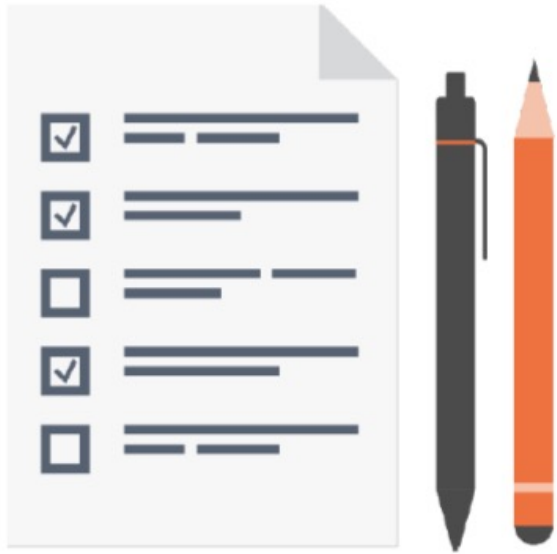


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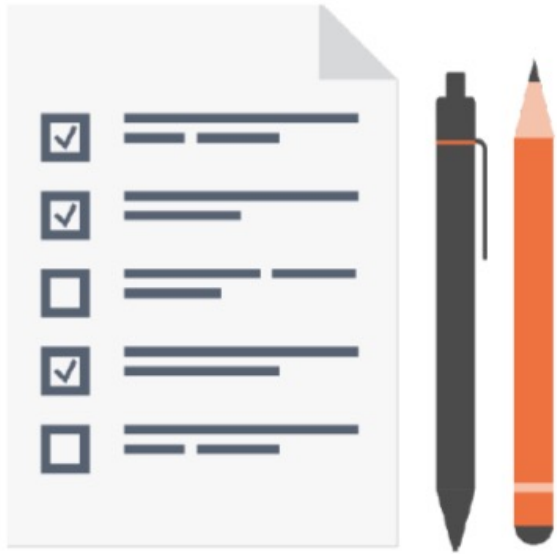
Synchronization

Agenda



- Thread.sleep
- ImplicitlyWait
- ExplicitWait

After today's session you should be able to:



- Handle the execution synchronization
- Use different ways of waiting for certain actions
- Minimize the test failure due to timeouts or exceptions

What does **synchronization** mean?

- Moving, working, operating at the same time.
- One of the most obvious examples:
 - from the movies, sound and action has to match precisely, (OR SYNCHRONIZE), otherwise the outcome will not be as expected.



What needs to be synchronized in our case?

- Our code and our browser has to be synchronized.
- Otherwise it will break.
- The outcome will not be as expected.
- We have been using our code synchronized, but we will go in more depth what it means today.

Why Synchronize?



What happens if our code is not synchronized?

- Code runs faster than browser can handle
- Element appears on the HTML after certain time
- Element is in the HTML but appears on the page after certain time
- We get exceptions such as;
- NoSuchElementException
- ElementNotInteractableException

What can we do?



Option 1:

- Thread.sleep

- This adds hard coded wait inside of our program.
- It does not depend on any kind of condition
- It will wait for the given time period no matter what
- This is not considered a good practice
- Try not to use this unless you have to
- Too much use will make the test long and heavy

```
driver.manage().timeouts().implicitlyWait()
```

What can we do?

Option 2:

- Implicit Wait
- Not used for a specific condition, applies to many lines until that driver instance is killed or changed.
- Makes driver continue looking for the WebElement for the given duration
- Stops polling as soon as the element is found
- If element is not found it will throw exception after the given time → no such element exception
- It will apply to every single line where **findElement()** or **findElements()** is used



What can we do?



Option 3:

- Explicit Wait
- Can be used to wait for a certain condition
- Wait until element is visible
- Wait until element is available
- Wait until element is clickable
- Wait until element is not available etc...

Explicit wait Syntax:

```
WebDriverWait wait = new WebDriverWait(driver, 10);  
  
wait.until(  
    ExpectedConditions.elementToBeClickable(  
        By.xpath(""))));
```

- It will wait 10 seconds using the locator provided then if condition does not happen throws exception → `TimeoutException`
- Does not depend on the value of implicit wait
- Only applies once when that line called
- Will continue waiting if the element is loaded but not clickable, or many similar scenarios