Capgemini Selenium with Java Interview Q&A

1. What is Selenium? What are its components?

Selenium is an open-source automation testing framework for web applications.

Components:

- Selenium IDE
- Selenium WebDriver
- Selenium Grid
- Selenium RC (deprecated)

2. Difference between findElement() and findElements()?

- findElement() returns the first matching WebElement or throws NoSuchElementException.
- findElements() returns a list of all matching elements or an empty list.

3. How to handle dropdowns in Selenium?

```
Select select = new Select(driver.findElement(By.id("dropdownId")));
select.selectByVisibleText("Option");
```

4. How to handle alerts/popups in Selenium?

```
Alert alert = driver.switchTo().alert();
alert.accept();
alert.dismiss();
alert.getText();
alert.sendKeys("text");
```

5. How to handle multiple browser windows or tabs?

```
String parent = driver.getWindowHandle();
Set<String> windows = driver.getWindowHandles();
for (String win : windows) {
  if (!win.equals(parent)) {
    driver.switchTo().window(win);
  }
}
```

6. What are different types of waits in Selenium?

- Implicit Wait

- Explicit Wait
- Fluent Wait

7. How to handle dynamic web elements?

driver.findElement(By.xpath("//input[contains(@id,'username')]")).sendKeys("admin");

8. Locator strategies in Selenium?

ID, Name, XPath, CSS Selector, LinkText, PartialLinkText, TagName, ClassName

9. XPath vs CSS Selector?

- XPath supports forward and backward traversal. CSS does not.
- CSS is faster but can't traverse upward.

10. How do you verify if an element is displayed/enabled/selected?

element.isDisplayed();

element.isEnabled();

element.isSelected();

11. How to perform mouse and keyboard actions?

Actions actions = new Actions(driver);

actions.moveToElement(element).click().perform();

12. How do you take screenshots in Selenium?

File src = ((TakesScreenshot)driver).getScreenshotAs(OutputType.FILE);

FileUtils.copyFile(src, new File("path/screenshot.png"));

13. Difference between == and .equals()?

- == compares references
- .equals() compares content/values

14. OOPs Concepts:

- Encapsulation, Inheritance, Polymorphism, Abstraction

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15. Overloading vs Overriding

- Overloading: Same method name, different parameters (compile-time)
- Overriding: Same method in parent & child class (runtime)

16. Exception handling

```
try {
  // code
} catch(Exception e) {
  e.printStackTrace();
} finally {
  // cleanup
}
```

17. String vs StringBuffer vs StringBuilder

- String: Immutable
- StringBuffer: Thread-safe, slower
- StringBuilder: Not thread-safe, faster

18. Common TestNG annotations

@BeforeSuite, @BeforeTest, @BeforeClass, @BeforeMethod, @Test, @AfterMethod, etc.

19. Parallel test execution (TestNG)

```
<suite name="Suite" parallel="tests" thread-count="2">
```

20. Gherkin syntax (Cucumber)

```
Feature: Login
Scenario: Valid login
Given user is on login page
When user enters valid credentials
Then user should be logged in
```

21. Step Definition Example

```
@Given("user is on login page")
```

```
public void user_is_on_login_page() {
  driver.get("https://example.com/login");
}
```