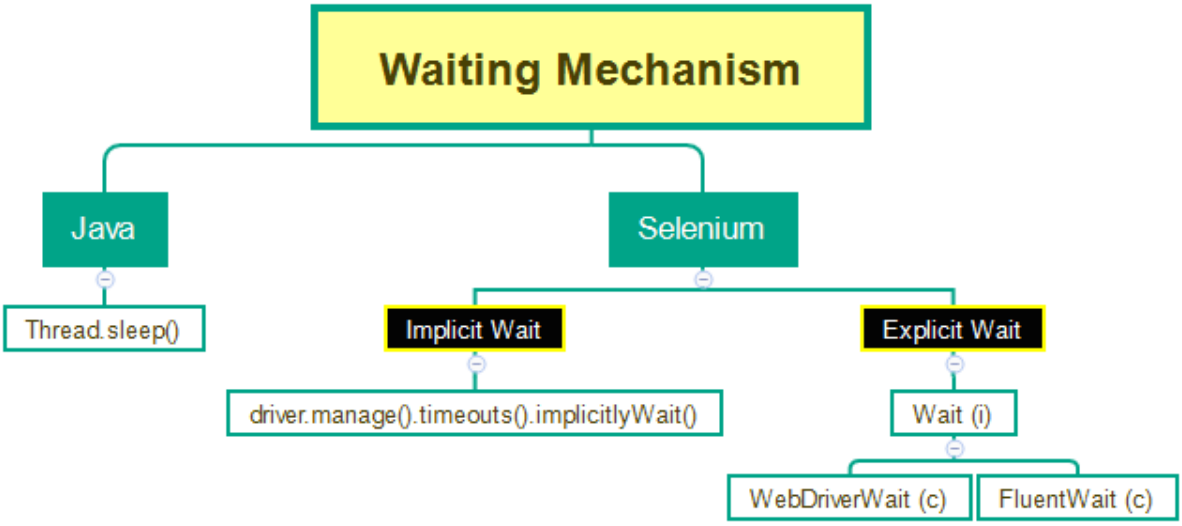
Last updated: Feb 4, 2022

Waiting mechanism - Selenium 4 Changes, pageLoadTimeout(), Ajax calls, loading process and Synchronization Problem (Session 17)

Waiting mechanism in Selenium

Waiting mechanism in Selenium and Java can be categorized as below:



- Demonstrate a program which don't use waiting mechanism to understand the importance of waiting mechanism in Selenium
  - NoSuchElementException
- Using **Thread.sleep()** in Java to overcome the waiting problems
- **Implicit Wait** - Instead of halting the program till the specified time is reached, Implicit wait will wait for all the web elements dynamically (i.e. Global wait)
  - driver.manage().timeouts().implicitlyWait(Duration.ofSeconds(10));
- **Explicit Wait -** Instead of waiting for all the statements in the program, Explicit wait will wait only for the specific web element
  - WebDriverWait wait = new WebDriverWait(driver,Duration.ofSeconds(30));
  - WebElement element = wait.until(ExpectedConditions.visibilityOfElementLocated(By.linkText("Facebook")));
  - element.click();
  - Also demonstrate 'ElementToBeClickable'
- **Fluent Wait** - Use `Duration.ofSeconds(30) in the deprecated methods`
  - Copy the FluentWait code from Selenium API Documentation

Handling Ajax Calls in Selenium

- Web Pages make Ajax calls, to retrieve small amount of data from server without the need for reloading the page
- Example for Ajax call
- Selenium WebDriver handles Ajax calls using Waiting mechanism
    - Implicit Wait
    - Explicit Wait
    - Fluent Wait
    - etc.
- Practical demonstration

Solving Synchronization Problem in Selenium

- Selenium is faster and it won't wait for any element on the web page by default
- If the element is not available, Selenium will simply throw NoSuchElementException
- To handle this problem, we have to use Waiting Mechanism in Selenium:
    - Implicit Wait
    - Explicit Wait
    - Fluent Wait
    - etc.

Waiting for an Element to be displayed on the page

- Sometimes, UI element won't be displayed on the page immediately and make take time to display after performing an action
- As Selenium WebDriver cannot wait for the UI element, we have to explicitly wait until the UI element is displayed on the page.
- Practical Demonstration - omayo

Waiting for an Element to be click-able

- Sometimes, we have to wait for the UI element to be clickable, as it won't be clickable by default
- Practical Demonstration - verifalia email checker

Waiting for an Alert to be present

- Sometimes, we have to wait for the alert before we perform any operations on the alert
- Practical Demonstration - omayo
- TimeoutException will be displayed if the alert is not displayed, despite of waiting

Loading Process Icon and How to Wait for the required UI element on the web page

- We get an Exception when we try to perform operation element, which is not displayed due

- We get an Exception when we try to perform operation element, which is not displayed due to the loading icon
- In this case, if we wait for the required UI element, things may or may not work
- Instead, we have to wait for the loading icon to disappear by writing some programming logic
    - We have to pause the debugger if required
- Practical Demonstration - Internet Heroku

pageLoadTimeout and TimeoutException - Selenium Exception Type

- By default Selenium WebDriver waits indefinitely, until the page to load without any time limit
- But we can set time limit for the web page to load using pageLoadTimeout()