

SELENIUM 4.0 NEW FEATURES - Part 1

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RELATIVE LOCATORS IN SELENIUM 4.0

Apart from the basic locators, selenium 4.0 has introduced concept of relative locators(earlier referred as friendly locators)

- 1.Above
- 2.Below
- 3.toLeftOf
- 4.toRightOf
- 5.near

```
By email= RelativeLocator.with(By.tagName("input"))  
.above(By.id("password"));
```

Feature to Take Element Screenshot in 4.0

In Selenium 4.0 you can take screenshot at element level also. Earlier you could take only page screenshot as method was attached at driver level only.

```
WebElement element =  
driver.findElement(By.cssSelector("h1"));  
File scrFile =  
element.getScreenshotAs(OutputType.FILE);  
FileUtils.copyFile(scrFile, new File("./image.png"));
```

Full Page Screenshot in Firefox Driver

In selenium Firefox webdriver you can also take the screenshot of the entire webpage. Generally screenshot of screen under view is taken but in firefox you can take screenshot of the entire webpage as well.

```
WebDriver driver=new FirefoxDriver();  
File fullPage = ((FirefoxDriver)  
driver).getFullPageScreenshotAs(OutputType.FILE);  
FileUtils.copyFile(fullPage, new  
File("./screenshot/image.jpg"));
```

Duration class in waits in Selenium 4.0

Syntax of Implicit, Explicit and fluent wait in Selenium 4.0 has been changed. Earlier the unit of time was TimeUnit and now it is Duration

Implicit wait:

```
driver.manage().timeouts().implicitlyWait(Duration.ofSeconds(10));
```

Explicit wait:

```
WebElement firstResult = new WebDriverWait(driver, Duration.ofSeconds(10))  
.until(ExpectedConditions.elementToBeClickable(By.xpath("//a/h3")));
```

Fluent wait:

```
Wait<WebDriver> wait = new  
FluentWait<WebDriver>(driver)  
.withTimeout(Duration.ofSeconds(30))  
.pollingEvery(Duration.ofSeconds(5))  
.ignoring(NoSuchElementException.class);
```

Additional Get Methods and Expected Conditions in Selenium 4.0

Following get methods have been added in Selenium 4.0

```
System.out.println(inputBox.getDomAttribute("placeholder"));
System.out.println(inputBox.getDomProperty("innerHTML"));
```

Following ExpectedConditions have been added in Selenium 4.0

```
ExpectedConditions.domAttributeToBe
ExpectedConditions.domPropertyToBe
```

Additional Features in Frames and tab handling in Selenium 4.0

In Selenium 4.0 you can switch back to parent frame also. Like below

```
WebElement child =  
driver.findElement(By.tagName("iframe"));  
driver.switchTo().frame(child);  
driver.switchTo().parentFrame();
```

You can open a new tab in Selenium 4.0 using `newWindow()` method

```
driver.switchTo().newWindow(WindowType.TAB);  
driver.get("http://google.com");
```

Basic Authentication and Generate PDF features

Selenium 4.0 has added basic authentication that could be set without going to a selected URL

```
((HasAuthentication)
driver).register(UsernameAndPassword.of("username",
"password"));

driver.get("entersiteurlhere");
```

Selenium 4.0 has also added a new feature to generate PDF

```
Pdf pdf = ((PrintsPage) driver).print(new PrintOptions());
Files.write(Paths.get("./document.pdf"),
OutputType.BYTES.convertFromBase64Png(pdf.getContent()));
```


Desired Capabilities is deprecated. Use Browser Options instead

DesiredCapabilities is now deprecated and instead Chrome options are used for Selenium Grid 4 and docker set up as well.

```
ChromeOptions opt = new ChromeOptions();  
opt.setAcceptInsecureCerts(true);
```

Below is deprecated:

```
DesiredCapabilities capability = new  
DesiredCapabilities();  
capability.setBrowserName("chrome");
```