Internship Report

1) Source Code of Two Versions of Application:

- Both versions are hosted on GitHub.
- Both repositories are public:

- **Source Codes:**

- First Version: https://github.com/KrishnaPandya-VGEC-IT/GUIfirst

- Second Version:

  https://github.com/KrishnaPandya-VGEC-IT/GUIsecond

  [Also the source code is attached in form of zip as well with the submission]

- **Hosted links (live):**

- First version: https://krishnapandya-vgec-it.github.io/GUIfirst

- Second version:

https://krishnapandya-vgec-it.github.io/GUIsecond

2) **Test Cases created:**

⇨ **First.java**:

```
import static org.junit.jupiter.api.Assertions.assertEquals;

import java.awt.Dimension;
import java.util.Arrays;

import org.junit.Assert;
import org.junit.jupiter.api.Test;

import org.openqa.selenium.By;
import org.openqa.selenium.WebDriver;
import org.openqa.selenium.WebElement;
import org.openqa.selenium.chrome.ChromeDriver;


public class First {


   //Test-1
   @Test
   public void checkFirstPageTitle()
   {
         WebDriver driver = new ChromeDriver();
         driver.manage().window().maximize();
         driver.get("https://krishnapandya-vgec-
it.github.io/GUIfirst/");
         String title = driver.getTitle();
         Assert.assertEquals(title, "MCQ app");
         driver.close();
   }


   //Test-2
   @Test
   public void checkFirstImageLocationandSize()
   {
         WebDriver driver = new ChromeDriver();
         driver.manage().window().maximize();
         driver.get("https://krishnapandya-vgec-
it.github.io/GUIfirst/");
         WebElement ele = driver.findElement(By.id("first_img"));

         int xCord = ele.getLocation().getX();
         int yCord = ele.getLocation().getY();

         org.openqa.selenium.Dimension dm = ele.getSize();

         int height = dm.getHeight();
         int width = dm.getWidth();
```

```
   Assert.assertEquals(Arrays.asList(xCord,yCord),Arrays.asList(18,178)
);

   Assert.assertEquals(Arrays.asList(height,width),Arrays.asList(300,40
0));

         driver.close();
   }

   //Test-3
   @Test
   public void checkFirstPageHeaderContent()
   {
         WebDriver driver = new ChromeDriver();
         driver.manage().window().maximize();
         driver.get("https://krishnapandya-vgec-
it.github.io/GUIfirst/");
         WebElement ele = driver.findElement(By.id("first_header"));

         String content = ele.getText();
         assertEquals(content, "Welcome to MCQ app");

         driver.close();
   }

   //Test-4
   @Test
   public void checkFirstPageImage()
   {
         WebDriver driver = new ChromeDriver();
         driver.manage().window().maximize();
         driver.get("https://krishnapandya-vgec-
it.github.io/GUIfirst/");
         driver.findElement(By.id("first_img"));
         driver.close();
   }

   //Test-5
   @Test
   public void checkFirstPageRadioButtons()
   {
         WebDriver driver = new ChromeDriver();
         driver.manage().window().maximize();
         driver.get("https://krishnapandya-vgec-
it.github.io/GUIfirst/");

         driver.findElement(By.id("first_radio_dog")).click();
         driver.findElement(By.id("first_radio_cat")).click();
         driver.findElement(By.id("first_radio_giraffe")).click();

         driver.close();
   }
```

```
    //Test-6
    @Test
    public void checkFirstPageCheckBox()
    {
          WebDriver driver = new ChromeDriver();
          driver.manage().window().maximize();
          driver.get("https://krishnapandya-vgec-
it.github.io/GUIfirst/");

          driver.findElement(By.id("checkbox_first")).click();
          driver.close();
    }

    //Test-7
    @Test
    public void checkFirstPageOptionsOrder()
    {
          WebDriver driver = new ChromeDriver();
          driver.manage().window().maximize();
          driver.get("https://krishnapandya-vgec-
it.github.io/GUIfirst/");
          WebElement ele1 =
driver.findElement(By.id("first_radio_cat"));
          WebElement ele2 =
driver.findElement(By.id("first_radio_dog"));

          int y1 = ele1.getLocation().getY();
          int y2 = ele2.getLocation().getY();

          assert(y1<y2);

          driver.close();
    }


    //Test-8
    @Test
    public void checkNavigationFromFirstToSecond()
    {
          WebDriver driver = new ChromeDriver();
          driver.manage().window().maximize();
          driver.get("https://krishnapandya-vgec-
it.github.io/GUIfirst/");

          driver.findElement(By.id("first_next")).click();

          assert(driver.findElement(By.id("second_main_div"))!=null);

          driver.close();
    }

    //Test-9
```

```
    @Test
    public void checkCheckboxesSecondPage()
    {
          WebDriver driver = new ChromeDriver();
          driver.manage().window().maximize();
          driver.get("https://krishnapandya-vgec-
it.github.io/GUIfirst/second");

          driver.findElement(By.id("second_op1")).click();
          driver.findElement(By.id("second_op2")).click();
          driver.findElement(By.id("second_op3")).click();
          driver.findElement(By.id("second_op4")).click();

          driver.close();
    }

    //Test-10
    @Test
    public void checkSecondPageDropDowns()
    {
          WebDriver driver = new ChromeDriver();
          driver.manage().window().maximize();
          driver.get("https://krishnapandya-vgec-
it.github.io/GUIfirst/second");

          driver.findElement(By.id("belt")).click();
          driver.findElement(By.id("goggles")).click();
          driver.findElement(By.id("clothes")).click();

          driver.close();
    }

    //Test-11
    @Test
    public void checkSecondPageImageLocation()
    {
          WebDriver driver = new ChromeDriver();
          driver.manage().window().maximize();
          driver.get("https://krishnapandya-vgec-
it.github.io/GUIfirst/second");

          WebElement ele = driver.findElement(By.id("second_img"));

          int xCord = ele.getLocation().getX();
          int yCord = ele.getLocation().getY();


          assertEquals(Arrays.asList(xCord,yCord),
Arrays.asList(18,86));
          driver.close();
    }

    //Test-12
    @Test
```

```
    public void checkSecondPageAnswered()
    {
          WebDriver driver = new ChromeDriver();
          driver.manage().window().maximize();
          driver.get("https://krishnapandya-vgec-
it.github.io/GUIfirst/second");

          driver.findElement(By.id("checkbox_second")).click();
          driver.close();
    }


    //Test-13
    @Test
    public void checkSecondPageBackNavigation()
    {
          WebDriver driver = new ChromeDriver();
          driver.manage().window().maximize();
          driver.get("https://krishnapandya-vgec-
it.github.io/GUIfirst/second");

          driver.findElement(By.id("second_back")).click();

          assert(driver.findElement(By.id("first_main_div"))!=null);
          driver.close();
    }


    //Test-14
    @Test
    public void checkSecondPageNextNavigation()
    {
          WebDriver driver = new ChromeDriver();
          driver.manage().window().maximize();
          driver.get("https://krishnapandya-vgec-
it.github.io/GUIfirst/second");

          driver.findElement(By.id("second_next")).click();

          assert(driver.findElement(By.id("third_main_div"))!=null);
          driver.close();
    }

    //Test-15
    @Test
    public void checkThirdPageImageLocation()
    {
          WebDriver driver = new ChromeDriver();
          driver.manage().window().maximize();
          driver.get("https://krishnapandya-vgec-
it.github.io/GUIfirst/third");

          WebElement ele = driver.findElement(By.id("third_img"));
```

```
        int xCord = ele.getLocation().getX();
        int yCord = ele.getLocation().getY();

        assertEquals(Arrays.asList(xCord,yCord),
Arrays.asList(18,86));

        driver.close();
    }

    //Test-16
    @Test
    public void checkThirdPageRadioButtons()
    {
        WebDriver driver = new ChromeDriver();
        driver.manage().window().maximize();
        driver.get("https://krishnapandya-vgec-
it.github.io/GUIfirst/third");

        WebElement ele = driver.findElement(By.id("third_img"));


        driver.findElement(By.id("third_radio_cat")).click();
        driver.findElement(By.id("third_radio_dog")).click();
        driver.findElement(By.id("third_radio_giraffe")).click();

        driver.close();
    }

    //Test-17
    @Test
    public void checkThirdPageOptionLocations()
    {
        WebDriver driver = new ChromeDriver();
        driver.manage().window().maximize();
        driver.get("https://krishnapandya-vgec-
it.github.io/GUIfirst/third");

        WebElement ele1 =
driver.findElement(By.id("third_radio_cat"));
        WebElement ele2 =
driver.findElement(By.id("third_radio_dog"));

        int y1 = ele1.getLocation().getY();
        int y2 = ele2.getLocation().getY();

        assert(y1<y2);

        driver.close();
    }

    //Test-18
    @Test
    public void checkThirdPageBackButton()
    {
```

```
        WebDriver driver = new ChromeDriver();
        driver.manage().window().maximize();
        driver.get("https://krishnapandya-vgec-
it.github.io/GUIfirst/third");

        driver.findElement(By.id("third_back")).click();

        assert(driver.findElement(By.id("second_main_div"))!=null);

        driver.close();
    }
}
```

⇨ Second.java

```
import static org.junit.jupiter.api.Assertions.assertEquals;

import java.awt.Dimension;
import java.util.Arrays;

import org.junit.Assert;
import org.junit.jupiter.api.Test;

import org.openqa.selenium.By;
import org.openqa.selenium.WebDriver;
import org.openqa.selenium.WebElement;
import org.openqa.selenium.chrome.ChromeDriver;


public class Second {

	//Test-1
	@Test
	public void checkFirstPageTitle()
	{
		WebDriver driver = new ChromeDriver();
		driver.manage().window().maximize();
		driver.get("https://krishnapandya-vgec-
it.github.io/GUIsecond/");
		String title = driver.getTitle();
		Assert.assertEquals(title, "MCQ app");
		driver.close();
	}


	//Test-2
	@Test
	public void checkFirstImageLocationandSize()
	{
		WebDriver driver = new ChromeDriver();
		driver.manage().window().maximize();
		driver.get("https://krishnapandya-vgec-
it.github.io/GUIsecond/");
		WebElement ele = driver.findElement(By.id("first_img"));

		int xCord = ele.getLocation().getX();
		int yCord = ele.getLocation().getY();

		org.openqa.selenium.Dimension dm = ele.getSize();

		int height = dm.getHeight();
		int width = dm.getWidth();


	Assert.assertEquals(Arrays.asList(xCord,yCord),Arrays.asList(18,178)
);
```

```
	Assert.assertEquals(Arrays.asList(height,width),Arrays.asList(300,40
0));

		driver.close();
	}

	//Test-3
	@Test
	public void checkFirstPageHeaderContent()
	{
		WebDriver driver = new ChromeDriver();
		driver.manage().window().maximize();
		driver.get("https://krishnapandya-vgec-
it.github.io/GUIsecond/");
		WebElement ele = driver.findElement(By.id("first_header"));

		String content = ele.getText();
		assertEquals(content, "Welcome to MCQ app");

		driver.close();
	}

	//Test-4
	@Test
	public void checkFirstPageImage()
	{
		WebDriver driver = new ChromeDriver();
		driver.manage().window().maximize();
		driver.get("https://krishnapandya-vgec-
it.github.io/GUIsecond/");
		driver.findElement(By.id("first_img"));
		driver.close();
	}

	//Test-5
	@Test
	public void checkFirstPageRadioButtons()
	{
		WebDriver driver = new ChromeDriver();
		driver.manage().window().maximize();
		driver.get("https://krishnapandya-vgec-
it.github.io/GUIsecond/");

		driver.findElement(By.id("first_radio_dog")).click();
		driver.findElement(By.id("first_radio_cat")).click();
		driver.findElement(By.id("first_radio_giraffe")).click();

		driver.close();
	}


	//Test-6
	@Test
```

```
	public void checkFirstPageCheckBox()
	{
		WebDriver driver = new ChromeDriver();
		driver.manage().window().maximize();
		driver.get("https://krishnapandya-vgec-
it.github.io/GUIsecond/");

		driver.findElement(By.id("checkbox_first")).click();
		driver.close();
	}

	//Test-7
	@Test
	public void checkFirstPageOptionsOrder()
	{
		WebDriver driver = new ChromeDriver();
		driver.manage().window().maximize();
		driver.get("https://krishnapandya-vgec-
it.github.io/GUIsecond/");
		WebElement ele1 =
driver.findElement(By.id("first_radio_cat"));
		WebElement ele2 =
driver.findElement(By.id("first_radio_dog"));

		int y1 = ele1.getLocation().getY();
		int y2 = ele2.getLocation().getY();

		assert(y1<y2);

		driver.close();
	}


	//Test-8
	@Test
	public void checkNavigationFromFirstToSecond()
	{
		WebDriver driver = new ChromeDriver();
		driver.manage().window().maximize();
		driver.get("https://krishnapandya-vgec-
it.github.io/GUIsecond/");

		driver.findElement(By.id("first_next")).click();

		assert(driver.findElement(By.id("second_main_div"))!=null);

		driver.close();
	}

	//Test-9
	@Test
	public void checkCheckboxesSecondPage()
	{
		WebDriver driver = new ChromeDriver();
```

```
            driver.manage().window().maximize();
            driver.get("https://krishnapandya-vgec-
it.github.io/GUIsecond/second");

            driver.findElement(By.id("second_op1")).click();
            driver.findElement(By.id("second_op2")).click();
            driver.findElement(By.id("second_op3")).click();
            driver.findElement(By.id("second_op4")).click();

            driver.close();
      }

      //Test-10
      @Test
      public void checkSecondPageDropDowns()
      {
            WebDriver driver = new ChromeDriver();
            driver.manage().window().maximize();
            driver.get("https://krishnapandya-vgec-
it.github.io/GUIsecond/second");

            driver.findElement(By.id("belt")).click();
            driver.findElement(By.id("goggles")).click();
            driver.findElement(By.id("clothes")).click();

            driver.close();
      }

      //Test-11
      @Test
      public void checkSecondPageImageLocation()
      {
            WebDriver driver = new ChromeDriver();
            driver.manage().window().maximize();
            driver.get("https://krishnapandya-vgec-
it.github.io/GUIsecond/second");

            WebElement ele = driver.findElement(By.id("second_img"));

            int xCord = ele.getLocation().getX();
            int yCord = ele.getLocation().getY();


            assertEquals(Arrays.asList(xCord,yCord),
Arrays.asList(18,86));
            driver.close();
      }

      //Test-12
      @Test
      public void checkSecondPageAnswered()
      {
            WebDriver driver = new ChromeDriver();
            driver.manage().window().maximize();
```

```
            driver.get("https://krishnapandya-vgec-
it.github.io/GUIsecond/second");

            driver.findElement(By.id("checkbox_second")).click();
            driver.close();
      }


      //Test-13
      @Test
      public void checkSecondPageBackNavigation()
      {
            WebDriver driver = new ChromeDriver();
            driver.manage().window().maximize();
            driver.get("https://krishnapandya-vgec-
it.github.io/GUIsecond/second");

            driver.findElement(By.id("second_back")).click();

            assert(driver.findElement(By.id("first_main_div"))!=null);
            driver.close();
      }


      //Test-14
      @Test
      public void checkSecondPageNextNavigation()
      {
            WebDriver driver = new ChromeDriver();
            driver.manage().window().maximize();
            driver.get("https://krishnapandya-vgec-
it.github.io/GUIsecond/second");

            driver.findElement(By.id("second_next")).click();

            assert(driver.findElement(By.id("third_main_div"))!=null);
            driver.close();
      }

      //Test-15
      @Test
      public void checkThirdPageImageLocation()
      {
            WebDriver driver = new ChromeDriver();
            driver.manage().window().maximize();
            driver.get("https://krishnapandya-vgec-
it.github.io/GUIsecond/third");

            WebElement ele = driver.findElement(By.id("third_img"));

            int xCord = ele.getLocation().getX();
            int yCord = ele.getLocation().getY();
```

```
            assertEquals(Arrays.asList(xCord,yCord),
Arrays.asList(18,86));

            driver.close();
      }

      //Test-16
      @Test
      public void checkThirdPageRadioButtons()
      {
            WebDriver driver = new ChromeDriver();
            driver.manage().window().maximize();
            driver.get("https://krishnapandya-vgec-
it.github.io/GUIsecond/third");

            WebElement ele = driver.findElement(By.id("third_img"));


            driver.findElement(By.id("third_radio_cat")).click();
            driver.findElement(By.id("third_radio_dog")).click();
            driver.findElement(By.id("third_radio_giraffe")).click();

            driver.close();
      }

      //Test-17
      @Test
      public void checkThirdPageOptionLocations()
      {
            WebDriver driver = new ChromeDriver();
            driver.manage().window().maximize();
            driver.get("https://krishnapandya-vgec-
it.github.io/GUIsecond/third");

            WebElement ele1 =
driver.findElement(By.id("third_radio_cat"));
            WebElement ele2 =
driver.findElement(By.id("third_radio_dog"));

            int y1 = ele1.getLocation().getY();
            int y2 = ele2.getLocation().getY();

            assert(y1<y2);

            driver.close();
      }

      //Test-18
      @Test
      public void checkThirdPageBackButton()
      {
            WebDriver driver = new ChromeDriver();
            driver.manage().window().maximize();
```

```
            driver.get("https://krishnapandya-vgec-
it.github.io/GUIsecond/third");

            driver.findElement(By.id("third_back")).click();

            assert(driver.findElement(By.id("second_main_div"))!=null);

            driver.close();
      }
}
```

1) Description of the Tool selected for GUI Testing:

- The tool used to test the GUI of the two versions is Selenium.

- Selenium is an open-source and portable tool, used for testing web applications. [1]

- It can work with any type of operating system and web browsers. [1]

- Selenium is made of multiple tools i.e., Selenium IDE, Selenium Remote Control (RC), Selenium WebDriver, and Selenium Grid.

- The tool I have used in my web application is Selenium WebDriver.

- It can also execute the tests in parallel with the help of Grids. [1]

- It also supports writing test cases in multiple languages like Java and Python.

- It also supports mobile devices to test for web applications. [1]

- The major drawback of Selenium is that it is only for web-based applications.

- Moreover, it doesn't have access to control the web browser on mobile devices. [1]

2) Description of the test cases developed:

- The Total number of test cases I have developed is 18.

- The test cases include testing of Element presence, content, order, location, size, clicks, etc.

- They also check the navigation among the HTML pages.

- The test cases that check the content of the elements are:

  [1] Test-1: checkFirstPageTitle

  [2] Test-3: checkFirstPageHeader

- The test cases that check the Location of the elements are:

  [1] Test-2: checkFirstImageLocationSize

  [2] Test-11: checkSecondPageImageLocation

  [3] Test-15: checkThirdPageImageLocation

- Test cases that check the Navigations are:

  [1] Test-8: checkNavigationFromFirstToSecond

  [2] Test-13: checkSecondPageBackNavigation

  [3] Test-14: checkSecondPageNextNavigation

  [4] Test-18: checkThirdPageBackButton

- Test cases that check the Clicks are:

  [1] Test-5: checkFirstPageRadioButtons

  [2] Test-6: checkFirstPageCheckbox

  [3] Test-9: checkChecboxesSecondPage

  [4] Test-10: checkSecondPageDropdowns

  [5] Test-12: checkSecondPageAnswered

  [6] Test-16: checkThirdPageRadioButtons

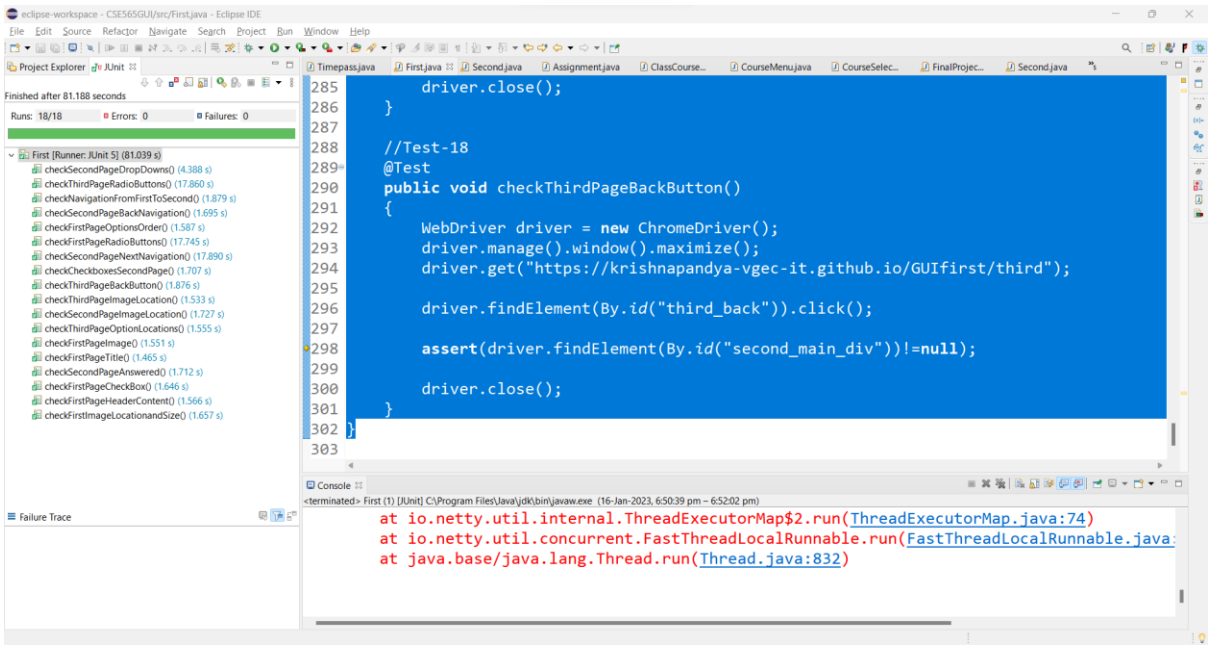
- Test cases that check the order of elements are:

  [1] Test-7: checkFirstPageOptionsOrder

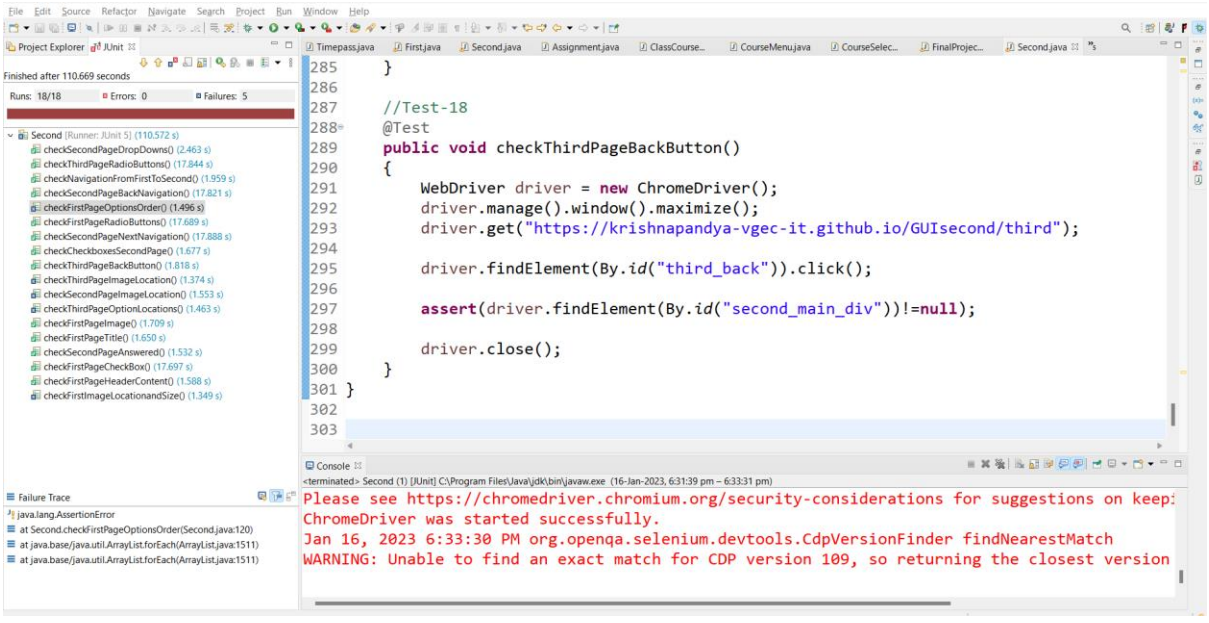
  [2] Test-17: checkThirdPageOptionLocations

3) Test results:

⇨ First-version:



⇨ Second-Version:



[Test-cases checking location, order, and sizes failed]

4) Assessment of the tool:

- When it comes to the assessment, I found selenium very useful.

- The main benefit of using selenium is that it is open source, and independent of browsers and operating systems. [1]

- It is very easy to configure selenium. All it takes to configure it is downloading the selenium jar file and adding it to the external jar in the classpath.

- When it comes to providing different methods to test UIs, it provides options like findElement() by Id, className, CSS selector, name, etc.

- To test for the buttons, it provides the click() method.

- To get the location of an element, it provides methods like getLocation() which can give X and Y coordinates using getX() and getY() methods respectively.

- To get the Size of an element it provides getSize() method. Then height and width can be measured using getHeight() and getWidth().

- It tests, buttons, dropboxes, sliders, text fields, images (location/size), and all the other types of elements.

- The test cases can be reused for another version as well. All we have to do is to just change the web application link to the other version.

- The test results produced are much more accurate and helpful to test upcoming versions of the web application as well.

➢ References:

[1] https://www.tutorialspoint.com/selenium/selenium_overview.htm