Shri Ramdeobaba college of engineering and management, Nagpur.

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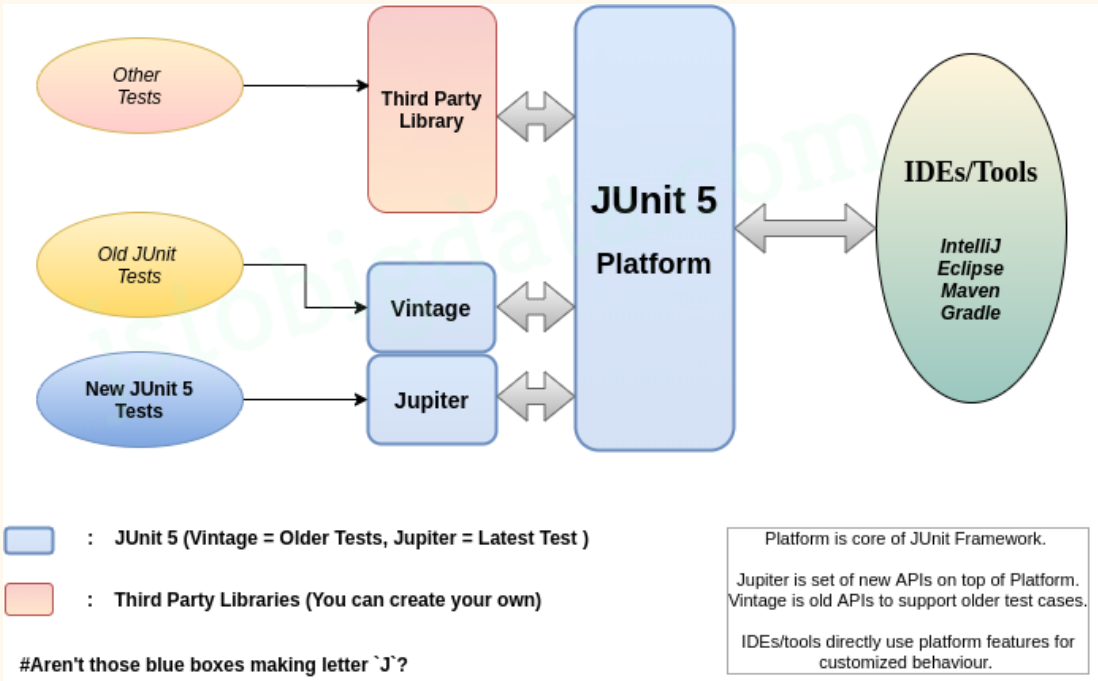
Branch - CSE 2nd shift

Year - 3rd year (6th sem)

Subject - SE

Topic - Junit



Jdk setup

Installation Prerequisites of JDK

JDK has bare minimum requirements for disk space and RAM for the 64-bit Windows platform. It requires around 800 MB disk space to install JDK, as JRE also gets installed along with it. JDK requires 128 MB of memory space to run JDK successfully. This is the minimum RAM required for running basic and small programs, but as the size of an application increases, the memory requirement also increases for the application to run smoothly.

Step 1: Download JDK from the Site

Go to the Oracle site and open the Java SE download page. Under the latest version of Java Platform, Standard Edition, click on the JDK download button.

Next, click on the Accept License Agreement button and choose your version of Java for Windows (32-bit or 64-bit) to proceed with downloading the JDK executable file.

Step 2: Install the JDK exe File

In this step, we will be running the executable JDK file (It will be a file with .exe as an extension) once the download is done. This installs JDK as well as JRE. For running this file on Windows, we will need Administrator rights.

To begin the installation, we need to double-click on the downloaded file, and we will be presented with the below window.

Click on Next to proceed with the installation, and follow the Installation guide provided for any queries.

Click on the Close button once the installation has finished.

To recover some of our system's disk space, it is good practice to delete the downloaded exe file once the download has been done.

Step 3: Check the Directory

JDK gets installed in the C directory of our system by default having the path "C:\Program Files\Java\jdk-11.0". If we make any change to this path at all, we need to make a note of it as it will be required in the upcoming steps.

This is the directory structure for our example.

Step 4: Update the Environment Variables

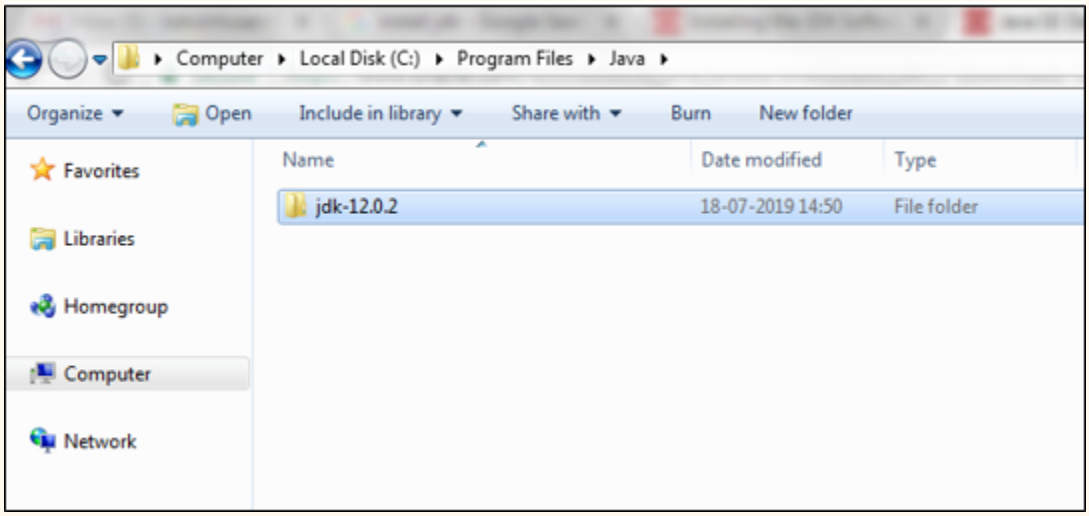
We will need to update our system's Environment variables with our installed JDK bin path to run the Java programs because while executing the programs, the command prompt will look for the complete JDK bin path.

The PATH variable in our system provides the exact location of executables that will be used for running Java programs, such as javac and java. The CLASSPATH variable provides us with the library files location.

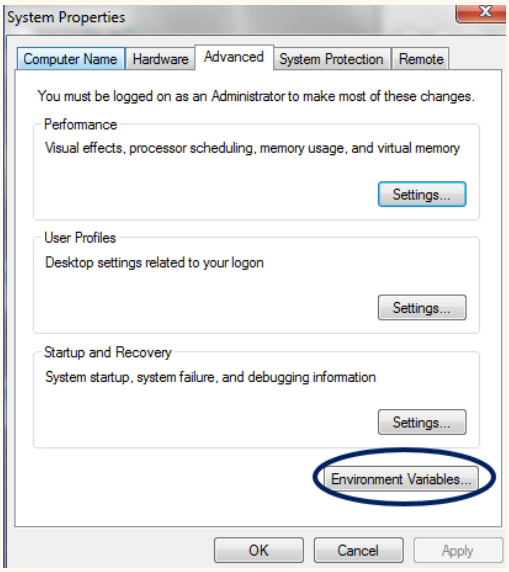
If we do not set the PATH variable, we will specify the full path to the JDK bin every time we run a program.

For example: C:\> "C:\Program Files\Java\jdk-11.0\bin\javac" TestClass.java

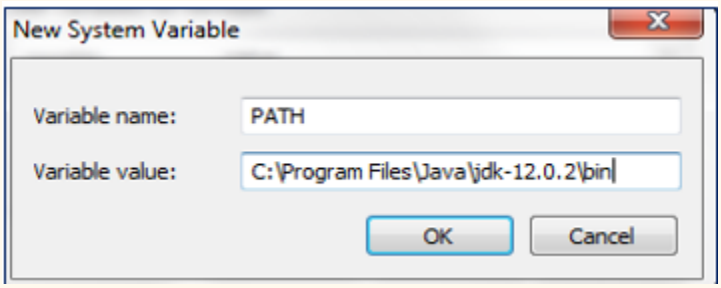
So to set these variables, first right-click on My PC and select Properties.



Inside Properties, in the left-side panel, select Advanced System Settings, and here choose the option Environment Variables.



Click on New, and type PATH in the Variable Name, and enter the path of the bin of installed JDK in the Variable Value field.



If we already have the PATH variable, we can edit it by adding it to the existing values.

Click on the OK button to apply the changes.

Step 5: Verify the Java Installation

Open the command prompt and enter the command "java –version", and if it runs successfully, Java has been successfully installed.

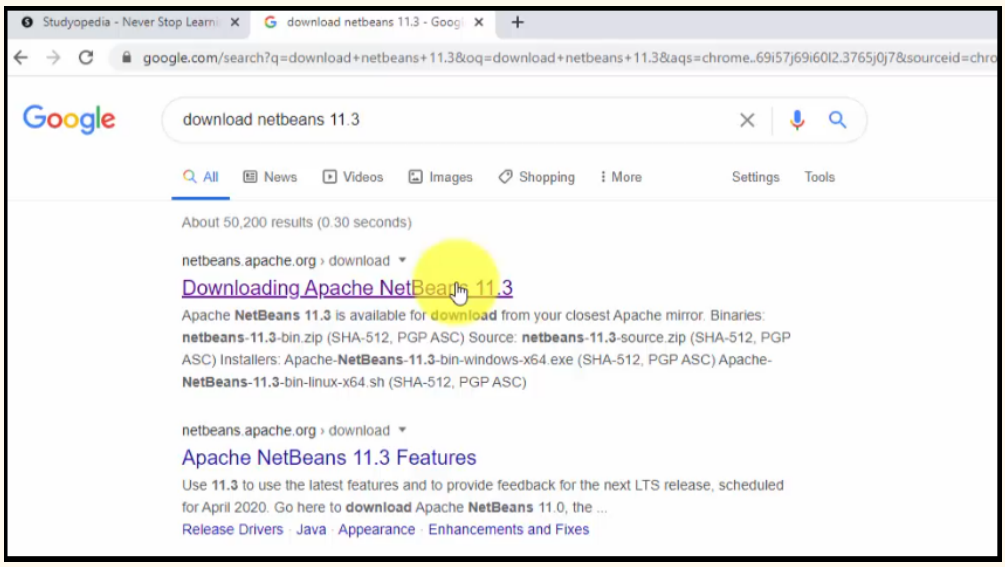
Now that we have seen the steps to install JDK, let the programming fun begin!

Netbeans setup

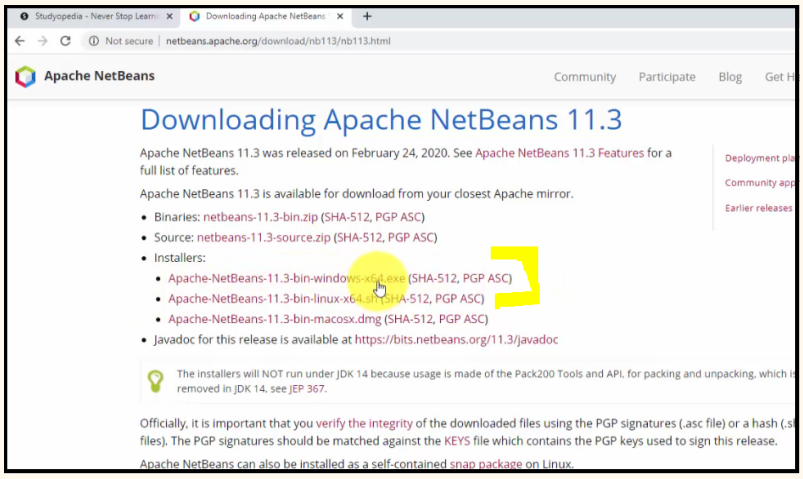
Download NetBeans IDE

We installed Java above for NetBeans. Now, to install NetBeans IDE on Windows 10, first we will download NetBeans IDE.

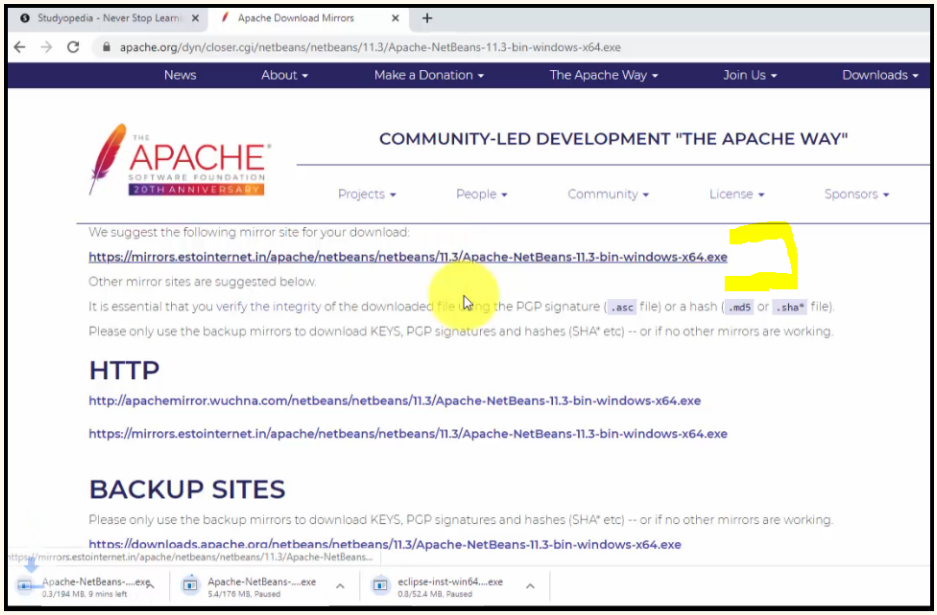
Go to Google and type **Download NetBeans IDE 11.3.** On typing, the official website of NetBeans i.e. **"netbeans.apache.org"** would be visible on the top of search results. Click on the website to download NetBeans as in the below screenshot:



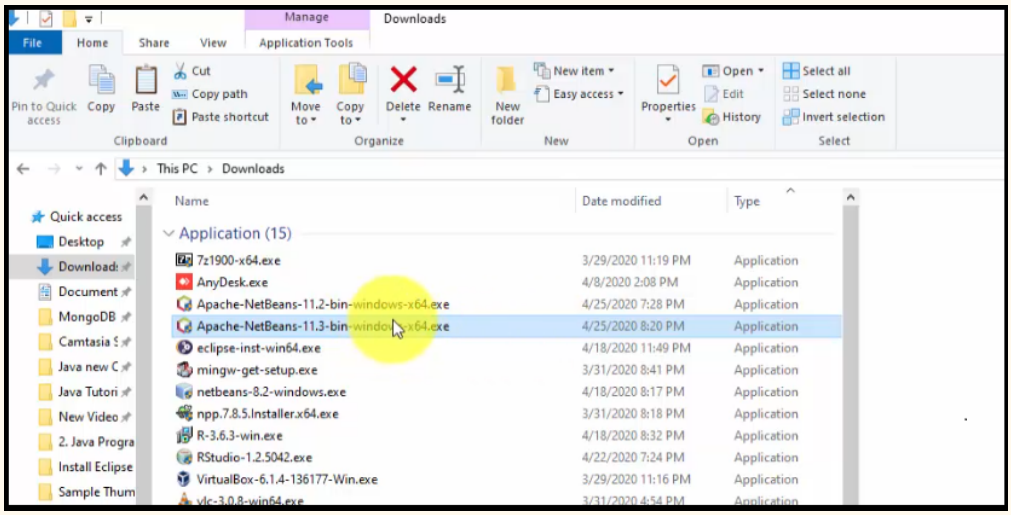
Now, the official website will open. Click on the Windows exe file i.e. "Apache-NetBeans-11.3-bin-windows-x64" file since we have to install NetBeans IDE on Windows 10:



Now, you will be redirected to mirror sites. Click on any of them to download NetBeans IDE. We clicked the first one and the Download started as in the below screenshot. The Download status would be visible on the bottom left of Chrome web browser. When the download ends, right click to reach the folder where it was installed. We have set the default for Google Chrome downloads to the **"Downloads"** folder:

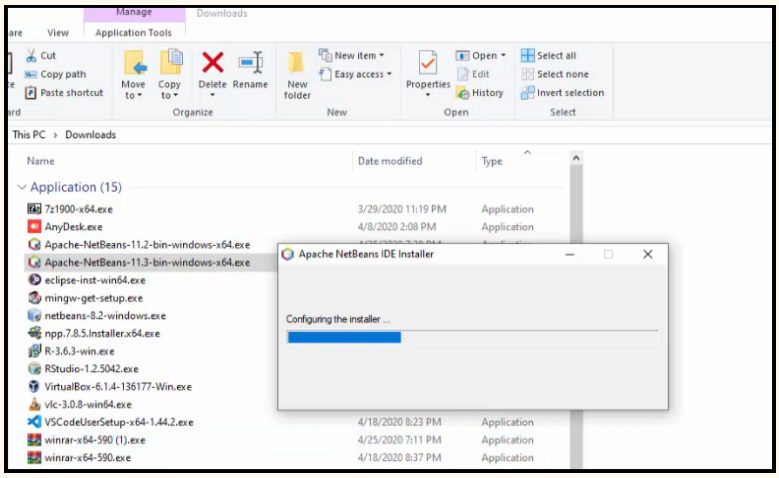


NetBeans installed successfully under "Downloads" folder through Google Chrome as in the below screenshot. Locate the exe file of NetBeans: "Apache-NetBeans-11.3-bin-windows-x64" file:

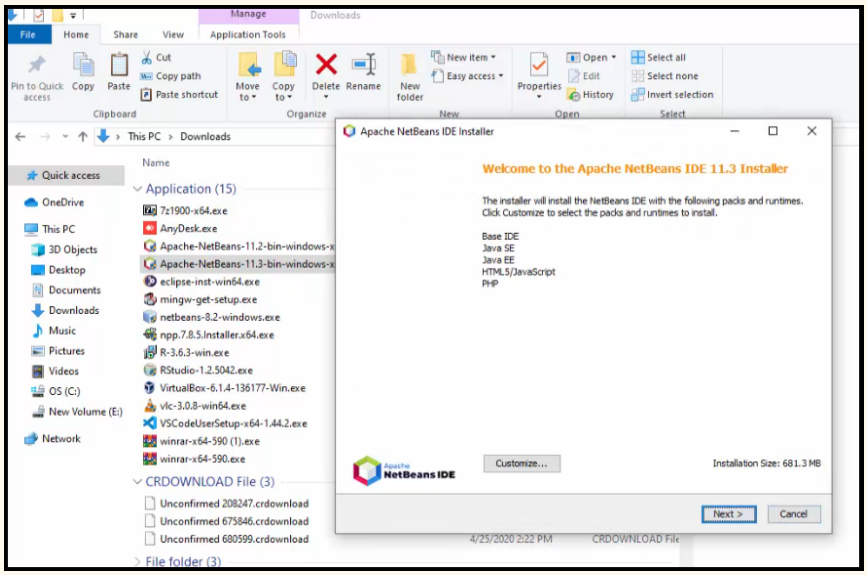


Installing NetBeans IDE

Now, we will be installing NetBeans IDE. Double click the exe file we downloaded in Step2 and the installation begins as in the below screenshot:

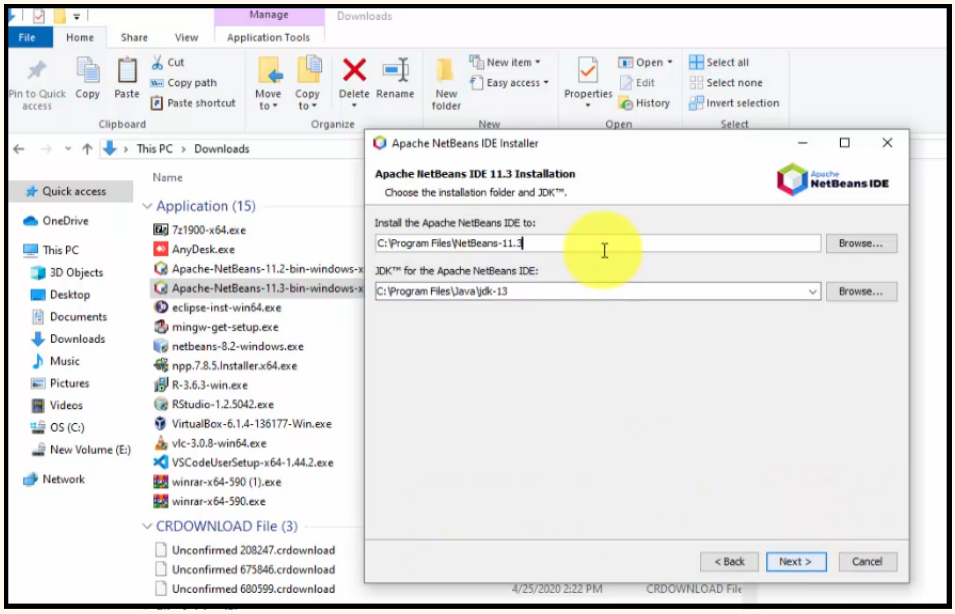


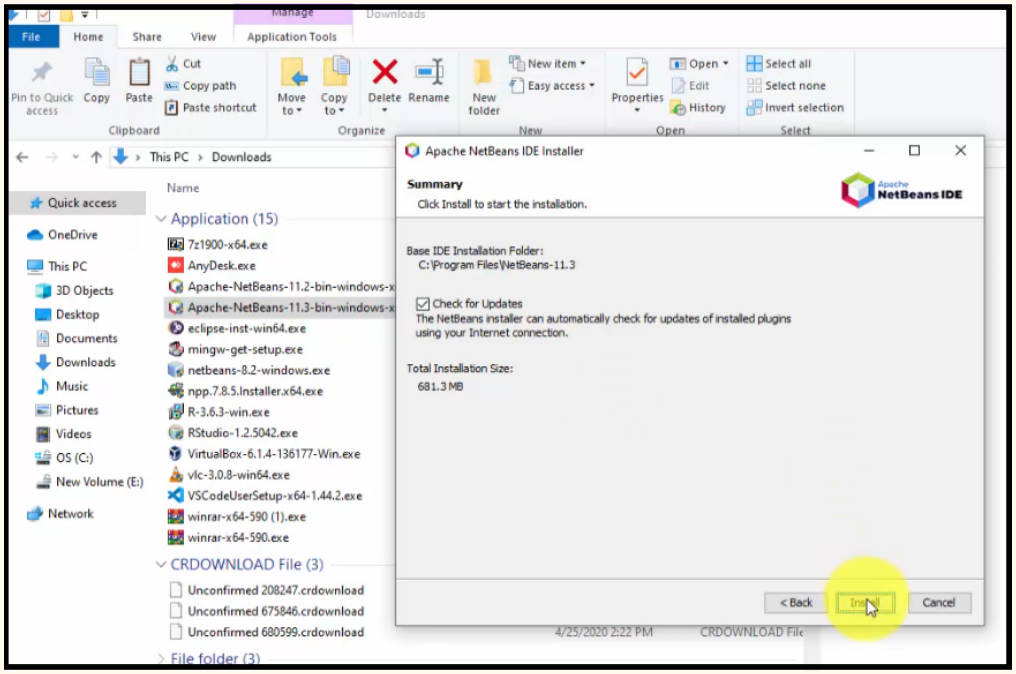
Now, you will reach the following installation dialog box (NetBeans Installer) showing what all will get installed with the installer size.Note: You may get a NetBeans installation error here. Do not worry, check our tutorial to fix NetBeans installation error.Click “Next” to proceed:



Set NetBeans and Java path

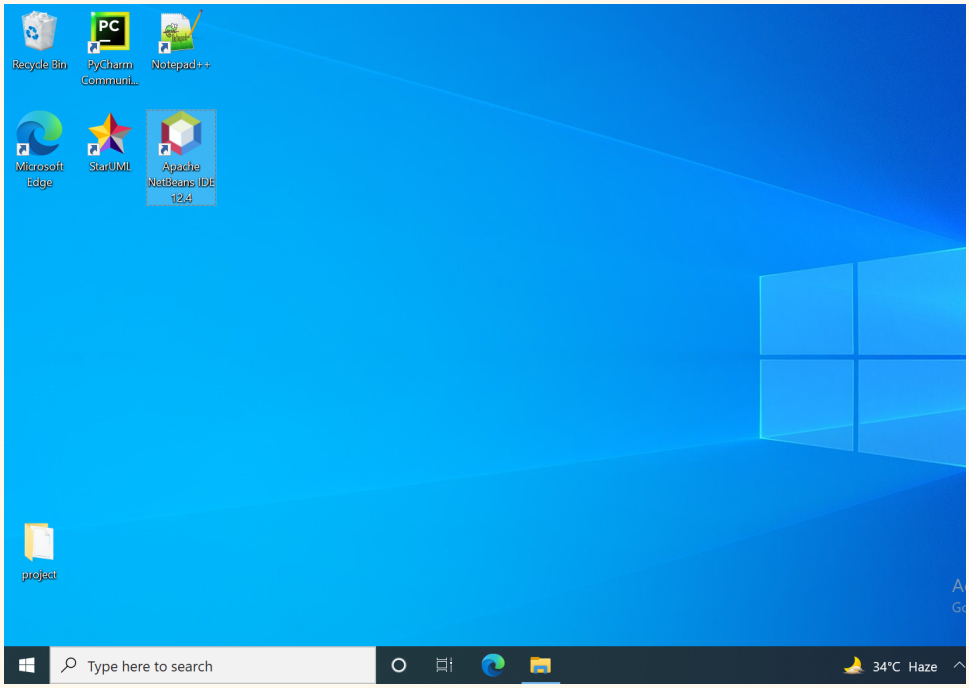
Now, set the path for NetBeans i.e. where you want to install it. We will keep the default i.e. under Program Files we will set the NetBeans path. Following is the path:

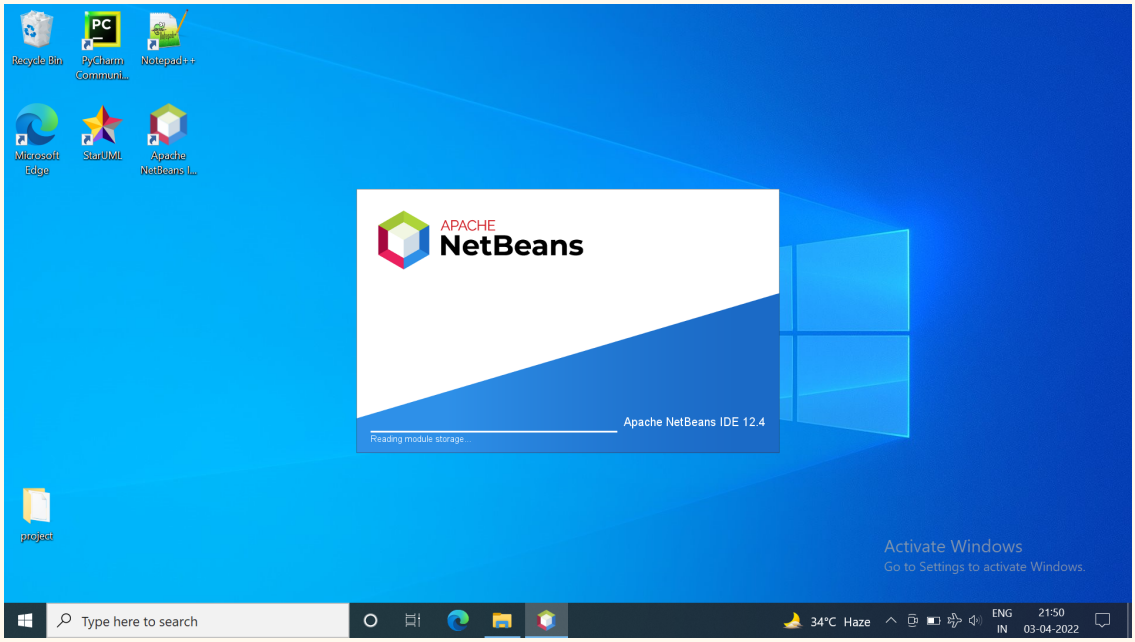




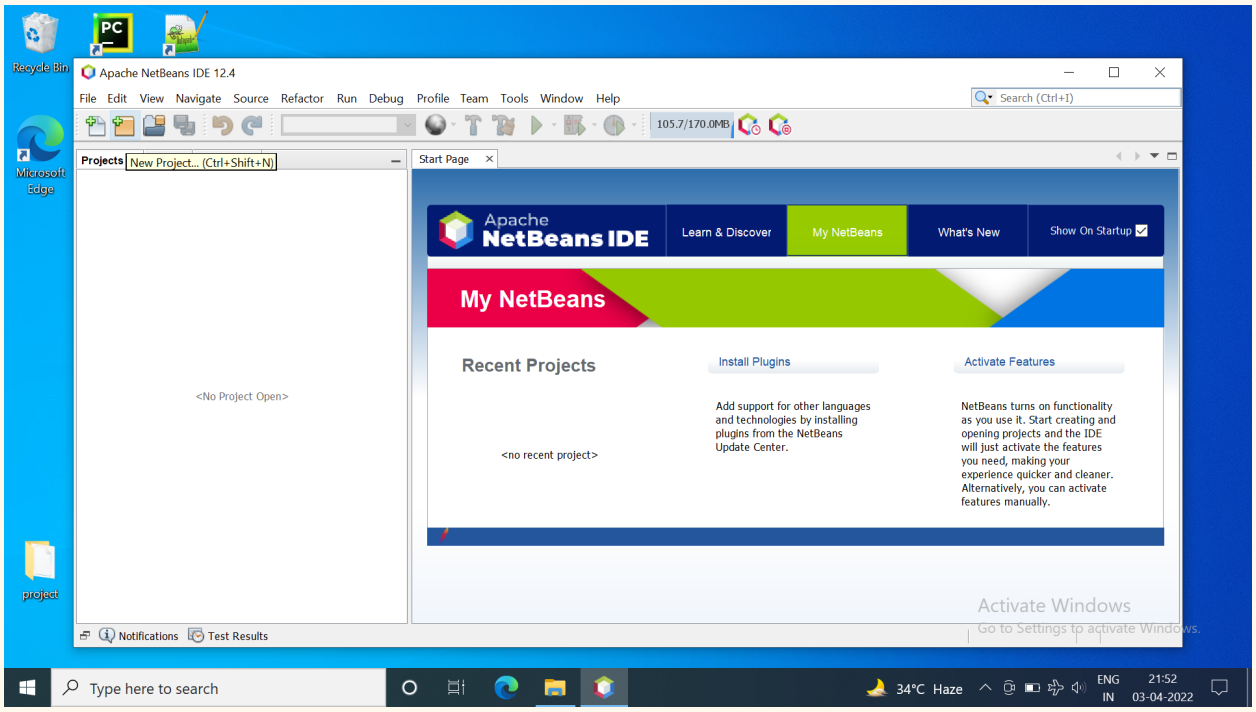
Make project

Click on netbeans ide logo to run.

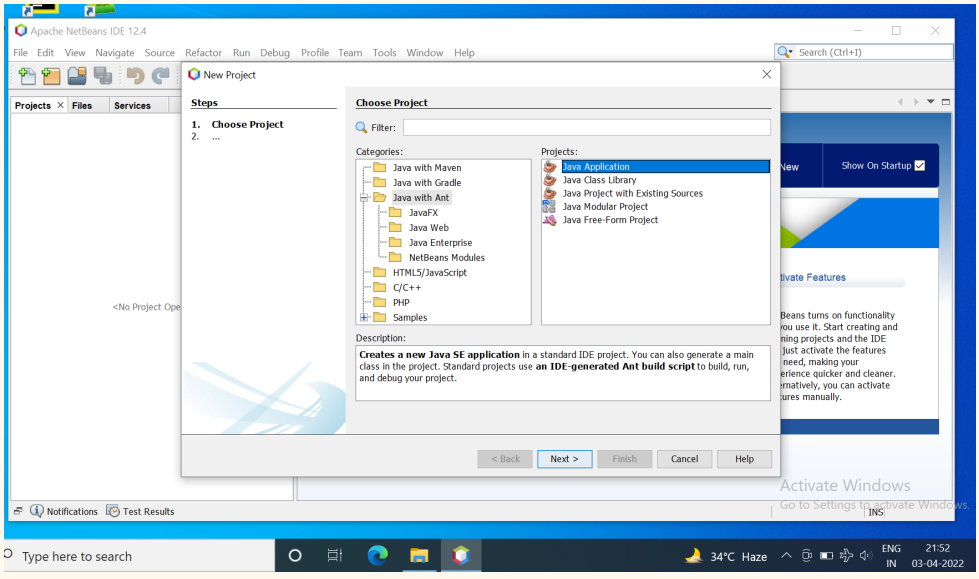




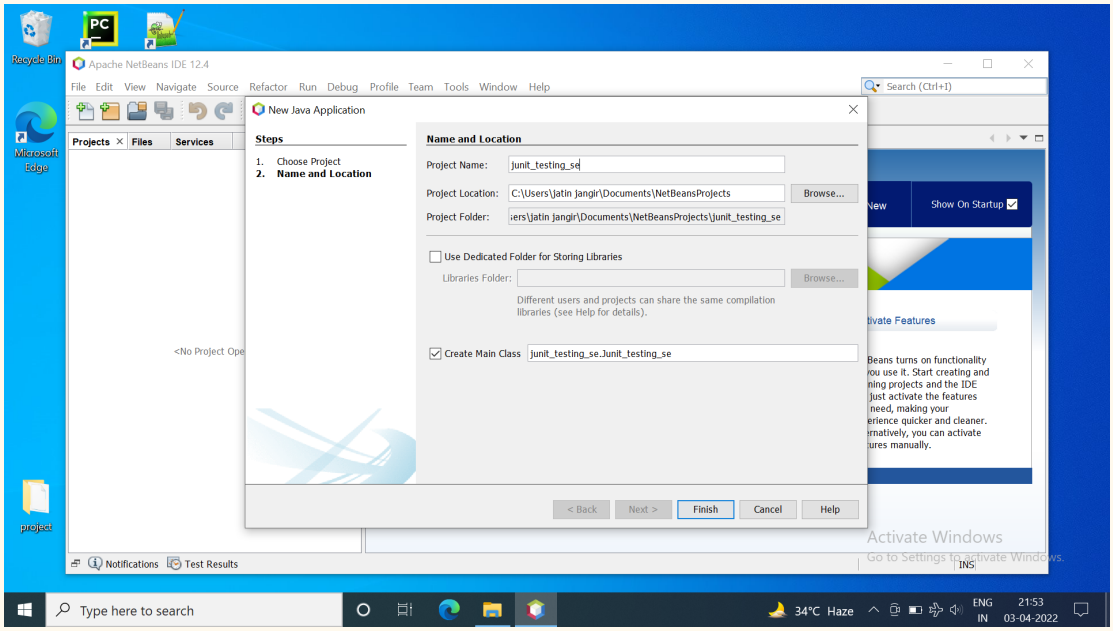
Make a new project



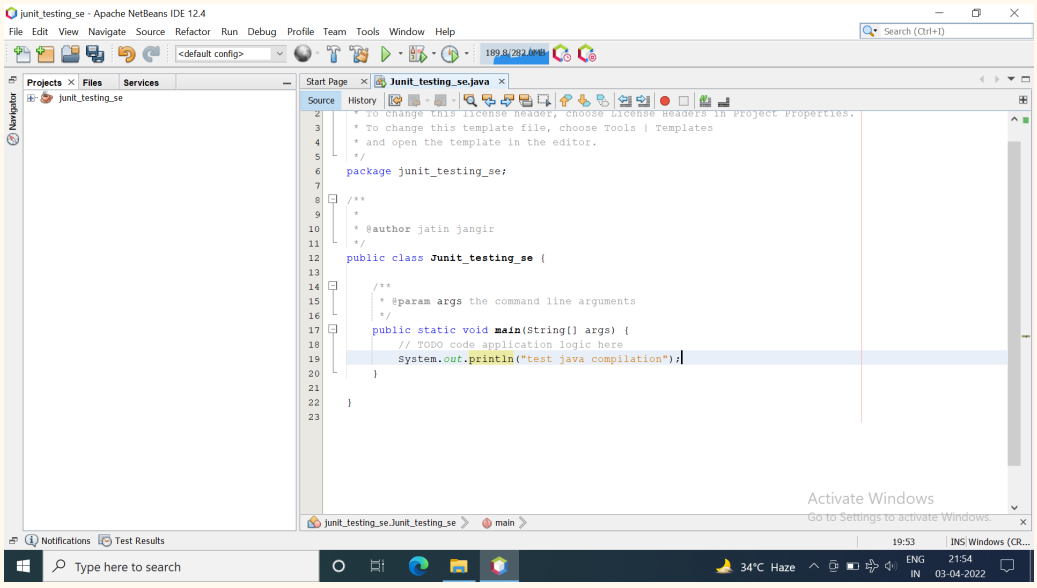
Select java application



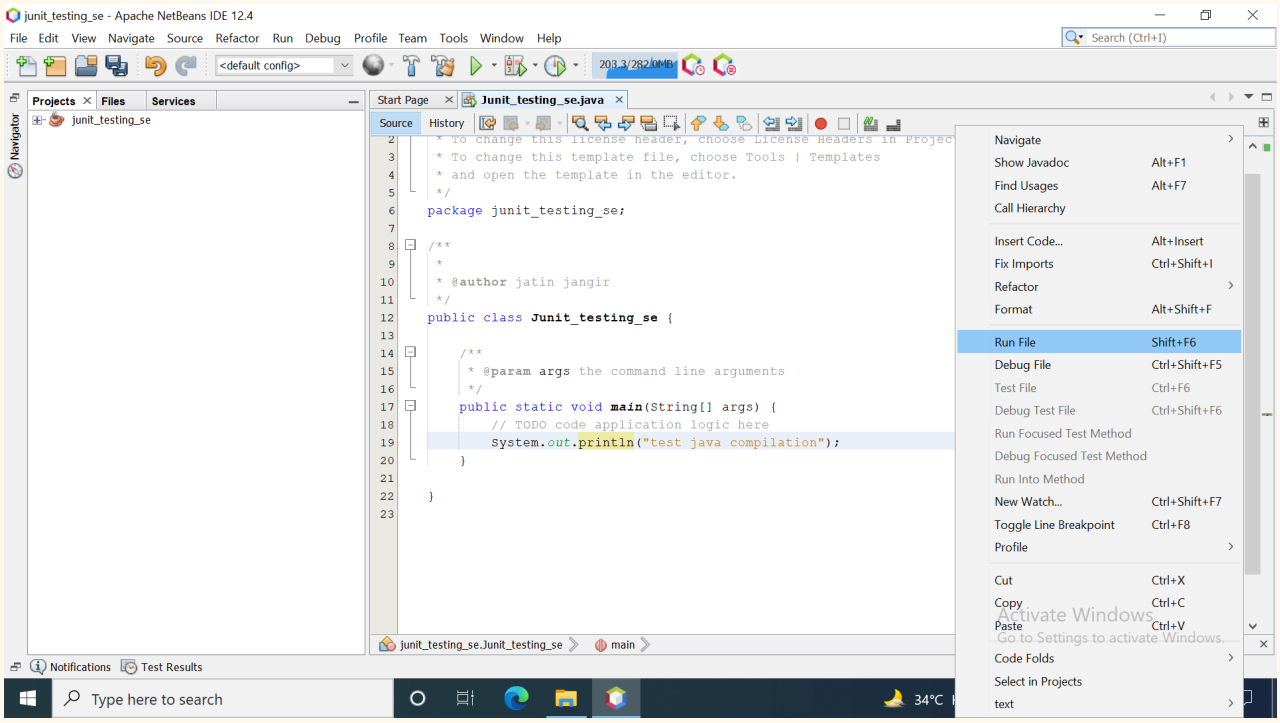
Give project name



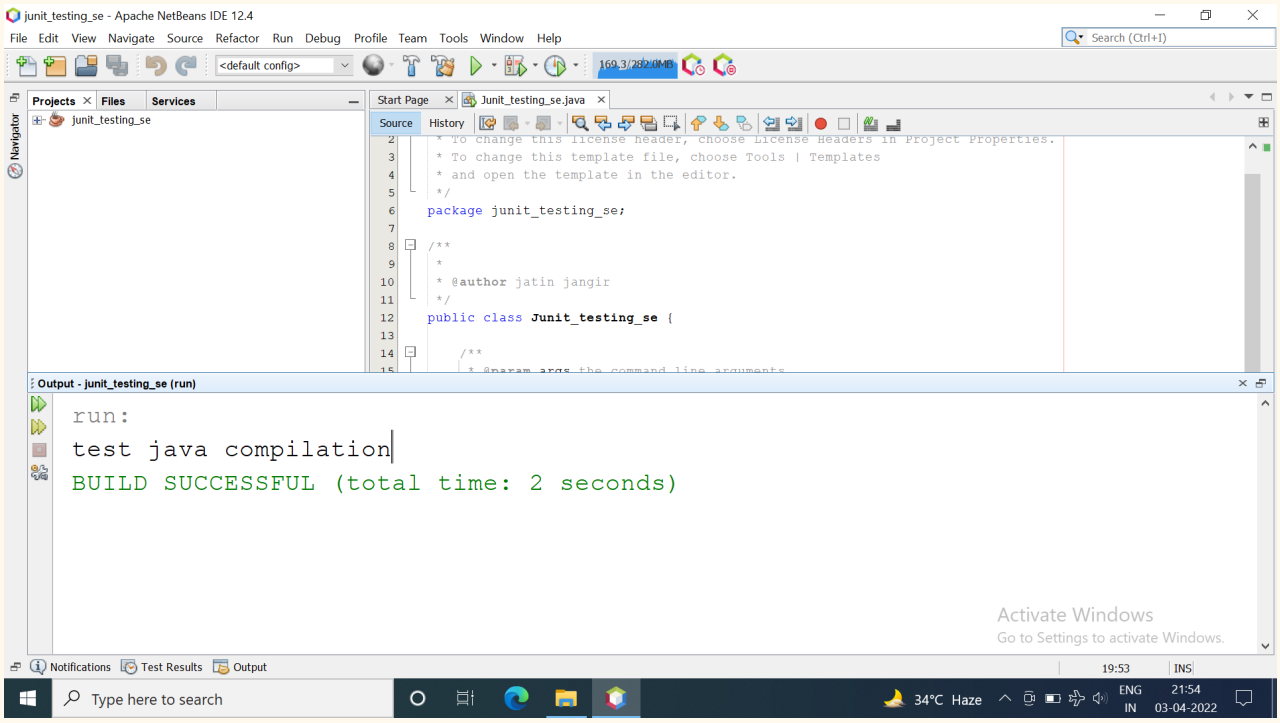
Test java connection by running hello world program,



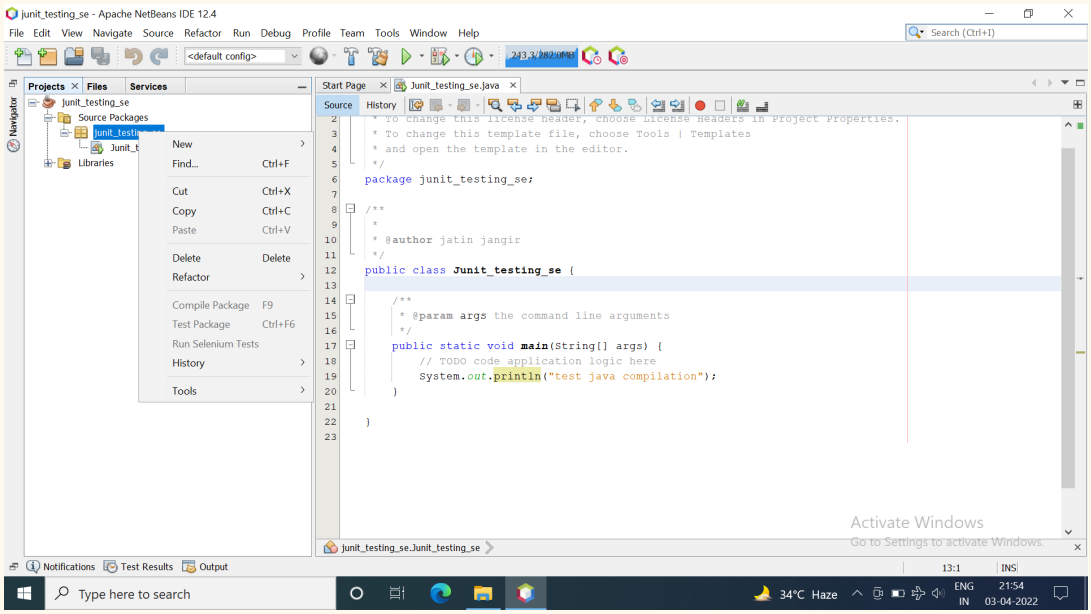
Right click on mouse and the select run file option to run .java file

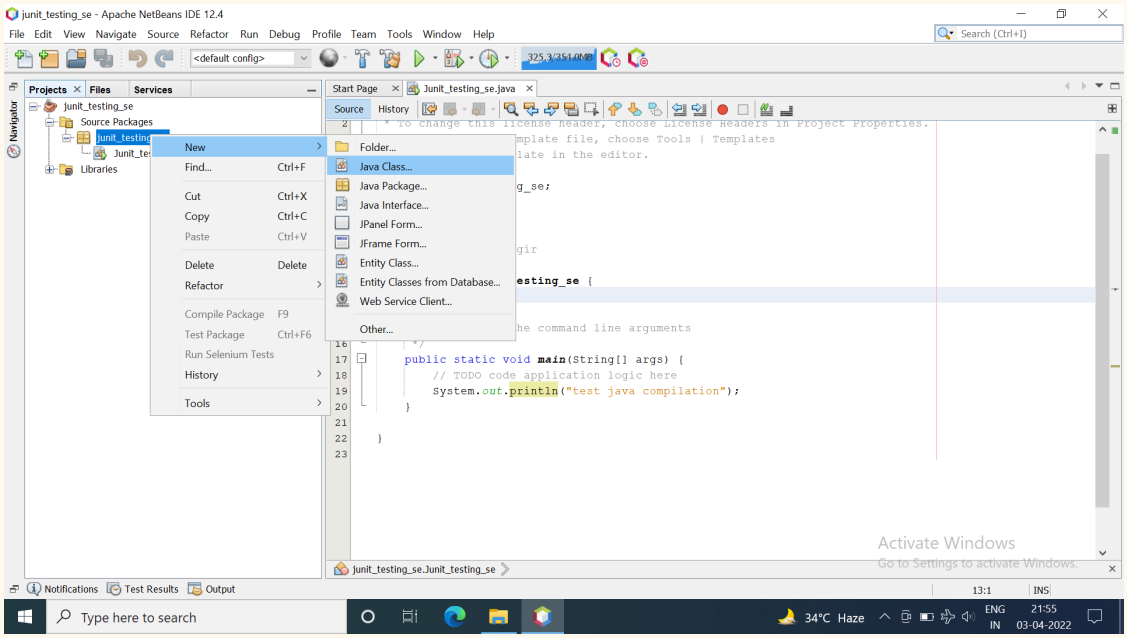


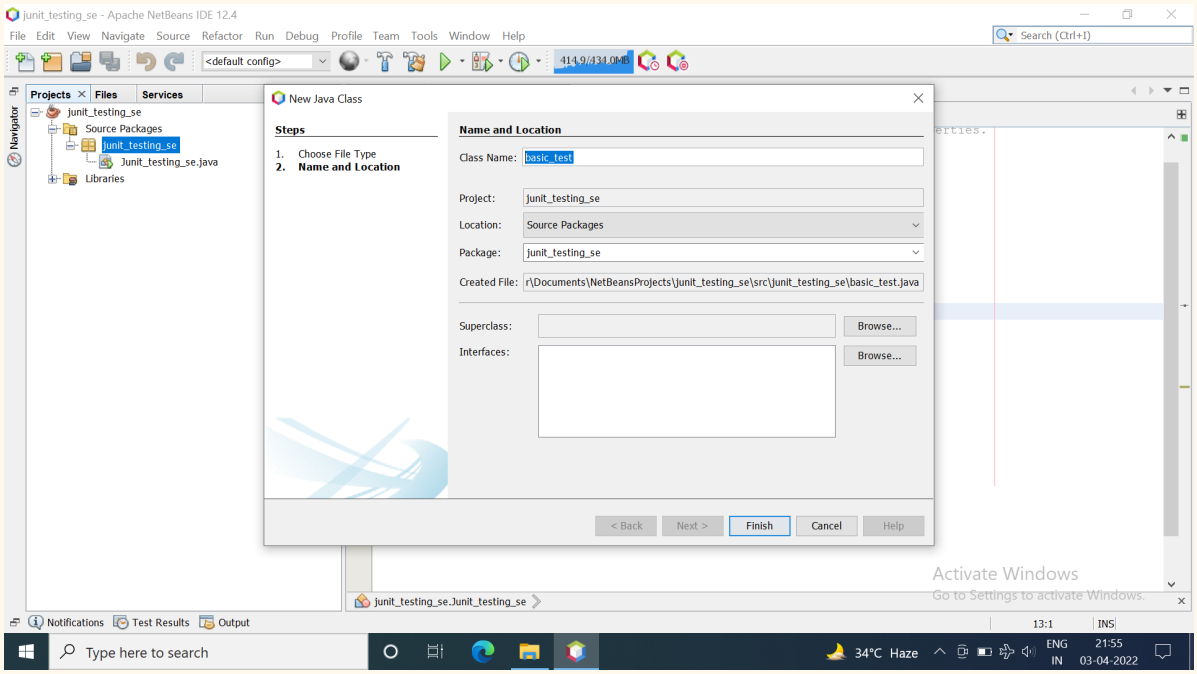
goto bottom-left corner and select output (if output not show)



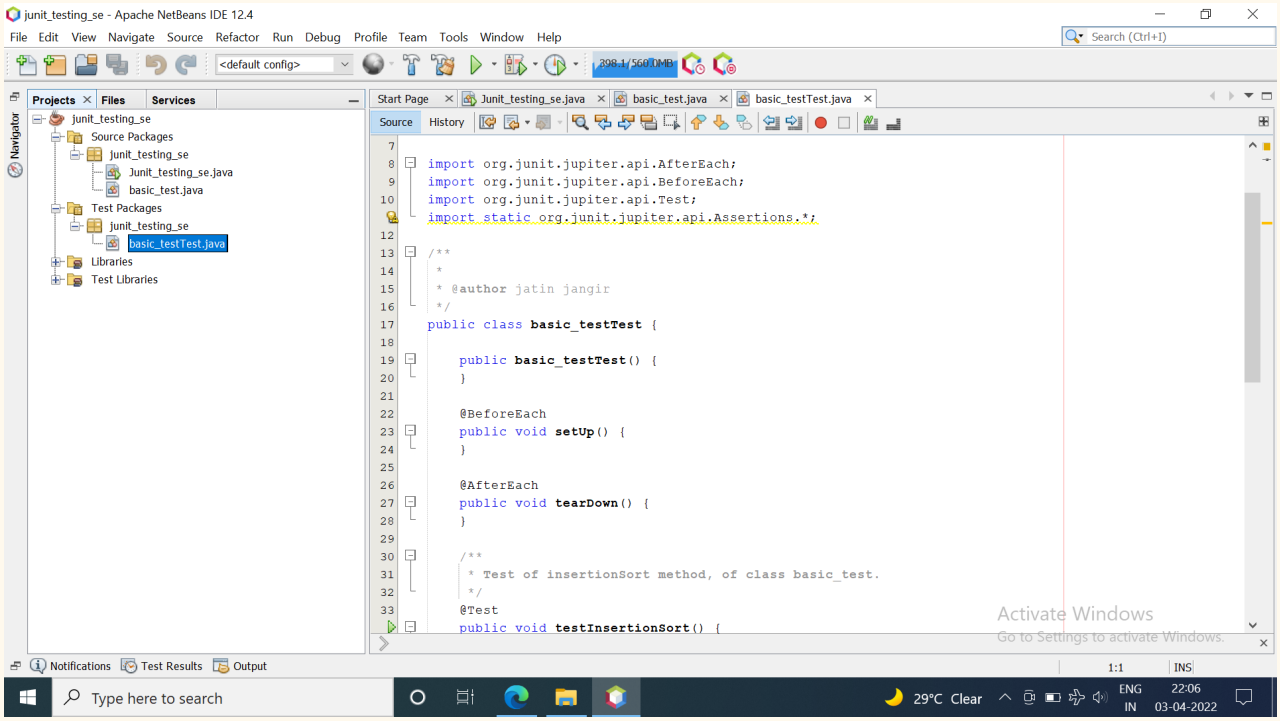
Create class for testing

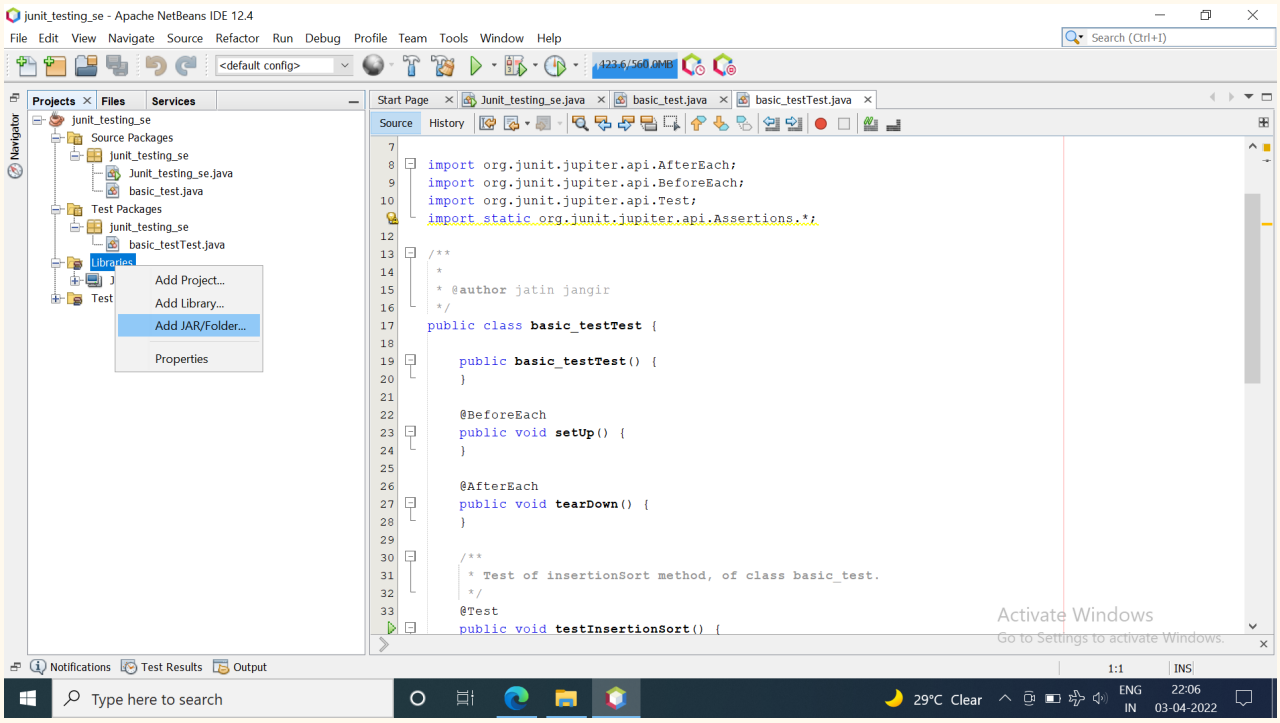






Setup junit libraries




junit_testing_se - Apache NetBeans IDE 12.4
File Edit View Navigate Source Refactor Run Debug Profile Team Tools Window Help
Search (Ctrl+I)
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Projects Files Services
junit_testing_se
Source Packages
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basic_test.java
Test Packages
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Add Library...
Add JAR/Folder...
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Start Page
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basic_test.java
basic_testTest.java
Source History
import org.junit.jupiter.api.AfterEach;
import org.junit.jupiter.api.BeforeEach;
import org.junit.jupiter.api.Test;
import static org.junit.jupiter.api.Assertions.*;
/**
* @author jatin jangir
*/
public class basic_testTest {
public basic_testTest() {
}
@BeforeEach
public void setUp() {
}
@AfterEach
public void tearDown() {
}
/**
* Test of insertionSort method, of class basic_test.
*/
@Test
public void testInsertionSort() {
Activate Windows
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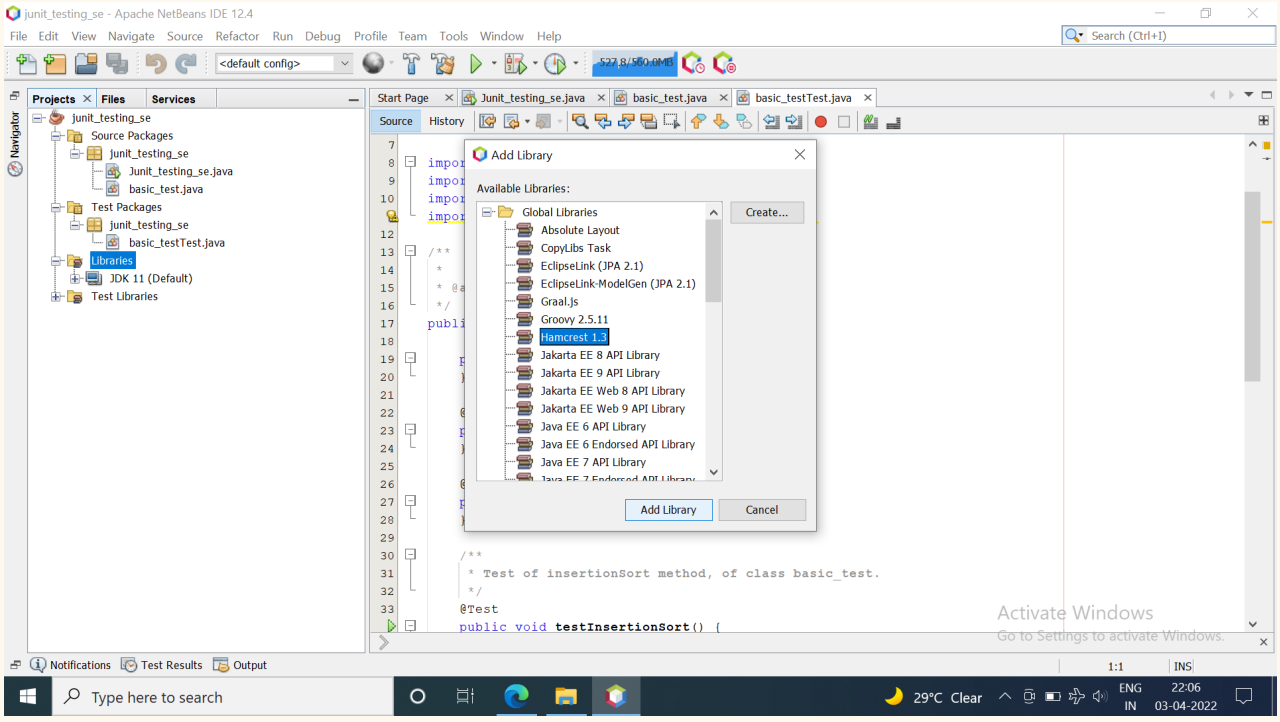
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Source Packages
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Test Packages
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JDK 11 (Default)
Test Libraries
Start Page
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basic_test.java
basic_testTest.java
Source History
Add Library
Available Libraries:
Global Libraries
Absolute Layout
CopyLibs Task
EclipseLink (JPA 2.1)
EclipseLink-ModelGen (JPA 2.1)
Graal.Js
Groovy 2.5.11
Hamcrest 1.3
Jakarta EE 8 API Library
Jakarta EE 9 API Library
Jakarta EE Web 8 API Library
Jakarta EE Web 9 API Library
Java EE 6 API Library
Java EE 6 Endorsed API Library
Java EE 7 API Library
Create...
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/**
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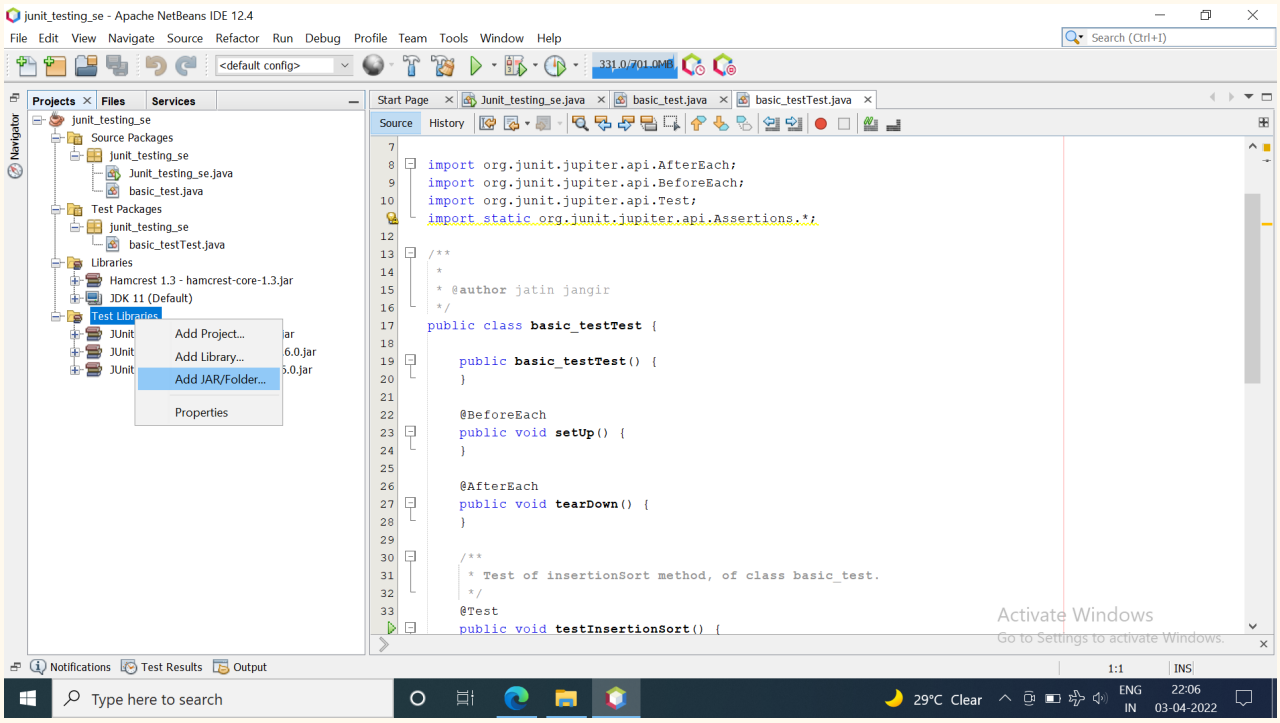
junit_testing_se - Apache NetBeans IDE 12.4
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junit_testing_se
Source Packages
junit_testing_se
Junit_testing_se.java
basic_test.java
Test Packages
junit_testing_se
basic_testTest.java
Libraries
Hamcrest 1.3 - hamcrest-core-1.3.jar
JDK 11 (Default)
Test Libraries
Add Project...
Add Library...
Add JAR/Folder...
Properties
Start Page
Junit_testing_se.java
basic_test.java
basic_testTest.java
Source History
import org.junit.jupiter.api.AfterEach;
import org.junit.jupiter.api.BeforeEach;
import org.junit.jupiter.api.Test;
import static org.junit.jupiter.api.Assertions.*;
/**
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* @author jatin jangir
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public class basic_testTest {
public basic_testTest() {
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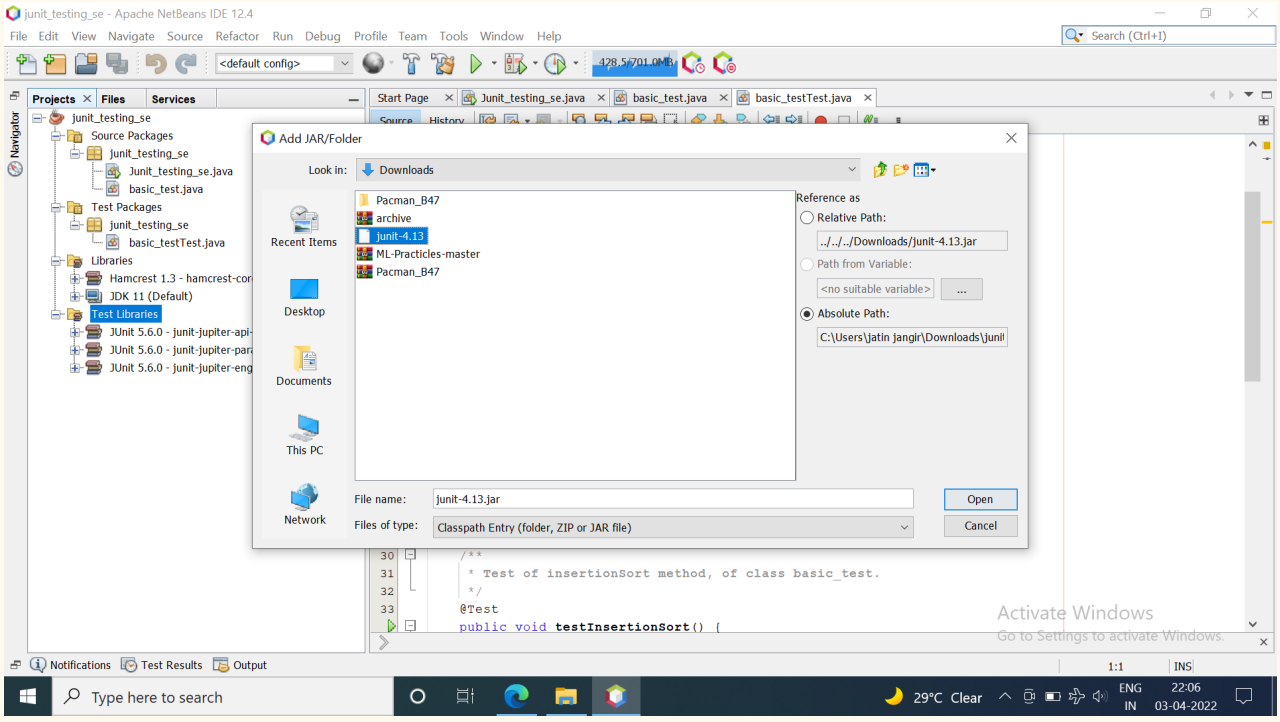
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Add JAR/Folder
Look in: Downloads
Recent Items
Desktop
Documents
This PC
Network
Pacman_B47
archive
junit-4.13
ML-Practicles-master
Pacman_B47
Reference as
Relative Path:
../../../Downloads/junit-4.13.jar
Path from Variable:
<no suitable variable>
Absolute Path:
C:\Users\jatin jangir\Downloads\junit
File name: junit-4.13.jar
Files of type: Classpath Entry (folder, ZIP or JAR file)
Open
Cancel
Projects Files Services
junit_testing_se
Source Packages
junit_testing_se
Junit_testing_se.java
basic_test.java
Test Packages
junit_testing_se
basic_testTest.java
Libraries
JDK 11 (Default)
Test Libraries
JUnit 5.6.0 - junit-jupiter-api
JUnit 5.6.0 - junit-jupiter-para
JUnit 5.6.0 - junit-jupiter-eng
Start Page
Junit_testing_se.java
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basic_testTest.java
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Activate Windows
Go to Settings to activate Windows.
Notifications Test Results Output
1:1 INS
Type here to search
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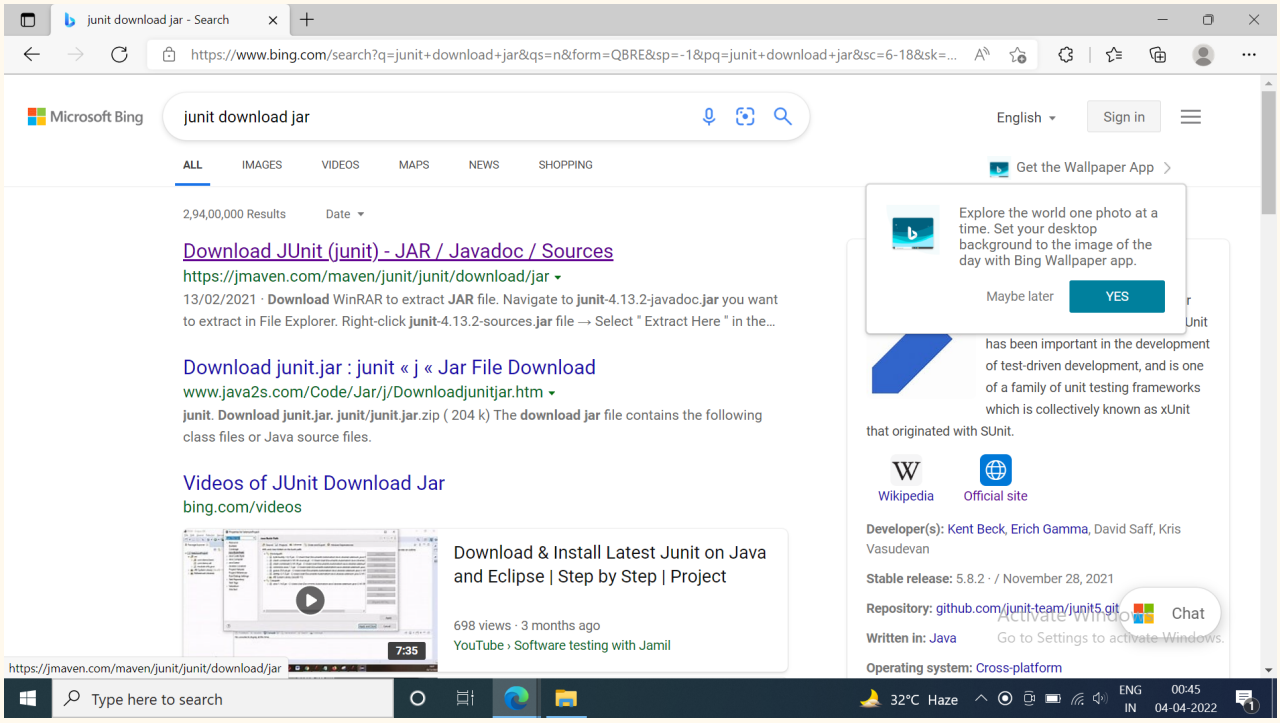
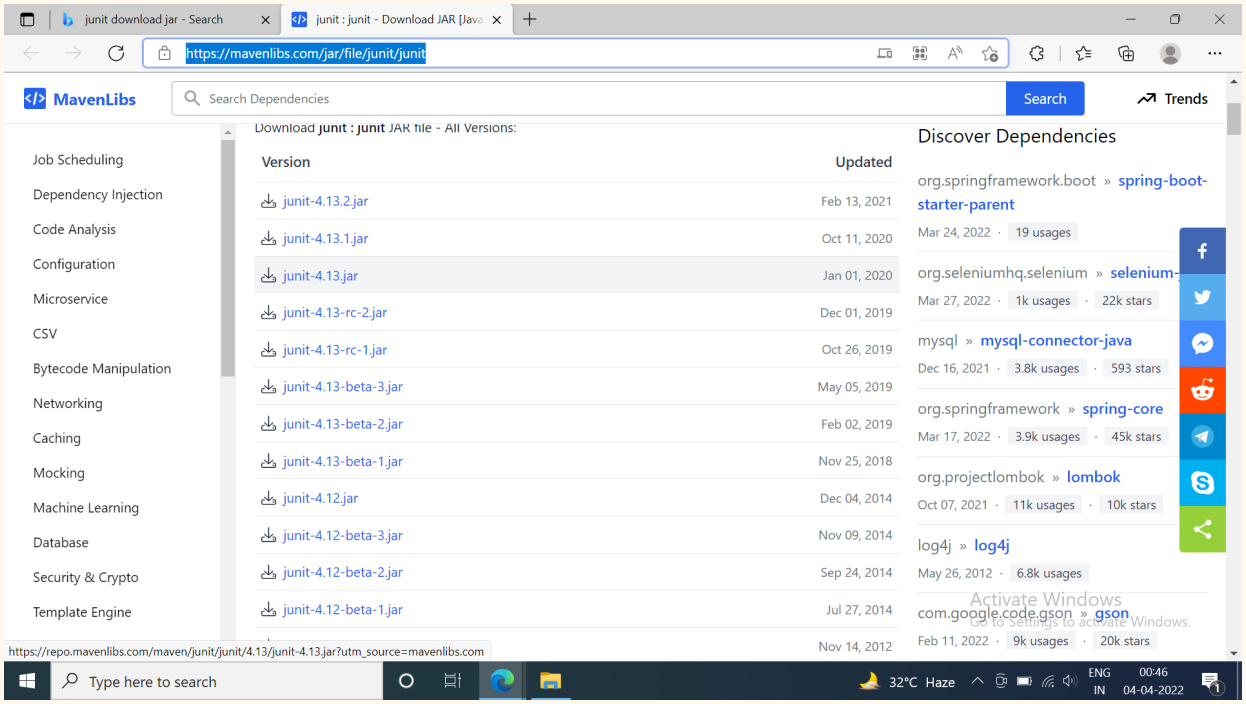
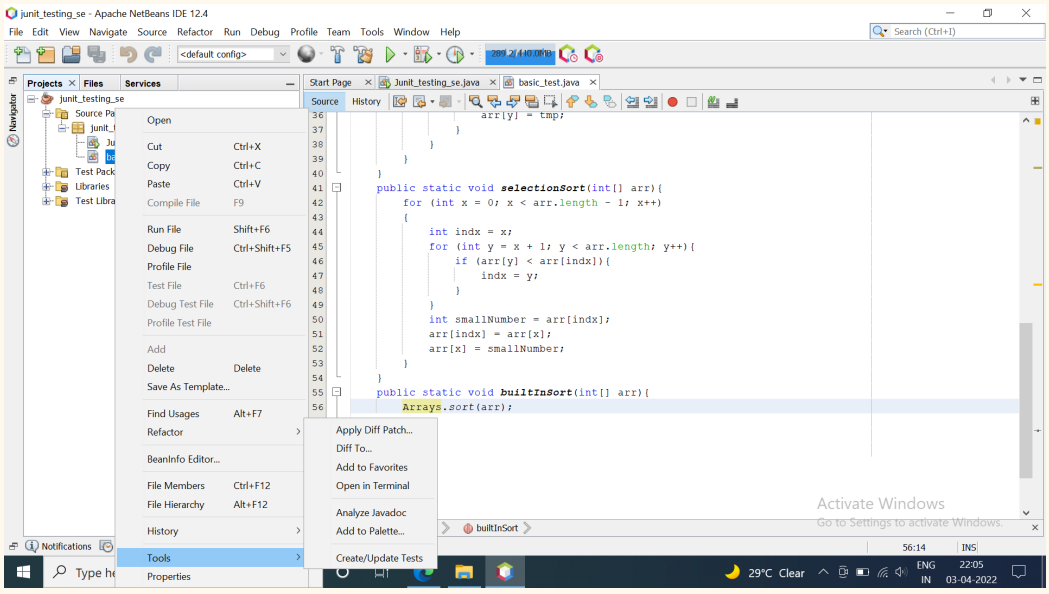
If you don't have jar file then search "junit download jar"

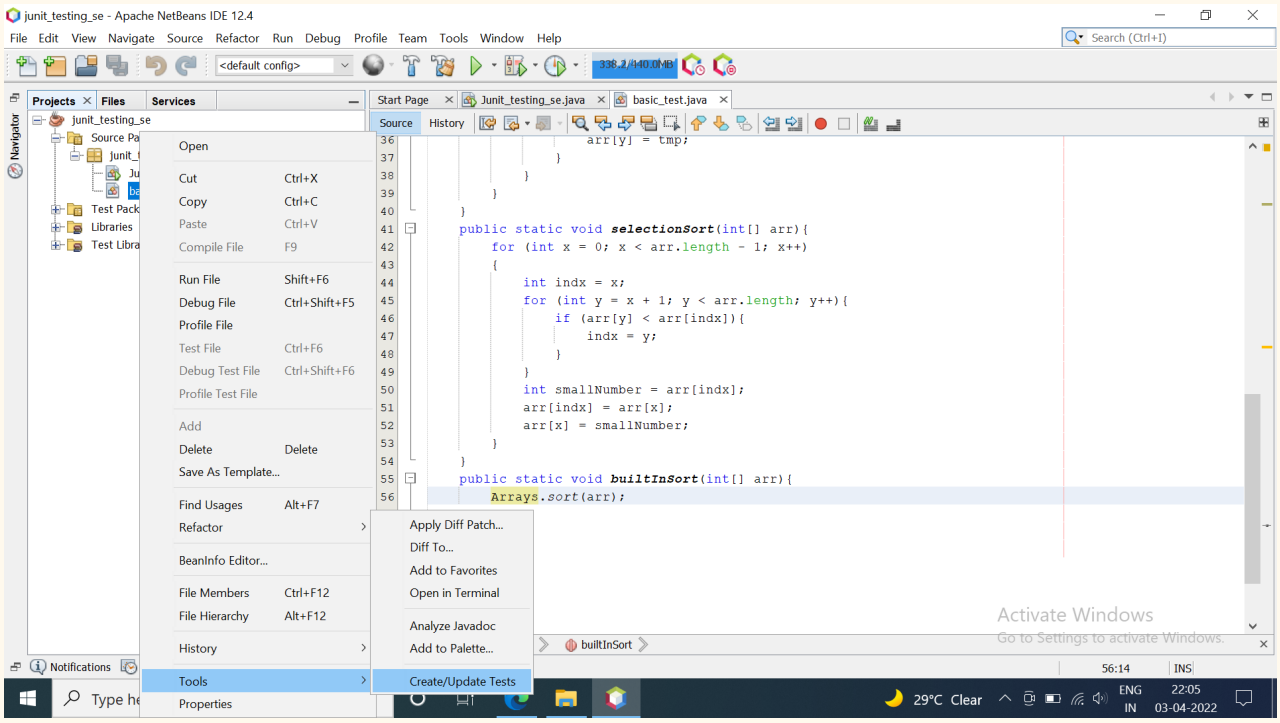
Goto junit : junit - Download JAR [Java] (mavenlibs.com)





Make testing file in junit

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basic_test.java
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Open
Cut Ctrl+X
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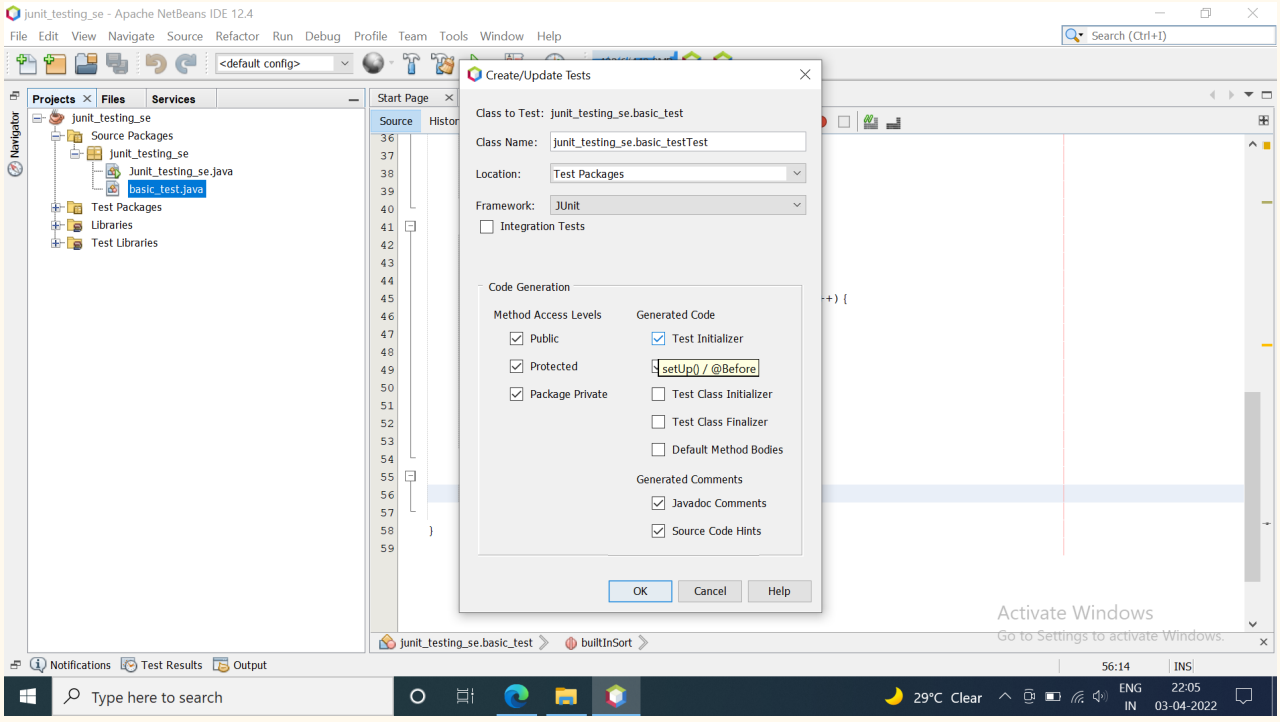
Paste Ctrl+V
Compile File F9
Run File Shift+F6
Debug File Ctrl+Shift+F5
Profile File
Test File Ctrl+F6
Debug Test File Ctrl+Shift+F6
Profile Test File
Add
Delete Delete
Save As Template...
Find Usages Alt+F7
Refactor
BeanInfo Editor...
File Members Ctrl+F12
File Hierarchy Alt+F12
History
Tools
Properties
Apply Diff Patch...
Diff To...
Add to Favorites
Open in Terminal
Analyze Javadoc
Add to Palette...
Create/Update Tests
public static void selectionSort(int[] arr){
for (int x = 0; x < arr.length - 1; x++)
int indx = x;
for (int y = x + 1; y < arr.length; y++){
if (arr[y] < arr[indx]){
indx = y;
int smallNumber = arr[indx];
arr[indx] = arr[x];
arr[x] = smallNumber;
public static void builtInSort(int[] arr){
Arrays.sort(arr);
builtInSort
Activate Windows
Go to Settings to activate Windows.
56:14 INS
Notifications
29°C Clear
ENG IN 22:05 03-04-2022


junit_testing_se - Apache NetBeans IDE 12.4
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Source Packages
junit_testing_se
Junit_testing_se.java
basic_test.java
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Start Page
Source
Create/Update Tests
Class to Test: junit_testing_se.basic_test
Class Name: junit_testing_se.basic_testTest
Location: Test Packages
Framework: JUnit
Integration Tests
Code Generation
Method Access Levels
Public
Protected
Package Private
Generated Code
Test Initializer
setUp() / @Before
Test Class Initializer
Test Class Finalizer
Default Method Bodies
Generated Comments
Javadoc Comments
Source Code Hints
OK Cancel Help
junit_testing_se.basic_test
builtInSort
Activate Windows
Go to Settings to activate Windows.
Notifications Test Results Output
56:14 INS
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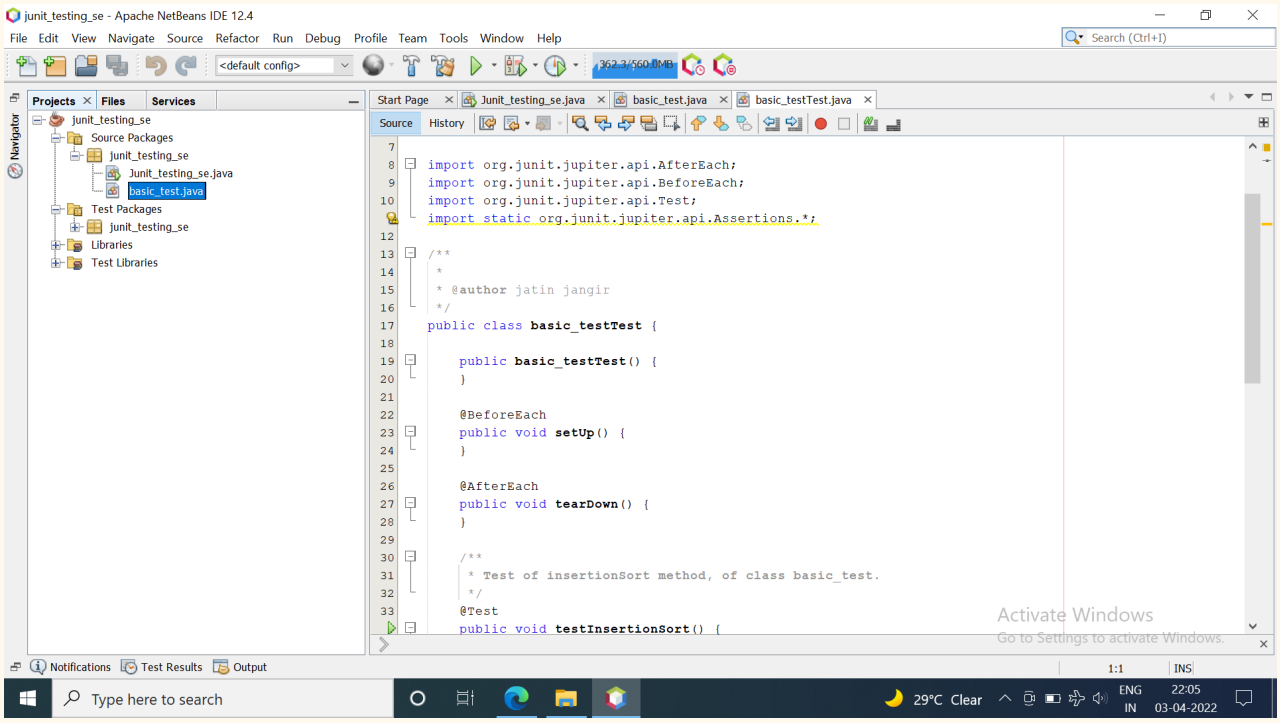
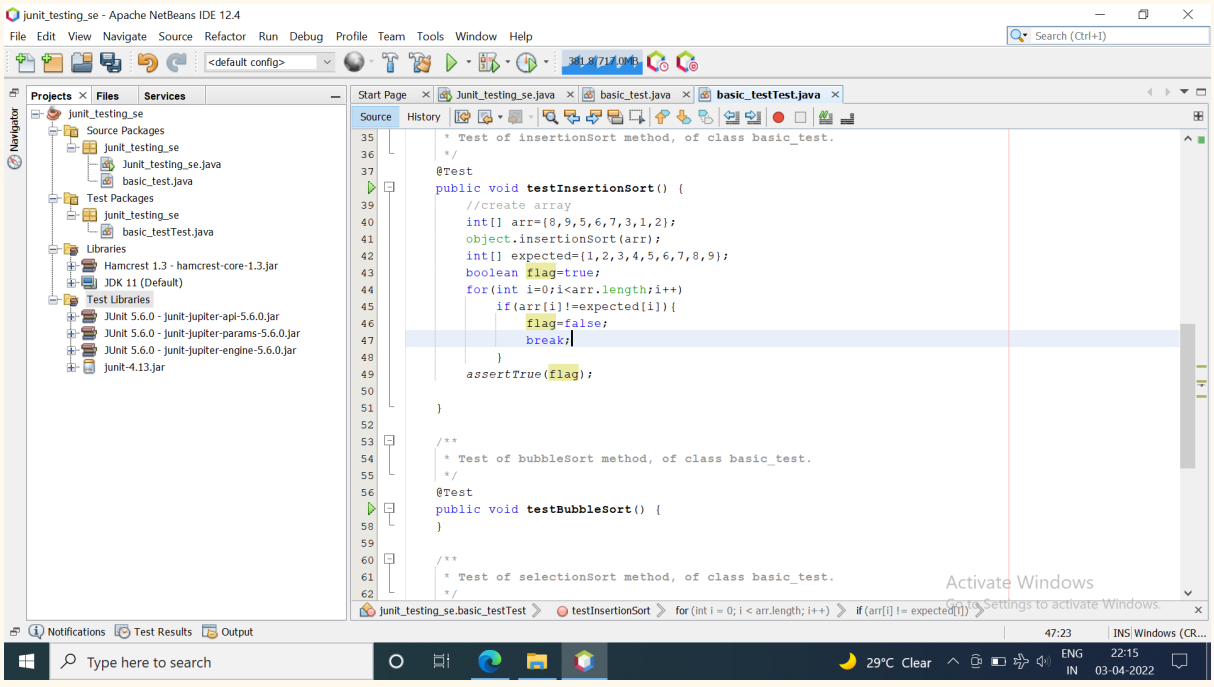
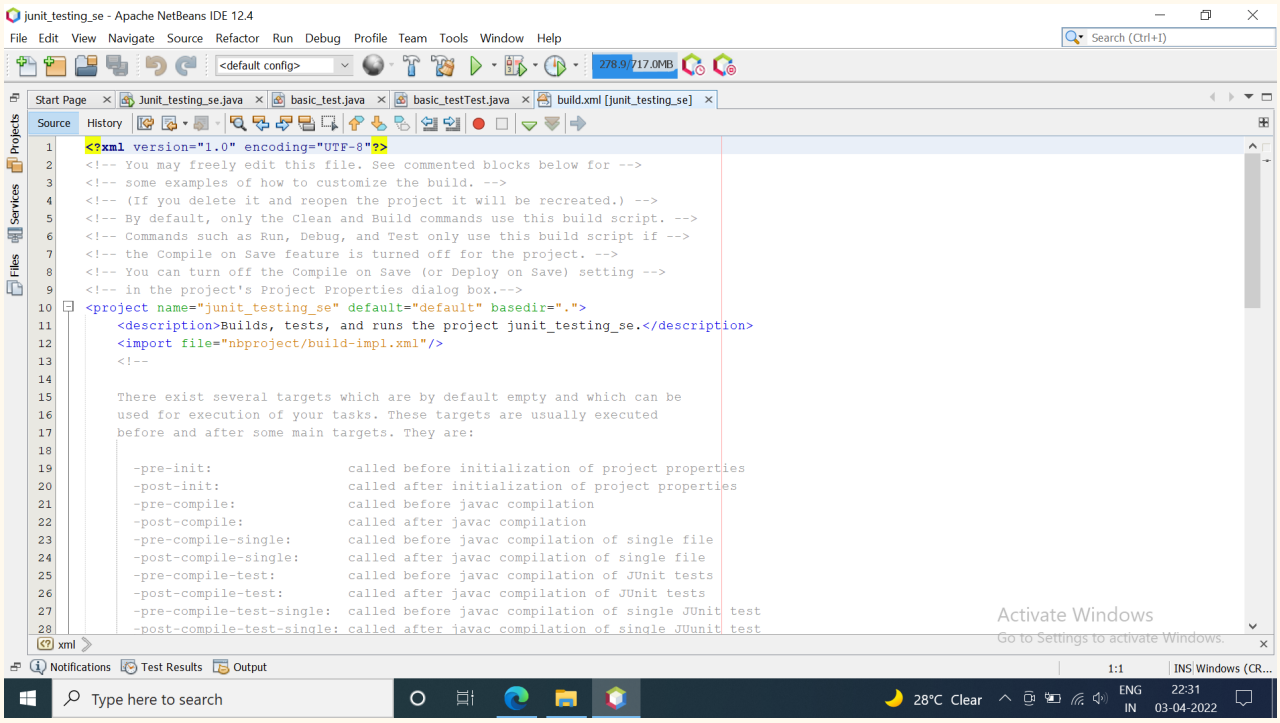
ENG IN 22:05 03-04-2022



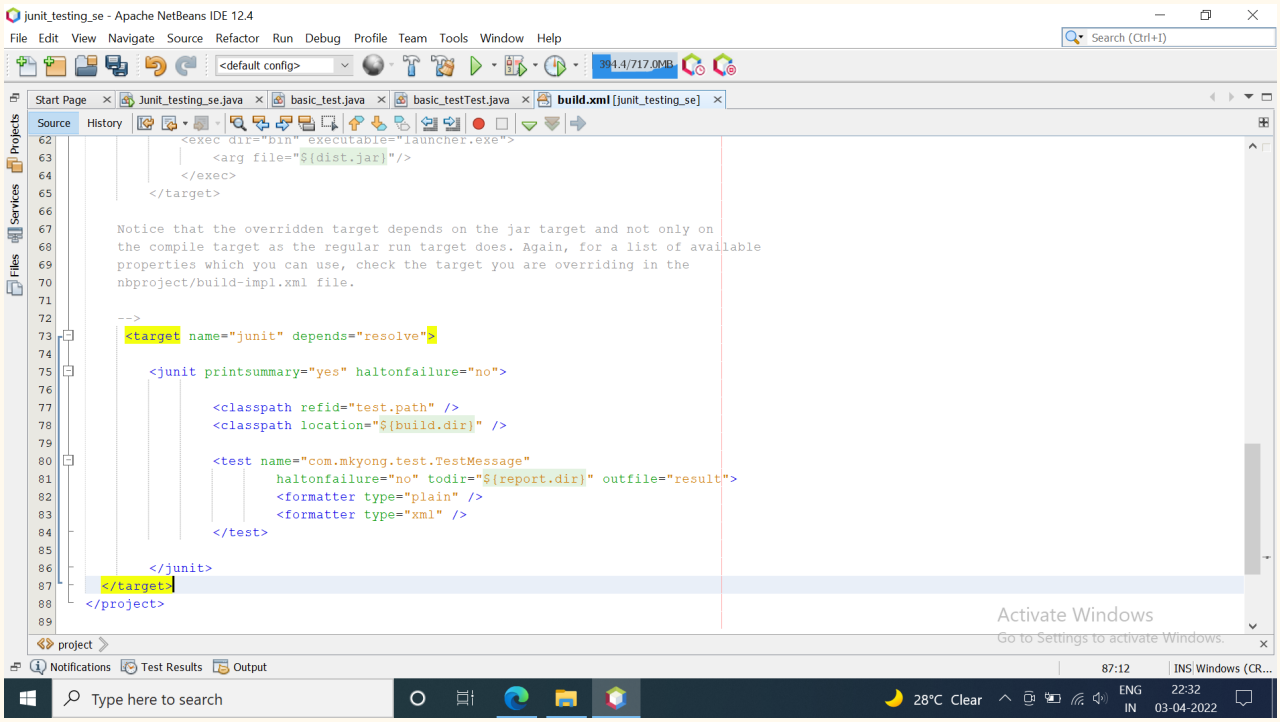
Write test cases



Add code in build.xml

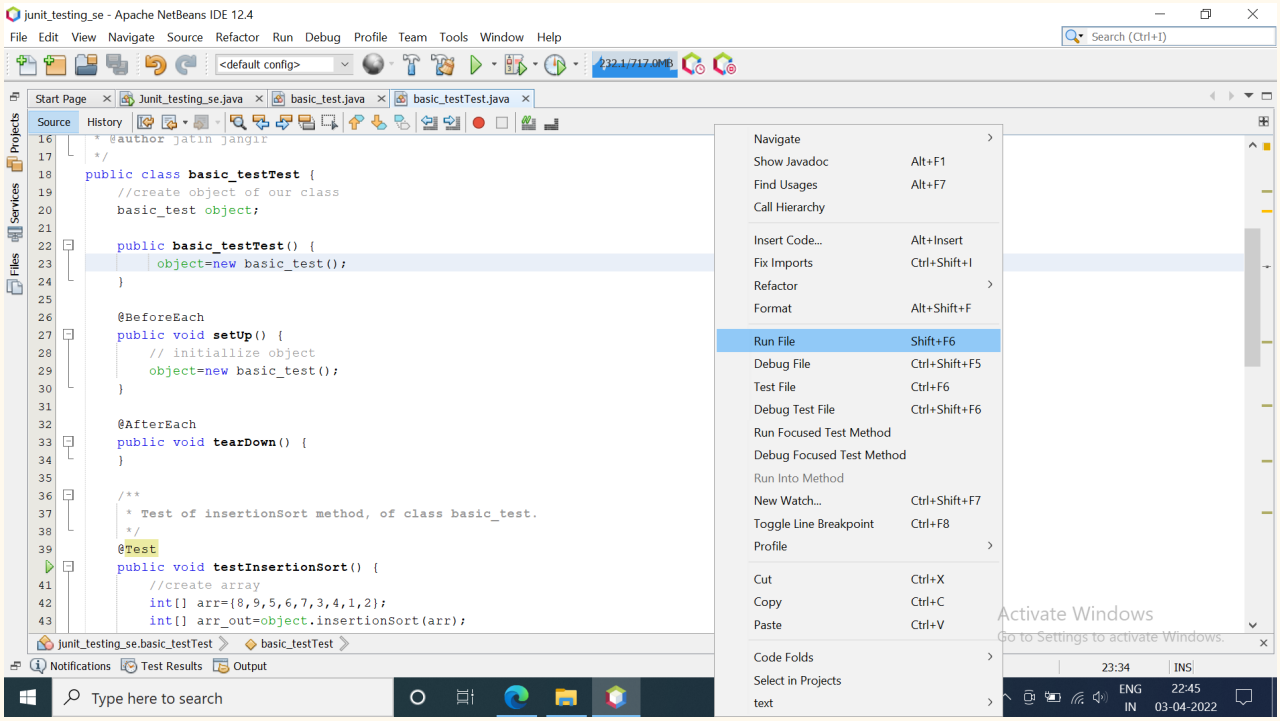


```
<?xml version="1.0" encoding="UTF-8"?>
<!-- You may freely edit this file. See commented blocks below for -->
<!-- some examples of how to customize the build. -->
<!-- (If you delete it and reopen the project it will be recreated.) -->
<!-- By default, only the Clean and Build commands use this build script. -->
<!-- Commands such as Run, Debug, and Test only use this build script if -->
<!-- the Compile on Save feature is turned off for the project. -->
<!-- You can turn off the Compile on Save (or Deploy on Save) setting -->
<!-- in the project's Project Properties dialog box.-->
<project name="junit_testing_se" default="default" basedir=".">
    <description>Builds, tests, and runs the project junit_testing_se.</description>
    <import file="nbproject/build-impl.xml"/>
    <!--

    There exist several targets which are by default empty and which can be
    used for execution of your tasks. These targets are usually executed
    before and after some main targets. They are:

      -pre-init:                 called before initialization of project properties
      -post-init:                called after initialization of project properties
      -pre-compile:              called before javac compilation
      -post-compile:             called after javac compilation
      -pre-compile-single:       called before javac compilation of single file
      -post-compile-single:      called after javac compilation of single file
      -pre-compile-test:         called before javac compilation of JUnit tests
      -post-compile-test:        called after javac compilation of JUnit tests
      -pre-compile-test-single:  called before javac compilation of single JUnit test
      -post-compile-test-single: called after javac compilation of single JUunit test
```



```
            <exec dir="bin" executable="launcher.exe">
                <arg file="${dist.jar}"/>
            </exec>
        </target>

    Notice that the overridden target depends on the jar target and not only on
    the compile target as the regular run target does. Again, for a list of available
    properties which you can use, check the target you are overriding in the
    nbproject/build-impl.xml file.

    -->
    <target name="junit" depends="resolve">

        <junit printsummary="yes" haltonfailure="no">

                <classpath refid="test.path" />
                <classpath location="${build.dir}" />

                <test name="com.mkyong.test.TestMessage"
                      haltonfailure="no" todir="${report.dir}" outfile="result">
                      <formatter type="plain" />
                      <formatter type="xml" />
                </test>

        </junit>
    </target>
</project>
```

Output –


junit_testing_se - Apache NetBeans IDE 12.4
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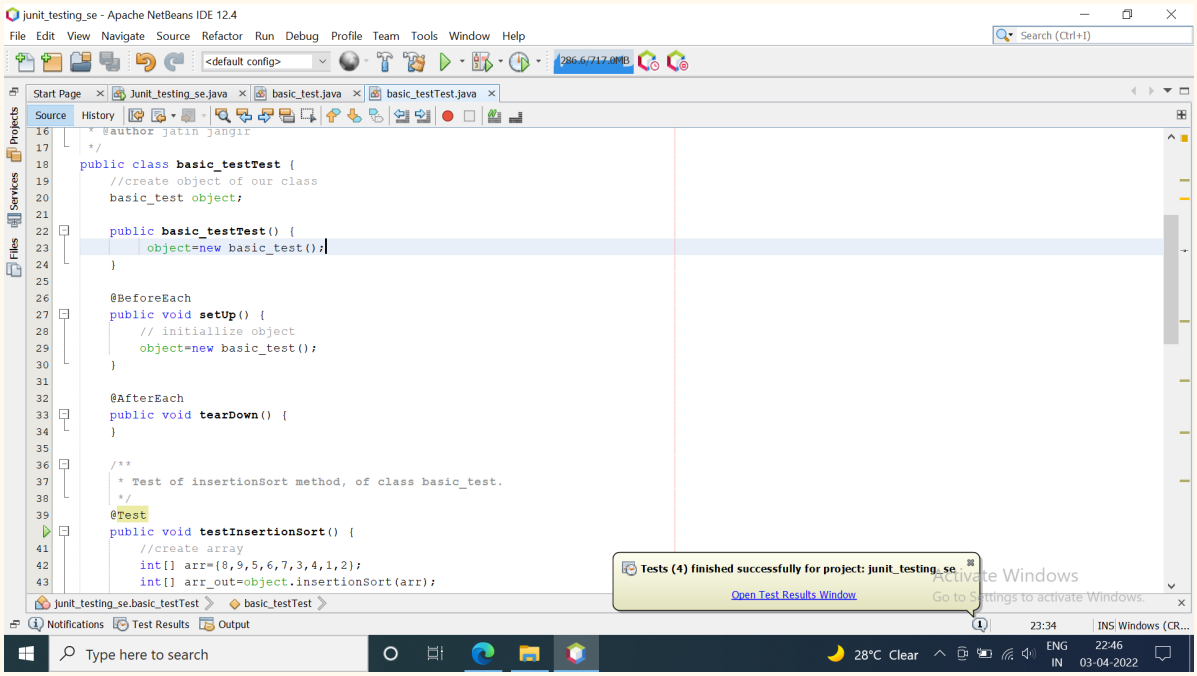
Search (Ctrl+I)
Start Page
Junit_testing_se.java
basic_test.java
basic_testTest.java
Source
History
* @author jatin jangir
*/
public class basic_testTest {
//create object of our class
basic_test object;
public basic_testTest() {
object=new basic_test();
}
@BeforeEach
public void setUp() {
// initiallize object
object=new basic_test();
}
@AfterEach
public void tearDown() {
}
/**
* Test of insertionSort method, of class basic_test.
*/
@Test
public void testInsertionSort() {
//create array
int[] arr={8,9,5,6,7,3,4,1,2};
int[] arr_out=object.insertionSort(arr);
Navigate
Show Javadoc Alt+F1
Find Usages Alt+F7
Call Hierarchy
Insert Code... Alt+Insert
Fix Imports Ctrl+Shift+I
Refactor
Format Alt+Shift+F
Run File Shift+F6
Debug File Ctrl+Shift+F5
Test File Ctrl+F6
Debug Test File Ctrl+Shift+F6
Run Focused Test Method
Debug Focused Test Method
Run Into Method
New Watch... Ctrl+Shift+F7
Toggle Line Breakpoint Ctrl+F8
Profile
Cut Ctrl+X
Copy Ctrl+C
Paste Ctrl+V
Code Folds
Select in Projects
text
Activate Windows
Go to Settings to activate Windows.
junit_testing_se.basic_testTest
basic_testTest
Notifications
Test Results
Output
23:34
INS
Type here to search
ENG
IN
22:45
03-04-2022


junit_testing_se - Apache NetBeans IDE 12.4
File Edit View Navigate Source Refactor Run Debug Profile Team Tools Window Help
Search (Ctrl+I)
<default config>
Start Page
Junit_testing_se.java
basic_test.java
basic_testTest.java
Source History
* @author jatin jangir
*/
public class basic_testTest {
//create object of our class
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public basic_testTest() {
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}
@BeforeEach
public void setUp() {
// initiallize object
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}
@AfterEach
public void tearDown() {
}
/**
* Test of insertionSort method, of class basic_test.
*/
@Test
public void testInsertionSort() {
//create array
int[] arr={8,9,5,6,7,3,4,1,2};
int[] arr_out=object.insertionSort(arr);
Tests (4) finished successfully for project: junit_testing_se
Open Test Results Window
Activate Windows
Go to Settings to activate Windows.
junit_testing_se.basic_testTest
basic_testTest
Notifications
Test Results
Output
23:34
INS
Windows (CR...
Type here to search
28°C Clear
ENG
IN
22:46
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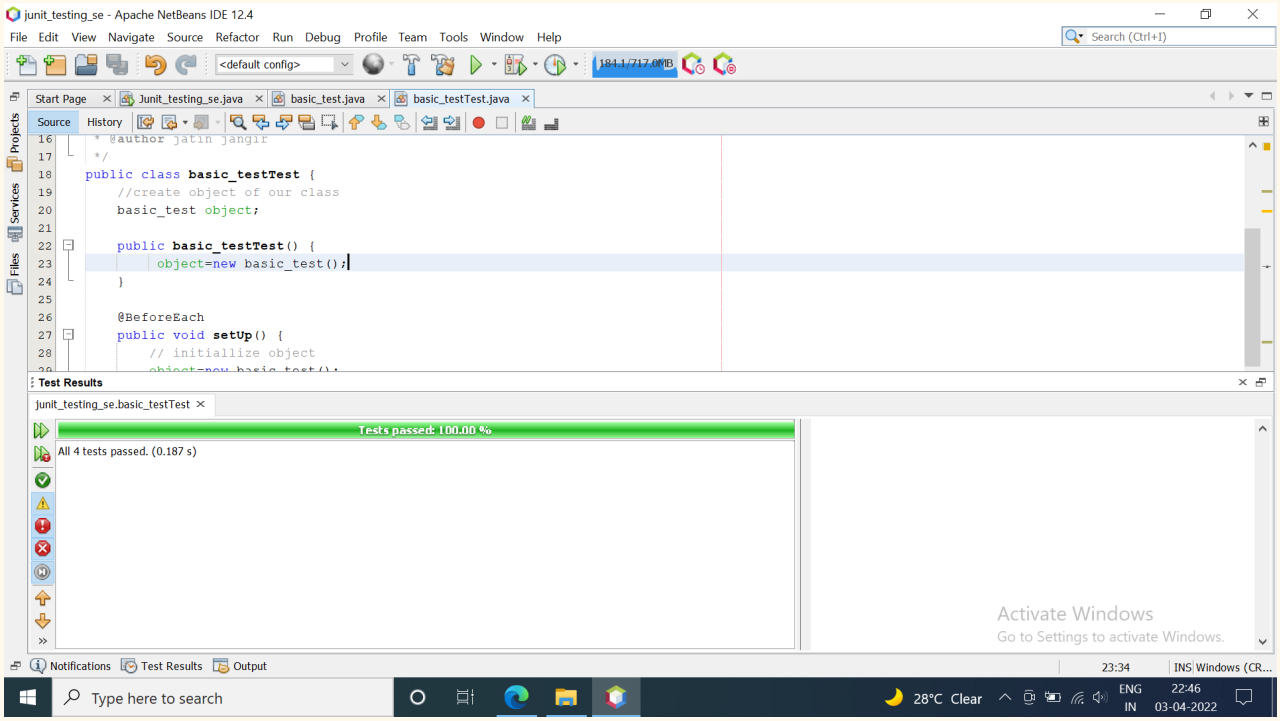

junit_testing_se - Apache NetBeans IDE 12.4
File Edit View Navigate Source Refactor Run Debug Profile Team Tools Window Help
Search (Ctrl+I)
<default config>
Start Page
Junit_testing_se.java
basic_test.java
basic_testTest.java
Source History
* @author jatin jangir
*/
public class basic_testTest {
//create object of our class
basic_test object;
public basic_testTest() {
object=new basic_test();
}
@BeforeEach
public void setUp() {
// initiallize object
Test Results
junit_testing_se.basic_testTest
Tests passed: 100.00 %
All 4 tests passed. (0.187 s)
Activate Windows
Go to Settings to activate Windows.
Notifications
Test Results
Output
23:34
INS
Windows (CR...
Type here to search
28°C Clear
ENG
IN
22:46
03-04-2022

Bank account class

```
/*
 * To change this license header, choose License Headers in Project Properties.
 * To change this template file, choose Tools | Templates
 * and open the template in the editor.
 */
package junit_testing_se;
import java.util.ArrayList;
import java.util.List;
import org.junit.jupiter.api.Test;
/**
 * @author jatin jangir
 */
public class bank_account {
        String name, actype;
        int accNo, bal, amt=0;
      List<String> actypes=new ArrayList<String>();
        public bank_account(){
        actypes.add("saving");
```

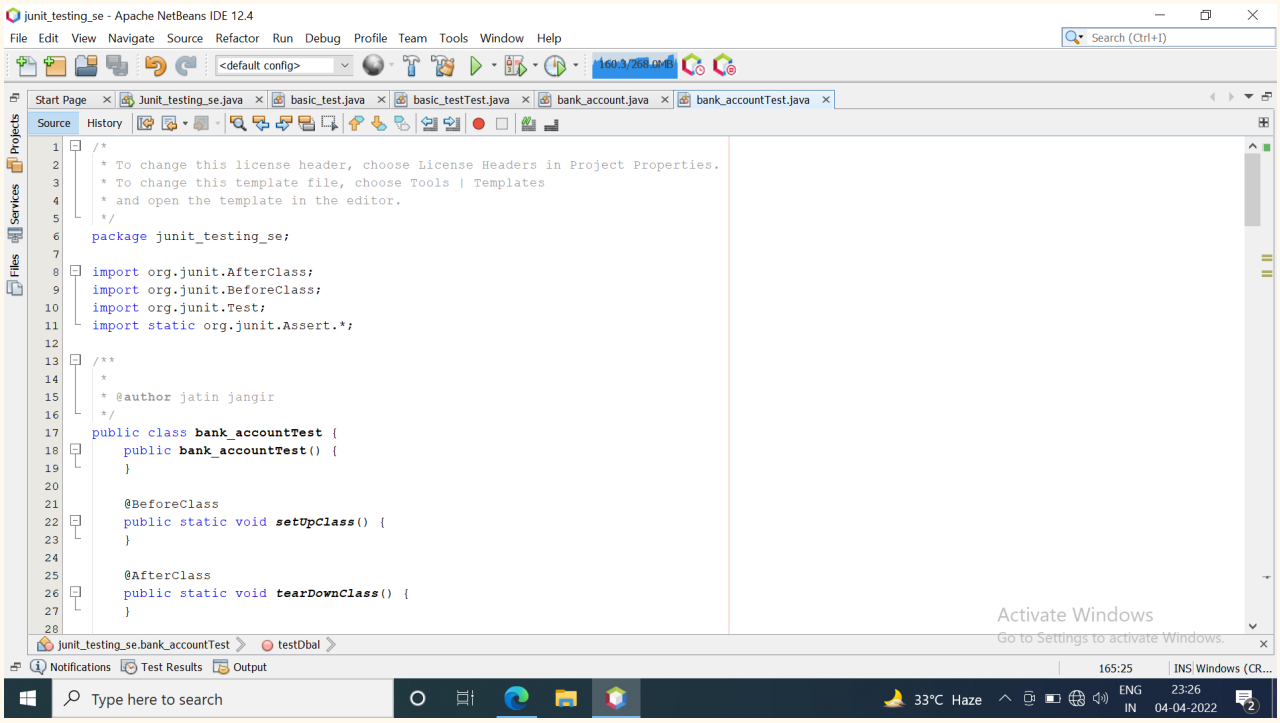
```
    actypes.add("current");
    actypes.add("buisness");
}
@Test
boolean setname(String n){
    this.name = n;
    return true;
    }
@Test
boolean setbalance(int n){
    this.bal = n;
    return true;
    }
@Test
boolean setaccount(String n){
    if(actypes.contains(n)==false)return false;
    this.actype = n;
    return true;
    }
@Test
```

```
boolean setaccno(int n){
   if(n<0)return false;
   this.accNo = n;
   return true;
   }
@Test
   int deposit(int amt) {

            if (amt < 0) {
                     System.out.println("Invalid Amount");
                     return -1;
            }
            bal = bal + amt;
            return 0;
   }
@Test
   int withdraw(int amt) {
            System.out.println("Your Balance=" + bal);
            if (bal < amt) {
                     System.out.println("Not sufficient balance.");
```

```
                return -1;
            }
            if (amt < 0) {
                System.out.println("Invalid Amount");
                return -1;
            }
            bal = bal - amt;
            return bal;
        }
    @Test
        void display() {
            System.out.println("Name:" + name);
            System.out.println("Account No:" + accNo);
            System.out.println("Balance:" + bal);
        }
    @Test
        void dbal() {
            System.out.println("Balance:" + bal);
        }
}
```

Testing class




```
/*
 * To change this license header, choose License Headers in Project Properties.
 * To change this template file, choose Tools | Templates
 * and open the template in the editor.
 */
package junit_testing_se;


import org.junit.AfterClass;
import org.junit.BeforeClass;
```

```
import org.junit.Test;
import static org.junit.Assert.*;

/**
 *
 * @author jatin jangir
 */
public class bank_accountTest {
    public bank_accountTest() {
    }

    @BeforeClass
    public static void setUpClass() {
    }

    @AfterClass
    public static void tearDownClass() {
    }

    /**
```

```
 * Test of setname method, of class bank_account.
 */
@Test
public void testSetname() {
    System.out.println("setname");
    // base case
    String n = "jatin";
    bank_account instance = new bank_account();
    boolean expResult = true;
    boolean result = instance.setname(n);
    assertEquals(expResult, result);
     // boundary case
     n = "";
    instance = new bank_account();
    expResult = false;
    result = instance.setname(n);
    assertEquals(expResult, result);
}

/**
```

```
 * Test of setbalance method, of class bank_account.
 */
@Test
public void testSetbalance() {
    System.out.println("setbalance");
    int n = 100;
    bank_account instance = new bank_account();
    boolean expResult = true;
    boolean result = instance.setbalance(n);
    assertEquals(expResult, result);

    n = -1;
    instance = new bank_account();
    expResult = false;
    result = instance.setbalance(n);
    assertEquals(expResult, result);
}

/**
 * Test of setaccount method, of class bank_account.
```

```
 */
@Test
public void testSetaccount() {
    System.out.println("setaccount");
    String n = "saving";
    bank_account instance = new bank_account();
    boolean expResult = true;
    boolean result = instance.setaccount(n);
    assertEquals(expResult, result);

    n = "oooooo";
    instance = new bank_account();
    expResult = false;
    result = instance.setaccount(n);
    assertEquals(expResult, result);
}

/**
 * Test of setaccno method, of class bank_account.
 */
```

```
@Test
public void testSetaccno() {
   System.out.println("setaccno");
   int n = 987;
   bank_account instance = new bank_account();
   boolean expResult =true;
   boolean result = instance.setaccno(n);
   assertEquals(expResult, result);

   n = -1;
   instance = new bank_account();
   expResult =false;
   result = instance.setaccno(n);
   assertEquals(expResult, result);
}

/**
 * Test of deposit method, of class bank_account.
 */
@Test
```

```
public void testDeposit() {
    System.out.println("deposit");
    int n = 987;
    bank_account instance = new bank_account();
    instance.bal=1000;
    int expResult =0;
    int result = instance.deposit(n);
    assertEquals(expResult, result);

    n = -987;
    instance = new bank_account();
    instance.bal=1000;
    expResult =-1;
    result = instance.deposit(n);
    assertEquals(expResult, result);
}

/**
 * Test of withdraw method, of class bank_account.
 */
```

```
@Test
public void testWithdraw() {
   System.out.println("withdraw");
   int amt = 100;
   bank_account instance = new bank_account();
   instance.bal=100;
   int expResult = 0;
   int result = instance.withdraw(amt);
   assertEquals(expResult, result);

   amt = 1000;
   instance = new bank_account();
   instance.bal=100;
   expResult = -1;
   result = instance.withdraw(amt);
   assertEquals(expResult, result);
}

/**
 * Test of display method, of class bank_account.
```

```
     */
    @Test
    public void testDisplay() {
        System.out.println("display");
        bank_account instance = new bank_account();
        instance.display();
    }

    /**
     * Test of dbal method, of class bank_account.
     */
    @Test
    public void testDbal() {
        System.out.println("dbal");
        bank_account instance = new bank_account();
        instance.dbal();
    }

}
```

Testing result