Locators (Part 1)

In this tutorial we are going to take a look at different locators to identify elements!

What you will Learn:
By class
By.id locator
By.name locator
By.linkText locator
By.xpath locator
Second xpath syntax
By.cssSelector locator
Second css syntax
Third css syntax
Fourth css syntax

By class:
We will now begin with identifying elements on a page. We will be working with chrome browser.
Go to https://selenium.dev/selenium/docs/api/java/index.html
We have a 'By' class in selenium api. This class helps us to identify elements.

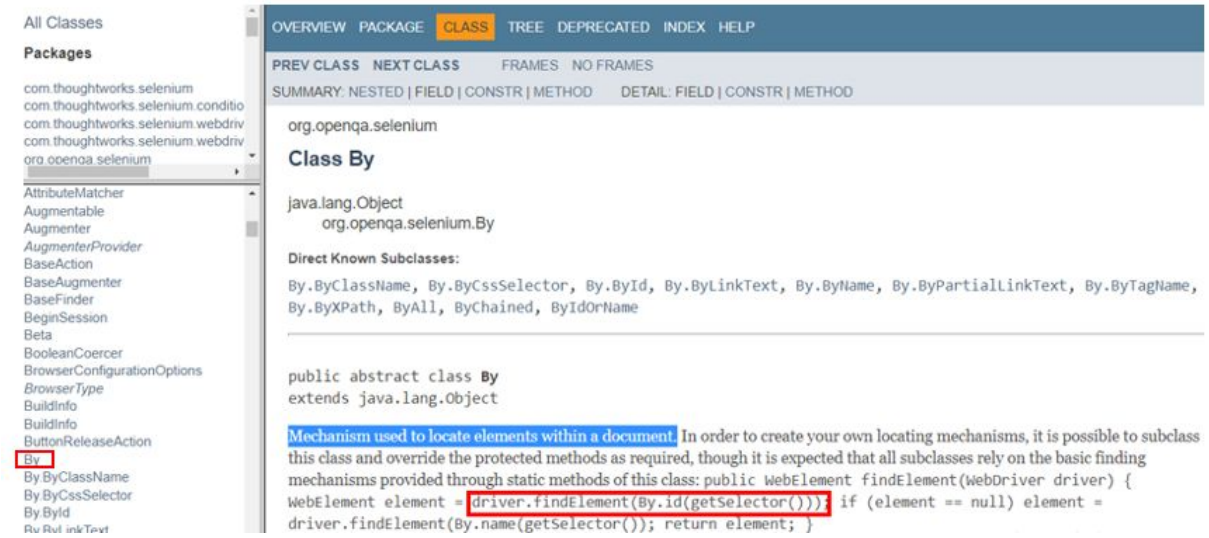

Figure 1

Open a new chrome browser & go to facebook.com, right click email field and click inspect. As can be seen, this field is represented by <input> tag & has lots of attributes like type, class, name, id etc

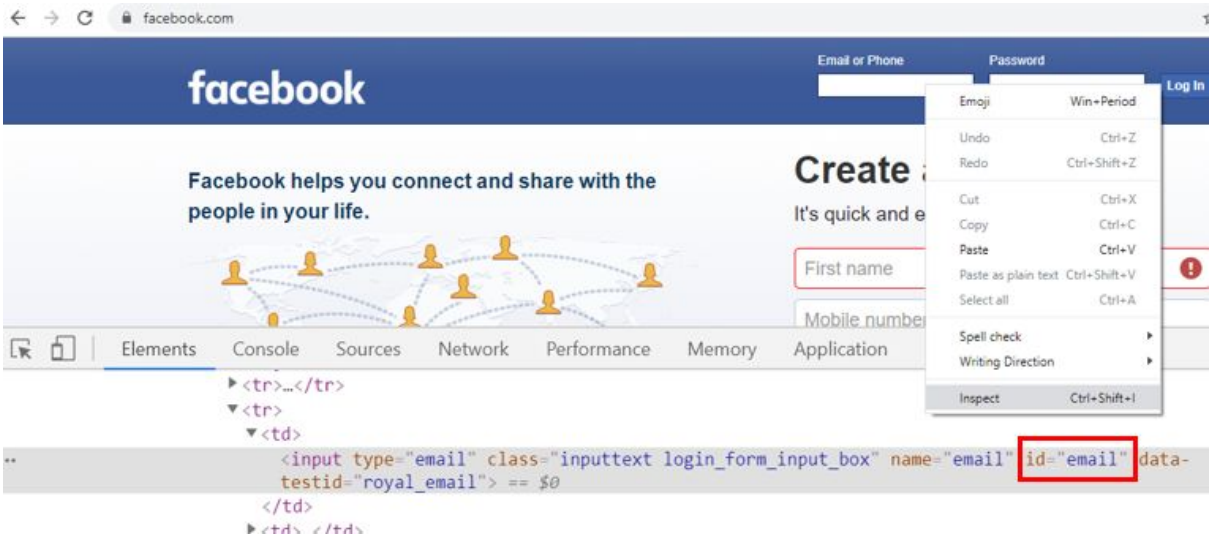

Figure 2

By.id locator:
The value of 'id' attribute as can be seen above is 'email'. The syntax is
By.<attribute_name>("<attribute_value>")

So, copy the value of 'id' attribute & use it line 14, see below. We will also use the 'sendkeys' method to send a dummy email id

```
1  import org.openqa.selenium.By;
4
5  public class IdentifyElements {
6
7      public static void main(String[] args) {
8          System.setProperty("webdriver.chrome.driver", "C:\\Users\\DELL\\D
9
10         WebDriver driver = null;
11
12         driver = new ChromeDriver();
13         driver.get("https://facebook.com");
14         driver.findElement(By.id("email")).sendKeys("dummy@gmail.com");
15     }
```

Figure 3

Run the script, notice that the dummy email id gets entered in 'Email' field

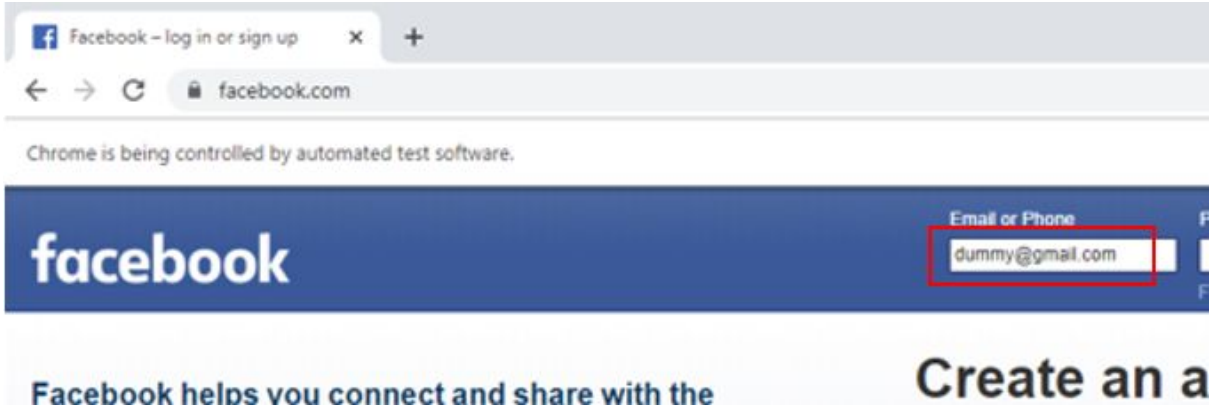

Figure 4

By.name locator:

Let's inspect password field & this time we will locate the password field using 'name' attribute instead of 'id' attribute. Notice that it is represented by <input> tag

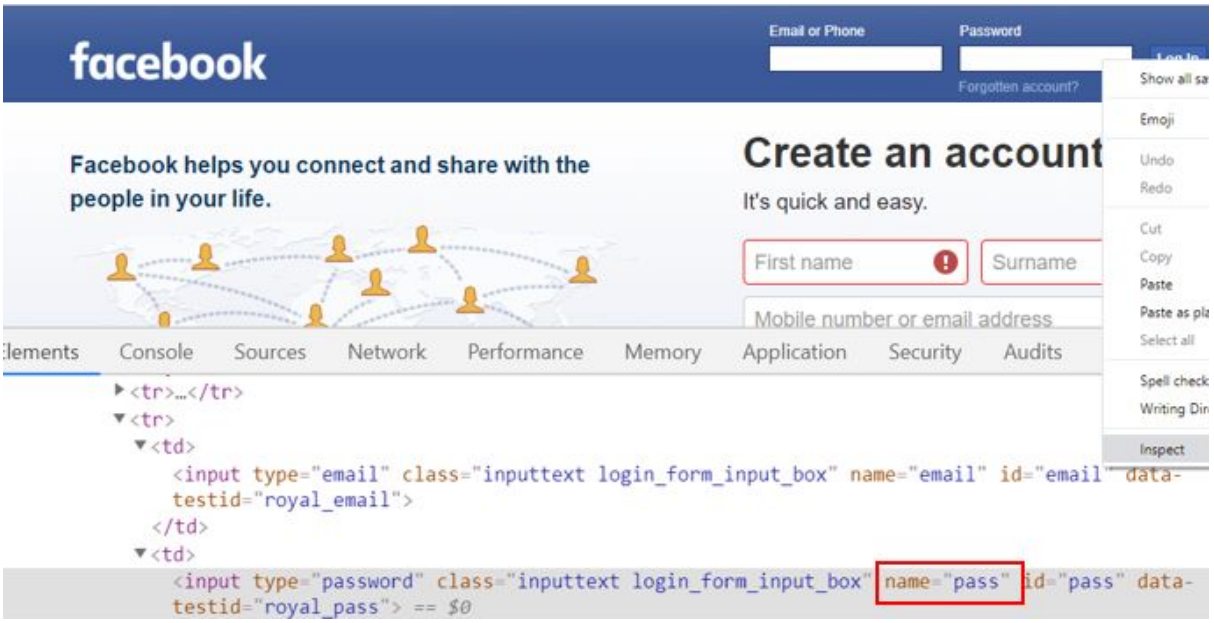

Figure 5

So we can write

```
driver.get("https://facebook.com");
driver.findElement(By.id("email")).sendKeys("dummy@gmail.com");
driver.findElement(By.name("pass")).sendKeys("dummy");
```

Figure 6

Run script. You will notice that the text 'dummy' gets entered in password field

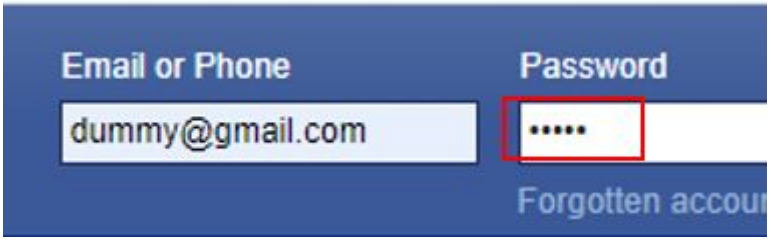

Figure 7

By.linkText locator:

On the facebook page, let us inspect the link "Forgotten account?" If you see below, this is represented by anchor tag <a> & the text of the link is "Forgotten account?"

Figure 8

So we use it like below & than use the click method on the link

```
12          driver = new ChromeDriver();
13          driver.get("https://facebook.com");
14          driver.findElement(By.id("email")).sendKeys("dummy@gmail.com");
15          driver.findElement(By.name("pass")).sendKeys("dummy");
16          driver.findElement(By.linkText("Forgotten account?")).click();
```

Figure 9

Run the script, the below page opens

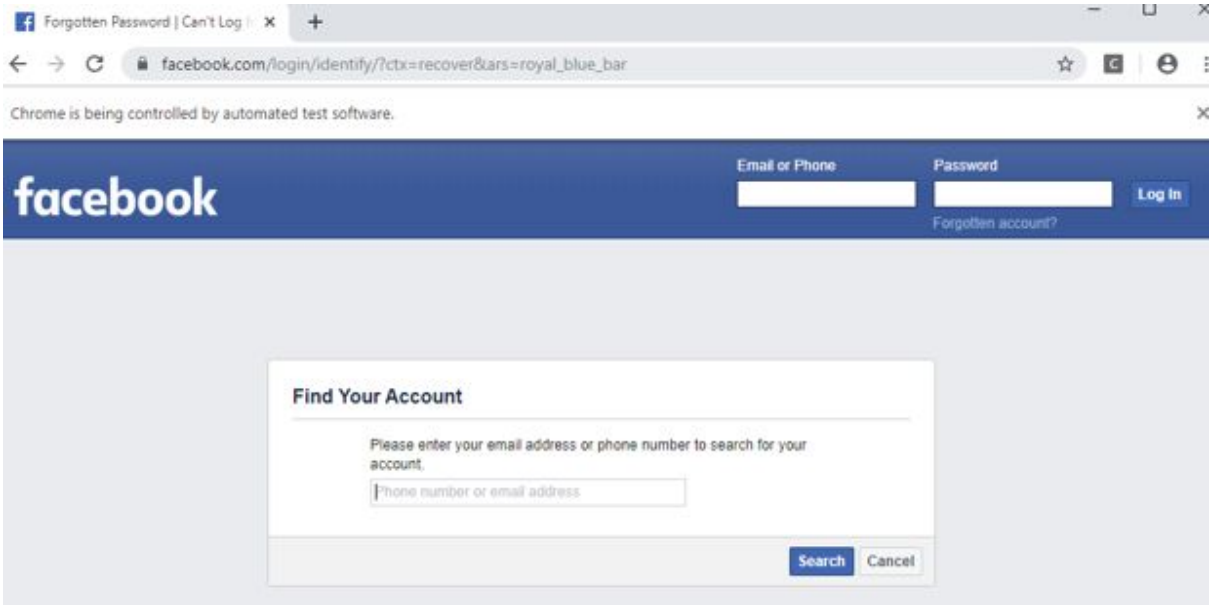

Figure 10

Now comment the below line

```
//driver.findElement(By.linkText("Forgotten account?")).click();
```

Figure 11

By.xpath locator:
Let us now identify an element using xpath. Xpath is address of an element on a webpage. We can create our own xpaths. This helps us traversing through nodes to reach a specific desired element on a web page.
Syntax of xpath: **//tagname[@attribute='value']**
Thus for example: **//input[@name='Log In']**
What this means is that: find me an element on the webpage whose tagname is 'input' & whose attribute 'name' has the value 'Log In'

See below. Let us inspect 'Log In' button. The tagname is 'input', attribute is 'value', the value of attribute is 'Log In'

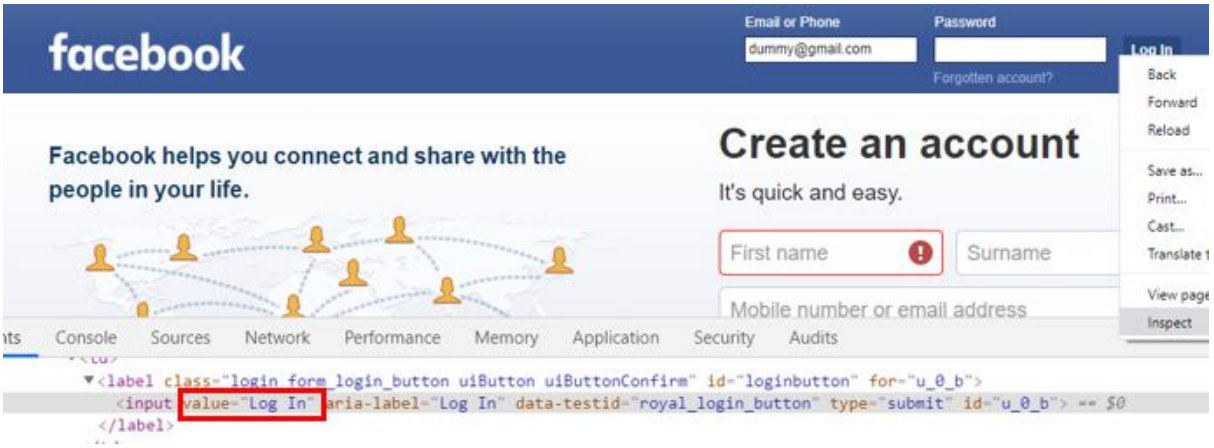

Figure 12

See line 18. We are using By.xpath and based on xpath syntax that we have seen above, our xpath would be: //input[@value='Log In']

```
12          driver = new ChromeDriver();
13          driver.get("https://facebook.com");
14          driver.findElement(By.id("email")).sendKeys("dummy@gmail.com");
15
16          driver.findElement(By.name("pass")).sendKeys("dummy");
17
18          driver.findElement(By.xpath("//input[@value='Log In']")).click();
```

Figure 13

Run script, login button should get clicked and below page might come up

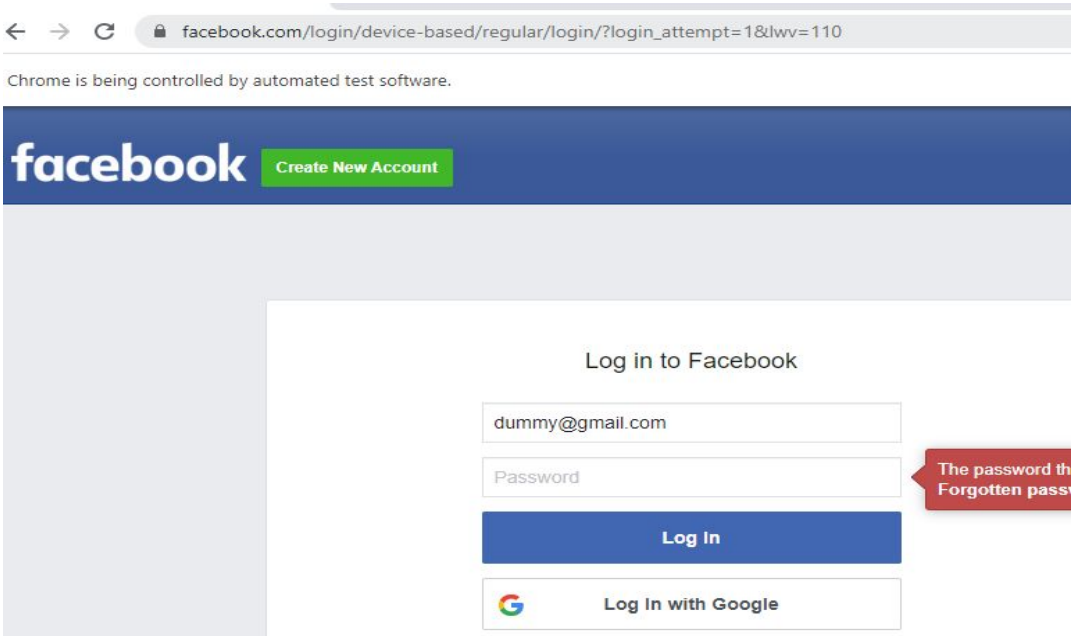

Figure 14

Second xpath syntax:
We can replace *tagname* with star * (star * represents *any*)
Thus instead of saying //tagname[@attribute='value'], we can also say **//*[@attribute='value']**
Thus for example: **//*[@value='Log In']**
What this means is that: find me any element on the webpage having *any* tagname whose attribute 'value' has the value 'Log In'

Comment line 18. Line 19 uses the second xpath syntax

```
12          driver = new ChromeDriver();
13          driver.get("https://facebook.com");
14          driver.findElement(By.id("email")).sendKeys("dummy@gmail.com"
15
16          driver.findElement(By.name("pass")).sendKeys("dummy");
17
18          //driver.findElement(By.xpath("//input[@value='Log In']")).cl
19          driver.findElement(By.xpath("//*[@value='Log In']")).click();
```

Figure 15

Run script, login button should get clicked and below page might come up

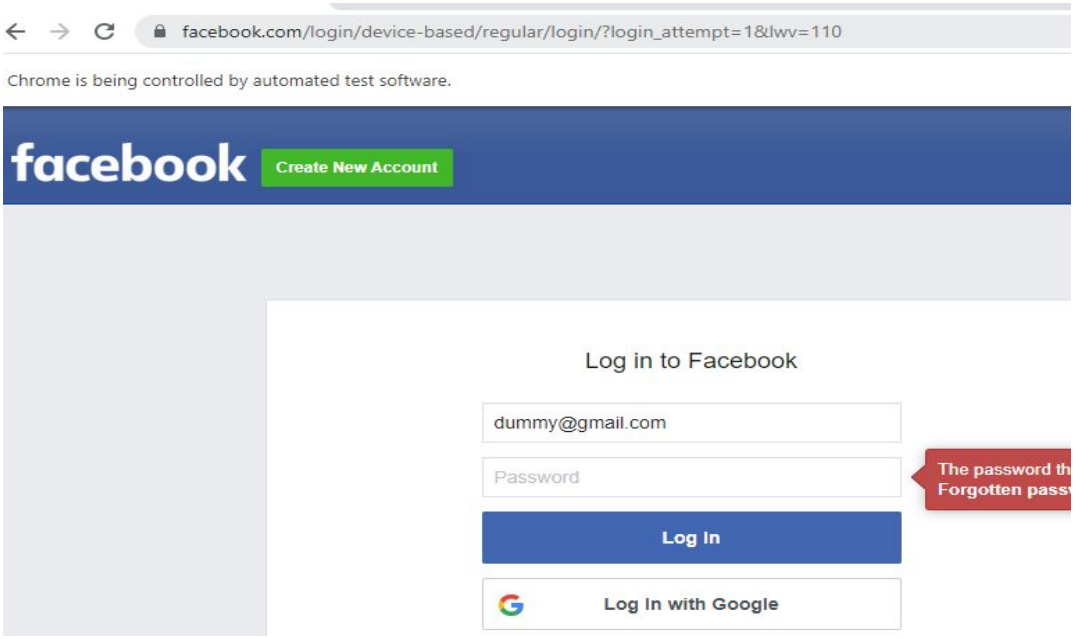

Figure 16

Note: Double quotes inside double quotes is not allowed. Now, while writing the xpath syntax, we are opening and closing the braces with double quotes viz By.xpath(“ “).
So we cannot write another set of double quotes viz By.xpath("//input[@value="Log In"]")
This will give syntax error. To handle this, we will convert the second set of double quotes to a single quote:
By.xpath("//input[@value='Log In']")

Before we proceed further, comment line 19

```
13          driver.get("https://facebook.com");
14          driver.findElement(By.id("email")).sendKeys("dummy@gmail.com");
15
16          driver.findElement(By.name("pass")).sendKeys("dummy");
17
18          //driver.findElement(By.xpath("//input[@value='Log In']")).click();//
19          //driver.findElement(By.xpath("//*[@value='Log In']")).click();  //xp
```

Figure 17

By.cssSelector locator:
Let us now identify the elements with the help of css selectors. ‘css’ stands for cascading style sheet. If you remove // and @ from the xpath syntax **//tagname[@attribute='value']**, we get our first css syntax: **tagname[attribute='value']**
We are using this syntax in line#22

```
13          driver.get("https://facebook.com");
14          driver.findElement(By.id("email")).sendKeys("dummy@gmail.com");
15
16          driver.findElement(By.name("pass")).sendKeys("dummy");
17
18          //driver.findElement(By.xpath("//input[@value='Log In']")).click();//
19          //driver.findElement(By.xpath("//*[@value='Log In']")).click();  //xp
20
21
22          driver.findElement(By.cssSelector("input[value='Log In']")).click();
```

Figure 18

Run script, below page comes up

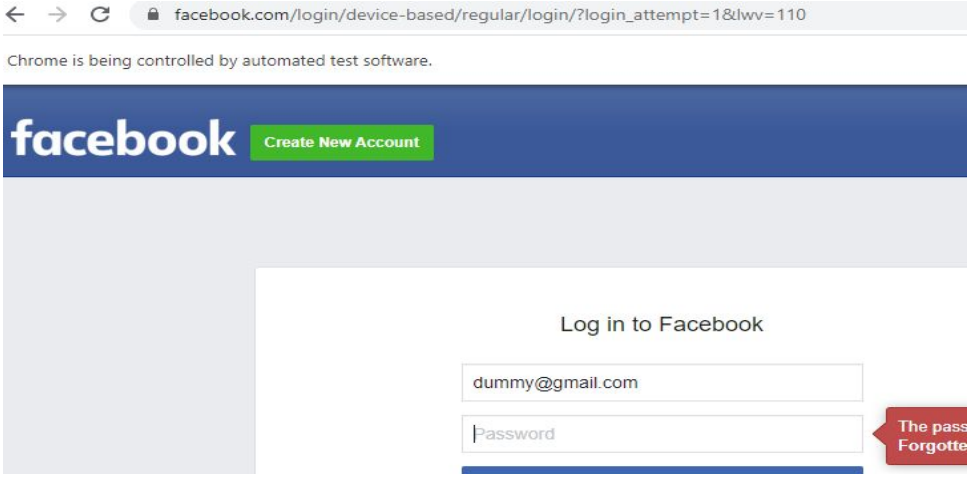

Figure 19

Comment line 22

```
22          //driver.findElement(By.cssSelector("input[value='Log In']")).click();
```

Figure 20

Second css syntax:

This css syntax is further made simpler by removing **tagname** from first css syntax viz **[attribute='value']**

Let us use this in line#23, see below

```
12          driver = new ChromeDriver();
13          driver.get("https://facebook.com");
14          driver.findElement(By.id("email")).sendKeys("dummy@gmail.com");
15
16          driver.findElement(By.name("pass")).sendKeys("dummy");
17
18          //driver.findElement(By.xpath("//input[@value='Log In']")).click();//x
19          //driver.findElement(By.xpath("//*[@value='Log In']")).click();  //xpa
20
21
22          //driver.findElement(By.cssSelector("input[value='Log In']")).click();
23          driver.findElement(By.cssSelector("[value='Log In']")).click();  //css
```

Figure 21

Run script

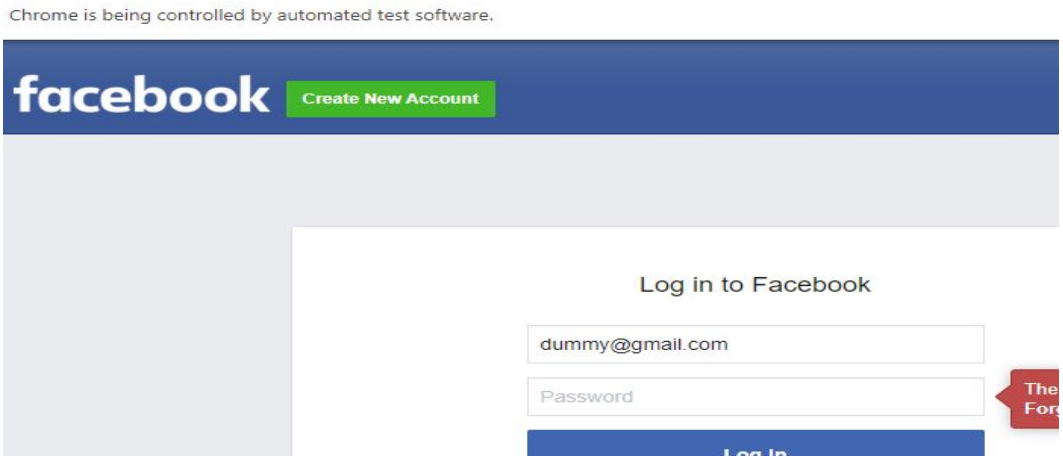

Figure 22

Comment line 23

```
23          //driver.findElement(By.cssSelector("[value='Log In']")).click();
```

Figure 23

Third css syntax:

This syntax can be used only if the element has 'id' attribute. The syntax is **tagname#id**

Notice below that 'Log In' button has 'id' attribute. So we can use this syntax here

Figure 24

See line#24 below

```
24          driver.findElement(By.cssSelector("input#u_0_2")).click();
```

Figure 25

Run script

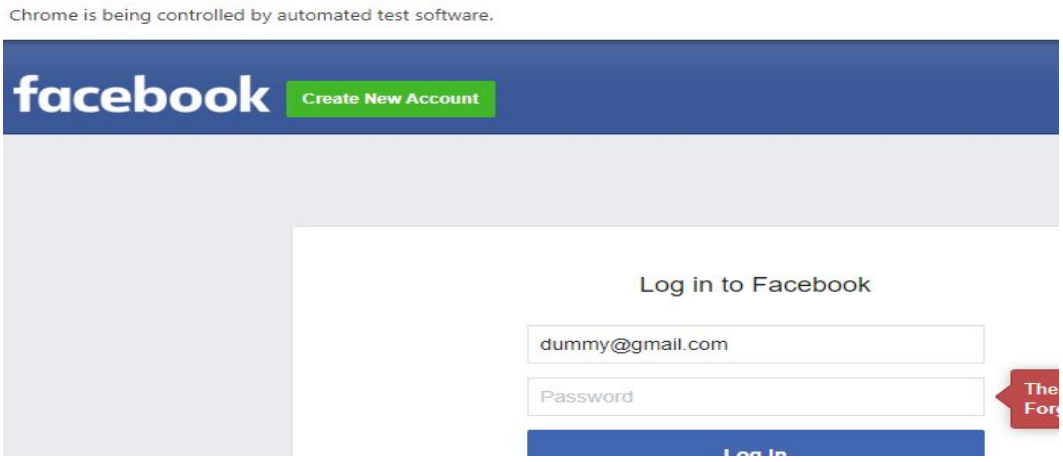

Figure 26

Comment line 24

```
24          //driver.findElement(By.cssSelector("input#u_0_2")).click();
```

Figure 27

Fourth css syntax:

This syntax can be used only if the element has 'id' attribute. The syntax is **#id**

```
25          driver.findElement(By.cssSelector("#u_0_2")).click();
```

Figure 28

Run script

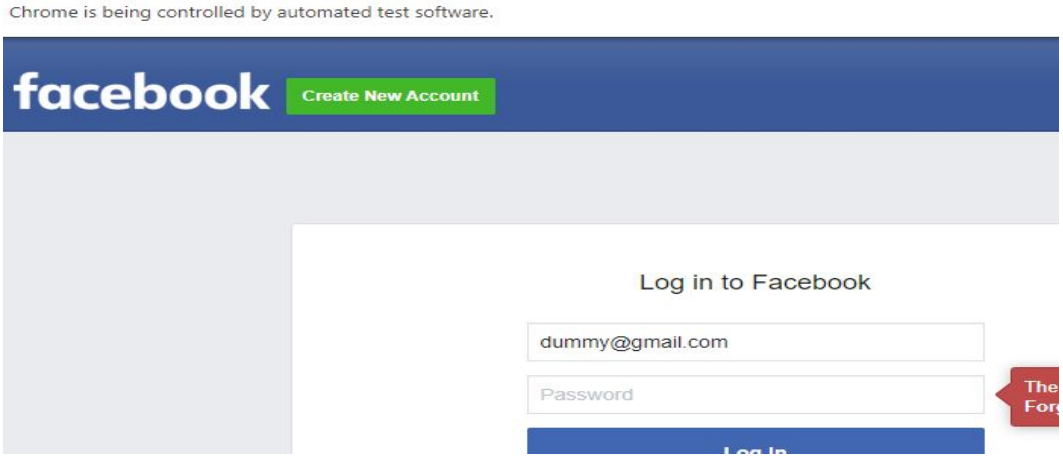

Figure 29

Comment line 25

```
25          //driver.findElement(By.cssSelector("#u_0_2")).click();
```

Figure 30

If you ever get 'NoSuchElementException', than it might be that the value of attribute might be dynamic in nature. What this means is that, if you see next 2 figures, the value of 'id' attribute is changing dynamically (u_0_4 and u_0_2 and so on). In this scenario, you should you an attribute whose value is static in nature.

```
M org.openqa.selenium.remote.ProtocolHandshake createSession
: OSS
ain" org.openqa.selenium.NoSuchElementException: no such element: Unable to locate element: {"me
e=79.0.3945.117)
driver=2.42.591088 (7b2b2dca23cca0862f674758c9a3933e685c27d5),platform=Windows NT 10.0.18362 x86
meout: 0 milliseconds
```

Figure 31

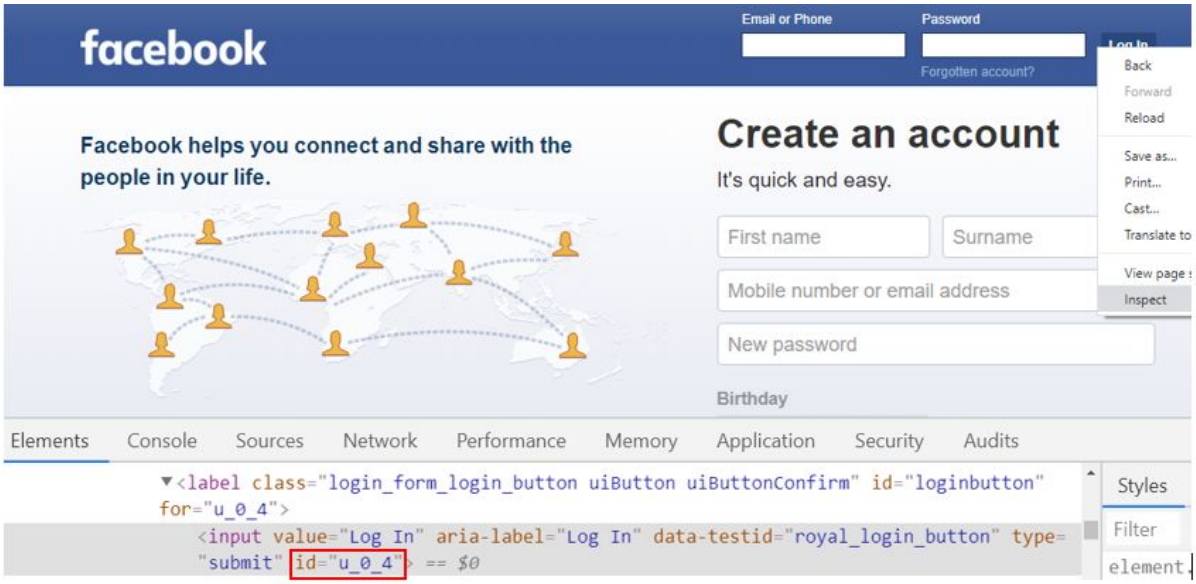

Figure 32

Figure 33

We will continue with locators in our next tutorial. Thank you for reading!