1. **Explain the difference between Selenium IDE, Selenium WebDriver, and Selenium Grid.**

a. **Selenium IDE**

Selenium IDE is a record and playback tool which have the extension of Firefox and Chrome browser. The main advantage is it doesn't require coding knowledge. It allows tester to record, edit, and debug tests with a simple interface. Selenium IDE generates tests in a scripting language such as java , python which is supported by selenium. The main disadvantage is it has only limited interface and not support all the testing requirements.

b. **Selenium WebDriver**

Selenium webDriver is the most important and robust component of selenium which provides a programming interface to create and execute test cases. It support multiple programming languages such as java, python, c## and more which make it more flexible and versatile. The flexibility of this webDriver allows developer to execute complex testing scenarios.

c. **Selenium Grid**

Selenium grid is a programming tool used to run automation testing script in different platform and in different browsers which support parallel testing.

Selenium grid contains hub which manages the distribution of test execution requests to available nodes. This helps in reduce the overall test execution time.

1. **Write a Selenium script in Java to open Google and search for "Selenium Browser Driver".**

**package task15;**

**import org.openqa.selenium.By;**

**import org.openqa.selenium.Keys;**

**import org.openqa.selenium.WebDriver;**

**import org.openqa.selenium.chrome.ChromeDriver;**

**public class SearchForSelenium**

**{**

**public static void main(String[] args) throws InterruptedException**

**{**

**// TODO Auto-generated method stub**

**WebDriver driver = new ChromeDriver();**

**driver.get("https://www.google.com/");**

**driver.manage().window().maximize();**

**driver.findElement(By.name("q")).sendKeys("Selenium Browser Drive" + Keys.ENTER);**

**Thread.sleep(1000);**

**}**

**}**

**3. What is Selenium? How it is useful in Automation Testing?**

Selenium is an open-source automated testing tool used to test web applications across various browsers. The main purpose of using selenium tool is to make automation testing efficiency, improve accuracy and speed by automating repetitive and time-consuming manual testing

**Uses:**

a. To make Cross-Browser Testing.

b. It can be used on different operating systems like Windows, Linux, etc. making it as platform-independent.

c. It supports multiple programming languages such as Java, Python etc.

d. It can be integrated with testing frameworks like JUnit, TestNG.

e. It allows parallel execution of tests cases making it time efficient.

**4. What are all Browser driver used in Selenium?**

Selenium supports automation across various web browsers through the use of browser-specific drivers they are

a. **Chrome Driver :** to access Chrome by creating object like

(WebDriver driver = new ChromeDriver();).

b. **EdgeDriver :** to access Microsoft Edge by creating object like

(WebDriver drive = new EdgeDrive();).

c. **FireFoxDriver** : to access firefox by creating object like

(WebDriver drive = new FireFoxDrive();)

d. **SafariDriver :** to access firefox by creating object like

(WebDriver drive = new SafariDriver();)

**5. What Are The Steps To Create A Simple Web Driver Script? Explain with code**.

package task15;

import org.openqa.selenium.WebDriver;

import org.openqa.selenium.chrome.ChromeDriver;

public class SimpleWebDriver {

public static void main(String[] args) throws InterruptedException

{

WebDriver driver = new ChromeDriver();

driver.get("https://www.google.com/");

driver.manage().window().maximize();

Thread.sleep(1000);

}

}

**CODE EXPLANATON:**

1. Import necessary libraries for locating elements and WebDriver for browser interaction.

2. Create a new ChromeDriver instance. You can use FirefoxDriver for Firefox or other WebDriver classes for different browsers.

3. Navigate to Google using driver.get.

4. We optionally wait for the page to load using Thread.sleep.