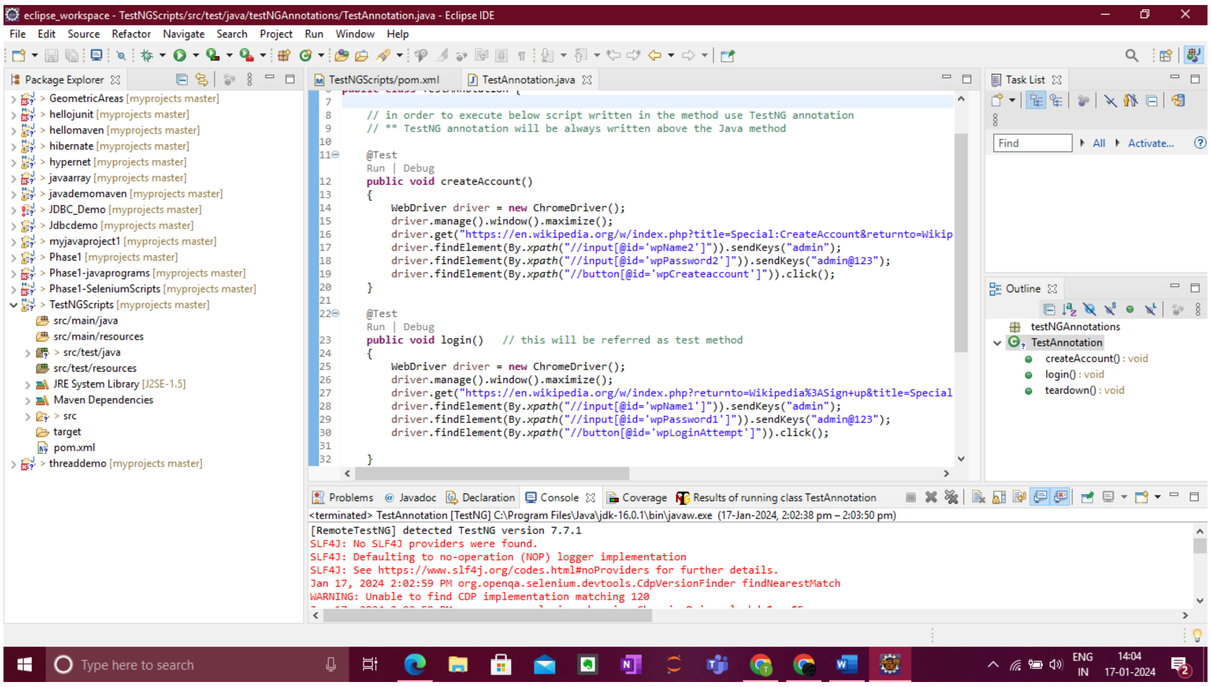
1. Test Annotations :

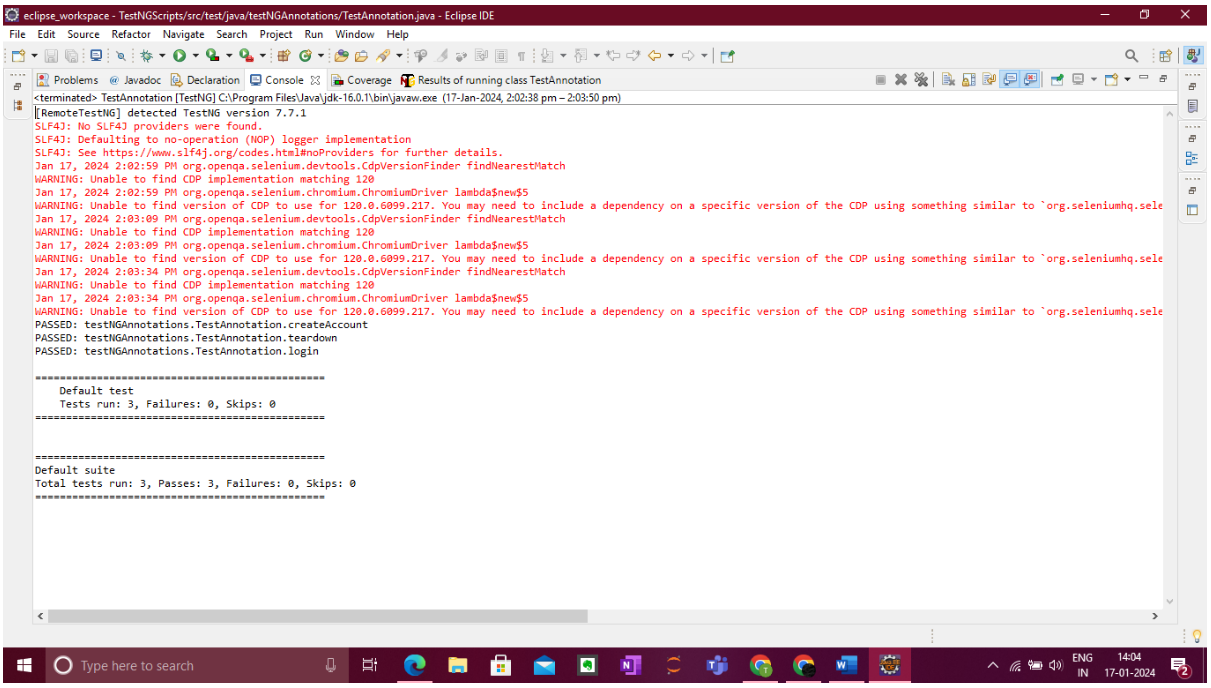
```
                              package testNGAnnotations;
                               import org.openqa.selenium.By;
                               import org.openqa.selenium.WebDriver;
                               import org.openqa.selenium.chrome.ChromeDriver;
                               import org.testng.annotations.Test;
                                public class TestAnnotation {
                            // in order to execute below script written in the method use TestNG annotation
                            // ** TestNG annotation will be always written above the Java method
                            @Test
                       public void createAccount()
                      {
                         WebDriver driver = new ChromeDriver();
                         driver.manage().window().maximize();
             driver.get("https://en.wikipedia.org/w/index.php?title=Special:CreateAccount&returnto=Wikipedia%3ASign+up&returntoquery=centralAuthAutologinTried%3D1%26centralAuthError%3DNot%2Bcentrally%2Blogged%2Bin");
                         driver.findElement(By.xpath("//input[@id='wpName2']")).sendKeys("admin");
                    driver.findElement(By.xpath("//input[@id='wpPassword2']")).sendKeys("admin@123");
                         driver.findElement(By.xpath("//button[@id='wpCreateaccount']")).click();
             }

                          @Test
                         public void login()   // this will be referred as test method
             {
                         WebDriver driver = new ChromeDriver();
                         driver.manage().window().maximize();
             driver.get("https://en.wikipedia.org/w/index.php?returnto=Wikipedia%3ASign+up&title=Special:UserLogin&centralAuthAutologinTried=1&centralAuthError=Not+centrally+logged+in");
                         driver.findElement(By.xpath("//input[@id='wpName1']")).sendKeys("admin");
                       driver.findElement(By.xpath("//input[@id='wpPassword1']")).sendKeys("admin@123");
                         driver.findElement(By.xpath("//button[@id='wpLoginAttempt']")).click();

             }

                           @Test
                            public void teardown()
             {
                         WebDriver driver = new ChromeDriver();
                         driver.manage().window().maximize();
             driver.get("https://en.wikipedia.org/w/index.php?returnto=Wikipedia%3ASign+up&title=Special:UserLogin&centralAuthAutologinTried=1&centralAuthError=Not+centrally+logged+in");
                         driver.close();

             }
}
```



eclipse_workspace - TestNGScripts/src/test/java/testNGAnnotations/TestAnnotation.java - Eclipse IDE

```java
    // in order to execute below script written in the method use TestNG annotation
    // ** TestNG annotation will be always written above the Java method

    @Test
    public void createAccount()
    {
        WebDriver driver = new ChromeDriver();
        driver.manage().window().maximize();
        driver.get("https://en.wikipedia.org/w/index.php?title=Special:CreateAccount&returnto=Wikip
        driver.findElement(By.xpath("//input[@id='wpName2']")).sendKeys("admin");
        driver.findElement(By.xpath("//input[@id='wpPassword2']")).sendKeys("admin@123");
        driver.findElement(By.xpath("//button[@id='wpCreateaccount']")).click();
    }

    @Test
    public void login()   // this will be referred as test method
    {
        WebDriver driver = new ChromeDriver();
        driver.manage().window().maximize();
        driver.get("https://en.wikipedia.org/w/index.php?returnto=Wikipedia%3ASign+up&title=Special
        driver.findElement(By.xpath("//input[@id='wpName1']")).sendKeys("admin");
        driver.findElement(By.xpath("//input[@id='wpPassword1']")).sendKeys("admin@123");
        driver.findElement(By.xpath("//button[@id='wpLoginAttempt']")).click();

    }
```

```
<terminated> TestAnnotation [TestNG] C:\Program Files\Java\jdk-16.0.1\bin\javaw.exe (17-Jan-2024, 2:02:38 pm – 2:03:50 pm)
[RemoteTestNG] detected TestNG version 7.7.1
SLF4J: No SLF4J providers were found.
SLF4J: Defaulting to no-operation (NOP) logger implementation
SLF4J: See https://www.slf4j.org/codes.html#noProviders for further details.
Jan 17, 2024 2:02:59 PM org.openqa.selenium.devtools.CdpVersionFinder findNearestMatch
WARNING: Unable to find CDP implementation matching 120
```



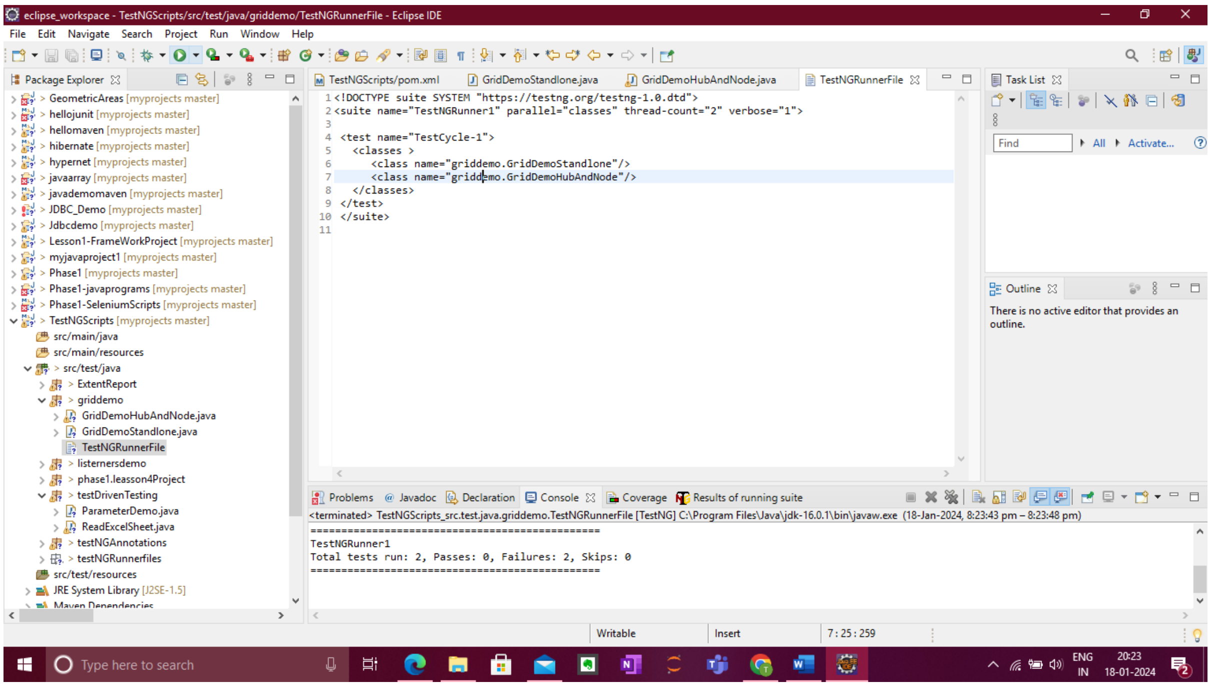
eclipse_workspace - TestNGScripts/src/test/java/testNGAnnotations/TestAnnotation.java - Eclipse IDE

```
<terminated> TestAnnotation [TestNG] C:\Program Files\Java\jdk-16.0.1\bin\javaw.exe (17-Jan-2024, 2:02:38 pm – 2:03:50 pm)
[RemoteTestNG] detected TestNG version 7.7.1
SLF4J: No SLF4J providers were found.
SLF4J: Defaulting to no-operation (NOP) logger implementation
SLF4J: See https://www.slf4j.org/codes.html#noProviders for further details.
Jan 17, 2024 2:02:59 PM org.openqa.selenium.devtools.CdpVersionFinder findNearestMatch
WARNING: Unable to find CDP implementation matching 120
Jan 17, 2024 2:02:59 PM org.openqa.selenium.chromium.ChromiumDriver lambda$new$5
WARNING: Unable to find version of CDP to use for 120.0.6099.217. You may need to include a dependency on a specific version of the CDP using something similar to `org.seleniumhq.sele
Jan 17, 2024 2:03:09 PM org.openqa.selenium.devtools.CdpVersionFinder findNearestMatch
WARNING: Unable to find CDP implementation matching 120
Jan 17, 2024 2:03:09 PM org.openqa.selenium.chromium.ChromiumDriver lambda$new$5
WARNING: Unable to find version of CDP to use for 120.0.6099.217. You may need to include a dependency on a specific version of the CDP using something similar to `org.seleniumhq.sele
Jan 17, 2024 2:03:34 PM org.openqa.selenium.devtools.CdpVersionFinder findNearestMatch
WARNING: Unable to find CDP implementation matching 120
Jan 17, 2024 2:03:34 PM org.openqa.selenium.chromium.ChromiumDriver lambda$new$5
WARNING: Unable to find version of CDP to use for 120.0.6099.217. You may need to include a dependency on a specific version of the CDP using something similar to `org.seleniumhq.sele
PASSED: testNGAnnotations.TestAnnotation.createAccount
PASSED: testNGAnnotations.TestAnnotation.teardown
PASSED: testNGAnnotations.TestAnnotation.login

===============================================
    Default test
    Tests run: 3, Failures: 0, Skips: 0
===============================================


===============================================
Default suite
Total tests run: 3, Passes: 3, Failures: 0, Skips: 0
===============================================
```

2.Test parallel execution :

```xml
<!DOCTYPE suite SYSTEM "https://testng.org/testng-1.0.dtd">
<suite name="TestNGRunner1" parallel="classes" thread-count="2" verbose="1">
<test name="TestCycle-1">
<classes >
<class name="griddemo.GridDemoStandlone"/>
<class name="griddemo.GridDemoHubAndNode"/>
</classes>
```

```
        </test>
         </suite>
```

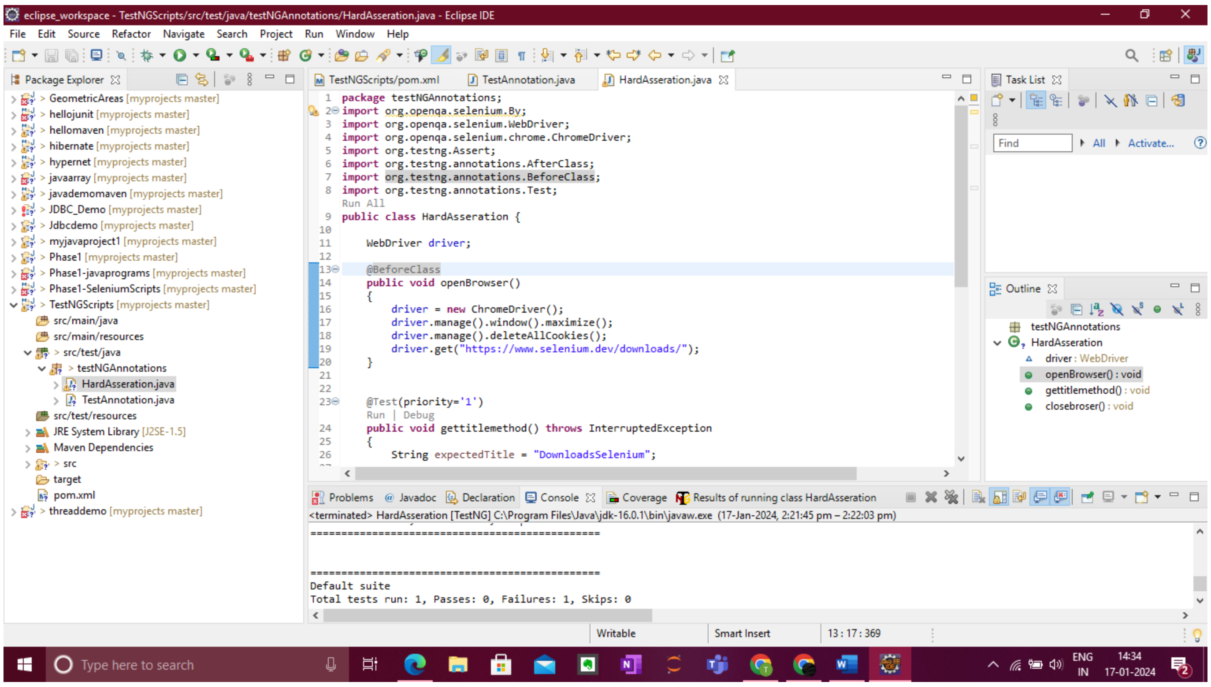


```
<!DOCTYPE suite SYSTEM "https://testng.org/testng-1.0.dtd">
<suite name="TestNGRunner1" parallel="classes" thread-count="2" verbose="1">

 <test name="TestCycle-1">
   <classes >
      <class name="griddemo.GridDemoStandlone"/>
      <class name="griddemo.GridDemoHubAndNode"/>
   </classes>
 </test>
 </suite>
```

```
<terminated> TestNGScripts_src.test.java.griddemo.TestNGRunnerFile [TestNG] C:\Program Files\Java\jdk-16.0.1\bin\javaw.exe (18-Jan-2024, 8:23:43 pm – 8:23:48 pm)
===============================================
TestNGRunner1
Total tests run: 2, Passes: 0, Failures: 2, Skips: 0
===============================================
```

3.Herd Assertion and soft Assertion :

```
package testNGAnnotations;
import org.openqa.selenium.By;
import org.openqa.selenium.WebDriver;
import org.openqa.selenium.chrome.ChromeDriver;
import org.testng.Assert;
import org.testng.annotations.AfterClass;
import org.testng.annotations.BeforeClass;
import org.testng.annotations.Test;
public class HardAsseration {
WebDriver driver;
@BeforeClass
public void openBrowser()
{
        driver = new ChromeDriver();
        driver.manage().window().maximize();
        driver.manage().deleteAllCookies();
        driver.get("https://www.selenium.dev/downloads/");
}
@Test(priority='1')
public void gettitlemethod() throws InterruptedException
{
        String expectedTitle = "DownloadsSelenium";
        String actualTitle = driver.getTitle(); // Downloads | Selenium
        // we will check if expected title == actual title-> add assertions
        Assert.assertEquals(actualTitle, expectedTitle);
        Thread.sleep(2000);
        System.out.println("Assertion was passed");
        //driver.findElement(By.xpath("(//div[@class='card-body px-0 text-
center'])[3]/descendant::a[3]")).click();
        System.out.println("click on the link");
        }
        @AfterClass
        public void closebroser()
        {
                driver.close();
        }
}
```


eclipse_workspace - TestNGScripts/src/test/java/testNGAnnotations/HardAsseration.java - Eclipse IDE

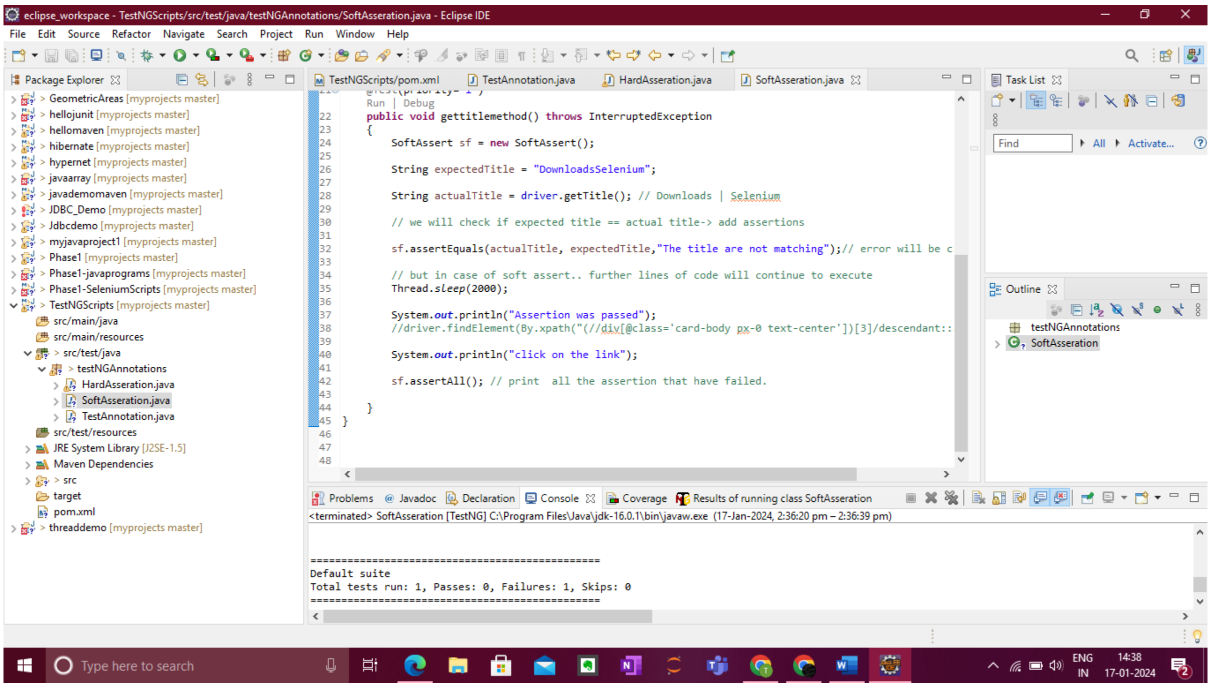
```
package testNGAnnotations;
import org.openqa.selenium.By;
import org.openqa.selenium.WebDriver;
import org.openqa.selenium.chrome.ChromeDriver;
import org.testng.Assert;
import org.testng.annotations.AfterClass;
import org.testng.annotations.BeforeClass;
import org.testng.annotations.Test;
Run All
public class HardAsseration {

    WebDriver driver;

    @BeforeClass
    public void openBrowser()
    {
        driver = new ChromeDriver();
        driver.manage().window().maximize();
        driver.manage().deleteAllCookies();
        driver.get("https://www.selenium.dev/downloads/");
    }


    @Test(priority='1')
    Run | Debug
    public void gettitlemethod() throws InterruptedException
    {
        String expectedTitle = "DownloadsSelenium";
```

```
<terminated> HardAsseration [TestNG] C:\Program Files\Java\jdk-16.0.1\bin\javaw.exe  (17-Jan-2024, 2:21:45 pm – 2:22:03 pm)
===============================================


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

File
Edit
Source
Refactor
Navigate
Search
Project
Run
Window
Help
Package Explorer
GeometricAreas [myprojects master]
hellojunit [myprojects master]
hellomaven [myprojects master]
hibernate [myprojects master]
hypernet [myprojects master]
javaarray [myprojects master]
javademomaven [myprojects master]
JDBC_Demo [myprojects master]
Jdbcdemo [myprojects master]
myjavaproject1 [myprojects master]
Phase1 [myprojects master]
Phase1-javaprograms [myprojects master]
Phase1-SeleniumScripts [myprojects master]
TestNGScripts [myprojects master]
src/main/java
src/main/resources
src/test/java
testNGAnnotations
HardAsseration.java
TestAnnotation.java
src/test/resources
JRE System Library [J2SE-1.5]
Maven Dependencies
src
target
pom.xml
threaddemo [myprojects master]
TestNGScripts/pom.xml
TestAnnotation.java
HardAsseration.java
Task List
Find
All
Activate...
Outline
testNGAnnotations
HardAsseration
driver : WebDriver
openBrowser() : void
gettitlemethod() : void
closebroser() : void
Problems
Javadoc
Declaration
Console
Coverage
Results of running class HardAsseration
Writable
Smart Insert
13 : 17 : 369
Type here to search
ENG
IN
14:34
17-01-2024

```
 package testNGAnnotations;
  import org.openqa.selenium.WebDriver;
  import org.openqa.selenium.chrome.ChromeDriver;
  import org.testng.annotations.BeforeClass;
  import org.testng.annotations.Test;
  import org.testng.asserts.SoftAssert;
  public class SoftAsseration {
  WebDriver driver;
@BeforeClass
public void openBrowser()
{
        driver = new ChromeDriver();
        driver.manage().window().maximize();
        driver.manage().deleteAllCookies();
        driver.get("https://www.selenium.dev/downloads/");
}
@Test(priority='1')
public void gettitlemethod() throws InterruptedException
{
        SoftAssert sf = new SoftAssert();
        String expectedTitle = "DownloadsSelenium";
        String actualTitle = driver.getTitle(); // Downloads | Selenium
        // we will check if expected title == actual title-> add assertions
        sf.assertEquals(actualTitle, expectedTitle,"The title are not matching");// error will be
captured
        // but in case of soft assert.. further lines of code will continue to execute
        Thread.sleep(2000);
```

```
                    System.out.println("Assertion was passed");
                    //driver.findElement(By.xpath("(//div[@class='card-body px-0 text-
center'])[3]/descendant::a[3]")).click();
                    System.out.println("click on the link");
                    sf.assertAll(); // print  all the assertion that have failed.

          }
}
```



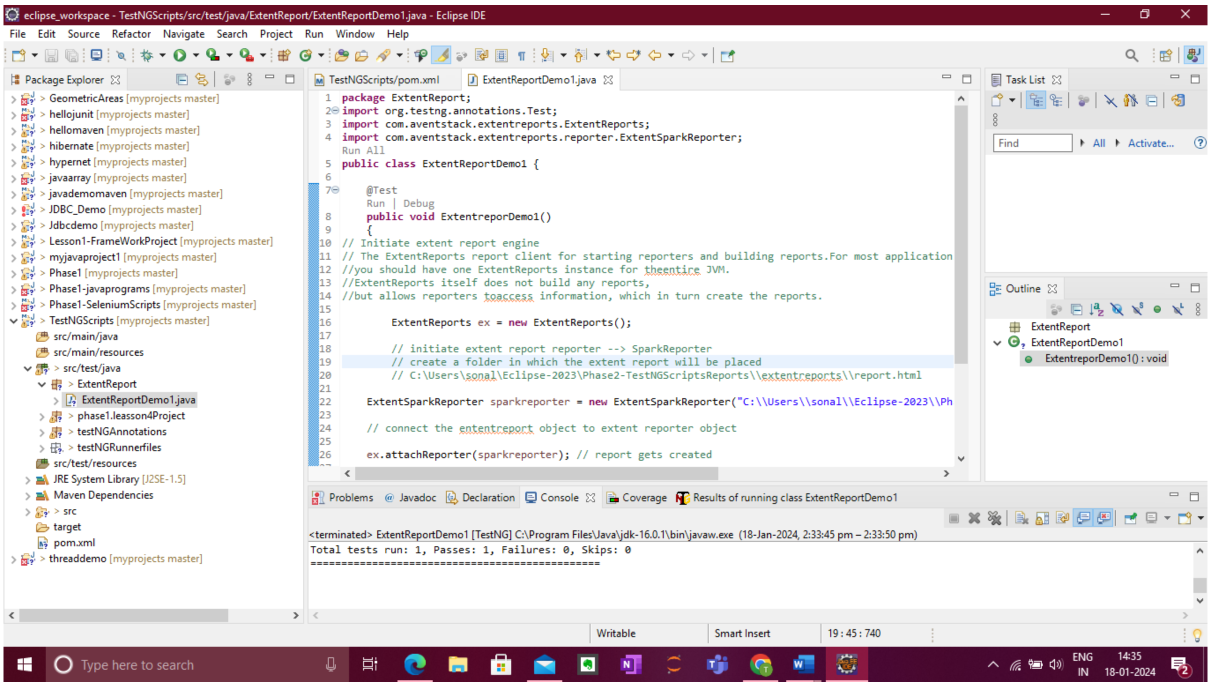
```
    Run | Debug
    public void gettitlemethod() throws InterruptedException
    {
        SoftAssert sf = new SoftAssert();

        String expectedTitle = "DownloadsSelenium";

        String actualTitle = driver.getTitle(); // Downloads | Selenium

        // we will check if expected title == actual title-> add assertions

        sf.assertEquals(actualTitle, expectedTitle,"The title are not matching");// error will be c

        // but in case of soft assert.. further lines of code will continue to execute
        Thread.sleep(2000);

        System.out.println("Assertion was passed");
        //driver.findElement(By.xpath("(//div[@class='card-body px-0 text-center'])[3]/descendant::

        System.out.println("click on the link");

        sf.assertAll(); // print  all the assertion that have failed.

    }
}
```

```
<terminated> SoftAsseration [TestNG] C:\Program Files\Java\jdk-16.0.1\bin\javaw.exe  (17-Jan-2024, 2:36:20 pm – 2:36:39 pm)


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

4.Extent Report :

```
                  package extentReports;
                  import org.testng.annotations.Test;
                  import com.aventstack.extentreports.ExtentReports;
                  import com.aventstack.extentreports.reporter.ExtentSparkReporter;
                  public class ExtentReportDemo1 {
            @Test
                  public void ExtentreporDemo1()
                   {
                 // Initiate extent report engine
                // The ExtentReports report client for starting reporters and building reports.For most
applications,
                //you should have one ExtentReports instance for theentire JVM.
                //ExtentReports itself does not build any reports,
                //but allows reporters toaccess information, which in turn create the reports.
                ExtentReports ex = new ExtentReports();
                   // initiate extent report reporter --> SparkReporter
                   // create a folder in which the extent report will be placed
```

```
                    // C:\Users\sonal\Eclipse-2023\Phase2-
TestNGScriptsReports\\extentreports\\report.html
                    ExtentSparkReporter sparkreporter = new
ExtentSparkReporter("C:\\Users\\sonal\\Eclipse-2023\\Phase2-
TestNGScriptsReports\\\\extentreports\\\\report.html");
          // connect the ententreport object to extent reporter object
          ex.attachReporter(sparkreporter); // report gets created
          ex.flush(); // generate the report in the required folder of the project

                    }
}
```

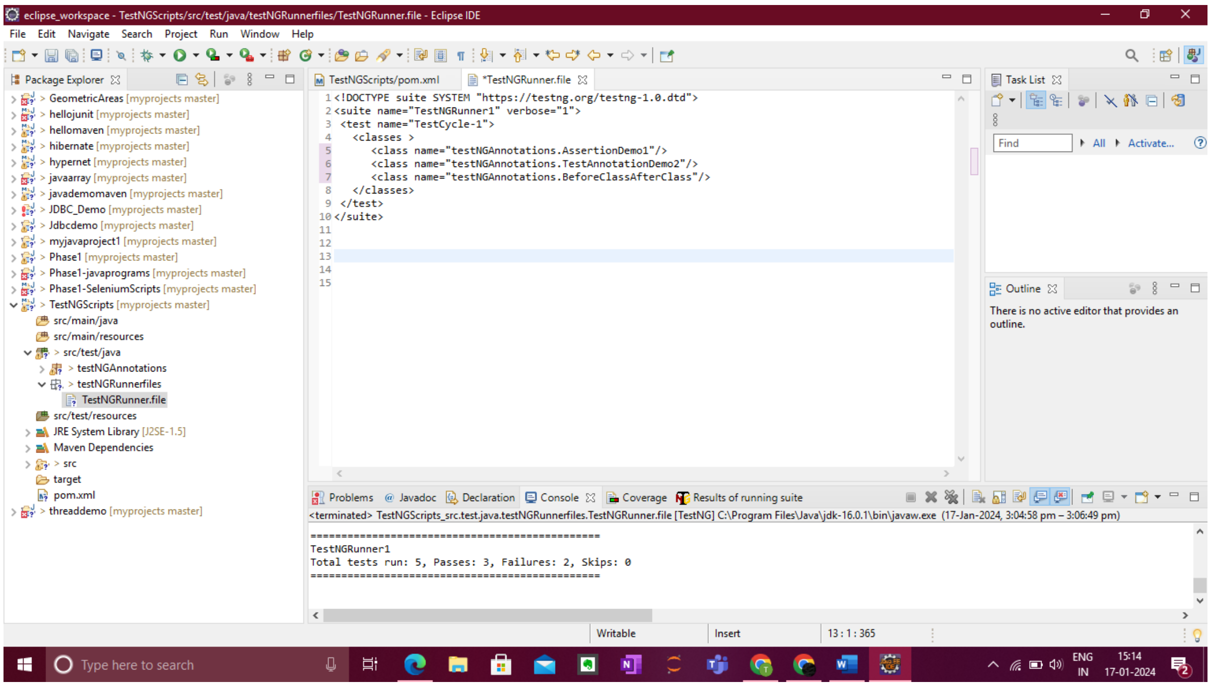


```
package ExtentReport;
import org.testng.annotations.Test;
import com.aventstack.extentreports.ExtentReports;
import com.aventstack.extentreports.reporter.ExtentSparkReporter;
public class ExtentReportDemo1 {

    @Test
    public void ExtentreporDemo1()
    {
// Initiate extent report engine
// The ExtentReports report client for starting reporters and building reports.For most application
//you should have one ExtentReports instance for theentire JVM.
//ExtentReports itself does not build any reports,
//but allows reporters toaccess information, which in turn create the reports.

        ExtentReports ex = new ExtentReports();

        // initiate extent report reporter --> SparkReporter
        // create a folder in which the extent report will be placed
        // C:\Users\sonal\Eclipse-2023\Phase2-TestNGScriptsReports\\extentreports\\report.html

    ExtentSparkReporter sparkreporter = new ExtentSparkReporter("C:\\Users\\sonal\\Eclipse-2023\\Ph

    // connect the ententreport object to extent reporter object

    ex.attachReporter(sparkreporter); // report gets created
```

```
<terminated> ExtentReportDemo1 [TestNG] C:\Program Files\Java\jdk-16.0.1\bin\javaw.exe (18-Jan-2024, 2:33:45 pm – 2:33:50 pm)
Total tests run: 1, Passes: 1, Failures: 0, Skips: 0
===============================================
```

7.TestNG parser :

```
<!DOCTYPE suite SYSTEM "https://testng.org/testng-1.0.dtd">
<suite name="TestNGRunner1" verbose="1">
 <test name="TestCycle-1">
<classes >
 <class name="testNGAnnotations.AssertionDemo1"/>
<class name="testNGAnnotations.TestAnnotationDemo2"/>
<class name="testNGAnnotations.BeforeClassAfterClass"/>
</classes>
</test>
</suite>
```

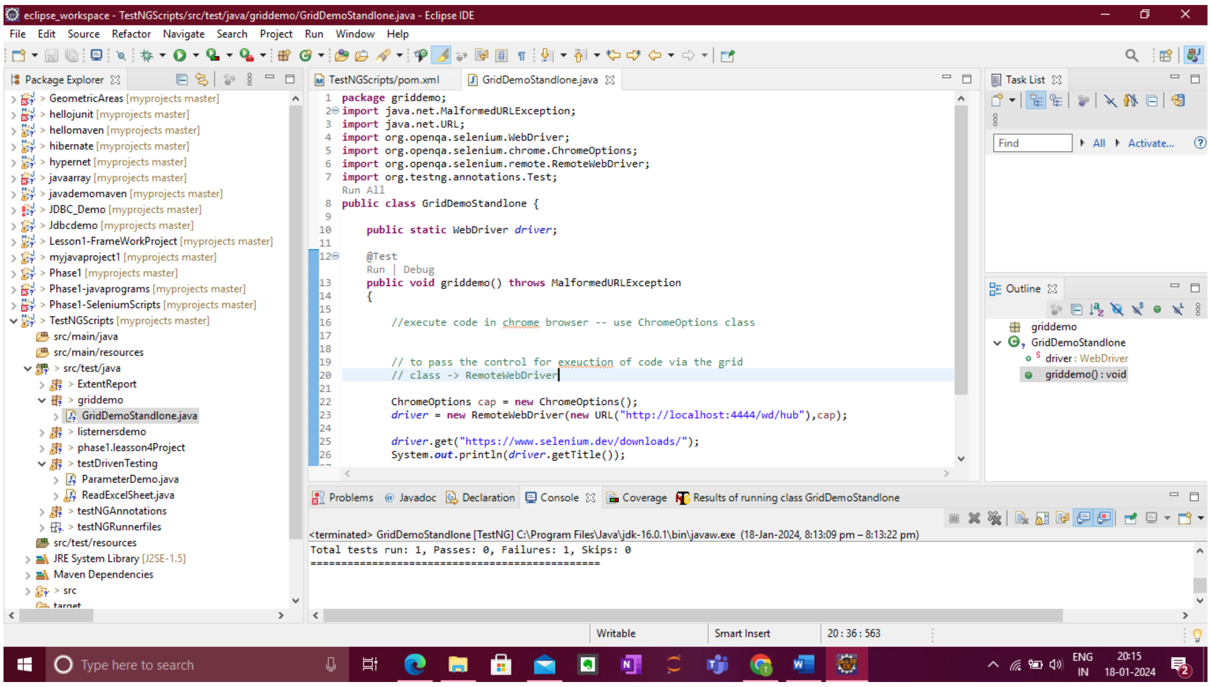


```
<!DOCTYPE suite SYSTEM "https://testng.org/testng-1.0.dtd">
<suite name="TestNGRunner1" verbose="1">
 <test name="TestCycle-1">
   <classes >
      <class name="testNGAnnotations.AssertionDemo1"/>
      <class name="testNGAnnotations.TestAnnotationDemo2"/>
      <class name="testNGAnnotations.BeforeClassAfterClass"/>
   </classes>
 </test>
</suite>
```

```
<terminated> TestNGScripts_src.test.java.testNGRunnerfiles.TestNGRunner.file [TestNG] C:\Program Files\Java\jdk-16.0.1\bin\javaw.exe (17-Jan-2024, 3:04:58 pm – 3:06:49 pm)
===============================================
TestNGRunner1
Total tests run: 5, Passes: 3, Failures: 2, Skips: 0
===============================================
```

8. Selenium Grid :

```
        package griddemo;
        import java.net.MalformedURLException;
        import java.net.URL;
        import org.openqa.selenium.WebDriver;
        import org.openqa.selenium.chrome.ChromeOptions;
        import org.openqa.selenium.remote.RemoteWebDriver;
        import org.testng.annotations.Test;
       public class GridDemoStandlone {
       public static WebDriver driver;
     @Test
    public void griddemo() throws MalformedURLException
    {
            //execute code in chrome browser -- use ChromeOptions class
            // to pass the control for exeuction of code via the grid
            // class -> RemoteWebDriver
            ChromeOptions cap = new ChromeOptions();
            driver = new RemoteWebDriver(new URL("http://localhost:4444/wd/hub"),cap);
            driver.get("https://www.selenium.dev/downloads/");
            System.out.println(driver.getTitle());
            }
}
```

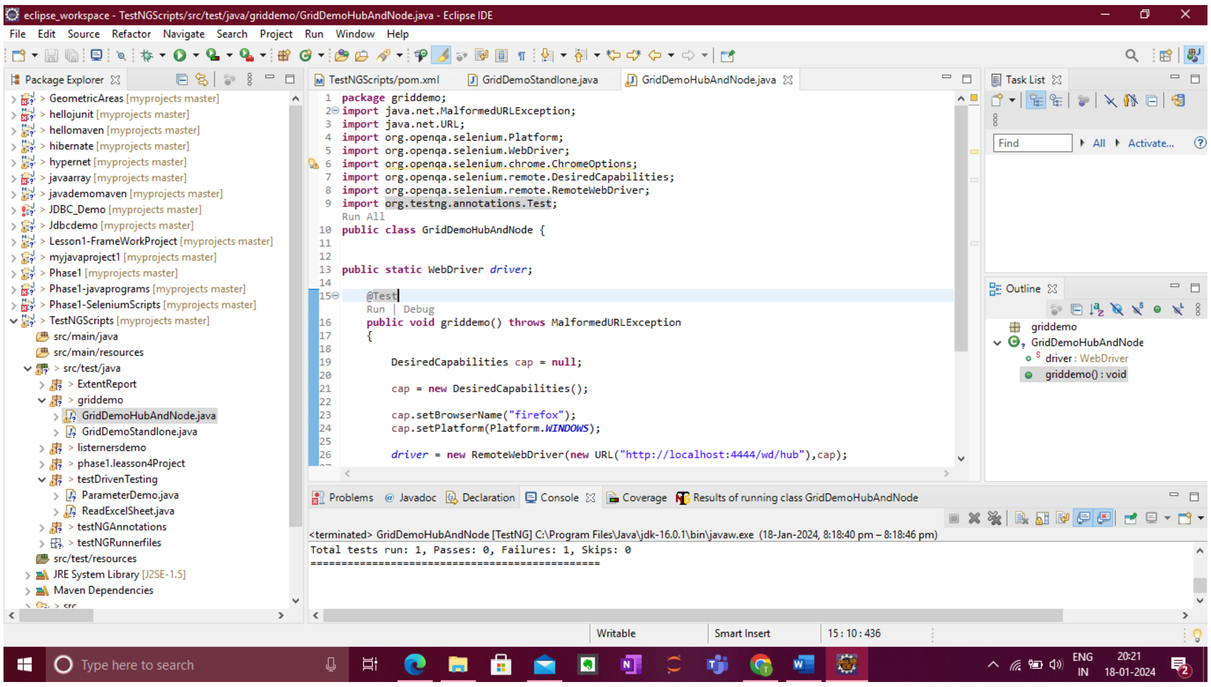

eclipse_workspace - TestNGScripts/src/test/java/griddemo/GridDemoStandlone.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
Package Explorer
GeometricAreas [myprojects master]
hellojunit [myprojects master]
hellomaven [myprojects master]
hibernate [myprojects master]
hypernet [myprojects master]
javaarray [myprojects master]
javademomaven [myprojects master]
JDBC_Demo [myprojects master]
Jdbcdemo [myprojects master]
Lesson1-FrameWorkProject [myprojects master]
myjavaproject1 [myprojects master]
Phase1 [myprojects master]
Phase1-javaprograms [myprojects master]
Phase1-SeleniumScripts [myprojects master]
TestNGScripts [myprojects master]
src/main/java
src/main/resources
src/test/java
ExtentReport
griddemo
GridDemoStandlone.java
listernersdemo
phase1.leasson4Project
testDrivenTesting
ParameterDemo.java
ReadExcelSheet.java
testNGAnnotations
testNGRunnerfiles
src/test/resources
JRE System Library [J2SE-1.5]
Maven Dependencies
src
target
TestNGScripts/pom.xml
GridDemoStandlone.java
Task List
Find
All
Activate...
Outline
griddemo
GridDemoStandlone
driver : WebDriver
griddemo() : void
Problems
Javadoc
Declaration
Console
Coverage
Results of running class GridDemoStandlone
Writable
Smart Insert
20 : 36 : 563
Type here to search
ENG
IN
20:15
18-01-2024

```
package griddemo;
import java.net.MalformedURLException;
import java.net.URL;
import org.openqa.selenium.WebDriver;
import org.openqa.selenium.chrome.ChromeOptions;
import org.openqa.selenium.remote.RemoteWebDriver;
import org.testng.annotations.Test;
Run All
public class GridDemoStandlone {

    public static WebDriver driver;

    @Test
    Run | Debug
    public void griddemo() throws MalformedURLException
    {

        //execute code in chrome browser -- use ChromeOptions class


        // to pass the control for exeuction of code via the grid
        // class -> RemoteWebDriver

        ChromeOptions cap = new ChromeOptions();
        driver = new RemoteWebDriver(new URL("http://localhost:4444/wd/hub"),cap);

        driver.get("https://www.selenium.dev/downloads/");
        System.out.println(driver.getTitle());
```

```
<terminated> GridDemoStandlone [TestNG] C:\Program Files\Java\jdk-16.0.1\bin\javaw.exe (18-Jan-2024, 8:13:09 pm – 8:13:22 pm)
Total tests run: 1, Passes: 0, Failures: 1, Skips: 0
===============================================
```

9. Selenium Grid On Multiple Browsers :

```
        package griddemo;
        import java.net.MalformedURLException;
        import java.net.URL;
        import org.openqa.selenium.Platform;
        import org.openqa.selenium.WebDriver;
        import org.openqa.selenium.chrome.ChromeOptions;
       import org.openqa.selenium.remote.DesiredCapabilities;
       import org.openqa.selenium.remote.RemoteWebDriver;
       import org.testng.annotations.Test;
       public class GridDemoHubAndNode {
       public static WebDriver driver;
    @Test
    public void griddemo() throws MalformedURLException
    {
              DesiredCapabilities cap = null;
              cap = new DesiredCapabilities();
              cap.setBrowserName("firefox");
              cap.setPlatform(Platform.WINDOWS);
             driver = new RemoteWebDriver(new URL("http://localhost:4444/wd/hub"),cap);
              driver.get("https://www.selenium.dev/downloads/");
             System.out.println(driver.getTitle());


    }

}
```



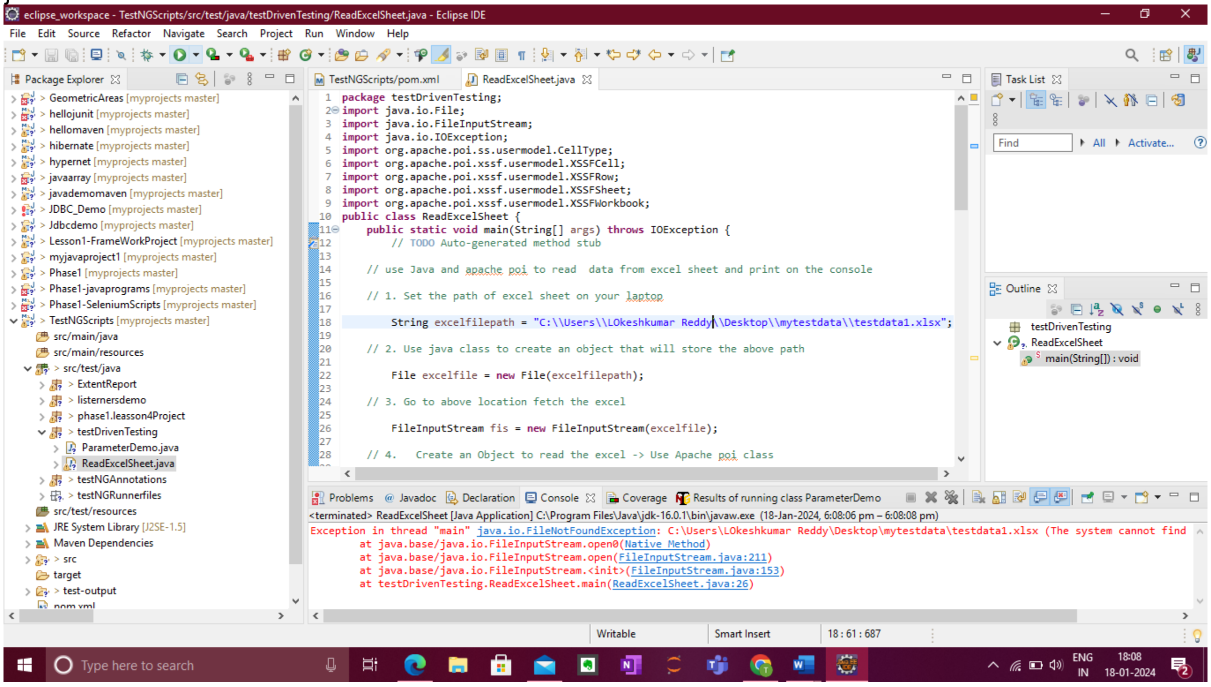
```
package griddemo;
import java.net.MalformedURLException;
import java.net.URL;
import org.openqa.selenium.Platform;
import org.openqa.selenium.WebDriver;
import org.openqa.selenium.chrome.ChromeOptions;
import org.openqa.selenium.remote.DesiredCapabilities;
import org.openqa.selenium.remote.RemoteWebDriver;
import org.testng.annotations.Test;
Run All
public class GridDemoHubAndNode {


public static WebDriver driver;

    @Test
    Run | Debug
    public void griddemo() throws MalformedURLException
    {

        DesiredCapabilities cap = null;

        cap = new DesiredCapabilities();

        cap.setBrowserName("firefox");
        cap.setPlatform(Platform.WINDOWS);

        driver = new RemoteWebDriver(new URL("http://localhost:4444/wd/hub"),cap);
```

```
<terminated> GridDemoHubAndNode [TestNG] C:\Program Files\Java\jdk-16.0.1\bin\javaw.exe (18-Jan-2024, 8:18:40 pm – 8:18:46 pm)
Total tests run: 1, Passes: 0, Failures: 1, Skips: 0
===============================================
```

12. Excel Sheet Read in Selenium :

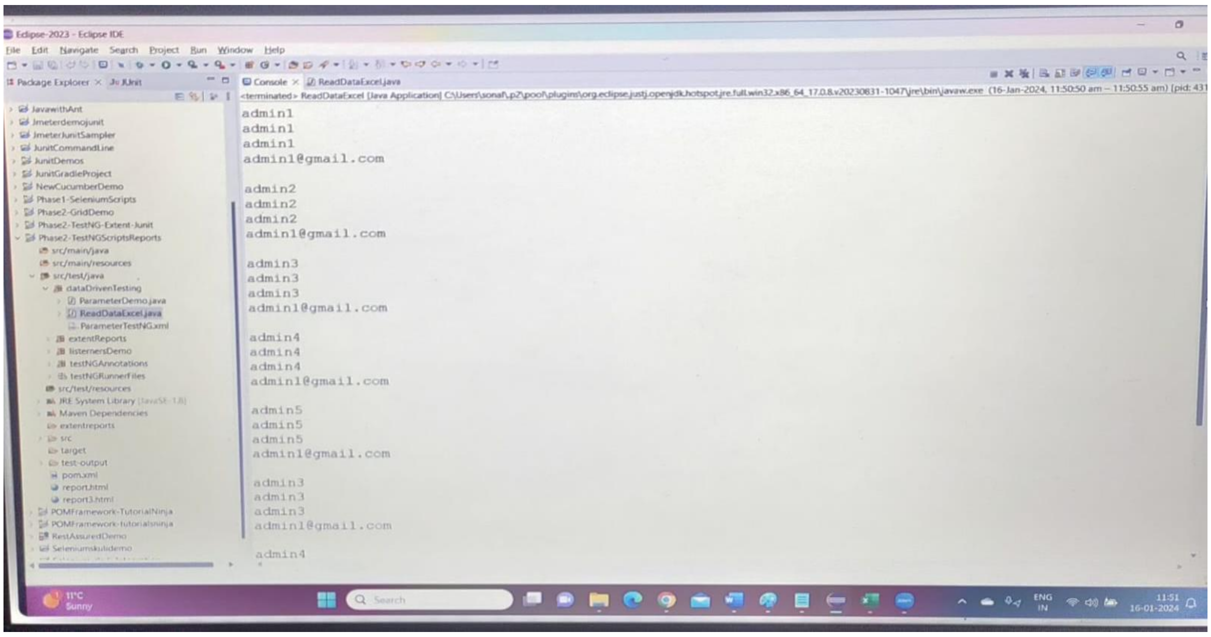
```
package testDrivenTesting;
import java.io.File;
import java.io.FileInputStream;
import java.io.IOException;
import org.apache.poi.ss.usermodel.CellType;
import org.apache.poi.xssf.usermodel.XSSFCell;
import org.apache.poi.xssf.usermodel.XSSFRow;
import org.apache.poi.xssf.usermodel.XSSFSheet;
import org.apache.poi.xssf.usermodel.XSSFWorkbook;
public class ReadExcelSheet {
 public static void main(String[] args) throws IOException {
    // TODO Auto-generated method stub
    // use Java and apache poi to read data from excel sheet and print on the console
    // 1. Set the path of excel sheet on your laptop
    String excelfilepath = "C:\\Users\\Lokeshkumar \\Desktop\\mytestdata\\testdata1.xlsx";
    // 2. Use java class to create an object that will store the above path
    File excelfile = new File(excelfilepath);
    // 3. Go to above location fetch the excel
    FileInputStream fis = new FileInputStream(excelfile);
    // 4.Create an Object to read the excel -> Use Apache poi class
    XSSFWorkbook workbook = new XSSFWorkbook(fis);
    // 5. From the workbook, fetch the sheet
    XSSFSheet sheet = workbook.getSheet("Sheet1");
    //6. Count the number of rows with data  in the sheet
    int rows= sheet.getLastRowNum();
    System.out.println("Number of rows in the sheet " + rows);
    // 7. Count number of columns with data
    // there is no method to count the number of columns
    // we need to use logic: go to 1st row, count the each cell with data => number of
columns with data
    int col =          sheet.getRow(1).getLastCellNum();
    System.out.println("Number of columns in the sheet " + col);
    // 8. Go to each row, each column and get the cell data
    // write 2 for loop to go to every row , every cell and get data
```

```
                for     (int r =0;r<rows;r++)
        {
                XSSFRow row = sheet.getRow(r);
                // loop to go to each cell of the row
                for(int c=0; c<col;c++)
                {
                        XSSFCell cell = row.getCell(c);
                        CellType celltype = cell.getCellType();
                        switch(celltype)
                        {
                        case STRING:
                        System.out.print(cell.getStringCellValue());
                        break;
                        case NUMERIC:
                        System.out.print(cell.getNumericCellValue());
                        break;
                }
                        System.out.println(" ");
                        }
                      System.out.println("");
                }
                         workbook.close();

                }
}
```


eclipse_workspace - TestNGScripts/src/test/java/testDrivenTesting/ReadExcelSheet.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
Package Explorer
TestNGScripts/pom.xml
ReadExcelSheet.java
Task List
Outline
testDrivenTesting
ReadExcelSheet
main(String[]) : void
Problems Javadoc Declaration Console Coverage Results of running class ParameterDemo
Writable Smart Insert 18 : 61 : 687
Type here to search
18:08 18-01-2024

```
package testDrivenTesting;
import java.io.File;
import java.io.FileInputStream;
import java.io.IOException;
import org.apache.poi.ss.usermodel.CellType;
import org.apache.poi.xssf.usermodel.XSSFCell;
import org.apache.poi.xssf.usermodel.XSSFRow;
import org.apache.poi.xssf.usermodel.XSSFSheet;
import org.apache.poi.xssf.usermodel.XSSFWorkbook;
public class ReadExcelSheet {
    public static void main(String[] args) throws IOException {
        // TODO Auto-generated method stub

    // use Java and apache poi to read  data from excel sheet and print on the console

    // 1. Set the path of excel sheet on your laptop

        String excelfilepath = "C:\\Users\\LOkeshkumar Reddy\\Desktop\\mytestdata\\testdata1.xlsx";

    // 2. Use java class to create an object that will store the above path

        File excelfile = new File(excelfilepath);

    // 3. Go to above location fetch the excel

        FileInputStream fis = new FileInputStream(excelfile);

    // 4.   Create an Object to read the excel -> Use Apache poi class
```

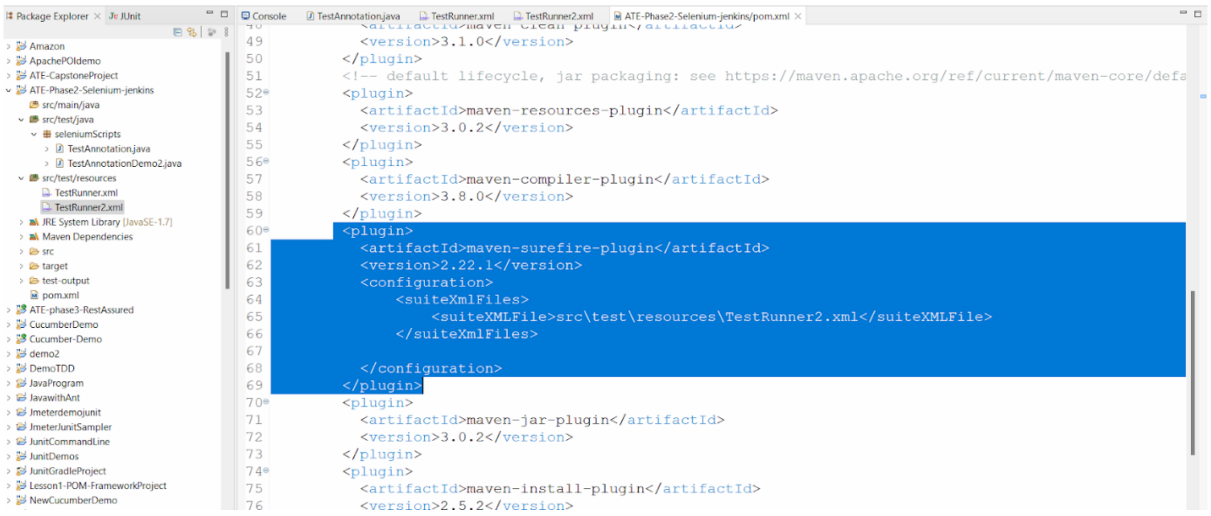
```
<terminated> ReadExcelSheet [Java Application] C:\Program Files\Java\jdk-16.0.1\bin\javaw.exe  (18-Jan-2024, 6:08:06 pm – 6:08:08 pm)
Exception in thread "main" java.io.FileNotFoundException: C:\Users\LOkeshkumar Reddy\Desktop\mytestdata\testdata1.xlsx (The system cannot find
        at java.base/java.io.FileInputStream.open0(Native Method)
        at java.base/java.io.FileInputStream.open(FileInputStream.java:211)
        at java.base/java.io.FileInputStream.<init>(FileInputStream.java:153)
        at testDrivenTesting.ReadExcelSheet.main(ReadExcelSheet.java:26)
```



```
<terminated> ReadDataExcel [Java Application] C:\Users\sonal\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.8.v20230831-1047\jre\bin\javaw.exe (16-Jan-2024, 11:50:50 am – 11:50:55 am) [pid: 431
admin1
admin1
admin1
admin1@gmail.com

admin2
admin2
admin2
admin1@gmail.com

admin3
admin3
admin3
admin1@gmail.com

admin4
admin4
admin4
admin1@gmail.com

admin5
admin5
admin5
admin1@gmail.com

admin3
admin3
admin3
admin1@gmail.com

admin4
```

13. Selenium With Maven :

```
    <plugin>
   <artifactId>maven-surefire-plugin</artifactId>
  <version>2.22.1</version>
 <configuration>
         <suiteXmlFiles>
                  <suiteXMLFile>src\test\resources\TestRunner2.xml</suiteXMLFile>
         </suiteXmlFiles>

</configuration>
</plugin>
```

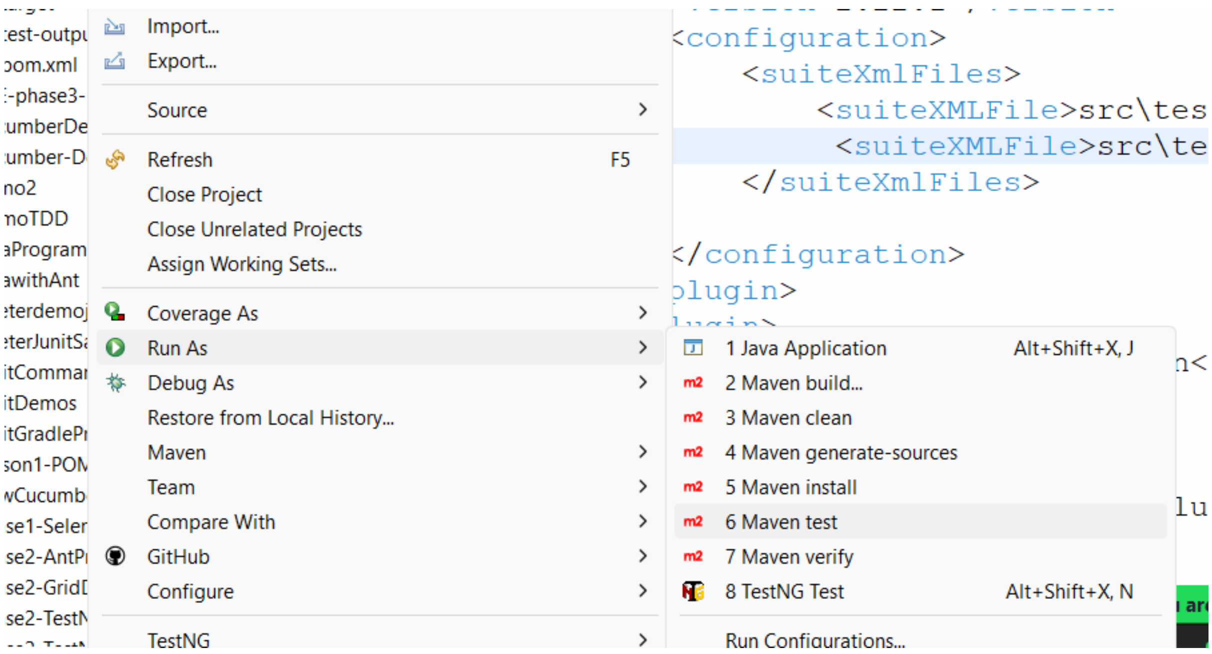


```
    <artifactId>maven-clean-plugin</artifactId>
    <version>3.1.0</version>
  </plugin>
  <!-- default lifecycle, jar packaging: see https://maven.apache.org/ref/current/maven-core/defa
  <plugin>
    <artifactId>maven-resources-plugin</artifactId>
    <version>3.0.2</version>
  </plugin>
  <plugin>
    <artifactId>maven-compiler-plugin</artifactId>
    <version>3.8.0</version>
  </plugin>
  <plugin>
    <artifactId>maven-surefire-plugin</artifactId>
    <version>2.22.1</version>
    <configuration>
        <suiteXmlFiles>
            <suiteXMLFile>src\test\resources\TestRunner2.xml</suiteXMLFile>
        </suiteXmlFiles>

    </configuration>
  </plugin>
  <plugin>
    <artifactId>maven-jar-plugin</artifactId>
    <version>3.0.2</version>
  </plugin>
  <plugin>
    <artifactId>maven-install-plugin</artifactId>
    <version>2.5.2</version>
```

Save the POM file.

Now execute the maven command

Right click on project → go to run as → go to maven test → code will run

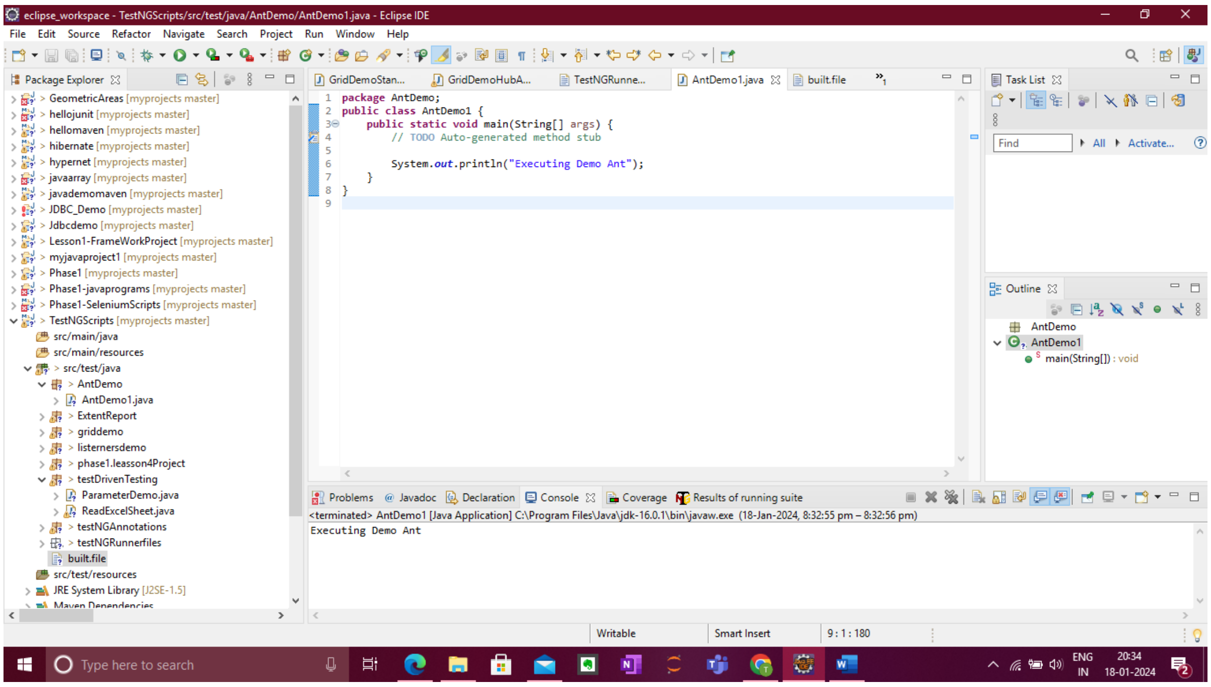


```
<configuration>
    <suiteXmlFiles>
        <suiteXMLFile>src\tes
          <suiteXMLFile>src\te
    </suiteXmlFiles>

</configuration>
plugin>
```

Whenever a maven command is executed, it will generate output files and place it in Target folder of the project

14. Selenium With Ant :

```
         package AntDemo;
         public class AntDemo1 {
         public static void main(String[] args) {
              // TODO Auto-generated method stub
              System.out.println("Executing Demo Ant");
      }
}
```


eclipse_workspace - TestNGScripts/src/test/java/AntDemo/AntDemo1.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
Package Explorer
GridDemoStan... GridDemoHubA... TestNGRunne... AntDemo1.java built.file
Task List
Outline
Problems Javadoc Declaration Console Coverage Results of running suite
Writable Smart Insert 9 : 1 : 180

```
package AntDemo;
public class AntDemo1 {
    public static void main(String[] args) {
        // TODO Auto-generated method stub

        System.out.println("Executing Demo Ant");
    }
}
```

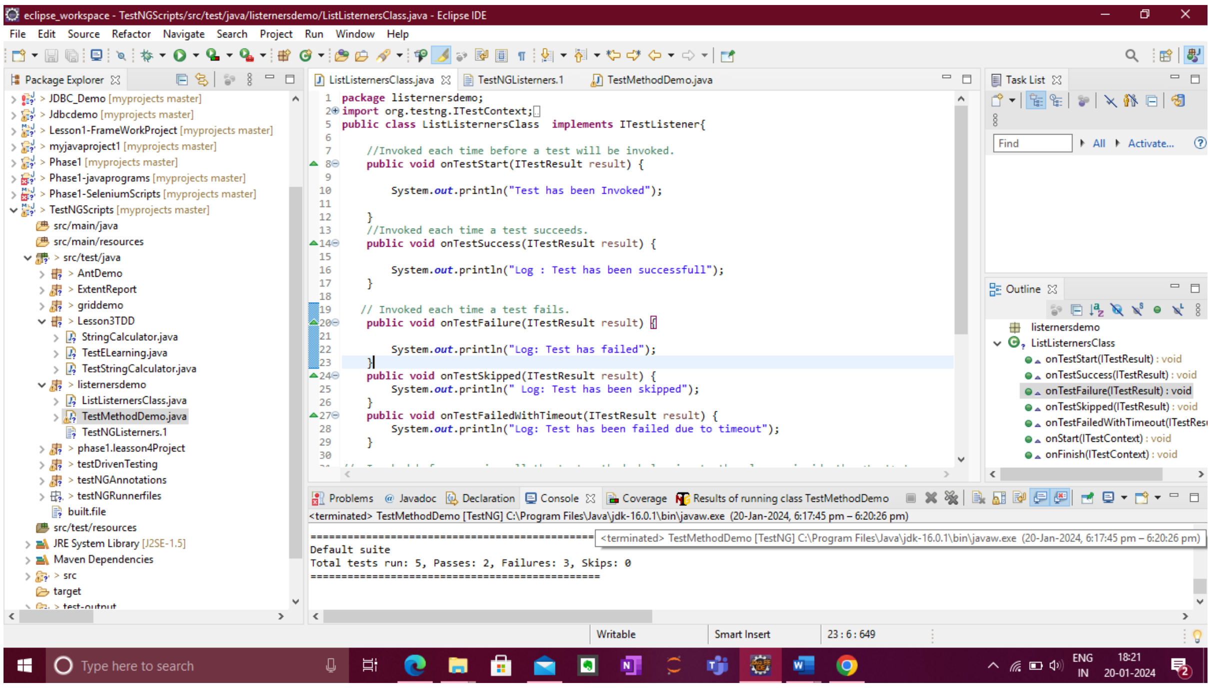
```
<terminated> AntDemo1 [Java Application] C:\Program Files\Java\jdk-16.0.1\bin\javaw.exe (18-Jan-2024, 8:32:55 pm – 8:32:56 pm)
Executing Demo Ant
```

15. Selenium in listerners :

```
                    package listernersdemo;
                    import org.testng.ITestContext;
                    import org.testng.ITestListener;
                    import org.testng.ITestResult;
                    public class ListListernersClass  implements ITestListener{
                   //Invoked each time before a test will be invoked.
                    public void onTestStart(ITestResult result) {
                  System.out.println("Test has been Invoked");
                  }
                  //Invoked each time a test succeeds.
                   public void onTestSuccess(ITestResult result) {
                  System.out.println("Log : Test has been successfull");
        }
          // Invoked each time a test fails.
        public void onTestFailure(ITestResult result) {
                  System.out.println("Log: Test has failed");
        }
        public void onTestSkipped(ITestResult result) {
                  System.out.println(" Log: Test has been skipped");
        }
        public void onTestFailedWithTimeout(ITestResult result) {
                  System.out.println("Log: Test has been failed due to timeout");
        }

      // Invoked before running all the test methods belonging to the classes inside the <test> tag
        // and calling all their Configuration methods.
        public void onStart(ITestContext context) {

                  System.out.println("The Main test has started");
        }
        //Invoked after all the test methods belonging to the classes inside the <test> tag have run
        // and all their Configuration methods have been called.
        public void onFinish(ITestContext context) {
                  System.out.println("The Main test has Completed");
```

}

}



```
package listernersdemo;
import org.testng.ITestContext;
public class ListListernersClass  implements ITestListener{

    //Invoked each time before a test will be invoked.
    public void onTestStart(ITestResult result) {

        System.out.println("Test has been Invoked");

    }
    //Invoked each time a test succeeds.
    public void onTestSuccess(ITestResult result) {

        System.out.println("Log : Test has been successfull");
    }

   // Invoked each time a test fails.
    public void onTestFailure(ITestResult result) {

        System.out.println("Log: Test has failed");
    }
    public void onTestSkipped(ITestResult result) {
        System.out.println(" Log: Test has been skipped");
    }
    public void onTestFailedWithTimeout(ITestResult result) {
        System.out.println("Log: Test has been failed due to timeout");
    }
```

```
<terminated> TestMethodDemo [TestNG] C:\Program Files\Java\jdk-16.0.1\bin\javaw.exe  (20-Jan-2024, 6:17:45 pm – 6:20:26 pm)

===============================================
Default suite
Total tests run: 5, Passes: 2, Failures: 3, Skips: 0
===============================================
```

16. Artifactory installed :

Install Jfrog Artifactory in Lab
Use the SL lab machine to install and set up Jfrog Artifactoy
Connect to the lab -> go to the terminal
Execute below commands:
================================

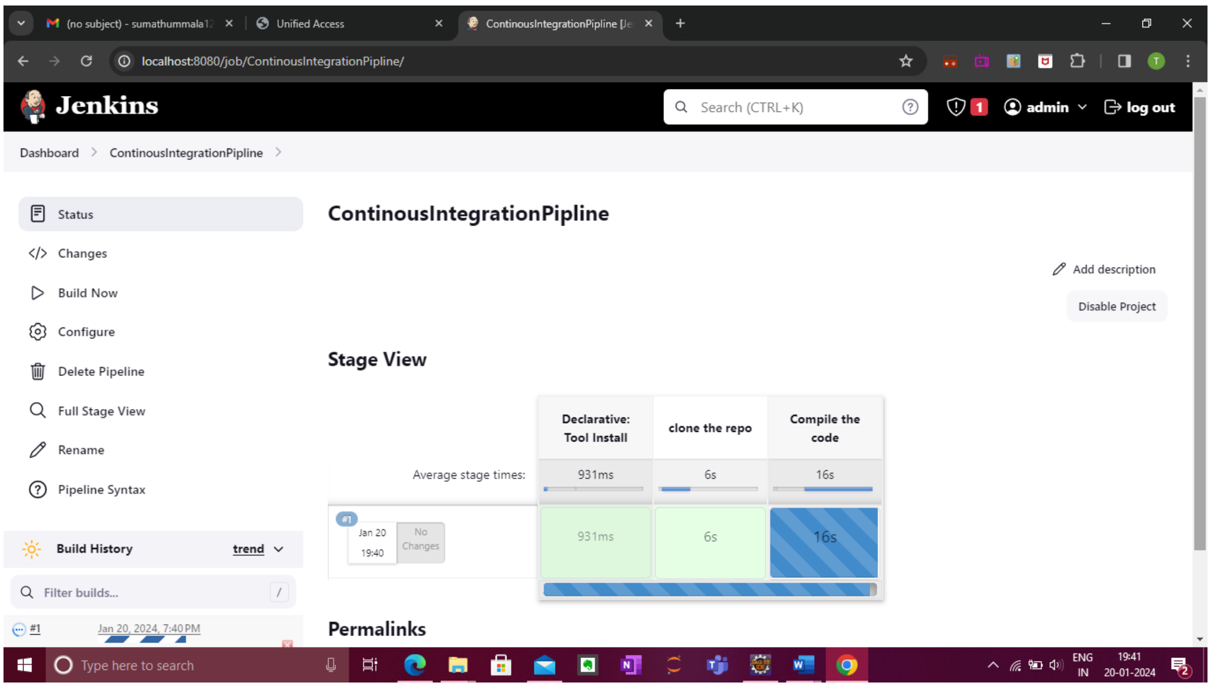
```
# sudo su -
# mkdir myartifactory
# cd myartifactory
# wget https://jfrog.bintray.com/artifactory/jfrog-artifactory-oss-6.9.6.zip
# unzip jfrog-artifactory-oss-6.9.6.zip
# cd jfrog-artifactory-oss-6.9.6
# cd bin
# ./artifactory.sh start
```

Go to your lab browser and give the URL
localhost:8081
You will be on the Jfrog Artifactoy page
Login with below credentials:
Username: admin
Password: password

17. CI/CD pipline With Maven :

```
pipeline{

 tools{

 maven 'mymaven'

 }

// where to run the pipeline
```

```
 // agent means a server/virtual machine
 // any here means--current windows server
 agent any

 // In pipline we want to exeucte many jobs -> called stages
 // pipeline = set of stages/set of task
stages{
      // each task/job represents a stage
     stage('Clone the repo'){
         steps{
           git 'https://github.com/Sonal0409/ATE_Phase2-Selenium-Jenkins-Jan24.git'
         }
     }
     stage('Execute the tests'){
         steps{
         bat 'mvn test'
         //bat :  you are running the command using windows command line(batch)
         }
     }
   }
}
```



ContinousIntegrationPipline

Stage View

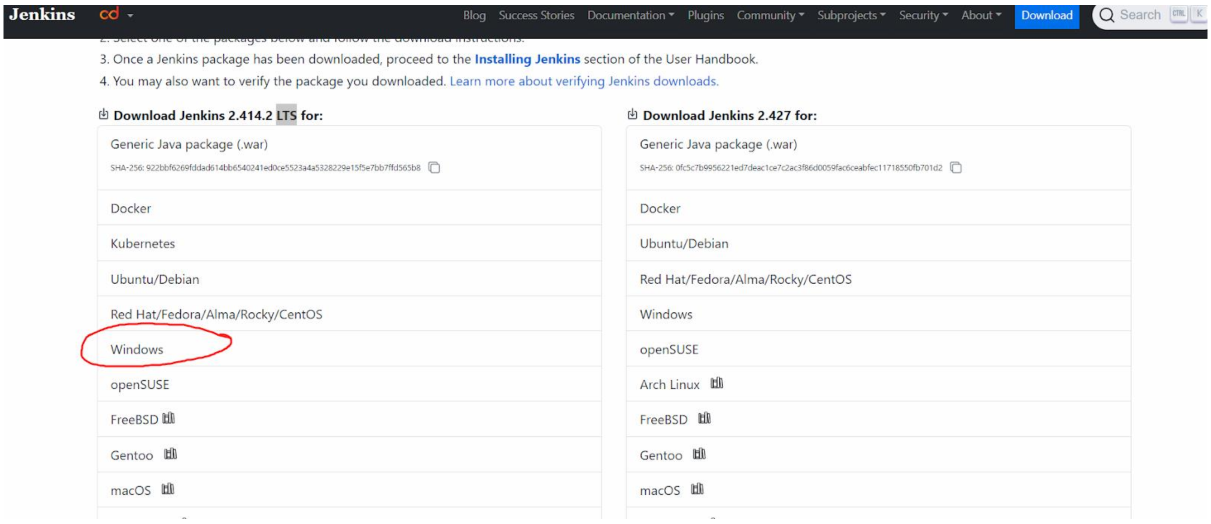
	Declarative: Tool Install	clone the repo	Compile the code
Average stage times:	931ms	6s	16s
#1 Jan 20 19:40 No Changes	931ms	6s	16s

18. CI/CD pipline With Selenium Webdriver :

```
                          pipeline{
                         tools{
                        maven 'mymaven'
                         }
                        // where to run the pipeline
                      // agent means a server/virtual machine
                     // any here means--current windows server
                     agent any
     // In pipline we want to exeucte many jobs -> called stages
    // pipeline = set of stages/set of task
     stages{
            // each task/job represents a stage
            stage('Clone the repo'){
           steps{
             git 'https://github.com/Sonal0409/ATE_Phase2-Selenium-Jenkins-Jan24.git'
           }
       }
       stage('Execute the tests'){
           steps{
           bat 'mvn test'
  //bat :  you are running the command using windows command line(batch)
           }
       }
    }
}
```

19. Selenium integration with Jenkins :

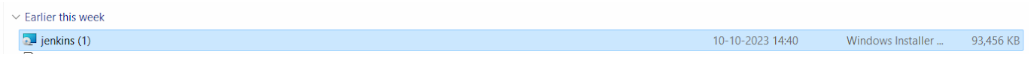
we will install the LTS version. Click on Windows



3. Once a Jenkins package has been downloaded, proceed to the **Installing Jenkins** section of the User Handbook.
4. You may also want to verify the package you downloaded. Learn more about verifying Jenkins downloads.

Download Jenkins 2.414.2 LTS for:	**Download Jenkins 2.427 for:**
Generic Java package (.war) SHA-256: 922bbf6269fddad614bb6540241ed0ce5523a4a5328229e15f5e7bb7ffd565b8	Generic Java package (.war) SHA-256: 0fc5c7b9956221ed7deac1ce7c2ac3f86d0059fac6ceabfec11718550fb701d2
Docker	Docker
Kubernetes	Ubuntu/Debian
Ubuntu/Debian	Red Hat/Fedora/Alma/Rocky/CentOS
Red Hat/Fedora/Alma/Rocky/CentOS	Windows
Windows	openSUSE
openSUSE	Arch Linux
FreeBSD	FreeBSD
Gentoo	Gentoo
macOS	macOS

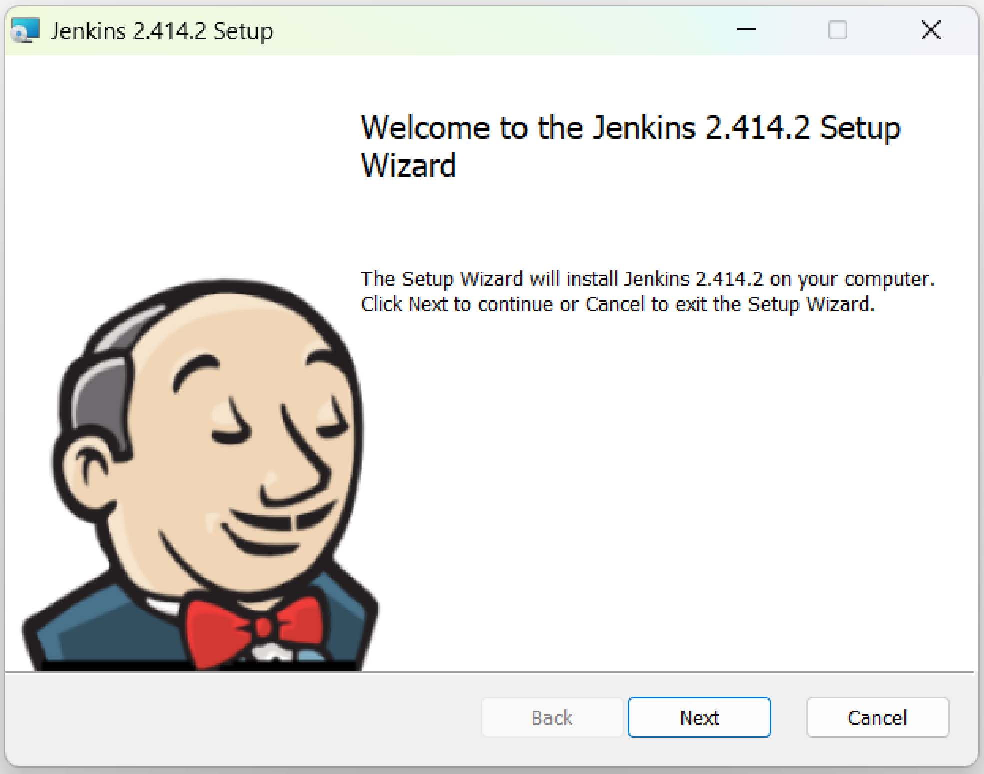
As you will click on Windows, it will automatically install Jenkins in your downloads folder



Earlier this week

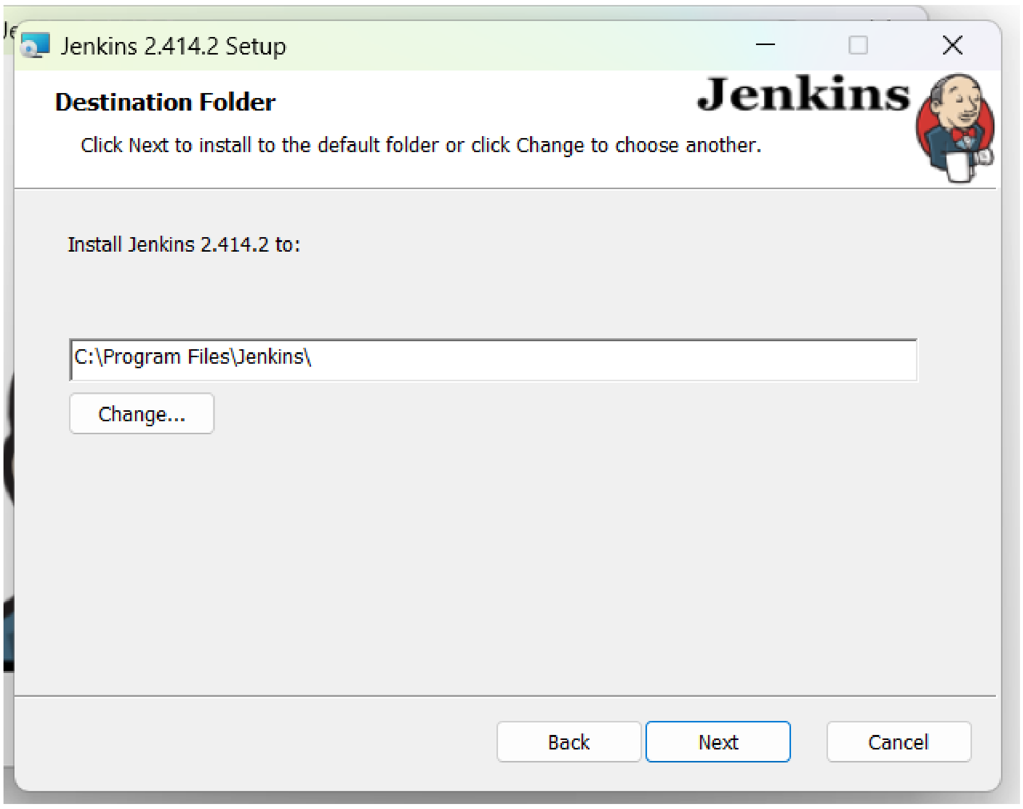
jenkins (1)	10-10-2023 14:40	Windows Installer ...	93,456 KB

Double click on Jenkins Windows installer to start the instillation.


Jenkins 2.414.2 Setup

Welcome to the Jenkins 2.414.2 Setup Wizard

The Setup Wizard will install Jenkins 2.414.2 on your computer. Click Next to continue or Cancel to exit the Setup Wizard.

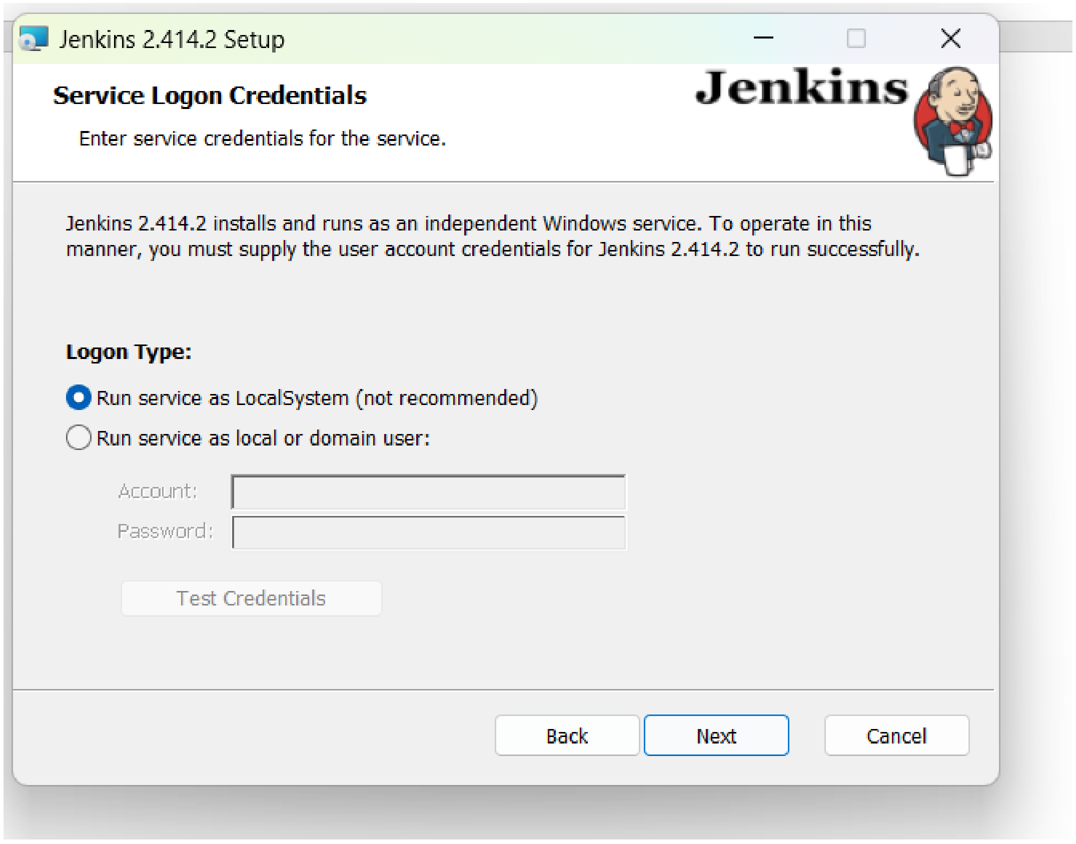

Jenkins 2.414.2 Setup

Destination Folder

Click Next to install to the default folder or click Change to choose another.

Install Jenkins 2.414.2 to:

C:\Program Files\Jenkins\


Jenkins 2.414.2 Setup

Service Logon Credentials

Enter service credentials for the service.

Jenkins 2.414.2 installs and runs as an independent Windows service. To operate in this manner, you must supply the user account credentials for Jenkins 2.414.2 to run successfully.

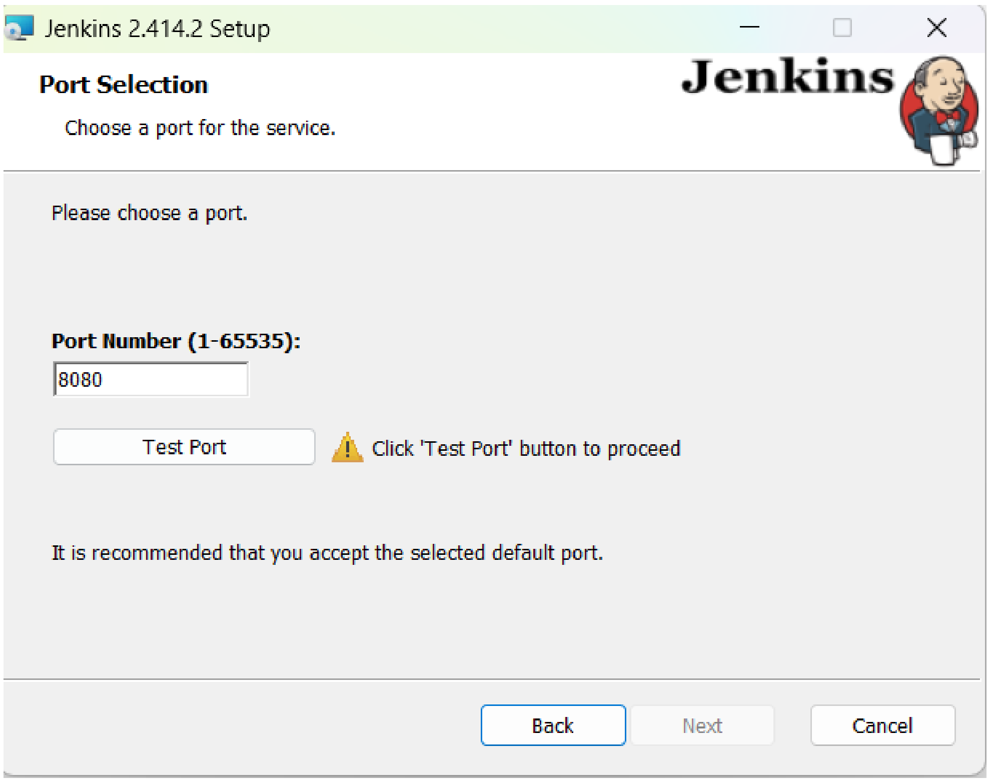
Logon Type:

[✓ Run service as LocalSystem (not recommended)]

Run service as local or domain user:

Account:

Password:


Jenkins 2.414.2 Setup

Port Selection

Choose a port for the service.

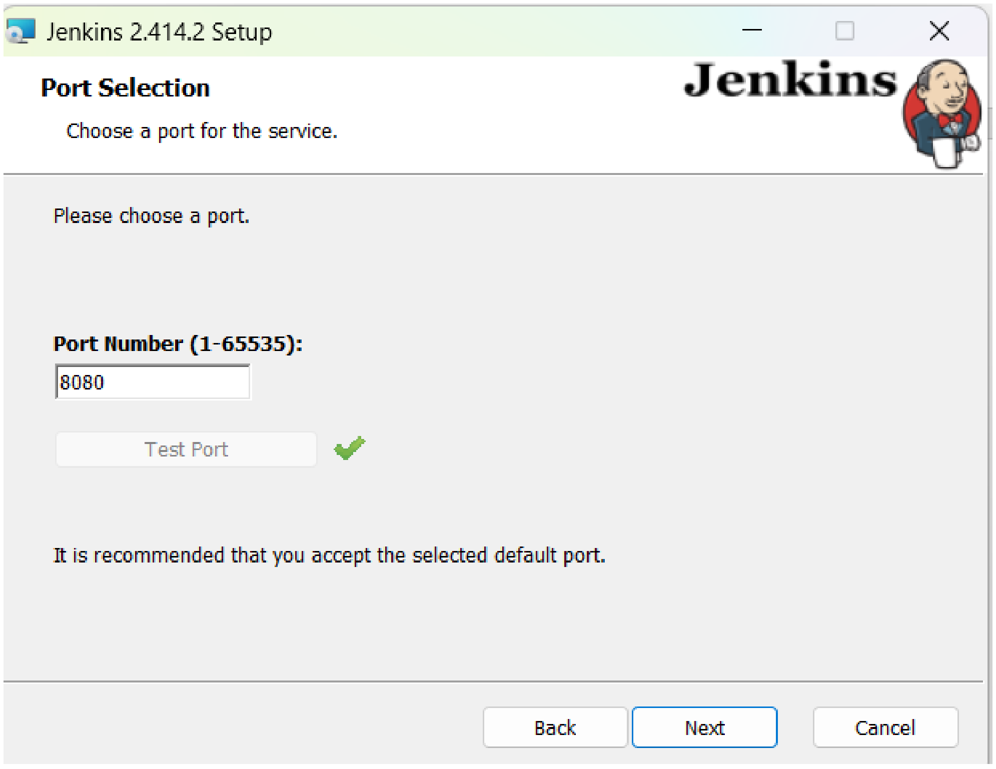
Please choose a port.

Port Number (1-65535):

8080

Test Port ⚠ Click 'Test Port' button to proceed

It is recommended that you accept the selected default port.


Jenkins 2.414.2 Setup

Port Selection

Choose a port for the service.

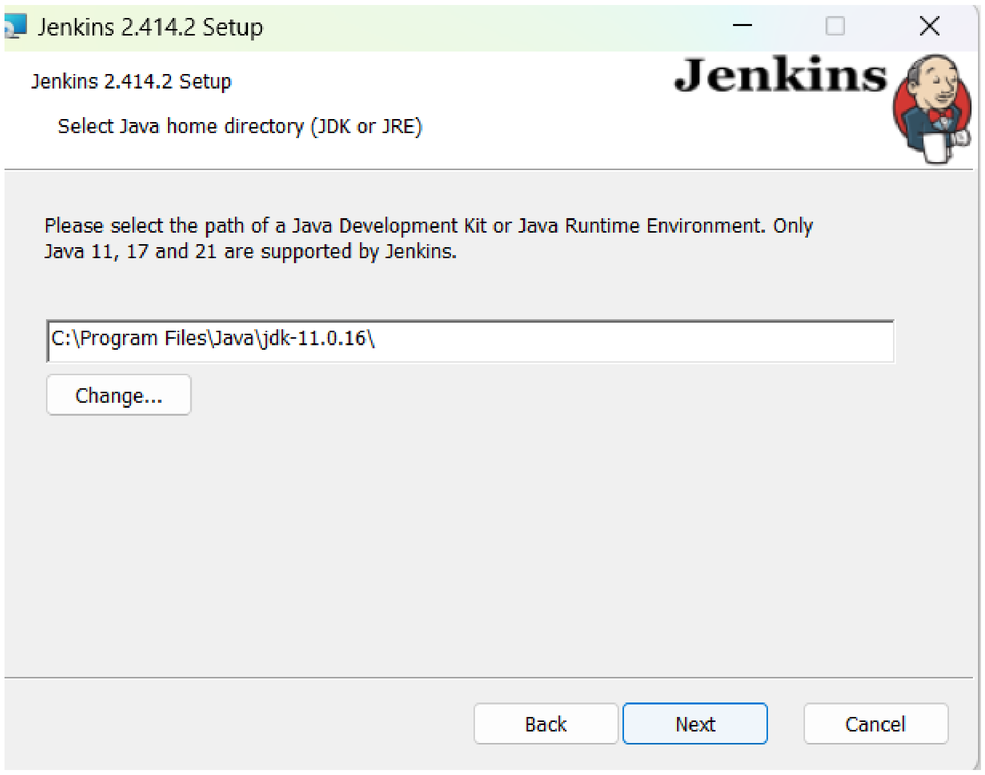
Please choose a port.

Port Number (1-65535):

8080

Test Port ✓

It is recommended that you accept the selected default port.

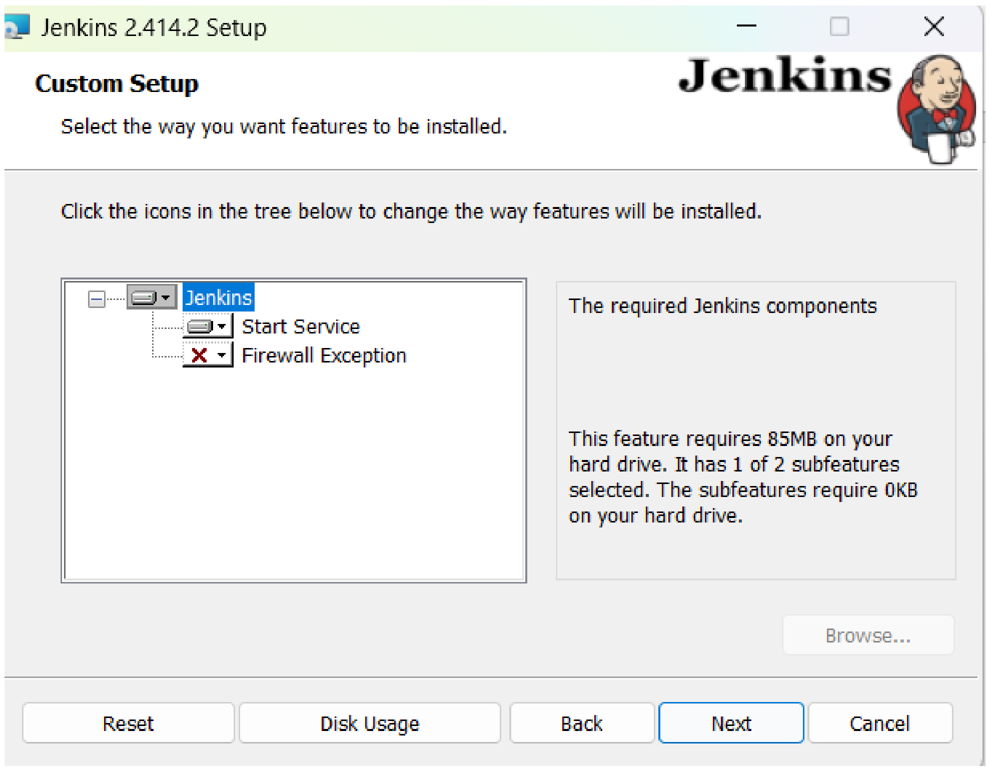


Jenkins 2.414.2 Setup

Select Java home directory (JDK or JRE)

Please select the path of a Java Development Kit or Java Runtime Environment. Only Java 11, 17 and 21 are supported by Jenkins.

C:\Program Files\Java\jdk-11.0.16\



Custom Setup

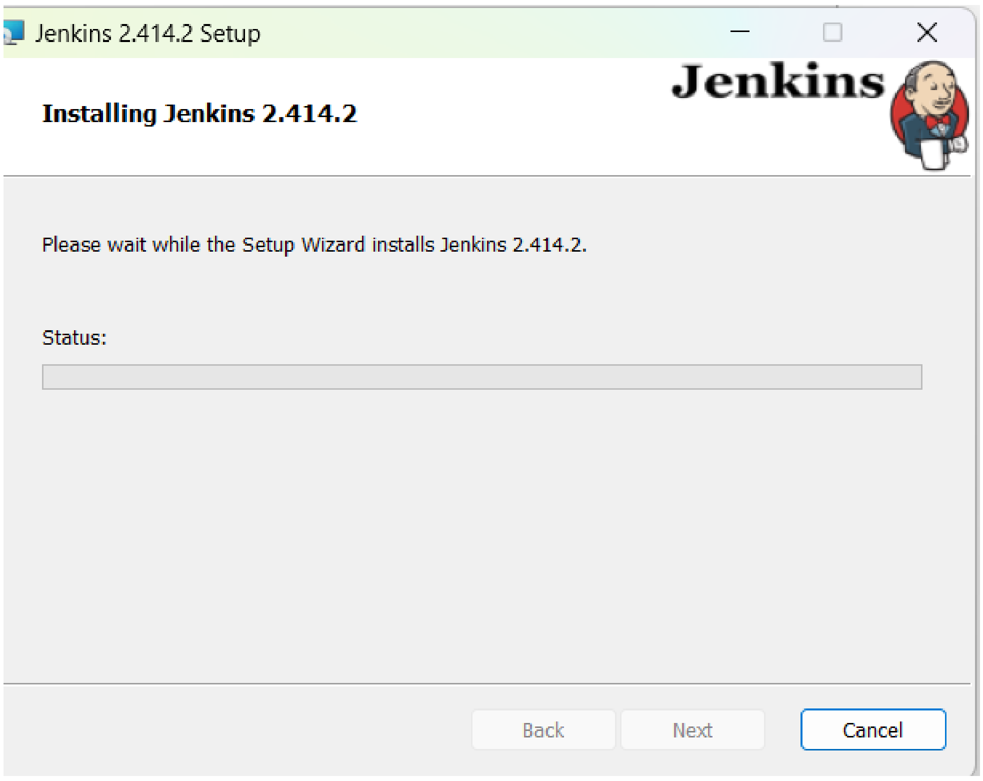
Select the way you want features to be installed.

Click the icons in the tree below to change the way features will be installed.

Jenkins
Start Service
Firewall Exception

The required Jenkins components

This feature requires 85MB on your hard drive. It has 1 of 2 subfeatures selected. The subfeatures require 0KB on your hard drive.

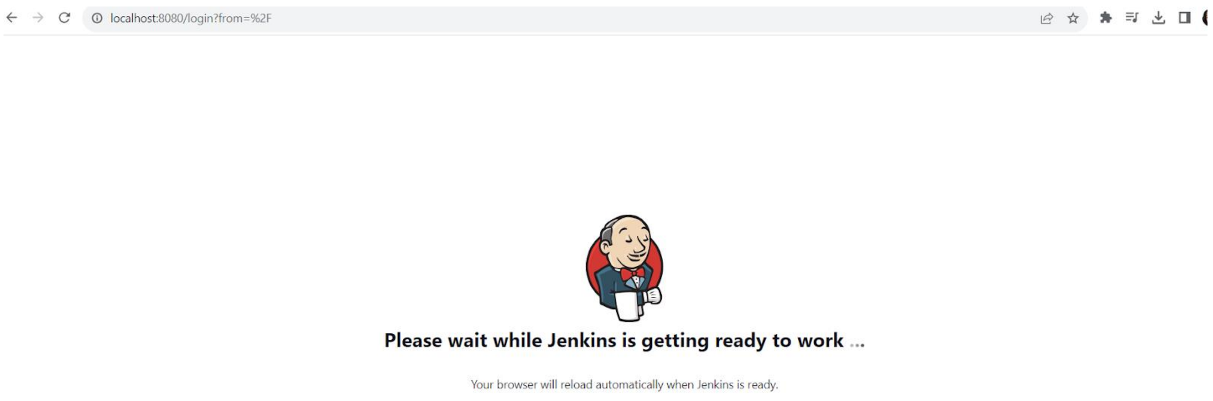

Jenkins 2.414.2 Setup

Installing Jenkins 2.414.2

Please wait while the Setup Wizard installs Jenkins 2.414.2.

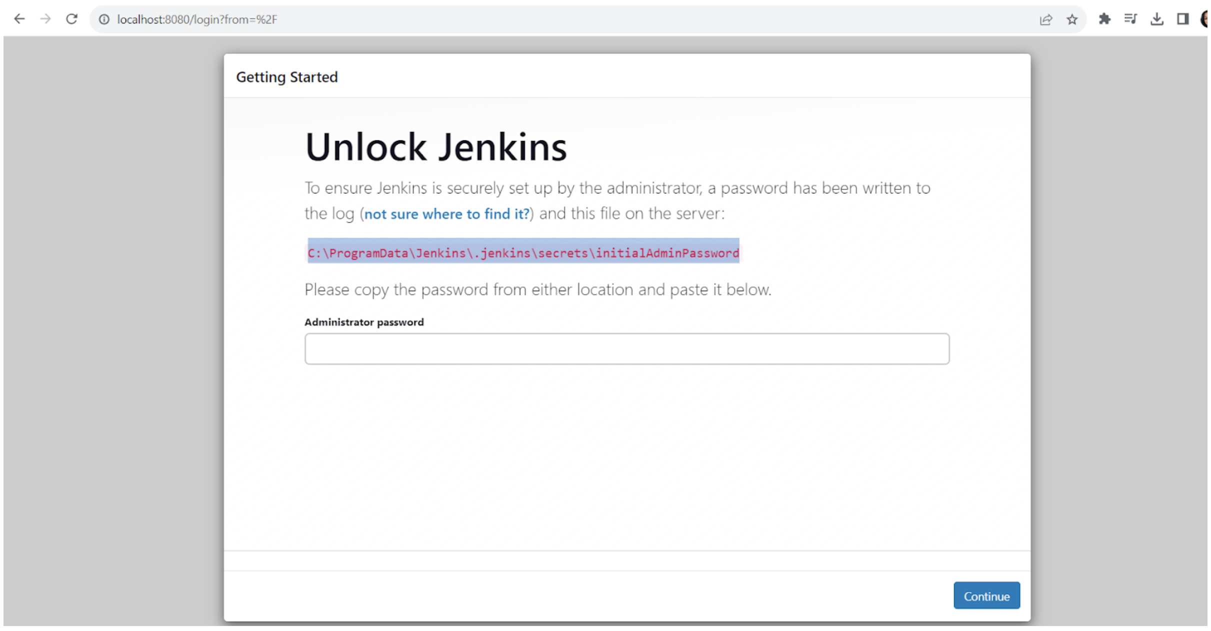
Status:

Installation will complete in sometime


localhost:8080/login?from=%2F

Please wait while Jenkins is getting ready to work ...

Your browser will reload automatically when Jenkins is ready.


localhost:8080/login?from=%2F

Getting Started

Unlock Jenkins

To ensure Jenkins is securely set up by the administrator, a password has been written to the log (not sure where to find it?) and this file on the server:

`C:\ProgramData\Jenkins\.jenkins\secrets\initialAdminPassword`

Please copy the password from either location and paste it below.

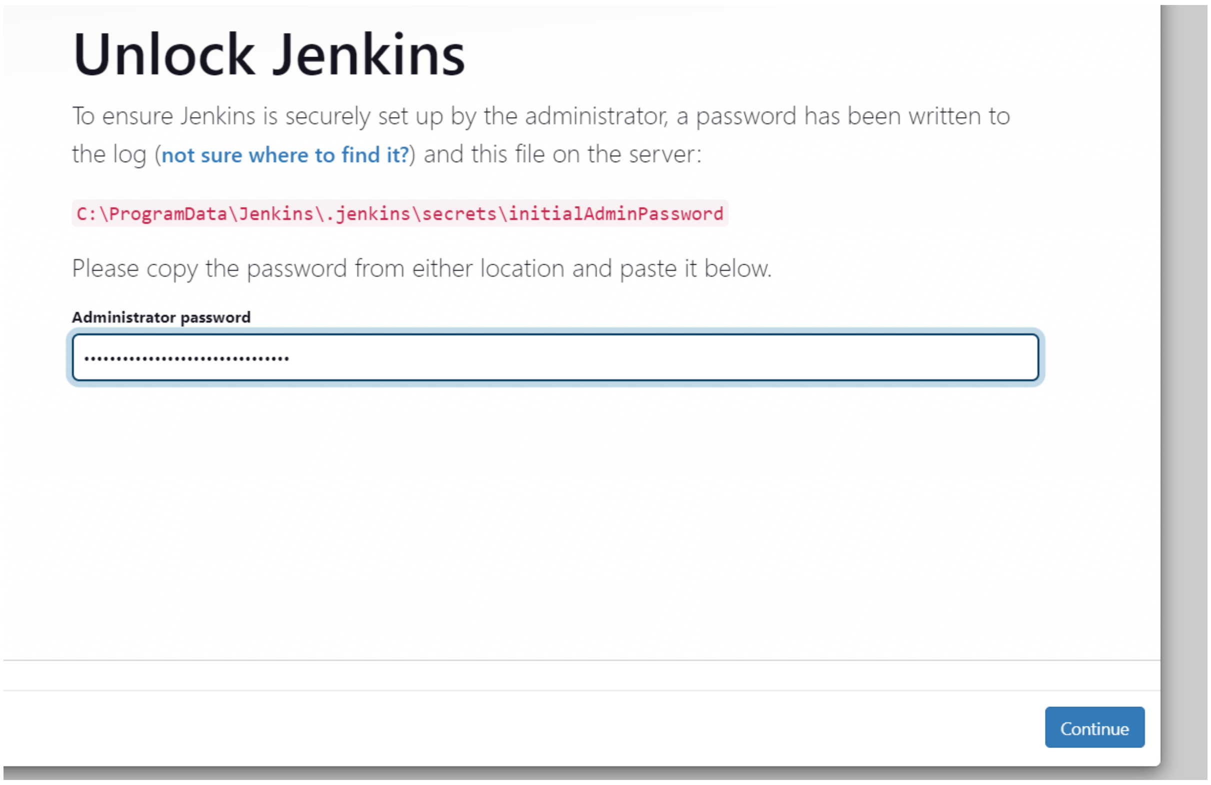
Administrator password

Continue

Go to this path: C:\ProgramData\Jenkins\.jenkins\secrets

You will get a file: initialAdminPassword

Open it with notepad => you will get a password copy it and paste on browser


Unlock Jenkins

To ensure Jenkins is securely set up by the administrator, a password has been written to the log (not sure where to find it?) and this file on the server:

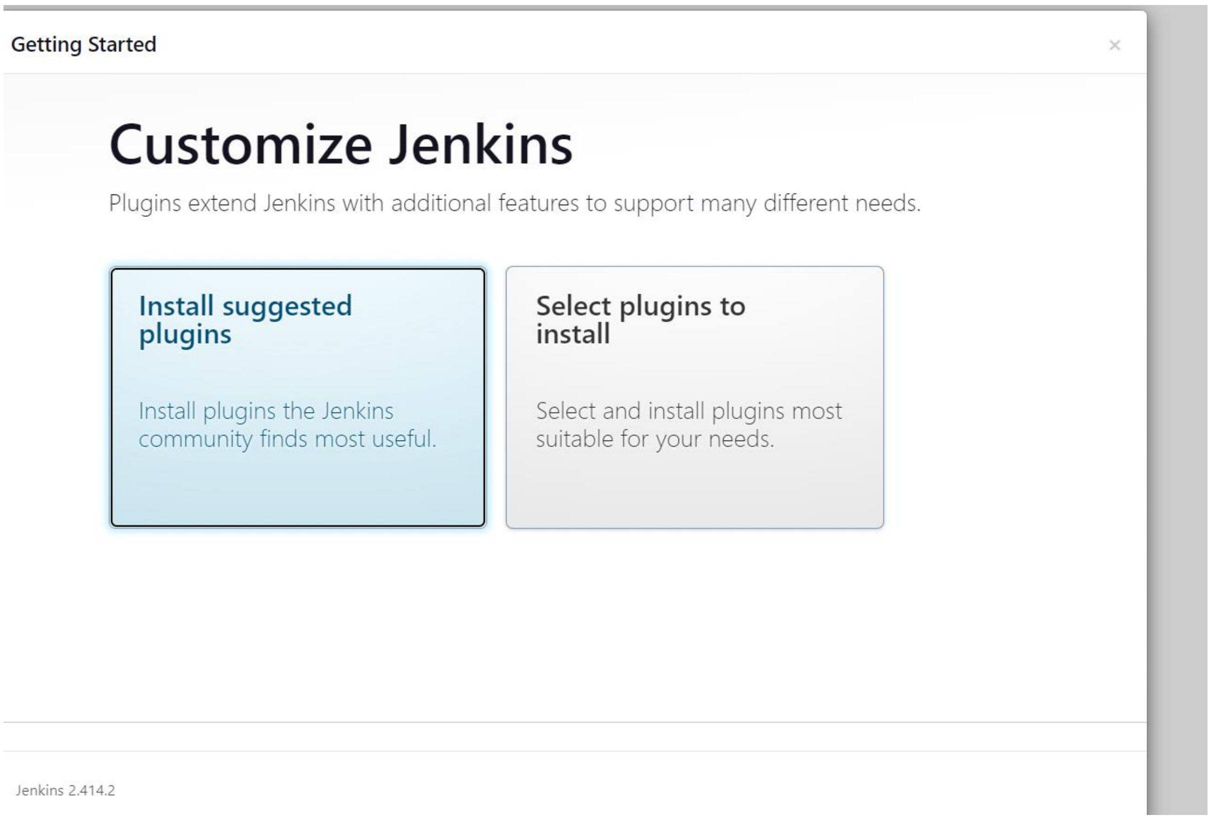
`C:\ProgramData\Jenkins\.jenkins\secrets\initialAdminPassword`

Please copy the password from either location and paste it below.

Administrator password

••••••••••••••••••••••••••••••••

Continue


Getting Started

Customize Jenkins

Plugins extend Jenkins with additional features to support many different needs.

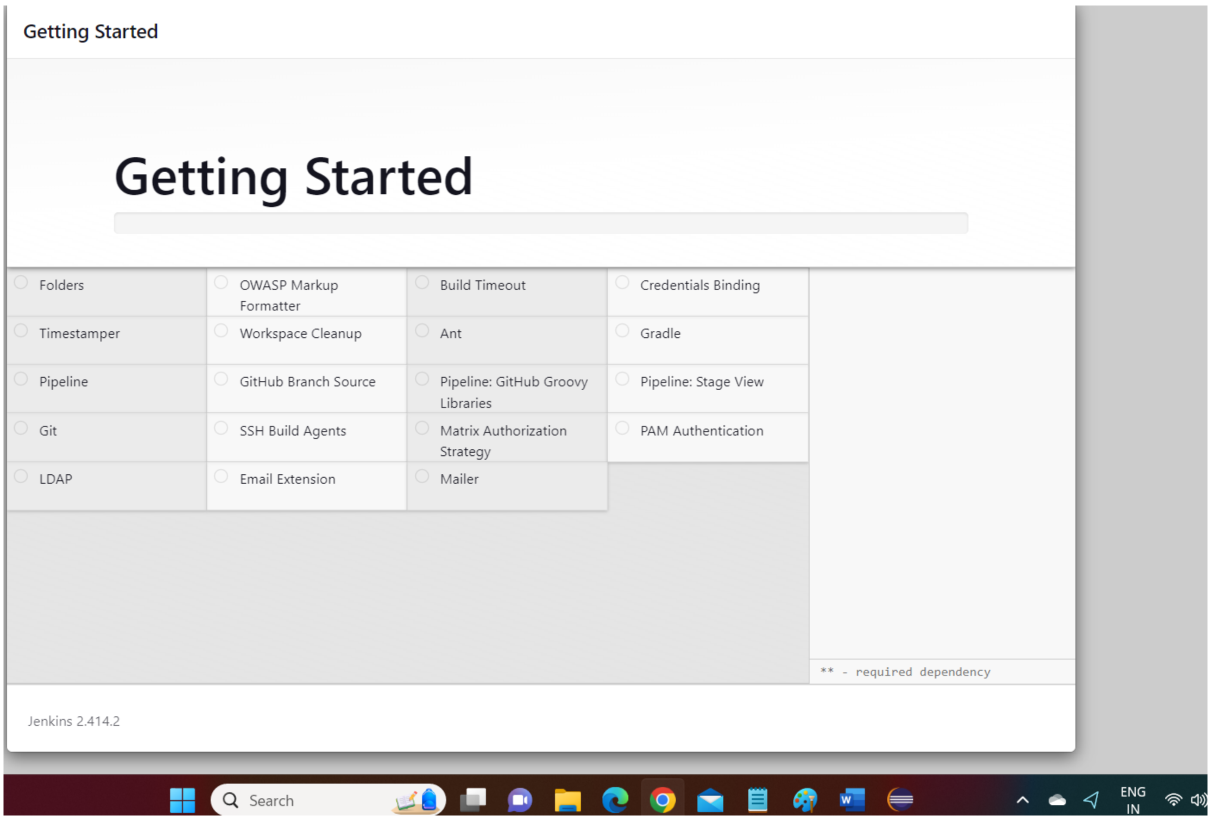
Install suggested plugins

Install plugins the Jenkins community finds most useful.

Select plugins to install

Select and install plugins most suitable for your needs.

Jenkins 2.414.2

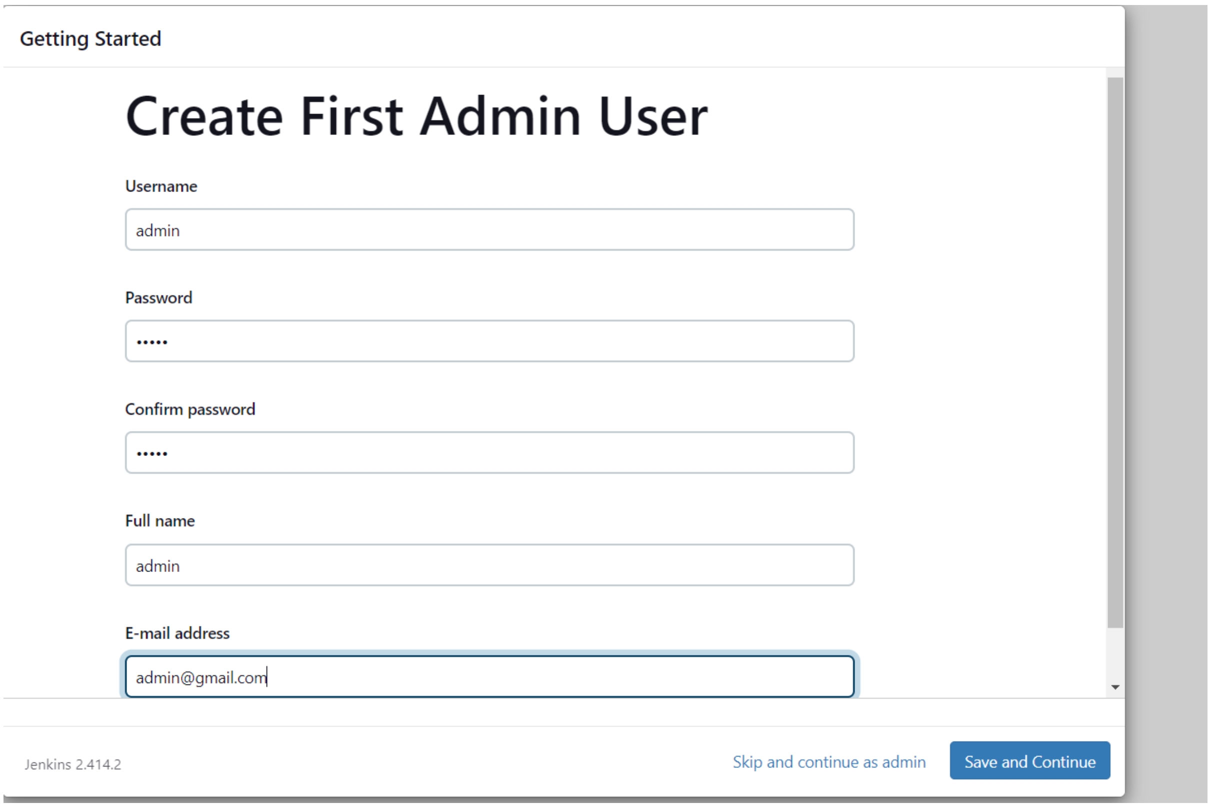

Getting Started

Getting Started

Folders	OWASP Markup Formatter	Build Timeout	Credentials Binding
Timestamper	Workspace Cleanup	Ant	Gradle
Pipeline	GitHub Branch Source	Pipeline: GitHub Groovy Libraries	Pipeline: Stage View
Git	SSH Build Agents	Matrix Authorization Strategy	PAM Authentication
LDAP	Email Extension	Mailer	

```
** - required dependency
```

Jenkins 2.414.2



Getting Started

Create First Admin User

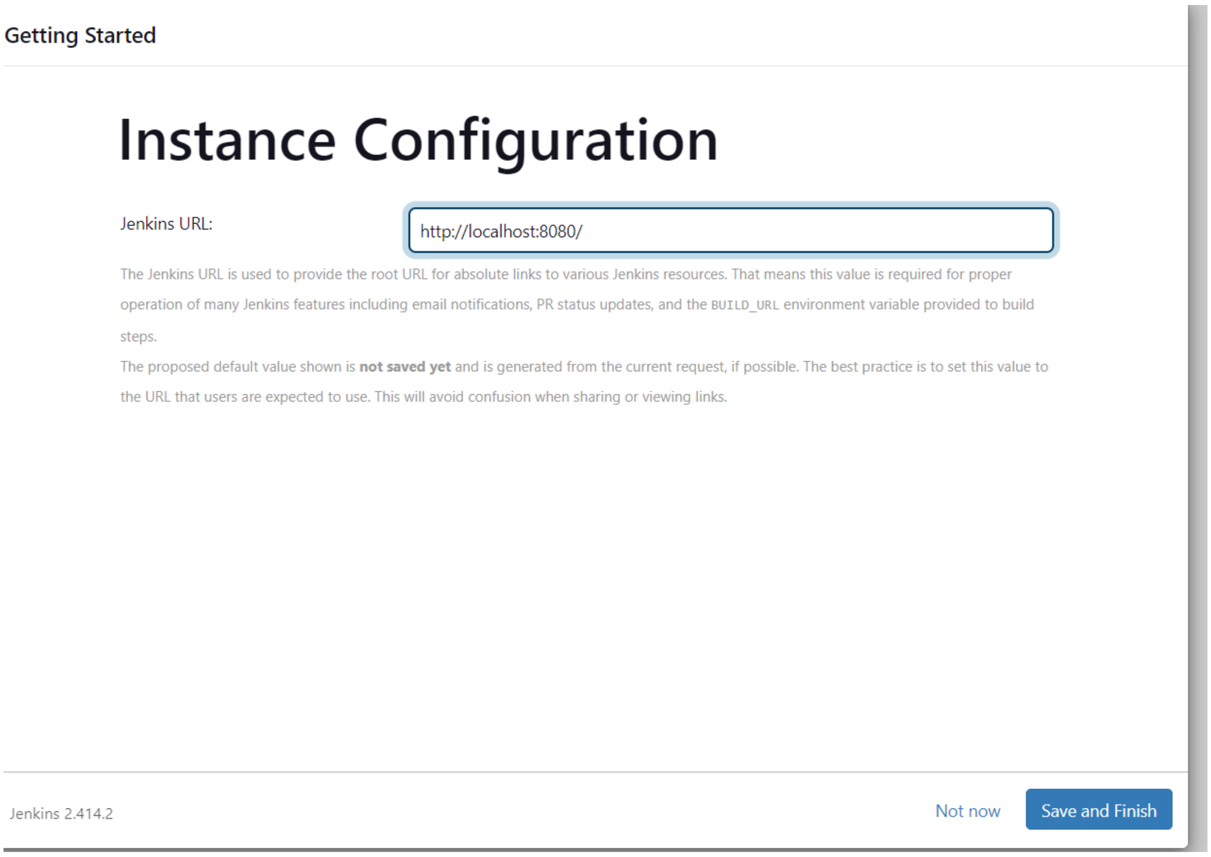
Username: admin

Password: •••••

Confirm password: •••••

Full name: admin

E-mail address: admin@gmail.com



Getting Started

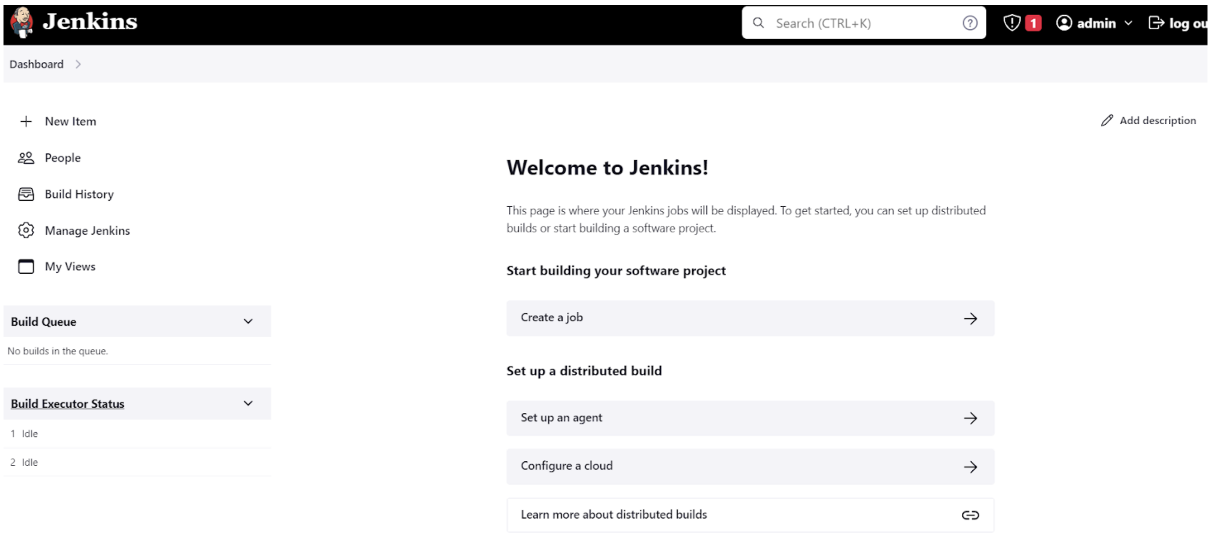
Instance Configuration

Jenkins URL: http://localhost:8080/

The Jenkins URL is used to provide the root URL for absolute links to various Jenkins resources. That means this value is required for proper operation of many Jenkins features including email notifications, PR status updates, and the `BUILD_URL` environment variable provided to build steps.

The proposed default value shown is **not saved yet** and is generated from the current request, if possible. The best practice is to set this value to the URL that users are expected to use. This will avoid confusion when sharing or viewing links.

Click on save and finish.



No builds in the queue.

1 Idle

2 Idle

Welcome to Jenkins!

This page is where your Jenkins jobs will be displayed. To get started, you can set up distributed builds or start building a software project.

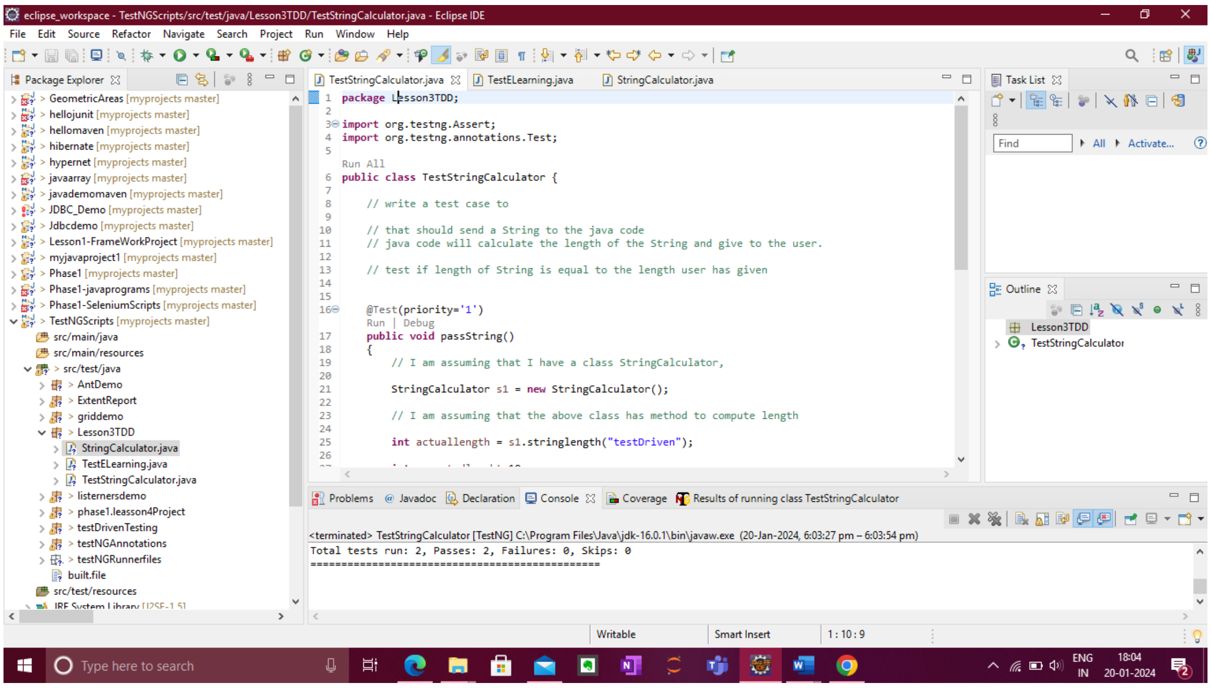
Start building your software project

Set up a distributed build

20. TDD With TestNG :

```
                    package Lesson3TDD;
                    import org.testng.Assert;
                    import org.testng.annotations.Test;
                    public class TestStringCalculator {
                    // write a test case to
                    // that should send a String to the java code
                    // java code will calculate the length of the String and give to the user.
                   // test if length of String is equal to the length user has given
          @Test(priority='1')
          public void passString()
          {
                    // I am assuming that I have a class StringCalculator,
                    StringCalculator s1 = new StringCalculator();
                    // I am assuming that the above class has method to compute length
                    int actuallength = s1.stringlength("testDriven");
                    int expectedlenght=10;
                    // using testNg assertion I am comparing the length of the string
                    Assert.assertEquals(actuallength, expectedlenght);
                    }
                   // The calculator should be able to add 2 strings
          @Test(priority='2')
          public void TestaddString()
          {

                    // I am assuming that I have a class StringCalculator,
                    StringCalculator str = new StringCalculator();
                    // I am assuming that the above class has method to concatinate 2 strings
                    String actualString= str.addstring("selenium","tool");
                    String expectedString = "SELENIUMTOOL";
                    Assert.assertEquals(actualString,expectedString);
```

```
            }

}
```



eclipse_workspace - TestNGScripts/src/test/java/Lesson3TDD/TestStringCalculator.java - Eclipse IDE

```java
package Lesson3TDD;

import org.testng.Assert;
import org.testng.annotations.Test;

public class TestStringCalculator {

    // write a test case to

    // that should send a String to the java code
    // java code will calculate the length of the String and give to the user.

    // test if length of String is equal to the length user has given


    @Test(priority='1')
    public void passString()
    {
        // I am assuming that I have a class StringCalculator,

        StringCalculator s1 = new StringCalculator();

        // I am assuming that the above class has method to compute length

        int actuallength = s1.stringlength("testDriven");

```

```
<terminated> TestStringCalculator [TestNG] C:\Program Files\Java\jdk-16.0.1\bin\javaw.exe  (20-Jan-2024, 6:03:27 pm – 6:03:54 pm)
Total tests run: 2, Passes: 2, Failures: 0, Skips: 0
===============================================
```