

As many browsers called and opened as the number of driver lines-

```
launchtests2.java X
1 package seleniumbatch;
2
3 import org.openqa.selenium.WebDriver;
4
5
6
7
8 public class launchtests2 {
9
10     public static void main(String[] args) {
11
12         //three browsers opened.
13         WebDriver driver = new ChromeDriver();//123-sample session id
14         driver = new FirefoxDriver();//345 -sample session id
15         driver = new EdgeDriver();//567 -sample session id
16     }
17
18 }
19
```

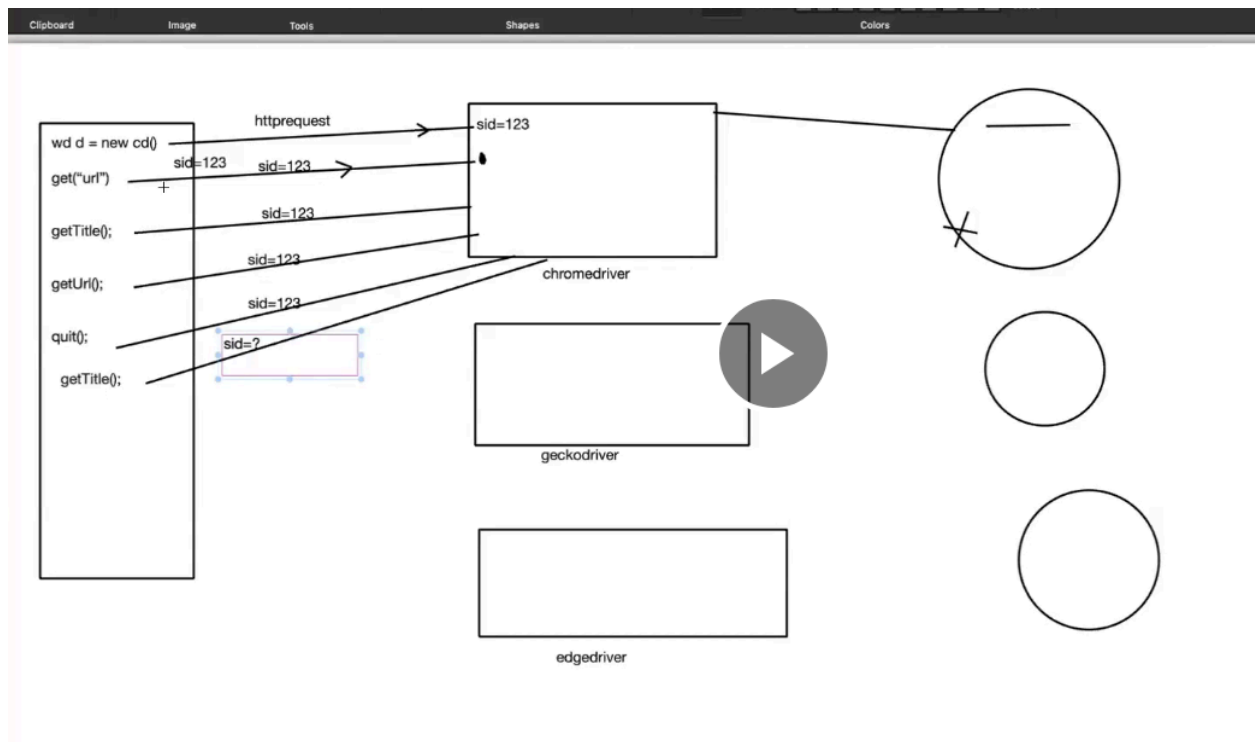
Google will open in third browser-

```
launchtests3.java X
1 package seleniumbatch;
2
3 import org.openqa.selenium.WebDriver;
4
5
6
7
8 public class launchtests3 {
9
10     public static void main(String[] args) {
11
12         //three browsers opened.
13         //google in edge browser.
14         WebDriver driver = new ChromeDriver();//123-sample session id
15         driver = new FirefoxDriver();//345 -sample session id
16         driver = new EdgeDriver();//567 -sample session id
17         driver.get("https://www.google.com");//567
18     }
19
20 }
21
```

Close the third browser-

```
launchtests4.java ×
1 package seleniumbatch;
2
3 import org.openqa.selenium.WebDriver;
4
5
6
7
8 public class launchtests4 {
9
10     public static void main(String[] args) {
11
12         //only edge browser is closed.
13         WebDriver driver = new ChromeDriver();//123-sample session id
14         driver = new FirefoxDriver();//345 -sample session id
15         driver = new EdgeDriver();//567 -sample session id
16         driver.get("https://www.google.com");//567
17         driver.quit();//returns void
18     }
19
20 }
21
```

Session id concept-

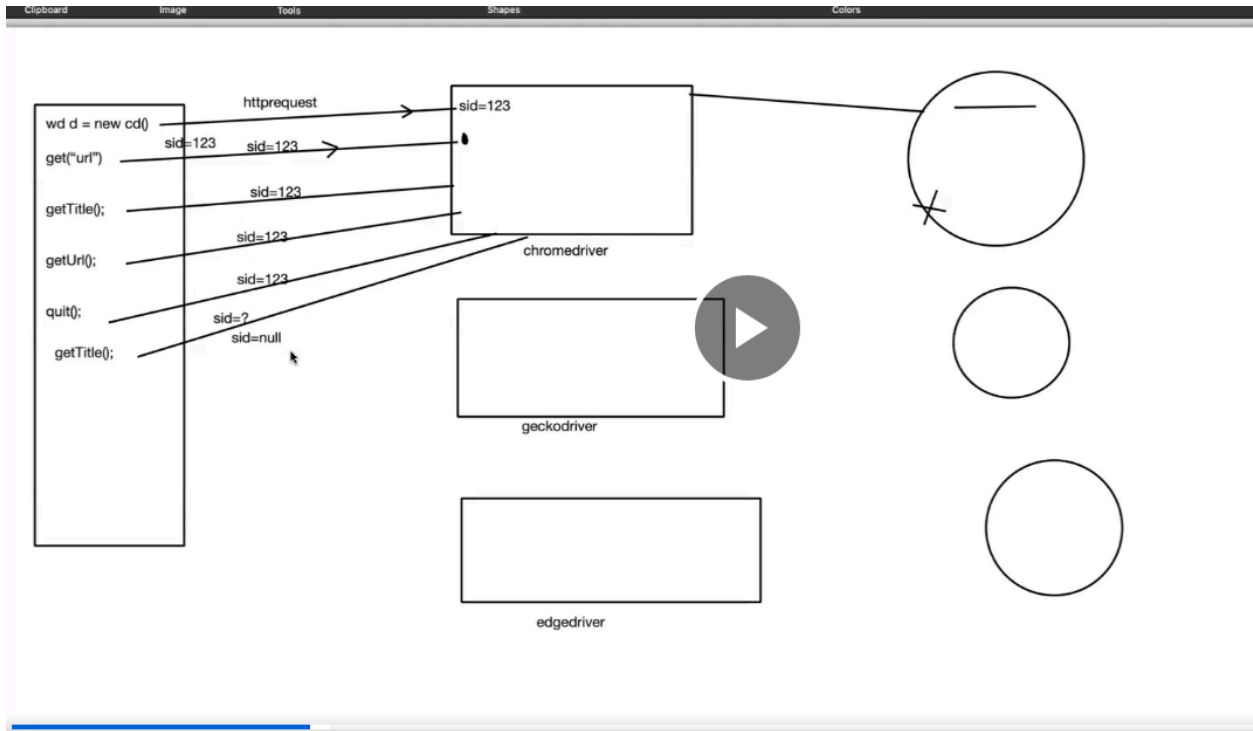


Write code to see if session maintained-

```
quitvsclose1.java X
1 package seleniumbatch;
2
3 import org.openqa.selenium.WebDriver;
4 import org.openqa.selenium.chrome.ChromeDriver;
5
6 public class quitvsclose1 {
7
8     public static void main(String[] args) {
9
10         //line 25 will give no such session as driver quit.
11         //session id gone.
12         WebDriver driver = new ChromeDriver();//123
13
14         driver.get("https://www.google.com");//123
15         //get returns void.
16
17         String title = driver.getTitle();//123
18         System.out.println(title);
19
20         String url = driver.getCurrentUrl();//123
21         System.out.println(url);
22
23         driver.quit();//123
24         //returns void.
25
26         System.out.println(driver.getTitle());//sid=123--invalid
27
28
29
30     }
31 }
32
33
34 //Google
35 //https://www.google.com/
36 //Exception in thread "main" org.openqa.selenium.NoSuchSessionException:
37 // Session ID is null. Using WebDriver after calling quit()?
38 //Build info: version: '4.35.0', revision: '1c58e5028b'
39 //System info: os.name: 'Windows 11', os.arch: 'amd64', os.version: '10.0', java.version: '23.0.2'
40 //Driver info: org.openqa.selenium.chrome.ChromeDriver
41 //Command: [null, getTitle {}]
42 //}
```

No such session exception for line 22.

Added null line-



Debug to know the session id-

```
1 package seleniumsessions;  
2  
3 import org.openqa.selenium.WebDriver;  
4 import org.openqa.selenium.chrome.ChromeDriver;  
5  
6 public class QuitVsClose {  
7  
8     public static void main(String[] args) {  
9  
10        WebDriver driver = new ChromeDriver();  
11  
12        driver.get("https://www.google.com");  
13  
14        > drivers: ChromeDriver (id=40)  
15        > bId: Optional<T> (id=67)  
16        > bIdUri: Optional<T> (id=67)  
17        > capabilities (ChromiumDriver): ImmutableCapabilities (id=70)  
18        > capabilities (ChromiumDriver): ImmutableCapabilities (id=70)  
19        ChromeDriver: chrome on mac (a1b4f6a580e46afb053e43741f70ca3)  
20  
21        driver.quit();  
22    }  
23 }
```

Here session id becomes null after the quit line.

To reactivate session initialise driver-

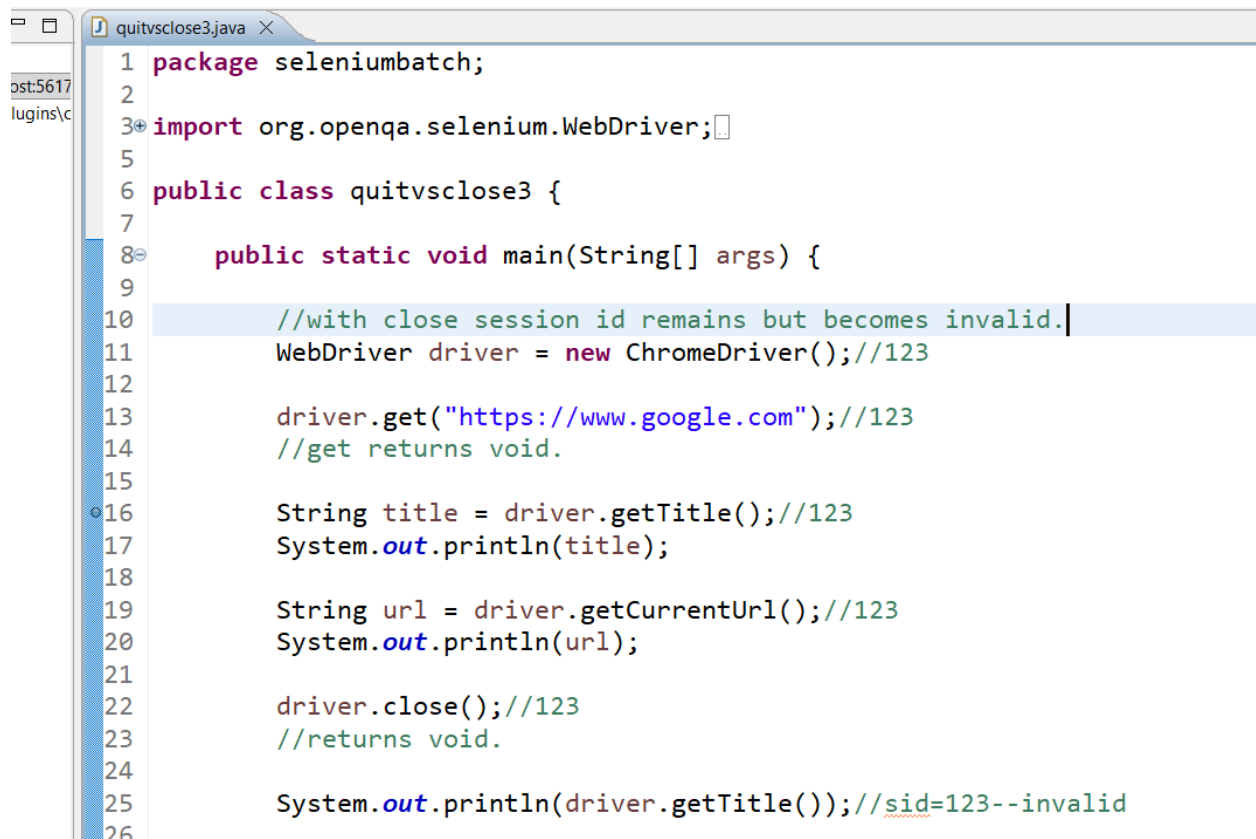
```
quitvsclose2.java X
1 package seleniumbatch;
2
3 import org.openqa.selenium.WebDriver;
4
5
6 public class quitvsclose2 {
7
8     public static void main(String[] args) {
9
10         //To reactivate session initialise driver
11         WebDriver driver = new ChromeDriver();//123
12
13         driver.get("https://www.google.com");//123
14         //get returns void.
15
16         String title = driver.getTitle();//123
17         System.out.println(title);
18
19         String url = driver.getCurrentUrl();//123
20         System.out.println(url);
21
22         driver.quit();//123
23         //returns void.
24
25         driver = new ChromeDriver();//456
26         driver.get("https://www.google.com");//456
27         System.out.println(driver.getTitle());//456
28
29
30
31     }
```

```

30
31     }
32
33 }
34
35 //opens google.com first.
36 //prints:
37 //Google
38 //https://www.google.com/
39 //then closes and opens google.com and prints title
40 //Google
41

```

What happens with close-



```

1 package seleniumbatch;
2
3 import org.openqa.selenium.WebDriver;
4
5
6 public class quitvsclse3 {
7
8     public static void main(String[] args) {
9
10         //with close session id remains but becomes invalid.
11         WebDriver driver = new ChromeDriver();//123
12
13         driver.get("https://www.google.com");//123
14         //get returns void.
15
16         String title = driver.getTitle();//123
17         System.out.println(title);
18
19         String url = driver.getCurrentUrl();//123
20         System.out.println(url);
21
22         driver.close();//123
23         //returns void.
24
25         System.out.println(driver.getTitle());//sid=123--invalid
26

```

```
24 //Setting page
25 System.out.println(driver.getTitle());//sid=123--invalid
26
27
28
29 }
30
31 }
32
33 //Google
34 //https://www.google.com/?zx=1758123158066&no_sw_cr=1
35 //Exception in thread "main" org.openqa.selenium.NoSuchSessionException: invalid session id
36
37
```

Line 25 gives invalid session id.

Here session id is present on line 25 but it is invalid.

Same way to solve this-

Reinitialise the driver.

```
quitvsclose4.java ×
1 package seleniumbatch;
2
3 import org.openqa.selenium.WebDriver;
4
5
6 public class quitvsclose4 {
7
8     public static void main(String[] args) {
9
10         //Reinitialise the driver.
11         //solve the issue.
12         WebDriver driver = new ChromeDriver();//123
13
14         driver.get("https://www.google.com");//123
15         //get returns void.
16
17         String title = driver.getTitle();//123
18         System.out.println(title);
19
20         String url = driver.getCurrentUrl();//123
21         System.out.println(url);
22
23         driver.close();//123
24         //returns void.
25
26         driver = new ChromeDriver();//456
27         driver.get("https://www.google.com");//456
28         System.out.println(driver.getTitle());//456
29     }
```

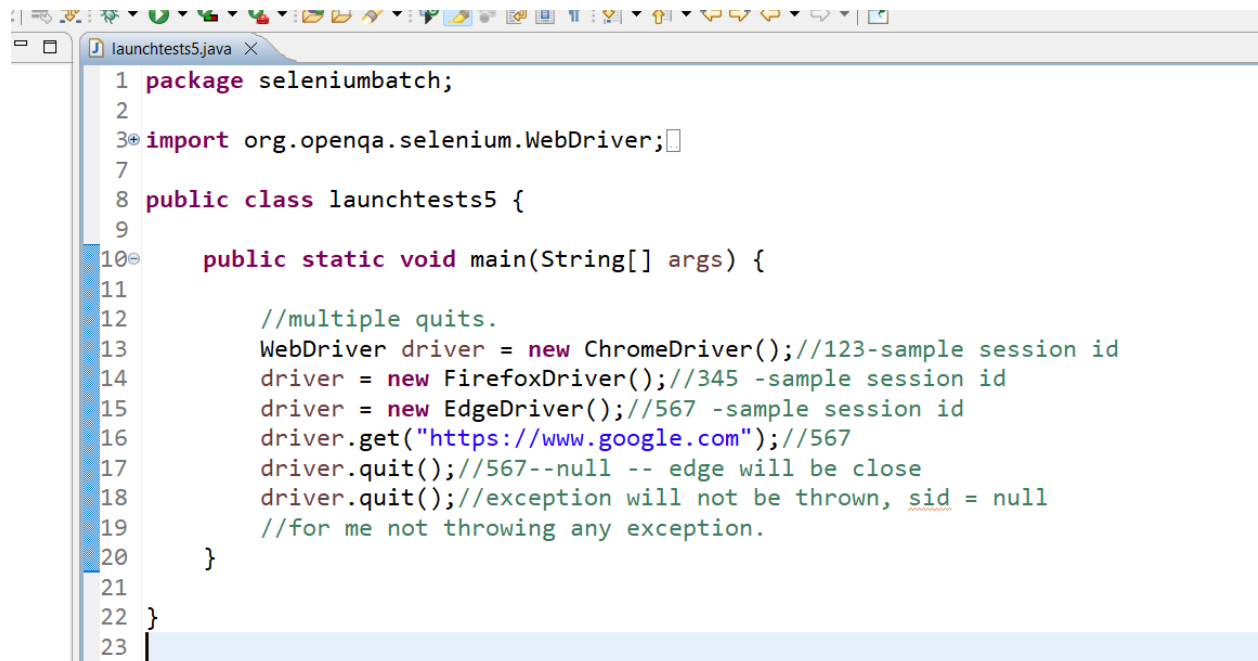


```

28         System.out.println(driver.getTitle()); //456
29
30
31
32     }
33
34 }
35
36 //first browser opens and prints this.
37 //Google
38 //https://www.google.com/
39 //second browser opens and prints this.
40 //Google
41
42

```

Multiple quits-



```

1 package seleniumbatch;
2
3 import org.openqa.selenium.WebDriver;
4
5
6 public class launchtests5 {
7
8     public static void main(String[] args) {
9
10         //multiple quits.
11         WebDriver driver = new ChromeDriver(); //123-sample session id
12         driver = new FirefoxDriver(); //345 -sample session id
13         driver = new EdgeDriver(); //567 -sample session id
14         driver.get("https://www.google.com"); //567
15         driver.quit(); //567--null -- edge will be close
16         driver.quit(); //exception will not be thrown, sid = null
17         //for me not throwing an exception.
18     }
19 }
20
21
22
23

```

i dont get exception in second quit() here is it ok

Yes, that's completely **expected behavior** in Selenium, and it's okay.

Here's why you don't see an exception on the second `quit()`:

1. What happens in your code step by step

- `driver = new ChromeDriver();` → creates a Chrome session (ID e.g. 123).
- Then you overwrite `driver` with `new FirefoxDriver();` → Chrome session still exists in the background, but you've lost the reference to it.
- Then again `driver = new EdgeDriver();` → Firefox session is now lost, and only Edge is referenced by `driver`.
- `driver.get("https://www.google.com");` → opens in Edge.

- `driver.quit()`; → closes the Edge session and sets its internal session ID to `null`.

2. Why the second `driver.quit()`; doesn't throw an exception

- Selenium's `quit()` method checks if the `sessionId` is `null`.
- If it's already `null` (meaning the session is closed), the method just returns silently.
- This makes repeated calls to `quit()` safe.
- That's why you don't see a `NoSuchSessionException` or anything else.

3. Important note

- Because you overwrote `driver` each time, the **Chrome** and **Firefox** sessions you

created were never closed — they're now “dangling” processes in the background. You should ideally close them to avoid leaving extra browser instances running.

👉 A better way is to explicitly quit each driver if you need multiple browsers, like:

```
WebDriver chrome = new ChromeDriver();
```

```
WebDriver firefox = new FirefoxDriver();
```

```
WebDriver edge = new EdgeDriver();
```

```
edge.get("https://www.google.com");
```

```
// Close each browser properly
```

```
chrome.quit();
```

```
firefox.quit();
```

```
edge.quit();
```

Navigation-

```
navigationmethods1.java X
1 package seleniumbatch;
2
3 import org.openqa.selenium.WebDriver;
4 import org.openqa.selenium.chrome.ChromeDriver;
5
6 public class navigationmethods1 {
7
8     public static void main(String[] args) {
9
10         //navigating back and forth between the two websites.
11         WebDriver driver = new ChromeDriver();
12
13         driver.get("https://www.google.com");
14
15         System.out.println(driver.getTitle());
16
17         //navigate to the naveen website.com
18         driver.navigate().
19         to("https://naveenautomationlabs.com/opencart/index.php?route=account/login");
20
21         System.out.println(driver.getTitle());
22
23         driver.navigate().back();
24
25         System.out.println(driver.getTitle());
26
27         driver.navigate().forward();
28
29         System.out.println(driver.getTitle());
30
31         System.out.println(driver.getTitle());
32
33         driver.navigate().back();
34
35         System.out.println(driver.getTitle());
36
37         driver.navigate().refresh();//refresh the page
38     }
39 }
40
41 //Google
42 //Account Login
43 //Google
44 //Account Login
45 //Google
46
```

Get and navigate-to does same work-

```
1 package seleniumbatch;
2
3 import org.openqa.selenium.WebDriver;
4
5
6 public class navigationmethods2 {
7
8     public static void main(String[] args) {
9
10         //Get and navigate-to does same work-
11
12         WebDriver driver = new ChromeDriver();
13
14         driver.get("https://www.google.com");
15
16         System.out.println(driver.getTitle());
17
18         //navigate to the naveen website.com
19         driver.navigate().
20         // to("https://naveenautomationlabs.com/opencart/index.php?route=account/login");
21         driver.get("https://naveenautomationlabs.com/opencart/index.php?route=account/login");
22
23         System.out.println(driver.getTitle());
24
25         driver.navigate().back();
26
27         System.out.println(driver.getTitle());
28
29         driver.navigate().forward();
30
31         driver.navigate().forward();
32
33         System.out.println(driver.getTitle());
34
35         driver.navigate().back();
36
37         System.out.println(driver.getTitle());
38
39         driver.navigate().refresh();//refresh the page
40     }
41 }
42
43 //Google
44 //Account Login
45 //Google
46 //Account Login
47 //Google
48
```

Another way to launch url using navigate-to-

```
navigationmethods3.java × navigationmethods2.java navigationmethods1.java
1 package seleniumbatch;
2
3 import org.openqa.selenium.WebDriver;
4
5
6 public class navigationmethods3 {
7
8     public static void main(String[] args) {
9
10         //Another way to launch url using navigate to-
11         WebDriver driver = new ChromeDriver();
12
13         driver.navigate().to("https://www.google.com");
14
15         System.out.println(driver.getTitle());
16
17         //navigate to the naveen website.com
18         driver.navigate().
19         to("https://naveenautomationlabs.com/opencart/index.php?route=account/login");
20
21         System.out.println(driver.getTitle());
22
23         driver.navigate().back();
24
25         System.out.println(driver.getTitle());
26
27         driver.navigate().forward();
28
29         System.out.println(driver.getTitle());
30     }
```

```

28
29     System.out.println(driver.getTitle());
30
31     driver.navigate().back();
32
33     System.out.println(driver.getTitle());
34
35 }
36
37 }
38
39 //Google
40 //Account Login
41 //Google
42 //Account Login
43 //Google
44

```

To method internally calls get method.
 Remotewebdriver, remotenavigation.class.

```

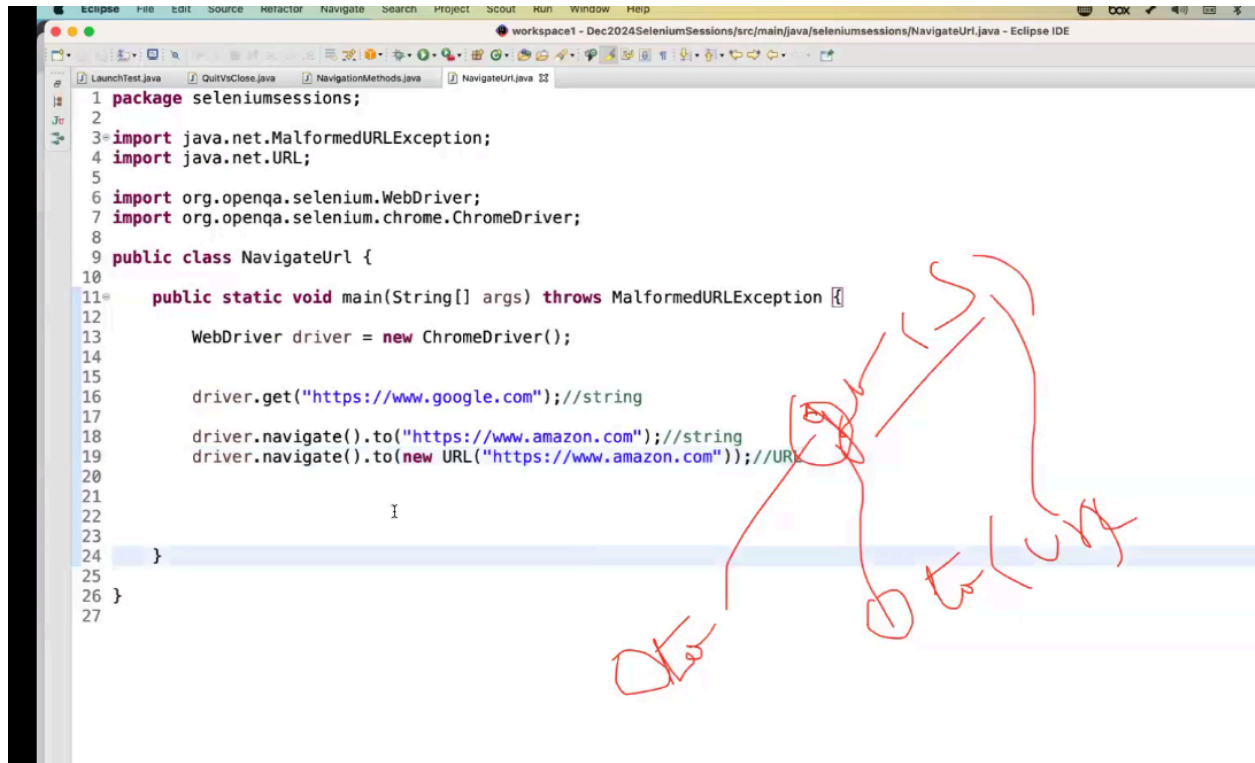
1085     }
1086
1087     @Override
1088     public void to(String url) {
1089         get(url);
1090     }
1091

```

Navigate-to method is overloaded method but get is not -


```
1 package seleniumbatch;
2
3 import java.net.MalformedURLException;
4 import java.net.URL;
5
6 import org.openqa.selenium.WebDriver;
7 import org.openqa.selenium.chrome.ChromeDriver;
8
9 public class navigationurl1 {
10
11     //Navigate-to method is overloaded method but get is not -
12
13     public static void main(String[] args) throws MalformedURLException {
14
15         WebDriver driver = new ChromeDriver();//123
16
17
18         driver.get("https://www.google.com");//string
19         //
20         driver.navigate().to("https://www.amazon.com");//string
21         driver.navigate().to(new URL("https://www.facebook.com"));//URL
22
23
24     }
25 }
26
27
28 //first opens google
29 //then opens amazon
30 //then opens facebook
31 //in same window
32
```

Kept below picture to show navigateto calls get-



The screenshot shows the Eclipse IDE with a Java file named `NavigateUrl.java`. The code is as follows:

```
1 package seleniumsessions;
2
3 import java.net.MalformedURLException;
4 import java.net.URL;
5
6 import org.openqa.selenium.WebDriver;
7 import org.openqa.selenium.chrome.ChromeDriver;
8
9 public class NavigateUrl {
10
11     public static void main(String[] args) throws MalformedURLException {
12
13         WebDriver driver = new ChromeDriver();
14
15
16         driver.get("https://www.google.com");//string
17
18         driver.navigate().to("https://www.amazon.com");//string
19         driver.navigate().to(new URL("https://www.amazon.com"));//URL
20
21
22
23
24     }
25
26 }
27
```

Handwritten red annotations are present on the right side of the code. A large 'S' is written at the top right. Below it, 'By' is written and circled, with an arrow pointing to the `driver.get()` call. Further down, 'URL' is written and circled, with an arrow pointing to the `driver.navigate().to(new URL(...))` call. At the bottom right, 'URL' is written again, with an arrow pointing to the same line. There are also some scribbles and a small 'I' character near line 21.

Refresh page-

```
navigationmethods4.java ×
1 package seleniumbatch;
2
3 import org.openqa.selenium.WebDriver;
4
5
6 public class navigationmethods4 {
7
8     public static void main(String[] args) {
9
10         //refresh page.
11         WebDriver driver = new ChromeDriver();
12
13         driver.navigate().to("https://www.google.com");
14
15         driver.navigate().refresh();//returns void.
16     }
17
18 }
19
20 //refreshes the page.
21
```

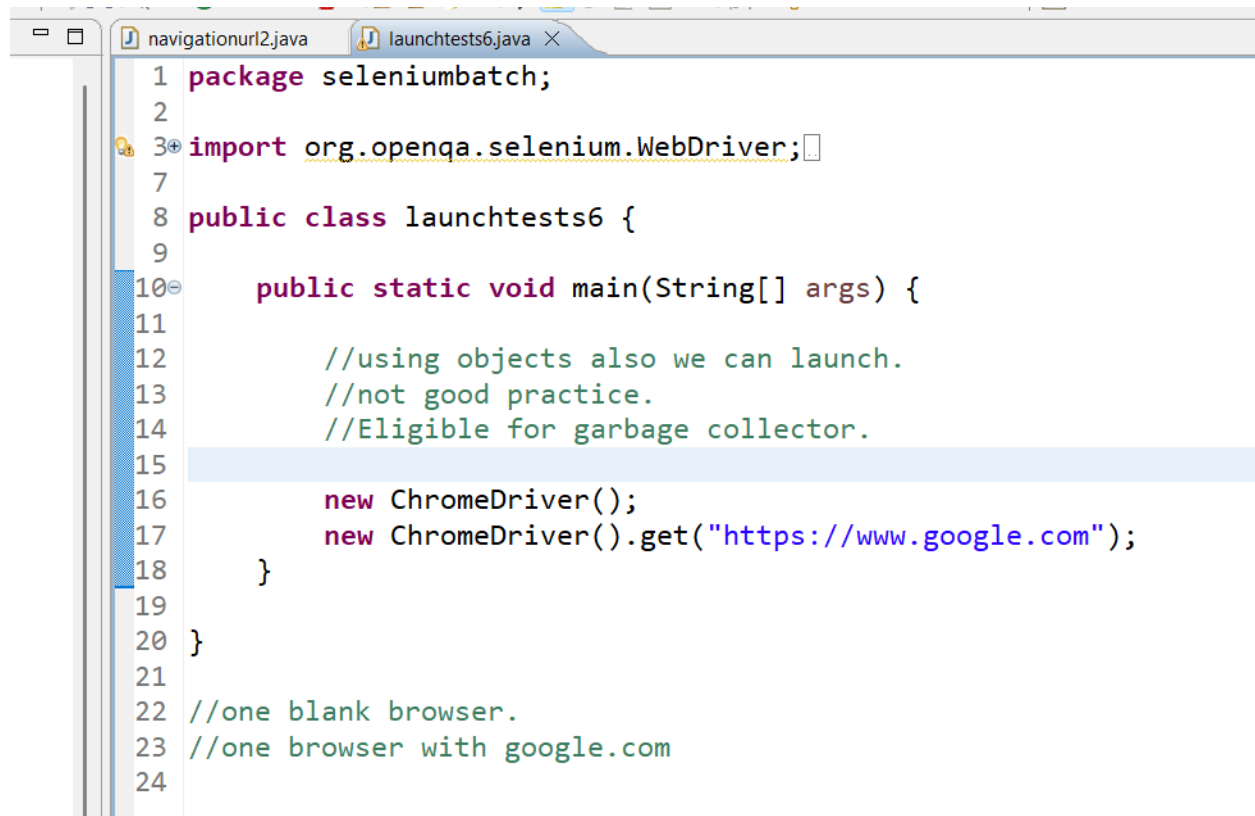
Launch flipkart using url-

```
navigationurl2.java ×
1 package seleniumbatch;
2
3 import java.net.MalformedURLException;
4
5
6 public class navigationurl2 {
7
8     // Launch flipkart using url-
9
10     public static void main(String[] args) throws MalformedURLException {
11
12         WebDriver driver = new ChromeDriver();// 123
13
14         URL baseUrl = new URL("https://www.flipkart.com");
15         driver.navigate().to(baseUrl);
16     }
17
18 }
19
20 //launches flipkart.
21
```

Driver.get will create new session id. Driver.navigate will use the same session id. Only for driver.quit or driver.close, the session id becomes invalid or null.

Two browsers launched-

One with the google. Eligible for garbage collector.

A screenshot of an IDE window showing a Java file named 'launchtests6.java'. The code is as follows:

```
1 package seleniumbatch;
2
3 import org.openqa.selenium.WebDriver;
4
5
6
7
8 public class launchtests6 {
9
10     public static void main(String[] args) {
11
12         //using objects also we can launch.
13         //not good practice.
14         //Eligible for garbage collector.
15
16         new ChromeDriver();
17         new ChromeDriver().get("https://www.google.com");
18     }
19 }
20
21
22 //one blank browser.
23 //one browser with google.com
24
```

The code is color-coded: keywords are in purple, package names in green, and comments in teal. The IDE interface includes a tab bar at the top with 'navigationurl2.java' and 'launchtests6.java'. A vertical line on the left indicates the current cursor position at line 10.