

Selenium Java - Tutorial 11- Window Tabs & Iterator

This is the next tutorial in selenium-java series. Please go through the previous tutorials before you start this one. In the last tutorial, we learned how to handle checkboxes, radio buttons, links. In this tutorial we will see how to handle window tabs using an iterator!

What you will Learn:

1. Open links in different window tabs
2. Handling window tabs using iterator
3. Tabs Exercise 1
4. Tabs Exercise 2

Open links in different window tabs

Create a new class & just copy the code (refer previous tutorial) that counts links in the first column

```
9 public class Iterator {
10
11     public static void main(String[] args) throws InterruptedException {
12         System.setProperty("webdriver.chrome.driver", "C:\\Users\\DELL\\Desktop\\TRAINING\\Software\\chromedriver.exe");
13
14         WebDriver driver = null;
15
16         driver = new ChromeDriver();
17
18         driver.get("https://www.hollisterco.com/shop/wd");
19
20         WebElement columndriver = driver.findElement(By.cssSelector(".footer__info-links.grid-col.grid-col-2 ul ul"));
21         System.out.println("Total links in first column-->" + columndriver.findElements(By.tagName("a")).size());
22     }
23 }
```

Figure 1

When we run this script, the total number of links in first column gets printed (4)

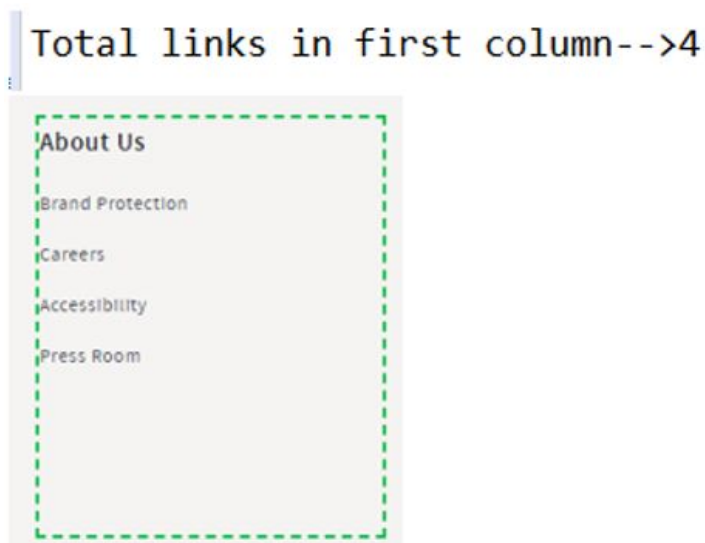


Figure 2

The 4 links that we see over here are: Brand Protection, Careers, Accessibility, Press room. Now our requirement is that, we have to click each of these 4 links, one by one. When we click these links, the links should open in a new window tab. They should not open in the same browser window.

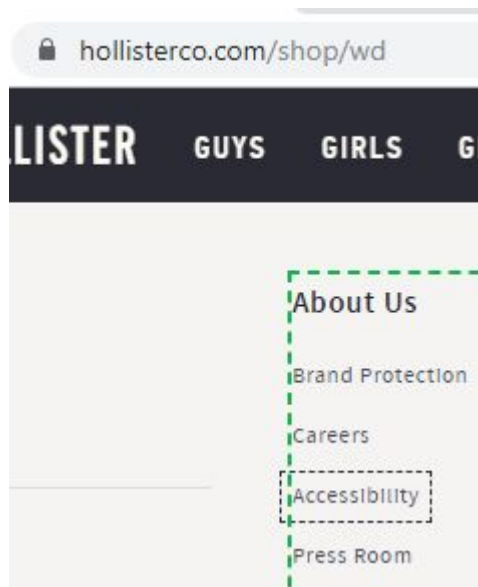


Figure 3

To simulate this requirement manually, move the mouse to any link (as seen above), press the control button and hit enter. Notice below that a new window tab opens having the title 'Accessibility'

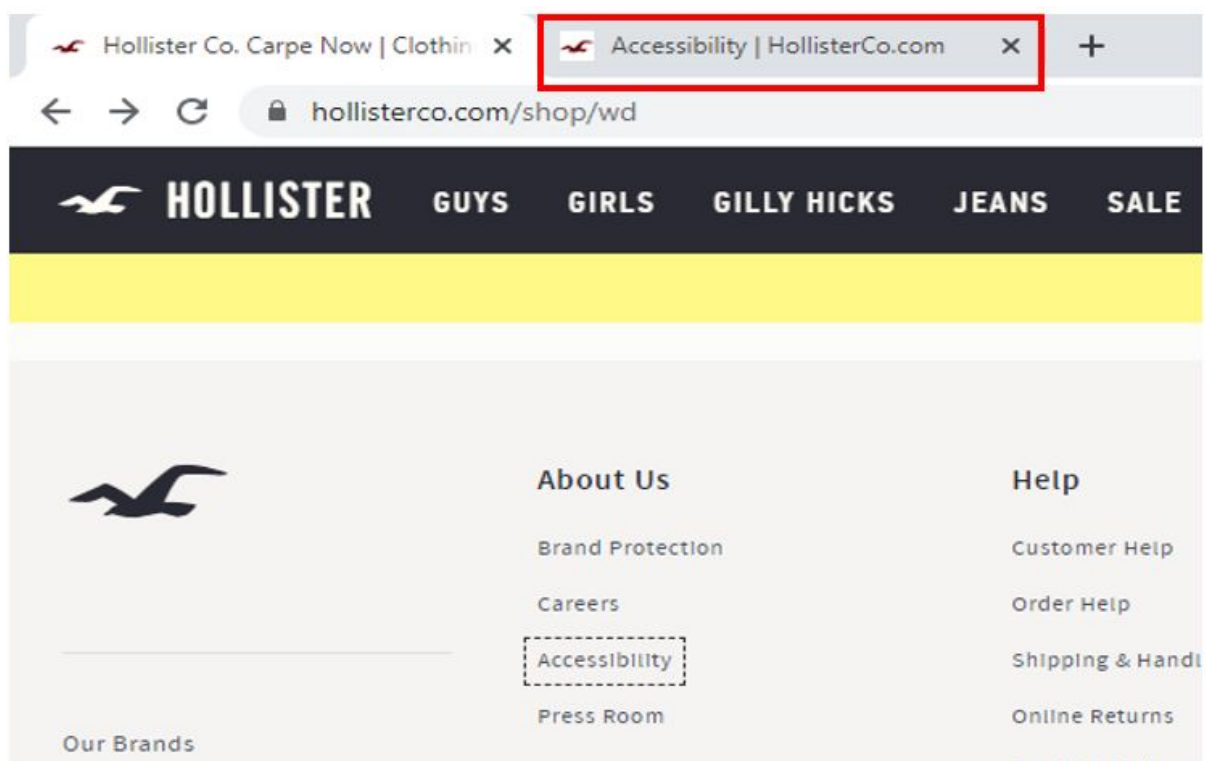


Figure 4

Similarly move the mouse to 'Brand Protection' link (as seen below), press the control button and hit enter. Notice that a new window tab opens having the title 'Customer Service'.

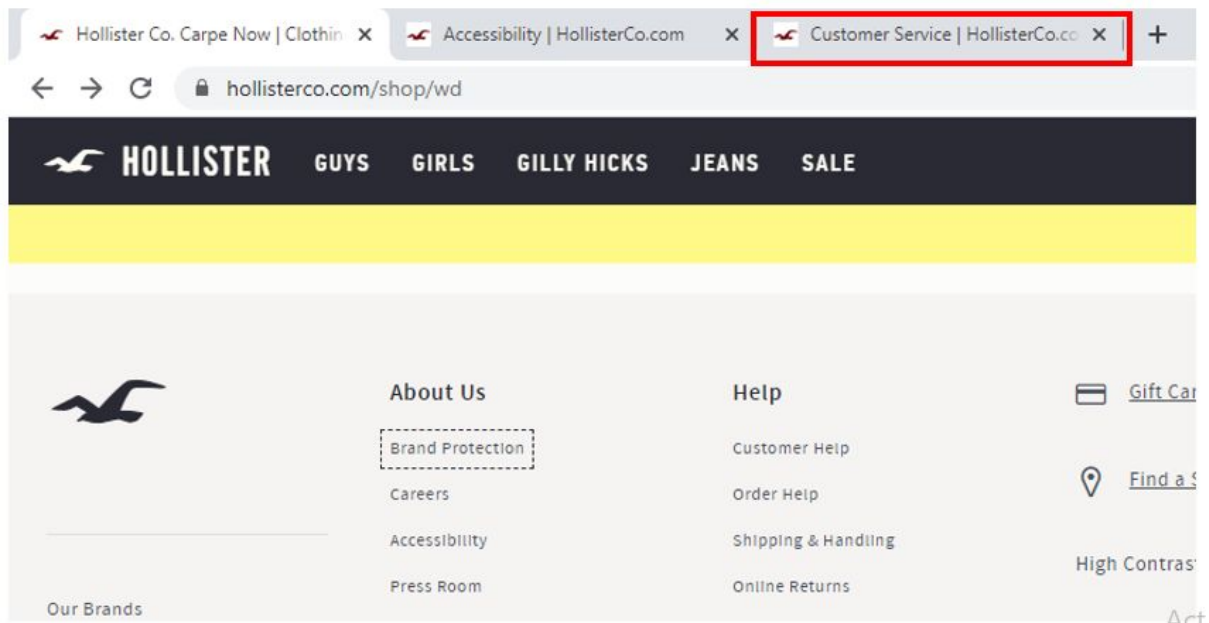


Figure 5

Repeat the same simulation for other 2 links as well. So we see 4 different window tabs open for each of the 4 links.

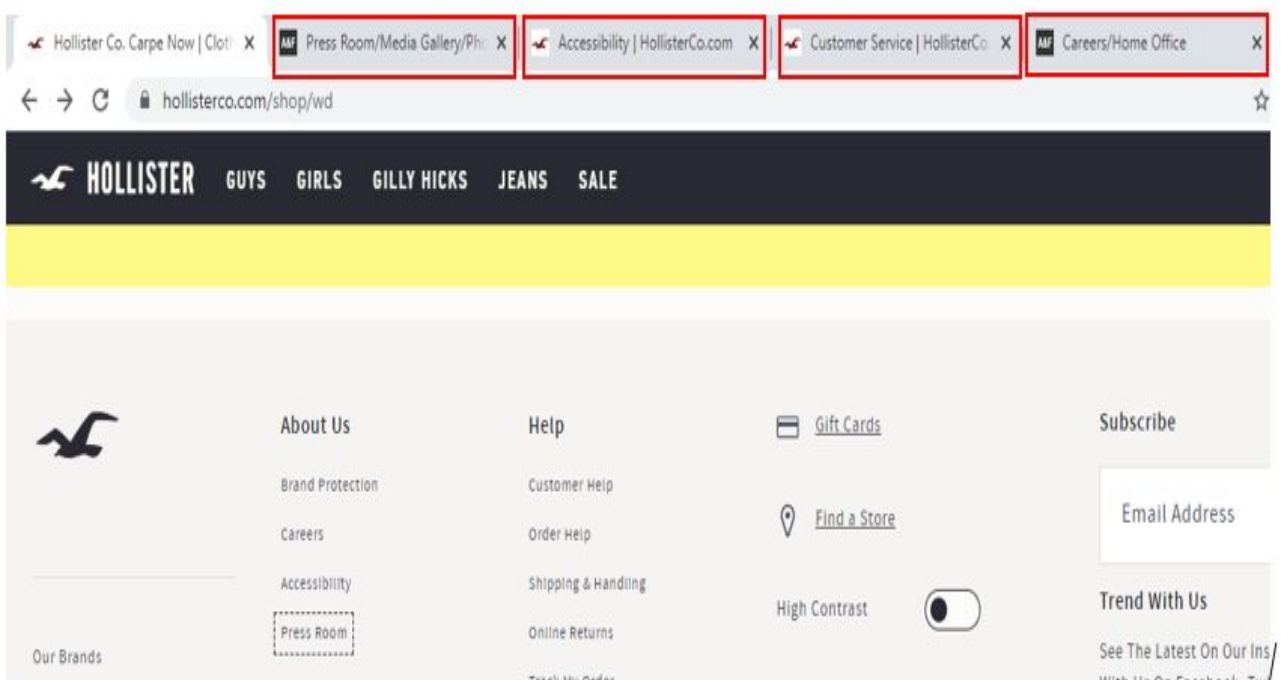


Figure 6

If you do not use the control button, than the link will open in the same page, like seen below. We do not want the link to open in the same page

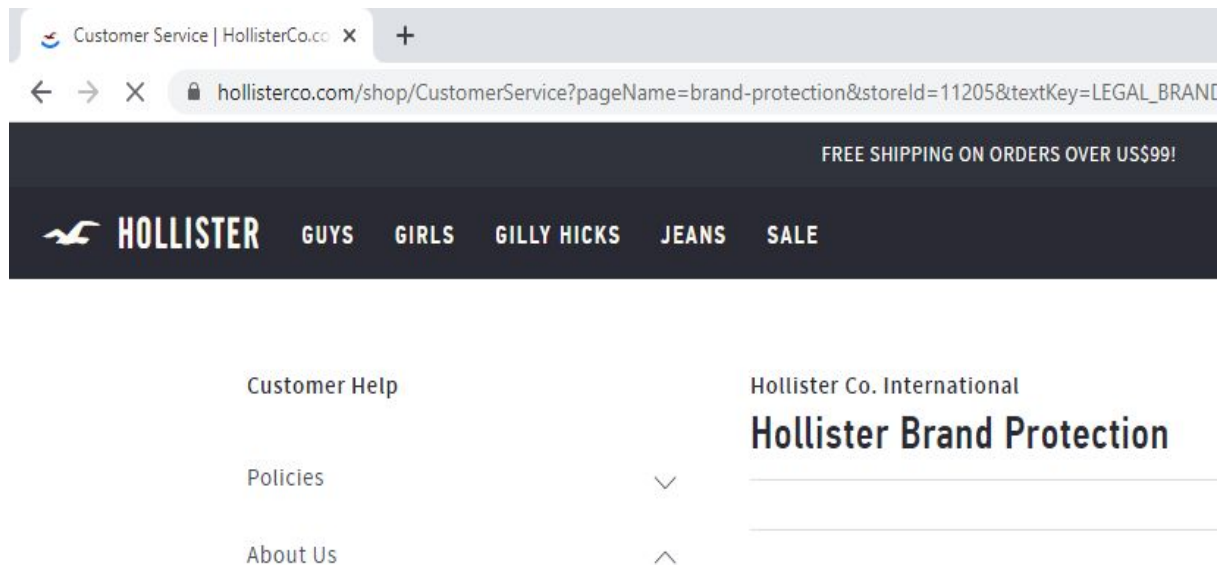


Figure 7

Now let us see how to simulate the same action using selenium script. The same action can be simulated using the 2 methods of 'Keys' class: CONTROL and ENTER, see line 25. So we have created a 'for' loop. This will click one link at a time. Note that the index 'i' of first link would start from 0. The logic of 'for' loop is self-explanatory. In line#23, we are initializing the variable/index 'i' starting from 0. We are then saying that this index should be less than size (4 in our case). Thus the index should be less than 4 (the range would be 0, 1, 2, and 3). We finally increment the index by 1 using i++ after each iteration. Line#25 captures the 2 keys in a string variable. We then pass this string variable in the sendkeys function in line#26. So in line#26, we are actually doing the click operation. Line#27 introduces a delay of 1 sec before the script clicks the next link.

```

9 public class Iterator {
10
11     public static void main(String[] args) throws InterruptedException {
12         System.setProperty("webdriver.chrome.driver", "C:\\Users\\DELL\\Desktop\\TRAINING\\Software\\chromedriver.exe"
13
14         WebDriver driver = null;
15
16         driver = new ChromeDriver();
17
18         driver.get("https://www.hollisterco.com/shop/wd");
19
20         WebElement columndriver = driver.findElement(By.cssSelector(".footer__info-links.grid-col.grid-col-2 ul ul"));
21         System.out.println("Total links in first column-->" + columndriver.findElements(By.tagName("a")).size());
22
23         for(int i=0 ; i < columndriver.findElements(By.tagName("a")).size() ; i++)
24         {
25             String clickonlinkTab = Keys.chord(Keys.CONTROL,Keys.ENTER);
26             columndriver.findElements(By.tagName("a")).get(i).sendKeys(clickonlinkTab);
27             Thread.sleep(1000);
28         }

```

Figure 8

So when we run this script, the 4 links are clicked one by one and 4 new tabs open for each of the 4 links

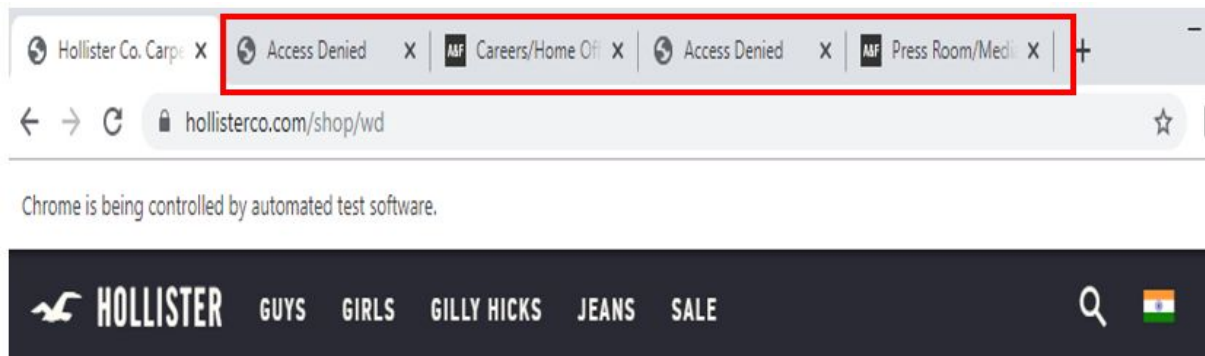


Figure 9

Now let us see what happens if we comment the 1 second wait time

```

9 public class Iterator {
10
11     public static void main(String[] args) throws InterruptedException {
12         System.setProperty("webdriver.chrome.driver", "C:\\Users\\DELL\\Desktop\\TRAINING\\Software\\chromedriver.exe"
13
14         WebDriver driver = null;
15
16         driver = new ChromeDriver();
17
18         driver.get("https://www.hollisterco.com/shop/wd");
19
20         WebElement columndriver = driver.findElement(By.cssSelector(".footer__info-links.grid-col.grid-col-2 ul ul"));
21         System.out.println("Total links in first column-->" + columndriver.findElements(By.tagName("a")).size());
22
23         for(int i=0 ; i < columndriver.findElements(By.tagName("a")).size() ; i++)
24         {
25             String clickonlinkTab = Keys.chord(Keys.CONTROL,Keys.ENTER);
26             columndriver.findElements(By.tagName("a")).get(i).sendKeys(clickonlinkTab);
27             //Thread.sleep(1000);
28         }

```

Figure 10

When you run the script, you will notice that the 4 windows open very fast.

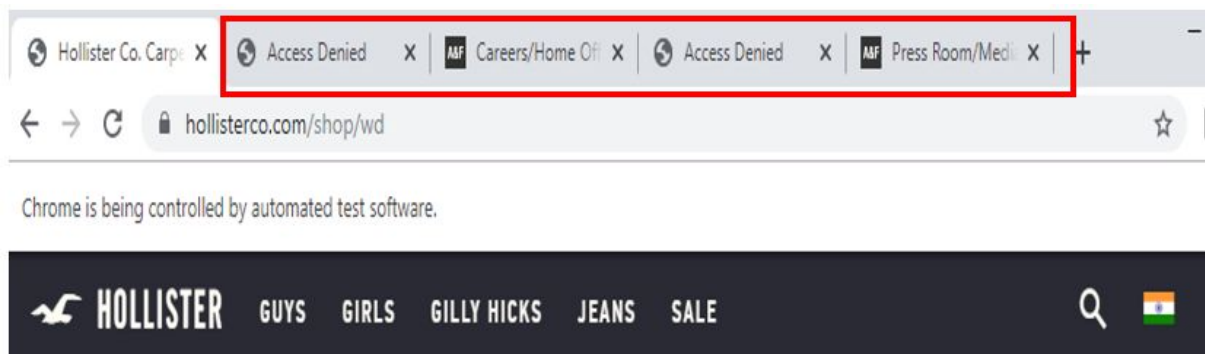


Figure 11

Let us uncomment back the wait statement

Handling window tabs using iterator

In continuous with previous exercise, our next goal is get the title of each of the 4 pages that the script opens. Now, each separate window that opens, has a unique window handle.

If you go to the selenium-java documentation and click *WebDriver* from the left panel, you would see 'getWindowHandles()' method listed, see below. This method returns a set of window handles.

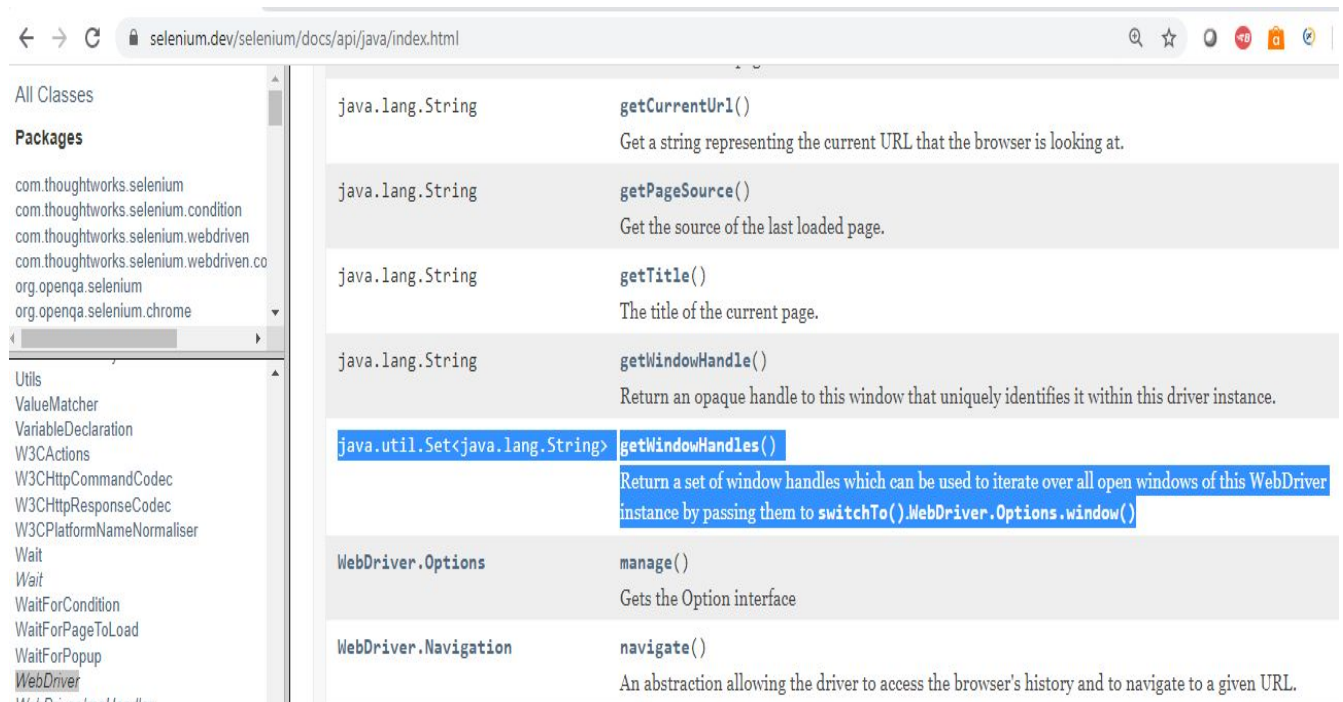


Figure 12

Let us see how to use this method. To handle all windows that are opened by web driver, we can use "driver.getWindowHandles()". Once we have the window handles, we can easily switch from one window to another in a web application. This method returns `Iterator<String>`, see line 27

`iter.hasNext()` tells us whether next index is present or not, line 29

`iter.next()` actually moves to next window using `switchTo()` method, line 31

In line 32 we are fetching the title of the page

```

9 public class Iterator {
10     public static void main(String[] args) throws InterruptedException {
11         System.setProperty("webdriver.chrome.driver", "C:\\Users\\DELL\\Desktop\\TRAINING\\Software\\chromedriver.exe"
12
13         WebDriver driver = null;
14         driver = new ChromeDriver();
15         driver.get("https://www.hollisterco.com/shop/wd");
16
17         WebElement columndriver = driver.findElement(By.cssSelector(".footer__info-links.grid-col.grid-col-2 ul ul"));
18         System.out.println("Total links in first column-->" + columndriver.findElements(By.tagName("a")).size());
19
20         for(int i=0 ; i < columndriver.findElements(By.tagName("a")).size() ; i++)
21         {
22             String clickonlinkTab = Keys.chord(Keys.CONTROL,Keys.ENTER);
23             columndriver.findElements(By.tagName("a")).get(i).sendKeys(clickonlinkTab);
24             Thread.sleep(1000);
25         }
26
27         java.util.Iterator<String> iter = driver.getWindowHandles().iterator();
28
29         while(iter.hasNext())
30         {
31             driver.switchTo().window(iter.next());
32             System.out.println(driver.getTitle());
33         }
34     }

```

Figure 13

Run the script, notice that the title of each window (including the parent window) gets printed

```

Total links in first column-->4
Hollister Co. Carpe Now | Clothing for Guys and Girls
[1575104637.411][WARNING]: Timed out connecting to Chrome, retrying...
Press Room/Media Gallery/Photos
[1575104642.521][WARNING]: Timed out connecting to Chrome, retrying...
Access Denied
[1575104647.702][WARNING]: Timed out connecting to Chrome, retrying...
Careers/Home Office
[1575104652.897][WARNING]: Timed out connecting to Chrome, retrying...
Access Denied

```

Figure 14

Tabs Exercise 1

Let us see another example. Navigate to <https://www.hdfc.com/>

You can see the link 'Blogs'



Figure 15

When we click this link, we see that a new window tab opens 'HDFC Blog'

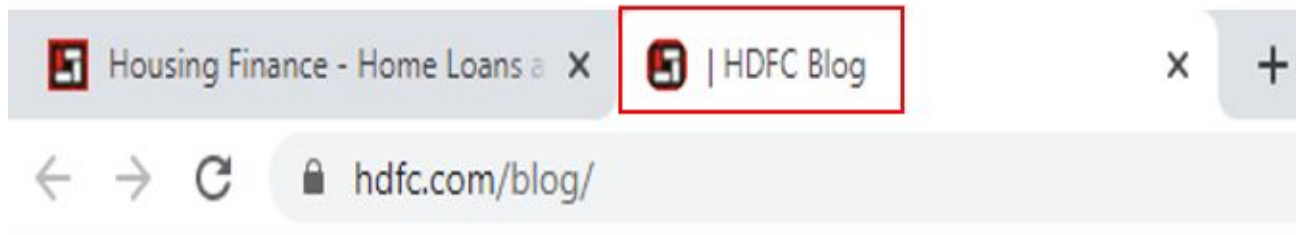


Figure 16

So just like we had done previously, we will perform the below steps to print the titles of parent and child windows:

- ❑ we will get the window handles
- ❑ we will use the `iter.next()`, the first `iter.next()` would point to current parent window, store this id in string var
- ❑ the next `iter.next` would point to first child window, store this id in string var
- ❑ we then switch to child window & print the page title
- ❑ we then switch to parent window & print the page title

Figure 17

Run the script, notice that 'HDFC Blog' child window tab opens and the control goes to this window. This is due to line#25 in above figure where we are switching to child window

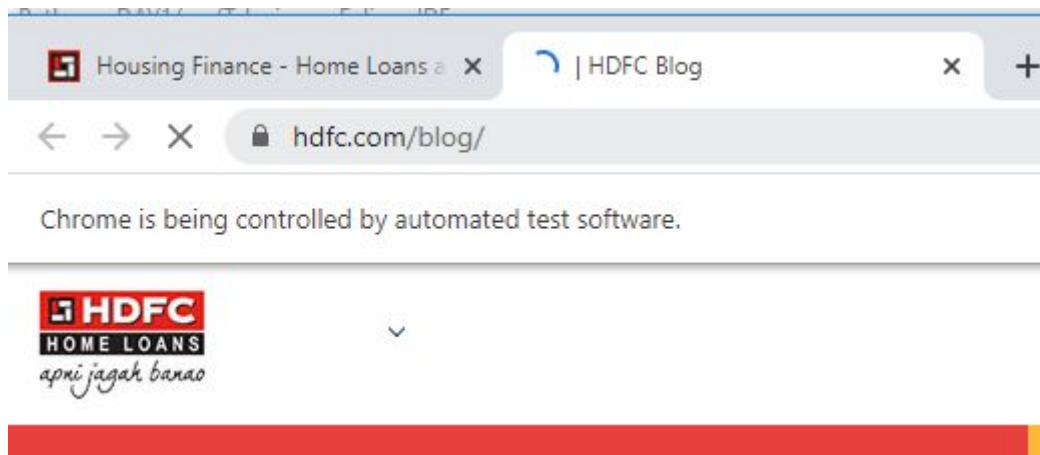


Figure 18

The control then comes back to parent window, see below. This is due to line#28 in above figure where we are switching back to parent window

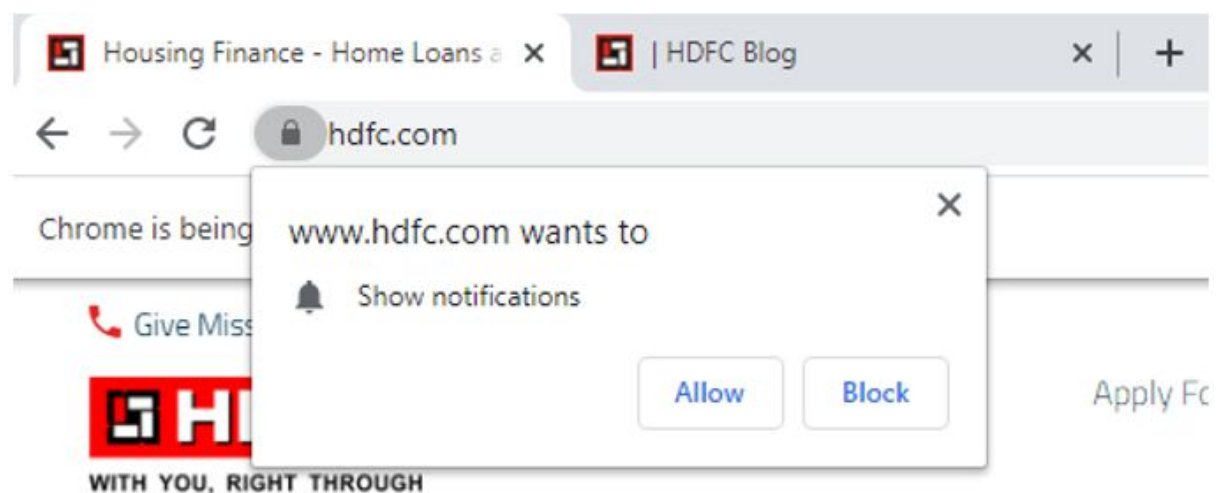


Figure 19

The console first prints the title of child window & then the title of parent window, see below

```
<terminated> Tabs [Java Application] C:\Program Files\Java\jre1.8.0_191\bin\javaw.exe (21-Feb-2020, 8:27:26 PM)
Starting ChromeDriver 2.42.591088 (7b2b2dca23cca0862f674758c9a3933e685)
Only local connections are allowed.
[1582297054.052][WARNING]: Timed out connecting to Chrome, retrying...
Feb 21, 2020 8:27:36 PM org.openqa.selenium.remote.ProtocolHandshake c
INFO: Detected dialect: OSS
[1582297063.947][WARNING]: Timed out connecting to Chrome, retrying...
| HDFC Blog
Housing Finance - Home Loans and Housing Finance Company - HDFC Ltd
```

Figure 20

Tabs Exercise 2

The behaviour of 'Careers' link is different. This link opens in a new tab only if you click 'Ctrl + Enter' key

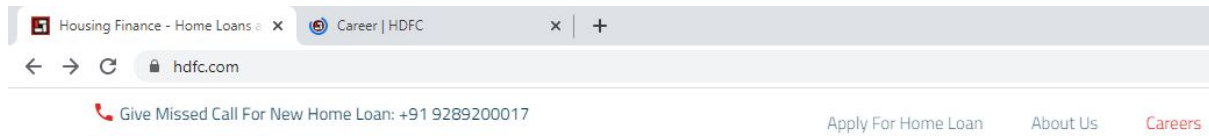


Figure 21

So we can simulate this action using CONTROL and ENTER keys like we have seen before

```

8 public class WindowTabs {
9
10 public static void main(String[] args) {
11     System.setProperty("webdriver.chrome.driver", "C:\\Users\\DELL\\Desktop\\TRAINING\\Soft
12
13     WebDriver driver = null;
14
15     driver = new ChromeDriver();
16
17     driver.get("https://www.hdfc.com/");
18
19     String clickonlinkTab = Keys.chord(Keys.CONTROL,Keys.ENTER);
20     driver.findElement(By.LinkText("Careers")).sendKeys(clickonlinkTab);
21
22     java.util.Iterator<String> iter = driver.getWindowHandles().iterator();
23
24     String parentid = iter.next(); //first iter.next() points to current parent window
25     String childid = iter.next(); //second iter.next() points to child window
26
27     driver.switchTo().window(childid); //switches to child window
28     System.out.println(driver.getTitle()); //prints title of child window
29
30     driver.switchTo().window(parentid); //switches back to parent window
31     System.out.println(driver.getTitle()); //prints title of parent window

```

Figure 22

Rest of the steps would be same.

When you run the script, the 'Careers' link opens in a new child window, the control goes to this child window

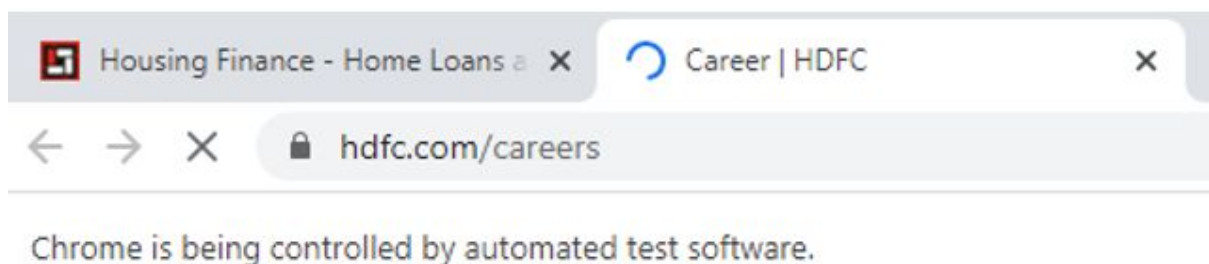


Figure 23

The control then switches to parent window

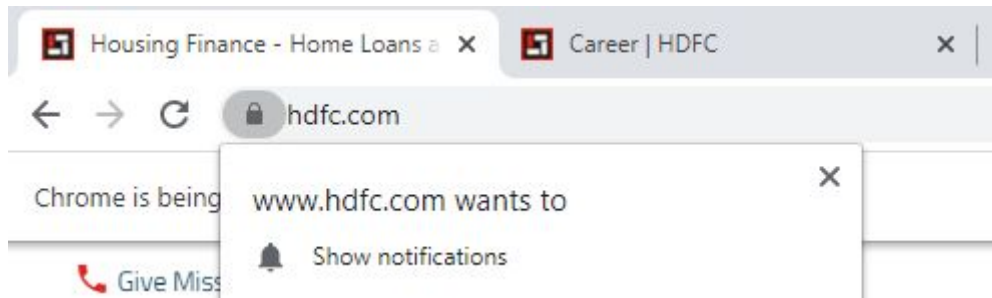


Figure 24

The console prints the titles of both the pages

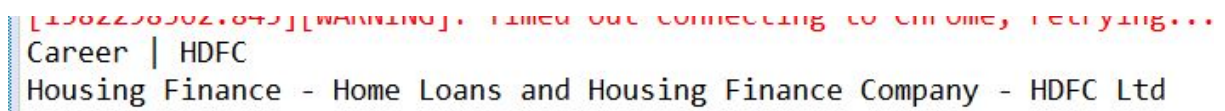


Figure 25

So this is how we deal with window tabs. Thank you for reading!