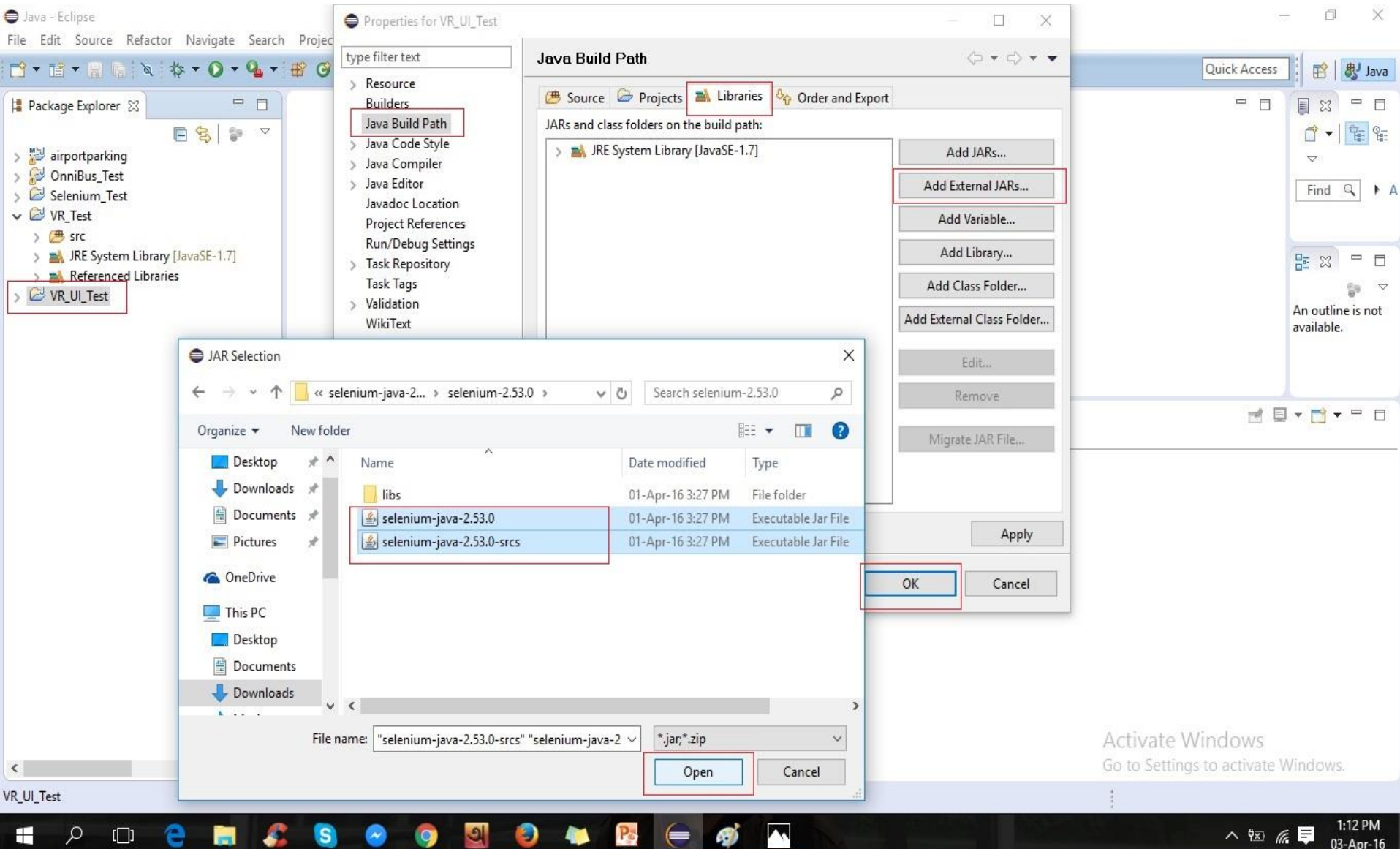
Project Name



Including Selenium JAR



Including Selenium JAR



Including Selenium JAR

The screenshot shows the Eclipse IDE interface. On the left, the Package Explorer shows a project named 'VR_UI_Test' under 'Referenced Libraries'. The main window displays the 'Properties for VR_UI_Test' dialog, with the 'Libraries' tab selected. The 'Libraries' tab shows a list of JARs and class folders on the build path, including Selenium JARs and various dependencies like Apache Commons, Guava, and JUnit. The 'Add External JARs...' button is highlighted. The 'OK' button is also highlighted. The status bar at the bottom indicates 'Activate Windows' and 'Go to Settings to activate Windows.'

Java - Eclipse

File Edit Source Refactor Navigate Search Project

Package Explorer

- airportparking
- OnniBus_Test
- Selenium_Test
- VR_Test
 - src
- JRE System Library [JavaSE-1.7]
- Referenced Libraries
 - VR_UI_Test

Properties for VR_UI_Test

type filter text

- Resource
- Builders
- Java Build Path
- Java Code Style
- Java Compiler
- Java Editor
- Javadoc Location
- Project References
- Run/Debug Settings
- Task Repository
- Task Tags
- Validation
- WikiText

Java Build Path

Source Projects Libraries Order and Export

JARs and class folders on the build path:

- apache-mime4j-0.6.jar - C:\Users\anik\Downloads\selenium-java-2.53.0\selenium-2.53.0\libs
- bsh-2.0b4.jar - C:\Users\anik\Downloads\selenium-java-2.53.0\selenium-2.53.0\libs
- cglib-nodep-2.1_3.jar - C:\Users\anik\Downloads\selenium-java-2.53.0\selenium-2.53.0\libs
- commons-codec-1.10.jar - C:\Users\anik\Downloads\selenium-java-2.53.0\selenium-2.53.0\libs
- commons-exec-1.3.jar - C:\Users\anik\Downloads\selenium-java-2.53.0\selenium-2.53.0\libs
- commons-io-2.4.jar - C:\Users\anik\Downloads\selenium-java-2.53.0\selenium-2.53.0\libs
- commons-logging-1.2.jar - C:\Users\anik\Downloads\selenium-java-2.53.0\selenium-2.53.0\libs
- gson-2.3.1.jar - C:\Users\anik\Downloads\selenium-java-2.53.0\selenium-2.53.0\libs
- guava-19.0.jar - C:\Users\anik\Downloads\selenium-java-2.53.0\selenium-2.53.0\libs
- hamcrest-core-1.3.jar - C:\Users\anik\Downloads\selenium-java-2.53.0\selenium-2.53.0\libs
- hamcrest-library-1.3.jar - C:\Users\anik\Downloads\selenium-java-2.53.0\selenium-2.53.0\libs
- httpclient-4.5.1.jar - C:\Users\anik\Downloads\selenium-java-2.53.0\selenium-2.53.0\libs
- httpcore-4.4.3.jar - C:\Users\anik\Downloads\selenium-java-2.53.0\selenium-2.53.0\libs
- httpmime-4.5.jar - C:\Users\anik\Downloads\selenium-java-2.53.0\selenium-2.53.0\libs
- jcommander-1.48.jar - C:\Users\anik\Downloads\selenium-java-2.53.0\selenium-2.53.0\libs
- jna-4.1.0.jar - C:\Users\anik\Downloads\selenium-java-2.53.0\selenium-2.53.0\libs
- jna-platform-4.1.0.jar - C:\Users\anik\Downloads\selenium-java-2.53.0\selenium-2.53.0\libs
- junit-4.12.jar - C:\Users\anik\Downloads\selenium-java-2.53.0\selenium-2.53.0\libs
- netty-3.5.7.Final.jar - C:\Users\anik\Downloads\selenium-java-2.53.0\selenium-2.53.0\libs
- phantomjsdriver-1.2.1.jar - C:\Users\anik\Downloads\selenium-java-2.53.0\selenium-2.53.0\libs
- selenium-java-2.53.0-srcs.jar - C:\Users\anik\Downloads\selenium-java-2.53.0\selenium-2.53.0
- selenium-java-2.53.0.jar - C:\Users\anik\Downloads\selenium-java-2.53.0\selenium-2.53.0
- testng-6.9.9.jar - C:\Users\anik\Downloads\selenium-java-2.53.0\selenium-2.53.0\libs

Add JARs...

Add External JARs...

Add Variable...

Add Library...

Add Class Folder...

Add External Class Folder...

Edit...

Remove

Migrate JAR File...

Apply

OK Cancel

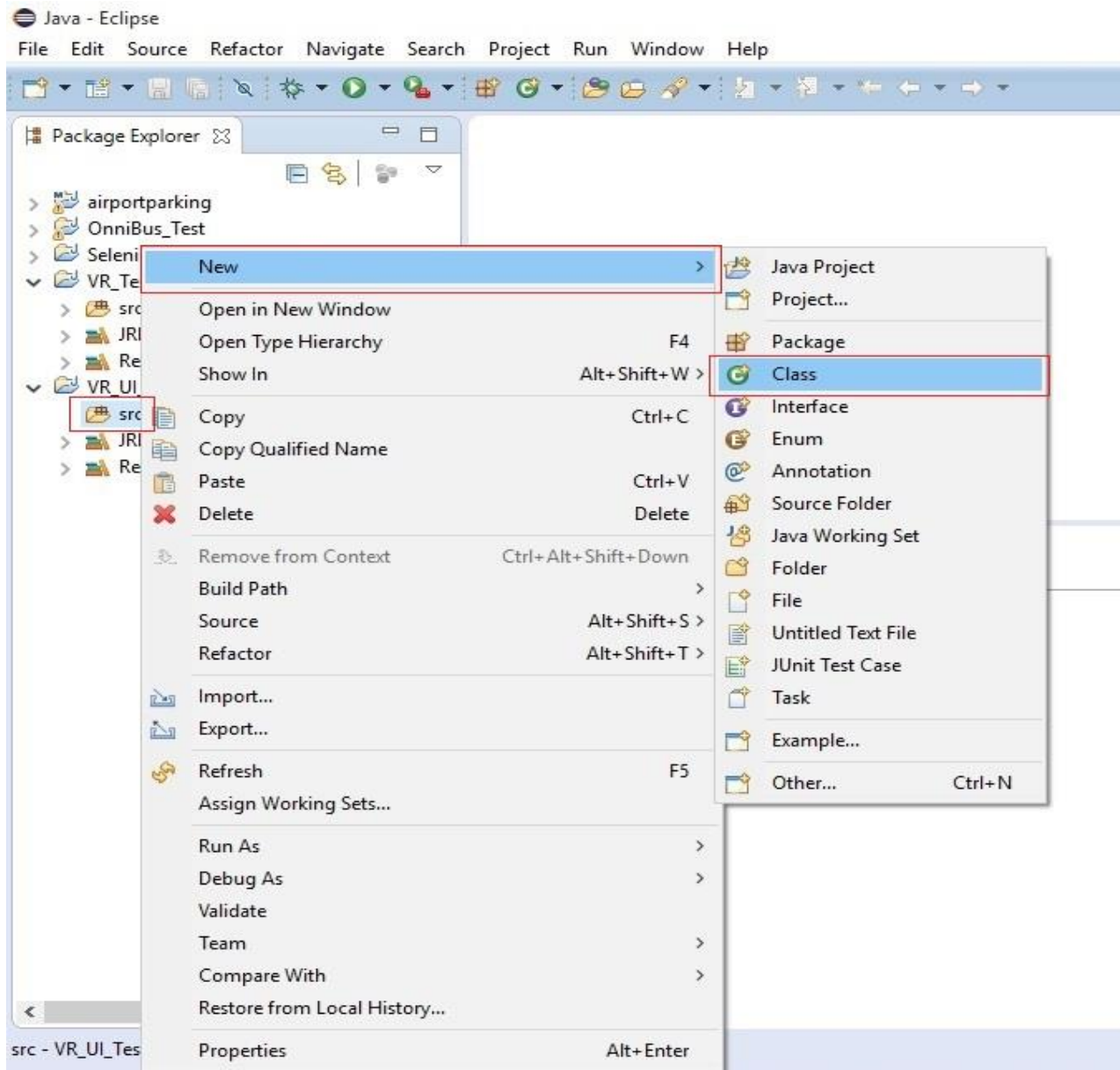
Activate Windows

Go to Settings to activate Windows.

VR_UI_Test

1:13 PM 03-Apr-16

Create new Class



Create new Class

Java - Eclipse

File Edit Source Refactor Navigate Search Project Run Window

Package Explorer

- airportparking
- OnniBus_Test
- Selenium_Test
- VR_Test
 - src
 - JRE System Library [JavaSE-1.7]
 - Referenced Libraries
- VR_UI_Test
 - src
 - JRE System Library [JavaSE-1.7]
 - Referenced Libraries

Problems @ Javadoc

No consoles to display at t

New Java Class

Java Class

The use of the default package is discouraged.

Source folder: VR_UI_Test/src Browse...

Package: (default) Browse...

☐ Enclosing type: Browse...

Name: VR_Test

Modifiers: ☒ public ☐ package ☐ private ☐ protected
☐ abstract ☐ final ☐ static

Superclass: java.lang.Object Browse...

Interfaces: Add... Remove

Which method stubs would you like to create?

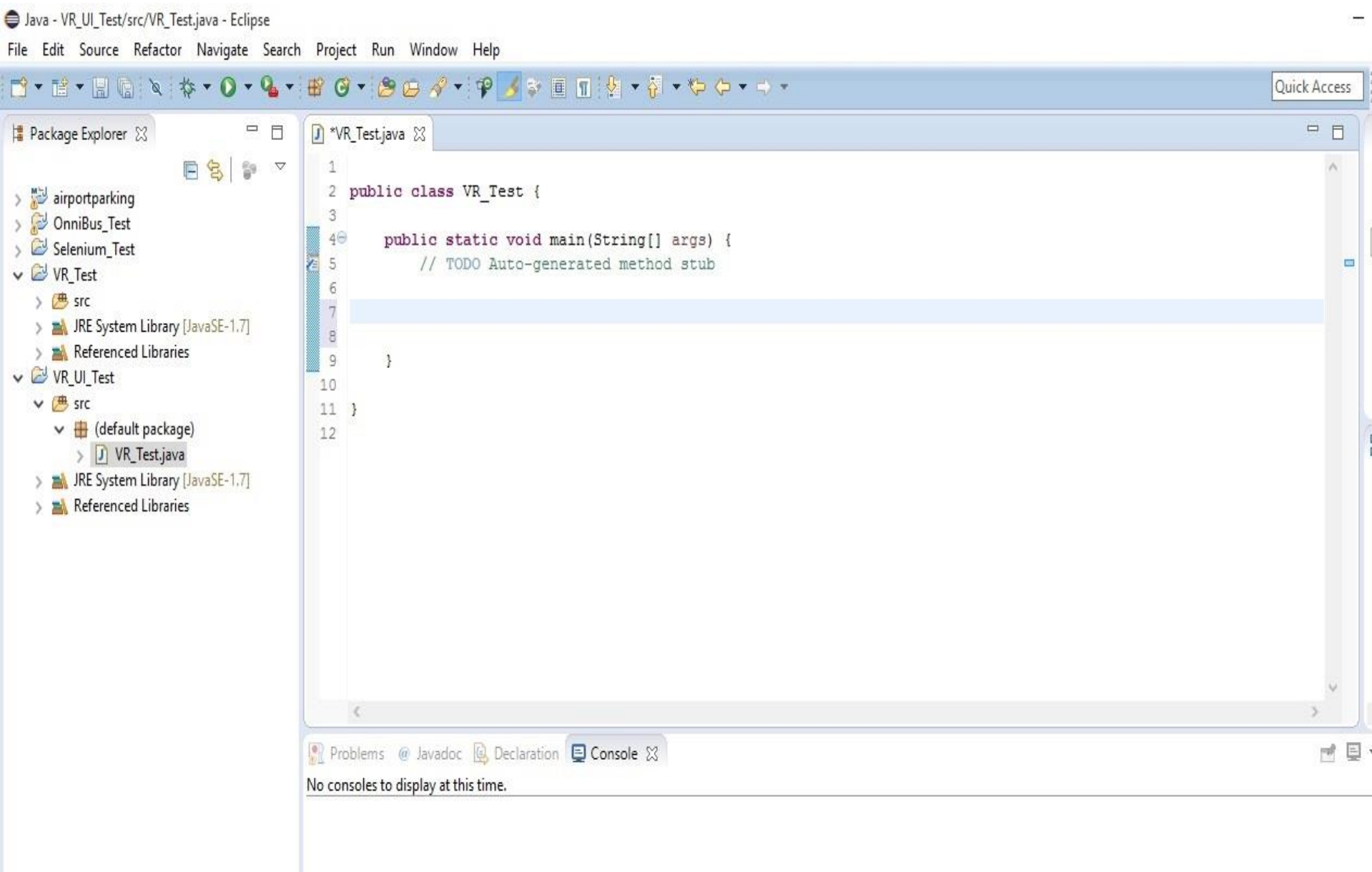
- ☒ public static void main(String[] args)
- ☐ Constructors from superclass
- ☒ Inherited abstract methods

Do you want to add comments? (Configure templates and default value [here](#))

- ☐ Generate comments

Finish Cancel

Writing test using Java



Create Firefox object

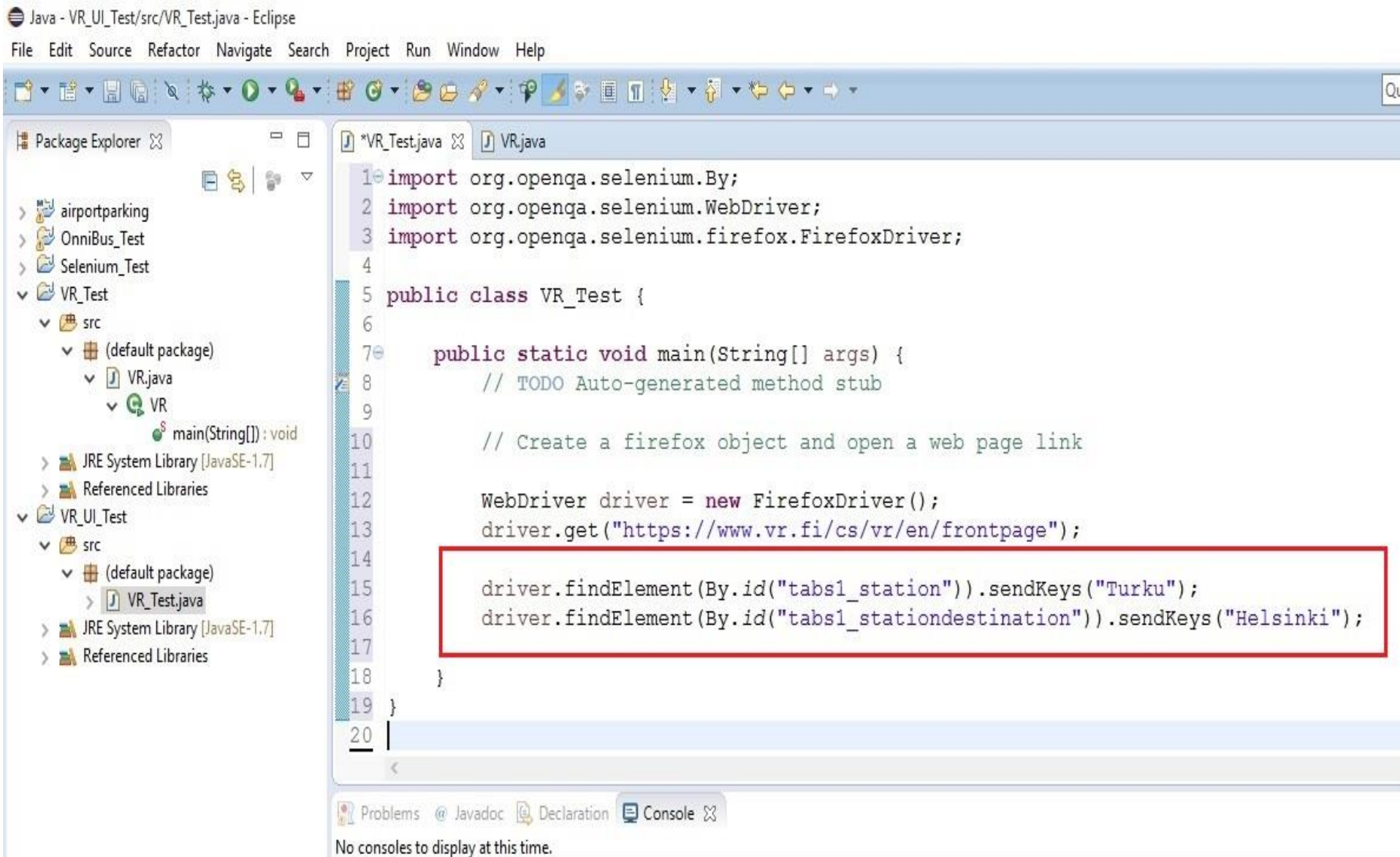
The screenshot shows the Eclipse IDE with the following components:

- Package Explorer:** Shows the project structure with packages like `airportparking`, `OnniBus_Test`, `Selenium_Test`, and `VR_Test`. The `VR_Test` package is expanded, showing the `src` folder and the `VR_Test.java` file.
- Editor:** Displays the code for `VR_Test.java`. The code is as follows:

```
1 import org.openqa.selenium.WebDriver;
2 import org.openqa.selenium.firefox.FirefoxDriver;
3
4 public class VR_Test {
5
6     public static void main(String[] args) {
7         // TODO Auto-generated method stub
8
9         // Create a firefox object and open a web page link
10
11         WebDriver driver = new FirefoxDriver();
12         driver.get("https://www.vr.fi/cs/vr/en/frontpage");
13     }
14 }
15
16 }
17
```

A red rectangular box highlights the code from line 9 to line 13, which is the code for creating a FirefoxDriver object and opening a web page.
- Problems, Javadoc, Declaration, Console:** The Console tab is active, showing the message "No consoles to display at this time."
- Bottom Bar:** Shows the status bar with "Writable", "Smart Insert", and "13:9".
- System Tray:** Shows the Windows taskbar with various icons and the system clock displaying "1:39 PM 03-Apr-16".

Input values for *From* and *To*



```
Java - VR_UI_Test/src/VR_Test.java - Eclipse
File Edit Source Refactor Navigate Search Project Run Window Help

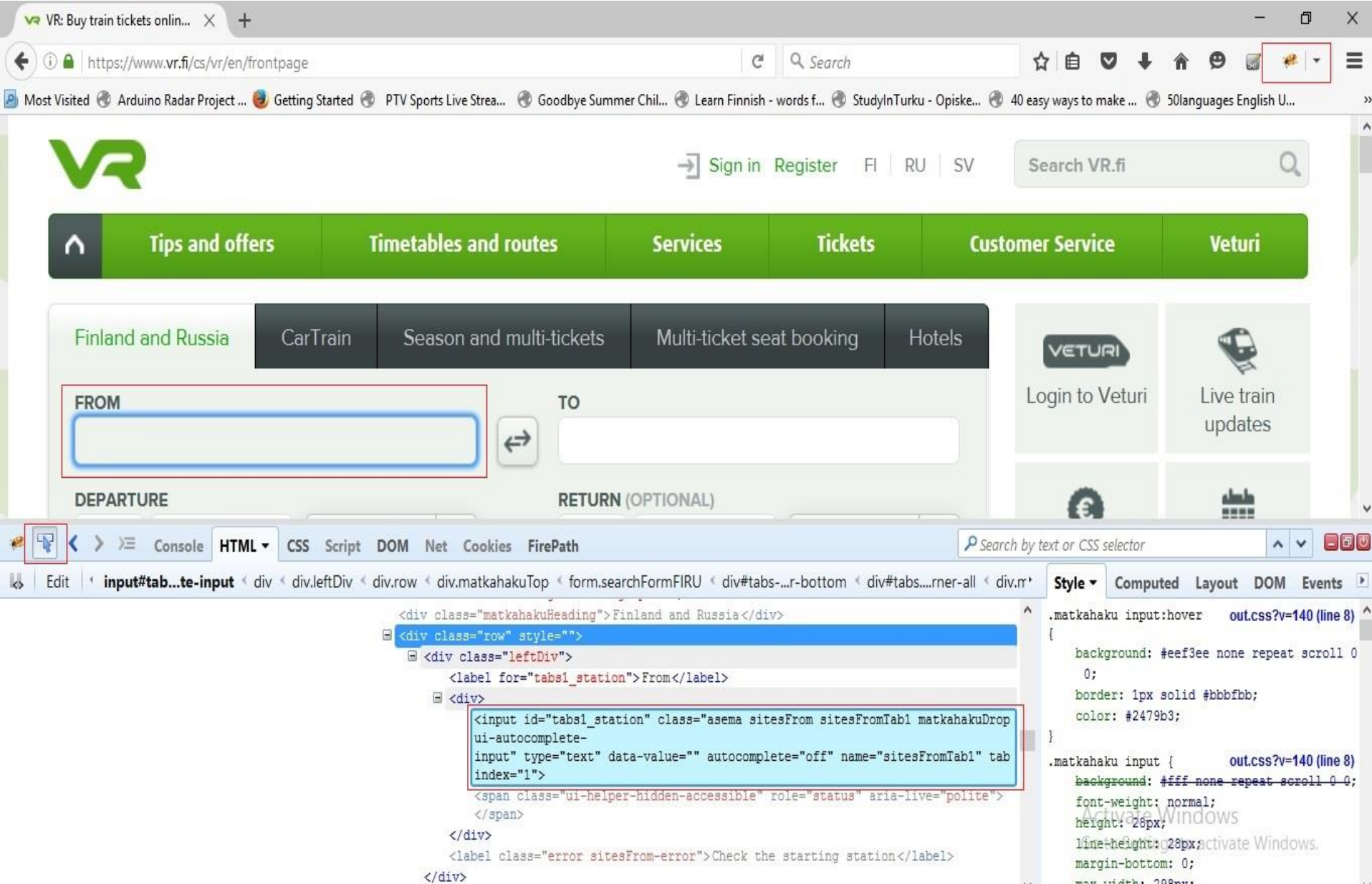
Package Explorer
  airportparking
  OnniBus_Test
  Selenium_Test
  VR_Test
    src
      (default package)
        VR.java
          VR
            main(String[]): void
      JRE System Library [JavaSE-1.7]
      Referenced Libraries
  VR_UI_Test
    src
      (default package)
        VR_Test.java
      JRE System Library [JavaSE-1.7]
      Referenced Libraries

VR_Test.java
VR.java
1 import org.openqa.selenium.By;
2 import org.openqa.selenium.WebDriver;
3 import org.openqa.selenium.firefox.FirefoxDriver;
4
5 public class VR_Test {
6
7     public static void main(String[] args) {
8         // TODO Auto-generated method stub
9
10        // Create a firefox object and open a web page link
11
12        WebDriver driver = new FirefoxDriver();
13        driver.get("https://www.vr.fi/cs/vr/en/frontpage");
14
15        driver.findElement(By.id("tabs1_station")).sendKeys("Turku");
16        driver.findElement(By.id("tabs1_stationdestination")).sendKeys("Helsinki");
17
18    }
19 }
20
```

Problems @ Javadoc Declaration Console

No consoles to display at this time.

Tracking Web Elements



Tracking Web Elements using Firebug

The screenshot displays the Firebug web development tool interface. The top toolbar includes icons for Console, HTML, CSS, Script, DOM, Net, Cookies, and FirePath. The breadcrumb path indicates the selected element is `input#tab...te-input`. The DOM tree on the left shows the following structure:

```
<div class="matkahakuHeading">Finland and Russia</div>
<div class="row" style="">
  <div class="leftDiv">
    <label for="tab1_station">From</label>
    <div>
      <input id="tab1_station" class="asema sitesFrom sitesFromTab1 matkahakuDrop
      ui-autocomplete-
      input" type="text" data-value="" autocomplete="off" name="sitesFromTab1" tab
      index="1">
      <span class="ui-helper-hidden-accessible" role="status" aria-live="polite">
      </span>
    </div>
    <label class="error sitesFrom-error">Check the starting station</label>
  </div>
```

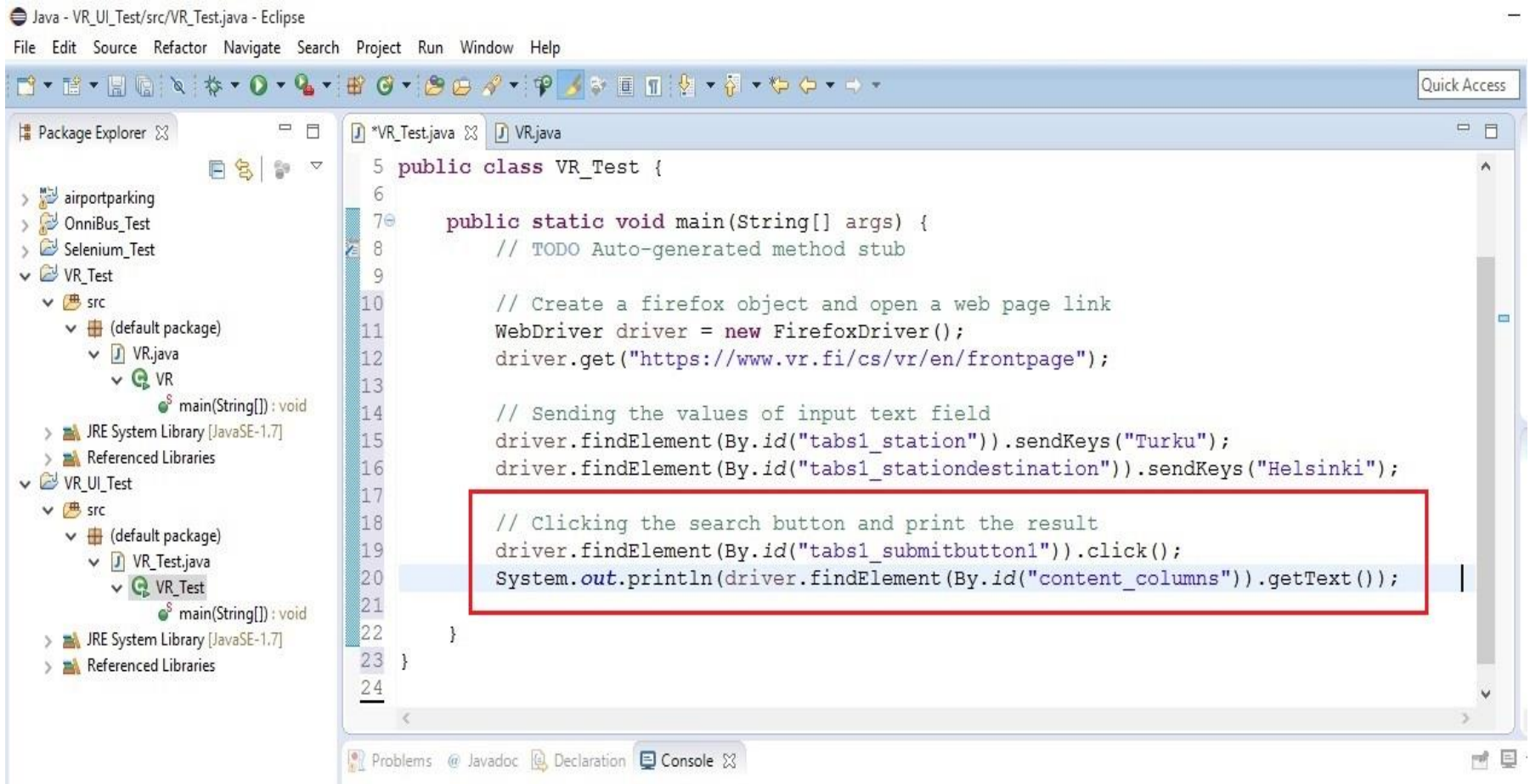
The `<input id="tab1_station" ...>` element is highlighted in blue. The CSS pane on the right shows the following styles:

```
.matkahaku input:hover {
  background: #eef3ee none repeat scroll 0 0;
  border: 1px solid #bbbfbb;
  color: #2479b3;
}

.matkahaku input {
  background: #fff none repeat scroll 0 0;
  font-weight: normal;
  height: 28px;
  line-height: 28px;
  margin-bottom: 0;
  max-width: 298px;
```

A watermark "Activate Windows" is visible in the background of the CSS pane.

Click on *Submit* and print *Result*



```
Java - VR_UI_Test/src/VR_Test.java - Eclipse
File Edit Source Refactor Navigate Search Project Run Window Help

Package Explorer
  > airportparking
  > OnniBus_Test
  > Selenium_Test
  > VR_Test
    > src
      > (default package)
        > VR.java
          > VR
            > main(String[]): void
  > JRE System Library [JavaSE-1.7]
  > Referenced Libraries
  > VR_UI_Test
    > src
      > (default package)
        > VR_Test.java
          > VR_Test
            > main(String[]): void
  > JRE System Library [JavaSE-1.7]
  > Referenced Libraries

*VR_Test.java VR.java
5 public class VR_Test {
6
7     public static void main(String[] args) {
8         // TODO Auto-generated method stub
9
10        // Create a firefox object and open a web page link
11        WebDriver driver = new FirefoxDriver();
12        driver.get("https://www.vr.fi/cs/vr/en/frontpage");
13
14        // Sending the values of input text field
15        driver.findElement(By.id("tabs1_station")).sendKeys("Turku");
16        driver.findElement(By.id("tabs1_stationdestination")).sendKeys("Helsinki");
17
18        // Clicking the search button and print the result
19        driver.findElement(By.id("tabs1_submitbutton1")).click();
20        System.out.println(driver.findElement(By.id("content_columns")).getText());
21
22    }
23 }
24
```

Execution of the program

VR Online Shop

https://shop.vr.fi/onlineshop/SearchResultDomestic.do

På svenska | Suomeksi

User name Password Log in

Register | Did you forget your password?

Search Timetable and fares Seats and services Delivery method and payment Confirmation

Prices

Please note that most of the long distance trains are not operated on 31.3. due to strike. Therefore the Thursday trains are not available in the web shop. Read more about the traffic arrangements on vr.fi frontpage.

[Guide](#) | [Print](#)

Outbound journey: Turku → Helsinki

Sunday 03.04.2016

[Previous departures](#) [Previous day](#) [Next day](#)

Departure	Arrival	Travel time	Train(s)
13:30	15:23	01:53	Pendolino train
14:30	16:23	01:53	InterCity train

Buy your tickets 1 min before departure.

Basic Ticket 17,00 €

Select your ticket from above.

My selections

03.04.2016

Turku
Helsinki

PASSENGERS

1 Adult

SEAT TYPE

Seat

Total 0,00 €

Veturi customer, log in!
Buy all your tickets by 31 May 2016 with your Veturi username: you can earn money worth up to €40 for the summer! [Read more.](#)

Activate Windows
Go to Settings to activate Windows.

Print search Result

The screenshot shows the Eclipse IDE interface. The top menu bar includes File, Edit, Source, Refactor, Navigate, Search, Project, Run, Window, and Help. The toolbar contains various icons, with the Run icon (a green play button) highlighted by a red box. The Package Explorer on the left shows the project structure: VR_Test, which contains a src package with VR.java and VR_Test.java. The main editor window displays the code in VR_Test.java, which includes a comment and two lines of code: `driver.findElement(By.id("tabs1_submitbutton1")).click();` and `System.out.println(driver.findElement(By.id("content_columns")).getText());`. The Console window at the bottom, also outlined with a red box, shows the output of the application. It starts with the command prompt prompt `<terminated>` and the path `C:\Program Files\Java\jre7\bin\javaw.exe`. The output is a search result for train tickets from Turku to Helsinki, including details like departure times, train types, and prices.

```
Java - VR_UI_Test/src/VR_Test.java - Eclipse
File Edit Source Refactor Navigate Search Project Run Window Help

Package Explorer
  airportparking
  OnniBus_Test
  Selenium_Test
  VR_Test
    src
      (default package)
        VR.java
        VR_Test
          main(String[]): void

JRE System Library [JavaSE-1.7]
Referenced Libraries
VR_UI_Test
  src
    (default package)
      VR_Test.java
        VR_Test
          main(String[]): void

JRE System Library [JavaSE-1.7]
Referenced Libraries

VR_Test.java
17
18 // Clicking the search button and print the result
19 driver.findElement(By.id("tabs1_submitbutton1")).click();
20 System.out.println(driver.findElement(By.id("content_columns")).getText());
21

Problems @ Javadoc Declaration Console
<terminated> VR_Test [Java Application] C:\Program Files\Java\jre7\bin\javaw.exe (Apr 3, 2016, 1:55:57 PM)
Search
Timetable and fares
Seats and services
Delivery method and payment
Confirmation
Guide | Print
Prices
Please note that most of the long distance trains are not operated on 31.3. due to strike. Therefore the T
Outbound journey: Turku ? Helsinki
Sunday 03.04.2016
Previous day | Next day
Previous departures
Departure Arrival Travel time Train(s)
13:30 15:23 01:53 Pendolino train Buy your tickets 1 min
before departure.
14:30 16:23 01:53 InterCity train
Basic Ticket|
17,00 €
Select your ticket from above.
InterCity trains have versatile restaurant services available. Drop into the restaurant car or take adva
14:30 Turku - 16:23 Helsinki
InterCity train 960 , Destination station: Helsinki

Activate Windows
Go to Settings to activate Windows.
```

Thank you !!!

