

## TestNG Documentation

This document will contain the record of steps performed to complete the TestNG section of the final assessment due 8<sup>th</sup> October 2022.

### Question

TestNG Framework

- a) Write a program to HRM Login
- b) Write program to apply leave
- c) User method over loading for searching as discussed in the class assignment

### **What is TestNG?**

TestNG is an open-source testing framework where NG stands for 'Next Generation'. It is architected to simplify a broad range of testing needs starting from unit testing to integrated system testing. Initially, both JUnit and TestNG were designed solely for unit testing. TestNG is a testing framework for the Java programming language. It makes automated tests more structured, readable, maintainable, and user-friendly.

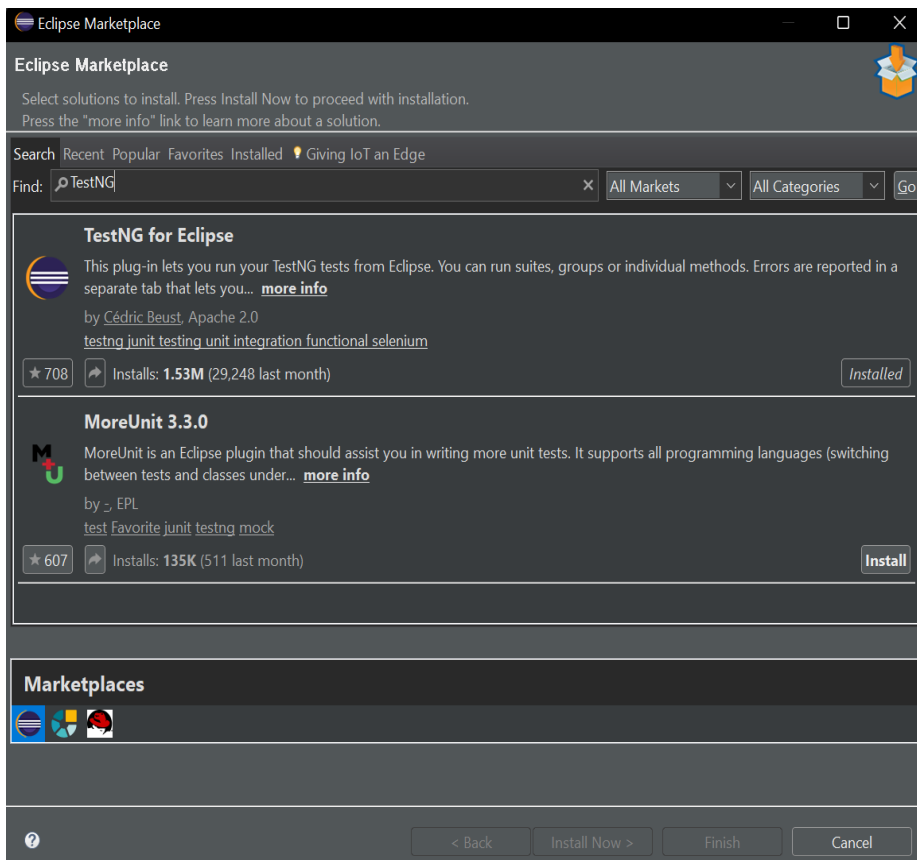
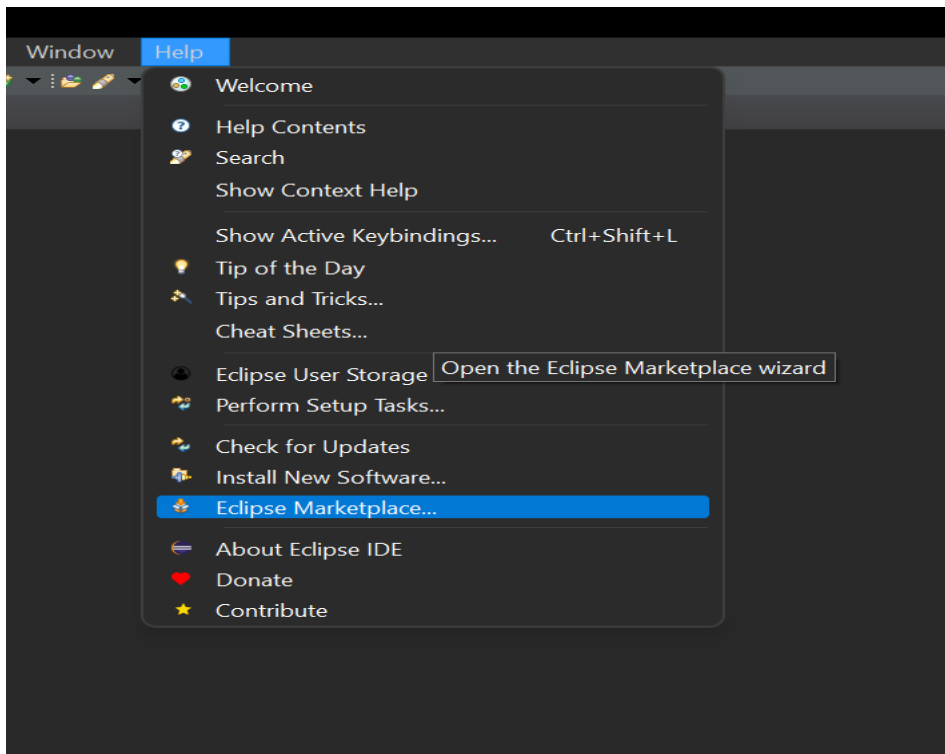
#### **a) Setting up TestNG in our environment**

Before creating the test NG class, the below piece of code needs to be appended into the dependencies tag of the pom.xml file of the maven project.

```
<dependency>
  <groupId>org.testng</groupId>
  <artifactId>testng</artifactId>
  <version>6.14.3</version>
  <scope>test</scope>
</dependency>
```

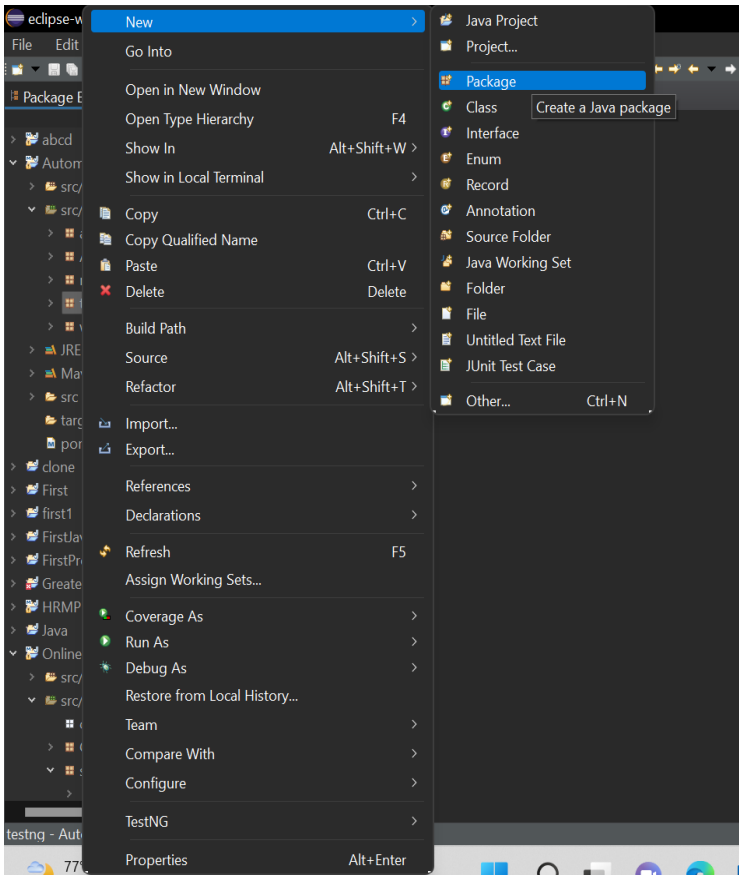
It's also a good practice to download the TestNG extension for eclipse from the eclipse workspace. Since TestNG is a very common framework, this package will be needed

Go to Help -> Eclipse marketplace -> search for TestNG and click install

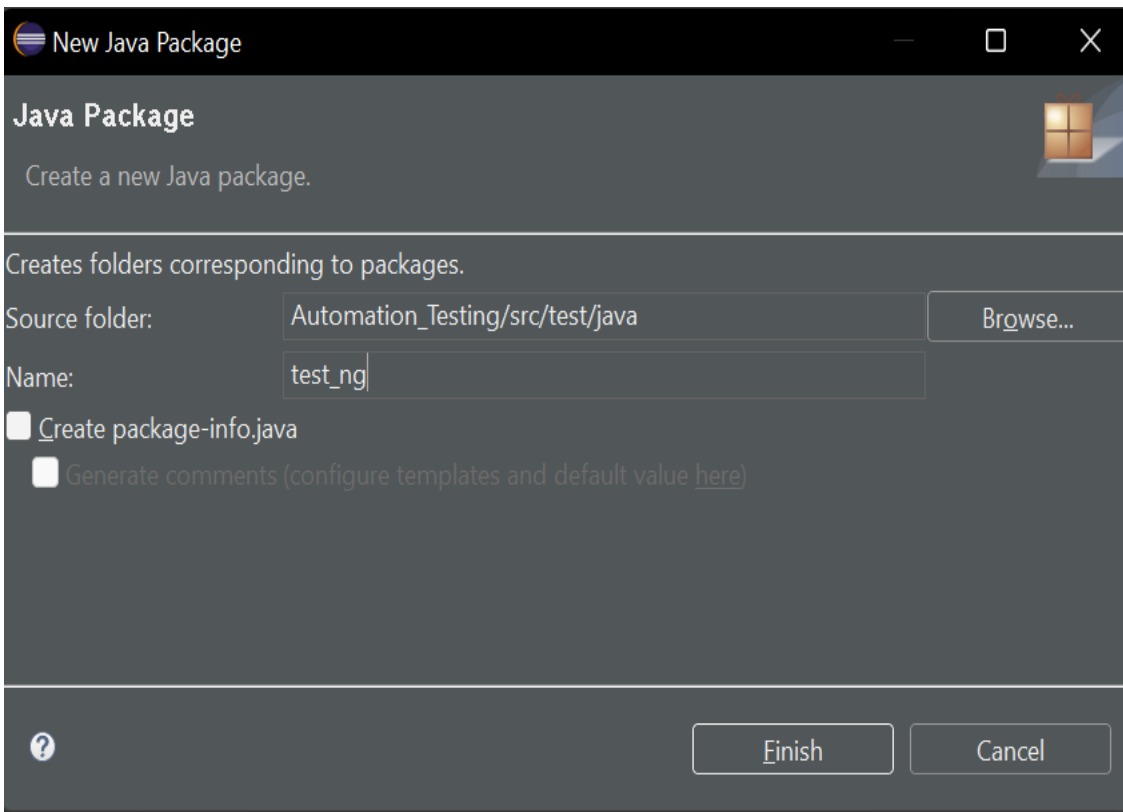


## b) Creating a TestNG class

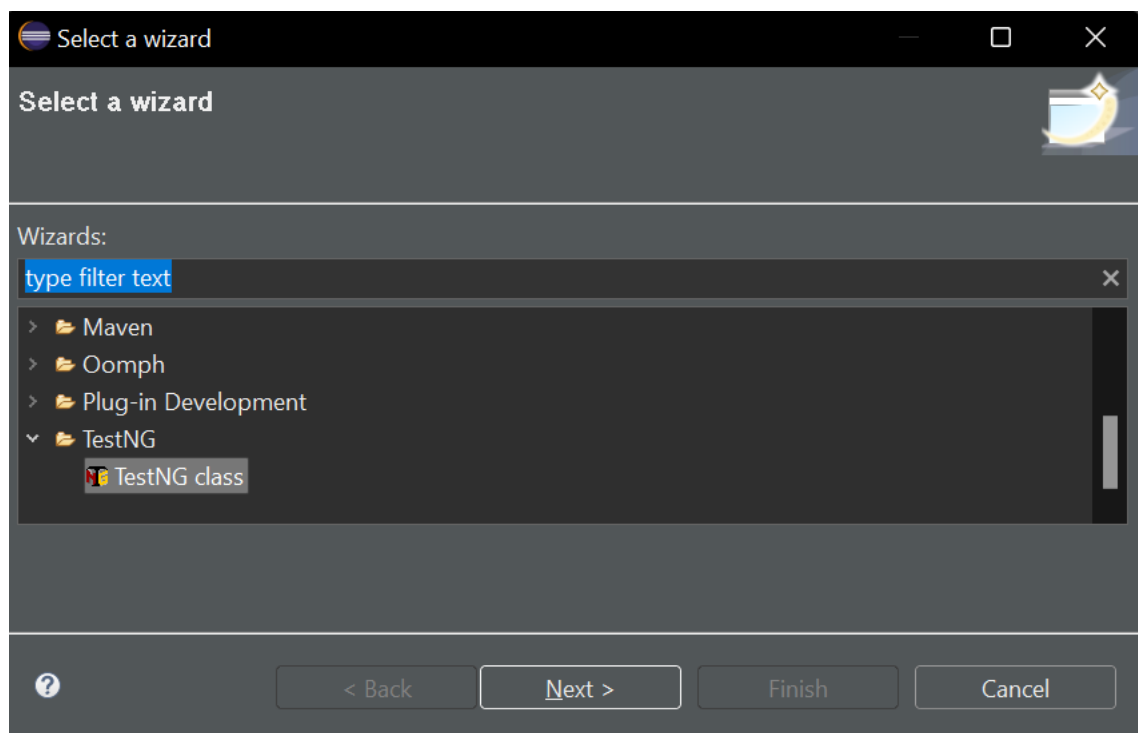
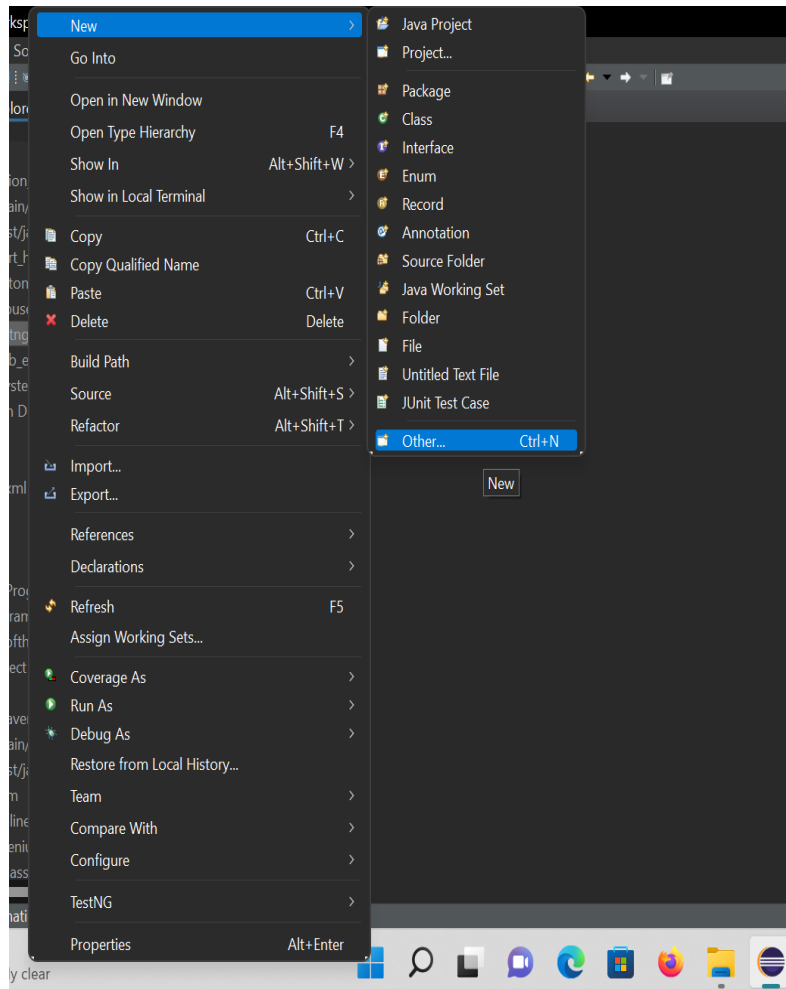
Now that TestNG has been installed, go inside the test java folder in our maven project and create a new package



Give the package an appropriate name



Now that a package has been created, right click on the package and go to Other -> TestNG -> TestNG class



Here, give the name for your TestNG class. You can also select the annotations needed for you in the testing process. For now, I am only considering the default annotation that is @test.

**New TestNG class**

Specify additional information about the test class.

Source folder: \\Automation\_Testing\\src\\test\\java Browse...

Package name: testng Browse...

Class name: HRM\_login

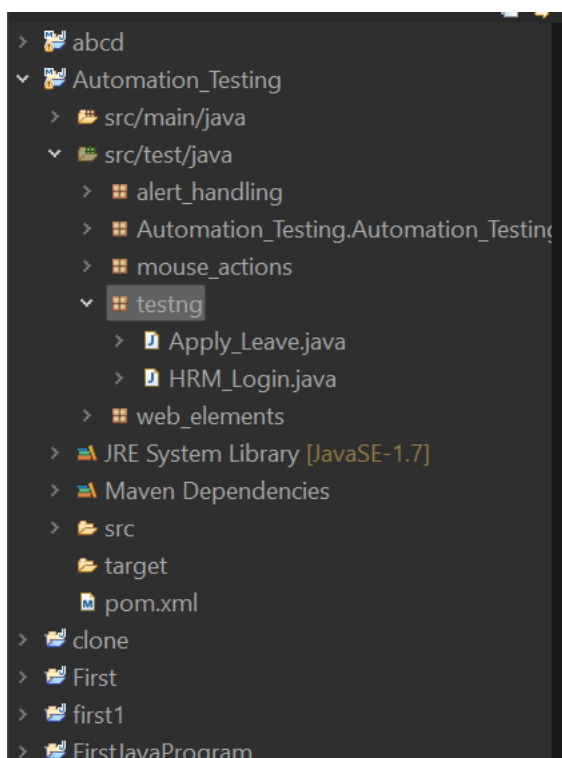
Annotations

- ☐ @BeforeMethod
- ☐ @AfterMethod
- ☐ @DataProvider
- ☐ @BeforeClass
- ☐ @AfterClass
- ☐ @BeforeTest
- ☐ @AfterTest
- ☐ @BeforeSuite
- ☐ @AfterSuite

XML suite file:

? < Back Next > Finish Cancel

Once the classes have been created, your folder structure will look something like this. I have the Apply leave and HRM login classes inside the testing package. These classes are testNG classes, and the package is inside the maven project named Automation\_Testing.



## Write a program to HRM Login

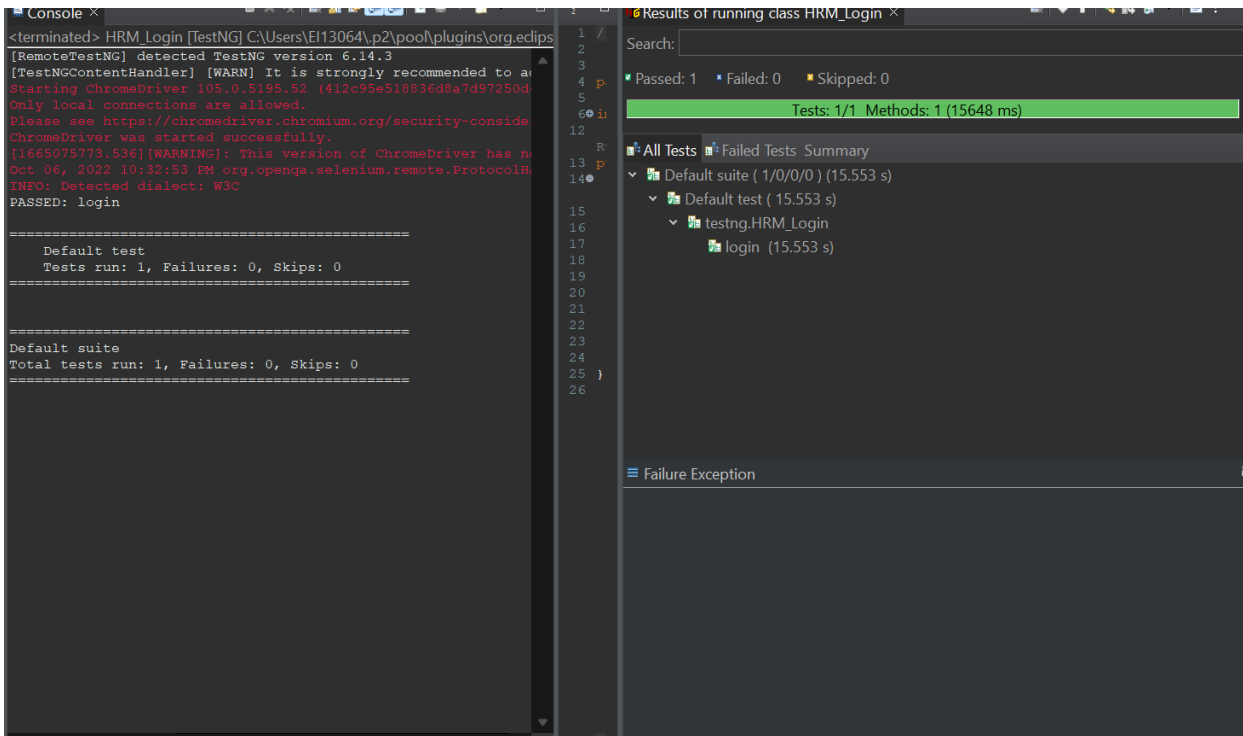
This program is for automating the login process of OrangeHRM using selenium. The single test case is run using the testNG framework.

- i) In line 4 we import the testing package needed
- ii) line 14 denotes the test annotation. Everything under the method under annotation is considered as a single test case. This makes more sense later when the program is executed.
- iii) Line 16 and 17 are the default driver code, used to set up the chrome driver.
- iv) Line 18 is the implicitly wait method, used to introduce delay in the automation process. This is needed if the website takes time to load. Here I have given a delay of 100 seconds
- v) In line 19-21, we are visiting in the OrangeHRM website, sending the username and password using the sendkeys method.
- vi) In line 23, we are using the Xpath to locate the login button, and the click method to click it.

```
HRM_Login.java x
1 // This program executes the automation testing on OrangeHRM website for the login functionality
2
3
4 package testng;
5
6 import java.util.concurrent.TimeUnit;
12
13 Run All
14 public class HRM_Login {
15     @Test
16     Run | Debug
17     public void login() {
18         System.setProperty("webdriver.chrome.driver", "C:\\brayan1\\chromedriver.exe");
19         WebDriver driver = new ChromeDriver(); // Instatiating an object of type Webdriver
20         driver.manage().timeouts().implicitlyWait(100, TimeUnit.SECONDS); //Used to introduce delay for the webpage to load
21         driver.get(" https://opensource-demo.orangehrmlive.com/web/index.php/pim/viewEmployeeList");
22         driver.findElement(By.name("username")).sendKeys("Admin");
23         driver.findElement(By.name("password")).sendKeys("admin123");
24         //driver.findElement(By.name("login")).click();
25         driver.findElement(By.xpath("//*[@id=\"app\"]/div[1]/div/div[1]/div/div[2]/div[2]/form/div[3]/button")).click();
26     }
27 }
```

## Output console

This output console shows the test cases as passed in a more structured way, thanks to TestNG.



The screenshot shows the Eclipse IDE with two panels. The left panel is the 'Console' window, displaying the output of the test execution. The right panel is the 'Results of running class HRM\_Login' window, showing a summary of the test results.

**Console Output:**

```
<terminated> HRM_Login [TestNG] C:\Users\E113064\p2\pool\plugins\org.eclipse
[RemoteTestNG] detected TestNG version 6.14.3
[TestNGContentHandler] [WARN] It is strongly recommended to a
Starting ChromeDriver 105.0.5195.52 (412c95e518836d8a7d97250d
Only local connections are allowed.
Please see https://chromedriver.chromium.org/security-consider
ChromeDriver was started successfully.
[1665075773.536][WARNING]: This version of ChromeDriver has n
Oct 06, 2022 10:32:53 PM org.openqa.selenium.remote.ProtocolH
INFO: Detected dialect: W3C
PASSED: login

=====
Default test
Tests run: 1, Failures: 0, Skips: 0
=====

=====
Default suite
Total tests run: 1, Failures: 0, Skips: 0
=====
```

**Results of running class HRM\_Login:**

Search:

Passed: 1 Failed: 0 Skipped: 0

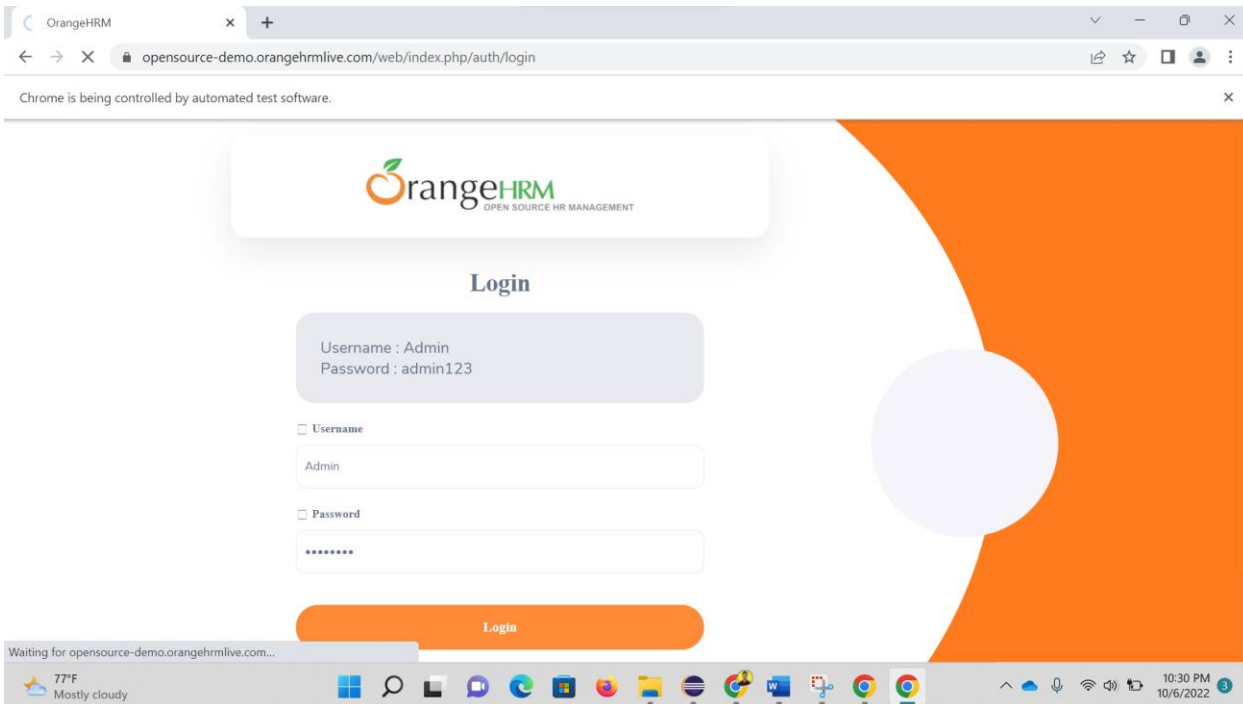
Tests: 1/1 Methods: 1 (15648 ms)

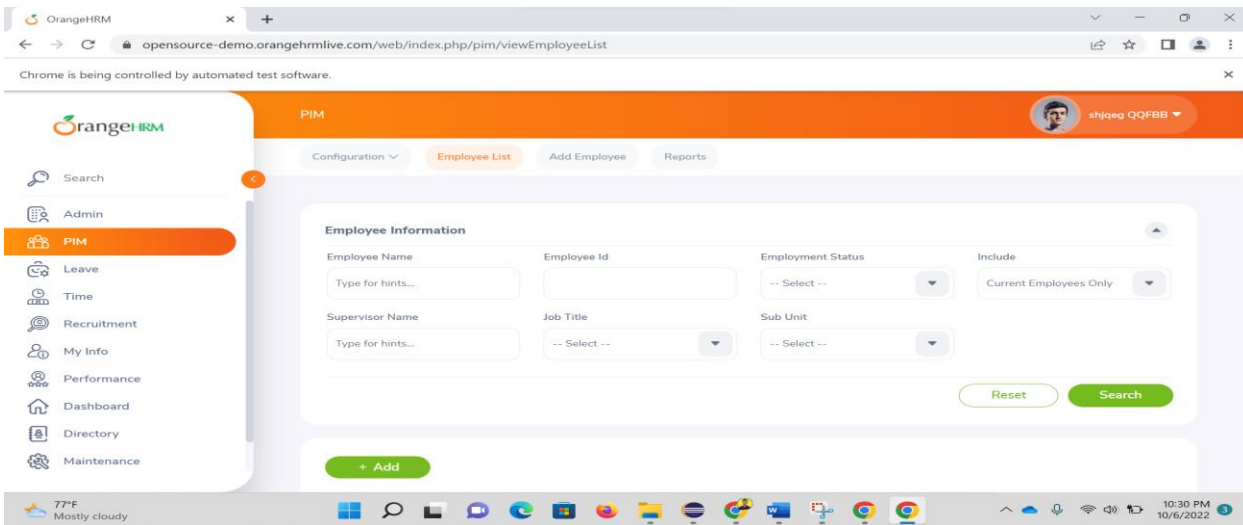
All Tests Failed Tests Summary

- Default suite ( 1/0/0/0 ) (15.553 s)
  - Default test ( 15.553 s)
    - testng.HRM\_Login
      - login (15.553 s)

Failure Exception

## Automation output





## Write a program to apply leave

- i) In line 3-10, we import all the needed packages including testing and webdriver
- ii) Line 15 and 16 are the commands needed to bring the chrome driver file into the program and to make an object of type chrome driver.
- iii) Line 17-21 involves logging into the HRM. Here we use Xpath locator to locate and enter the text into the elements we use sendkeys
- iv) We then find the sidebar element of the dashboard and the apply button using link text locator
- v) line 24 is used to click on the drop-down arrow and line 25 is used to select an option using the. contains filter
- vi) We then send the leave end date using the sendkeys into the date field and click on apply

```

1 // This program automates the process of leave application in OrangeHRM website
2
3 package testng;
4
5 import java.util.concurrent.TimeUnit;
6
7 import org.openqa.selenium.By;
8 import org.openqa.selenium.WebDriver;
9 import org.openqa.selenium.chrome.ChromeDriver;
10 import org.testng.annotations.Test;
11
12 Run All
13 public class Apply_Leave {
14     @Test //This is the test annotation used in TestNG
15     public void HRM_leave_application() {
16         System.setProperty("webdriver.chrome.driver", "C:\\brayan1\\chromedriver.exe");
17         WebDriver driver = new ChromeDriver();
18         driver.get("https://opensource-demo.orangehrmlive.com/web/index.php/auth/login");
19         driver.manage().timeouts().implicitlyWait(1000, TimeUnit.MILLISECONDS);
20         driver.findElement(By.xpath("//div/input[@name = 'username']")).sendKeys("Admin");
21         driver.findElement(By.xpath("//input[@type = 'password']")).sendKeys("admin123");
22         driver.findElement(By.xpath("//button[@type = 'submit']")).click(); // Clicking on login button
23         driver.findElement(By.linkText("Leave")).click(); // Clicking on the leave element on sidebar
24         driver.findElement(By.linkText("Apply")).click(); // clicking on apply button for leave
25         driver.findElement(By.xpath("//div[@class='oxd-select-text oxd-select-text--active']/div[2]/i")).click();
26         driver.findElement(By.xpath("//div[contains(text(),'CAN')]")).click(); // selecting an option from dropdown using the contains filter
27         driver.findElement(By.xpath("//div/div[2]/div/div/input")).sendKeys("2022-10-25"); // sending the leave date
28         driver.findElement(By.xpath("//button[@type='submit']")).click(); // clicking on submit application
29     }
30 }

```



## Console output

The screenshot shows the Selenium IDE interface. The console on the left displays the following output:

```
<terminated> Apply Leave [TestNG] C:\Users\EI13064\p2\pool\plugins\org.eclipse
[RemoteTestNG] detected TestNG version 6.14.3
[TestNGContentHandler] [WARN] It is strongly recommended to avoid
Starting ChromeDriver 105.0.5195.52 (412c95e518836d8a7d97250d
Only local connections are allowed.
Please see https://chromedriver.chromium.org/security-considerations
ChromeDriver was started successfully.
[1665075864.909][WARNING]: This version of ChromeDriver has no
Oct 06, 2022 10:34:24 PM org.openqa.selenium.remote.ProtocolHandl
INFO: Detected dialect: W3C
PASSED: HRM_leave_application

=====
Default test
Tests run: 1, Failures: 0, Skips: 0
=====

Default suite
Total tests run: 1, Failures: 0, Skips: 0
=====
```

The test results pane on the right shows a summary of the test execution:

- Passed: 1, Failed: 0, Skipped: 0
- Tests: 1/1, Methods: 1 (19801 ms)
- Default suite (1/0/0/0) (19.697 s)
  - Default test (19.697 s)
    - testng.Apply\_Leave
      - HRM\_leave\_application (19.697 s)

The Failure Exception pane is currently empty.

## Automation output

The screenshot shows the open-source-demo.orangehrmlive.com web application. The browser address bar displays the URL: <https://opensource-demo.orangehrmlive.com/web/index.php/pim/viewEmployeeList>.

The application interface includes a sidebar menu with the following items:

- Search
- Admin
- PIM (selected)
- Leave
- Time
- Recruitment
- My Info
- Performance
- Dashboard
- Directory
- Maintenance
- Buzz

The main content area displays the "Employee Information" form, which includes the following fields and controls:

- Employee Name:
- Employee Id:
- Employment Status:
- Include:
- Supervisor Name:
- Job Title:
- Sub Unit:
- Reset button
- Search button
- + Add button

The bottom status bar shows the temperature as 77°F, the weather as "Mostly cloudy", and the time as 10:29 PM on 10/6/2022.

OrangeHRM

opensource-demo.orangehrmlive.com/web/index.php/leave/applyLeave

Chrome is being controlled by automated test software.

orangeHRM

Leave

Paul Collings

Apply My Leave Entitlements Reports Configure Leave List Assign Leave

### Apply Leave

Leave Type\* CAN - Bereavement Leave Balance ? 14.00 Day(s)

From Date\* 2022-10-25 To Date\* 2022-10-25

Duration Full Day

Comments

77°F Mostly cloudy 10:29 PM 10/6/2022

OrangeHRM

opensource-demo.orangehrmlive.com/web/index.php/pim/viewEmployeeList

Chrome is being controlled by automated test software.

orangeHRM

PIM

shiqeg QQFBB

Configuration Employee List Add Employee Reports

### Employee Information

Employee Name Type for hints... Employee Id Job Title -- Select -- Employment Status -- Select -- Include Current Employees Only

Supervisor Name Type for hints... Sub Unit -- Select --

Reset Search

+ Add

77°F Mostly cloudy 10:31 PM 10/6/2022

## User method over loading for searching as discussed in the class assignment

- i) In line 2-7, we import the needed packages
- ii) Inside the search method in the test annotation, we login into HRM, click on the admin element in the dashboard. We also create an object of the main public class i.e. Method\_Overloading\_Searching. All this happens from line 12-21.
- iii) Next in line 23 and 24, we call the same search function using different parameters to perform the method overloading.
- iv) The first function searches only based on the name and the second function searches based on the name and user role. So, method overloading takes place in line 23 and 24
- v) Line 28-39 contains the definitions for both these functions. Note that these definitions are not part of the @test annotation.

```
Method_Overloading_Searching.java x
1 package testng;
2 import java.util.concurrent.TimeUnit;
3
4 import org.openqa.selenium.By;
5 import org.openqa.selenium.WebDriver;
6 import org.openqa.selenium.chrome.ChromeDriver;
7 import org.testng.annotations.Test;
8
9 //WebDriver driver = new ChromeDriver();
10 private static WebDriver driver = null;
11 @Test
12 public void Search() {
13     System.setProperty("webdriver.chrome.driver", "C:\\brayan1\\chromedriver.exe");
14     driver = new ChromeDriver();
15     driver.manage().timeouts().implicitlyWait(100, TimeUnit.SECONDS);
16     driver.get("https://opensource-demo.orangehrmlive.com/web/index.php/auth/login");
17     driver.findElement(By.name("username")).sendKeys("Admin");
18     driver.findElement(By.name("password")).sendKeys("admin123");
19     driver.findElement(By.xpath("//button")).click();
20     driver.findElement(By.xpath("//a[@class='oxd-main-menu-item']")).click(); //
21     Method_Overloading_Searching obj = new Method_Overloading_Searching();
22     // obj.login();
23     obj.search("Admin");
24     obj.search("Username","userrole");
25 }
26
27
28 void search(String c) {
29     // WebDriver driver = new ChromeDriver();
30     driver.findElement(By.xpath("//div[2]/input")).sendKeys(c);
31     driver.findElement(By.xpath("//button[@type = 'submit']")).click();
32 }
33 //
34 void search(String a, String b) {
35     driver.findElement(By.xpath("//div[2]/input")).sendKeys(a);
36     driver.findElement(By.xpath("//div/div[2]/div/div/input")).sendKeys(b);
37     driver.findElement(By.xpath("//button[@type = 'submit']")).click();
38 }
39 }
40
41
```

## Console Output

```
<terminated> Method_Overloading_Searching [TestNG] C:\Users\E13064\p2\po
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3 [RemoteTestNG] detected TestNG version 6.14.3
4 [TestNGContentHandler] [WARN] It is strongly recommended to al
5 Starting ChromeDriver 105.0.5195.52 (412c95e518836d8a7d97290d
6 Only local connections are allowed.
7 Please see https://chromedriver.chromium.org/security-consider
8 ChromeDriver was started successfully.
9 [1665075684.922][WARNING]: This version of ChromeDriver has n
10 Oct 06, 2022 10:31:24 PM org.openqa.selenium.remote.ProtocolH
11 INFO: Detected dialect: W3C
12 PASSED: Search
13
14 =====
15 Default test
16 Tests run: 1, Failures: 0, Skips: 0
17 =====
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orangeHRM

Search

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Leave

Time

Recruitment

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Performance

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Info

No Records Found

Directory

Admin / User Management

User Management

Job

Organization

Qualifications

Nationalities

More

System Users

Username	User Role	Employee Name	Status
AdminUsername	-- Select --	userrole	-- Select --

Reset

Search