Experiment Number : 01 **Date: 28/12/2026**

Installation of Java and Simple Java Programs

Aim:

To install Java Development Kit (JDK), configure the environment, and write simple Java programs including Hello World.

PRE LAB EXERCISE

QUESTIONS

1. What is JDK and why is it required?

Answer:
JDK (Java Development Kit) is a software package used to develop Java applications. It includes tools required to write, compile, debug, and run Java programs.

Why it is required:

- To compile Java source code into bytecode
- To run Java programs
- To develop Java applications using tools like:
    - javac (compiler)
    - java (interpreter)
    - debugger and other utilities

2. Difference between JDK, JRE, and JVM

Feature	JDK	JRE	JVM
Full form	Java Development Kit	Java Runtime Environment	Java Virtual Machine
Purpose	Develop and run Java programs	Run Java programs	Executes Java bytecode
Contains	JRE + development tools	JVM + libraries	Only execution
Used by	Programmers	Users	System
Can compile code?	Yes	No	No

3. What is the purpose of the main() method in Java?

Answer:
The main() method is the starting point of execution of any Java program.

Purpose:

- It tells the JVM where the program starts
- Without main() method, the program will not execute

Syntax:

```
public static void main(String[] args)
```

IN LAB EXERCISE

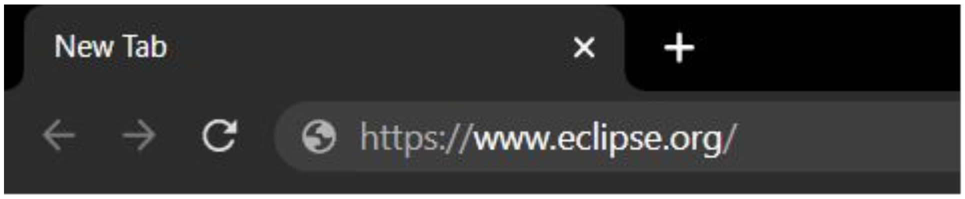
Objective:

To verify Java installation and execute a basic Java program.

INSTALLATION STEPS:

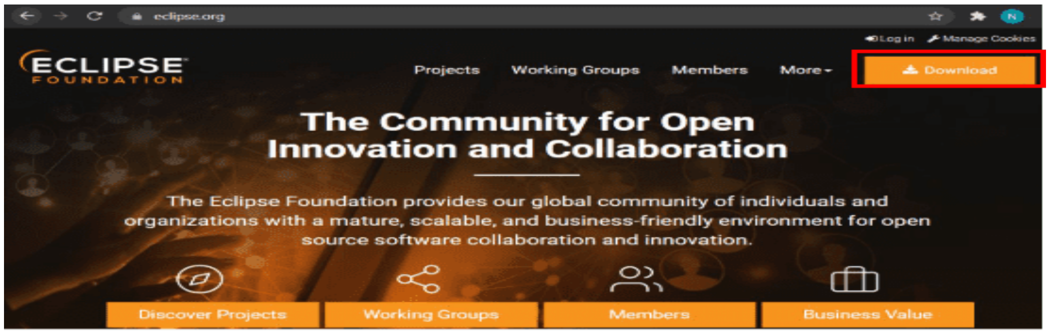
STEP 1: Open Browser

- Open your browser and go to the official URL Eclipse Downloads page.



STEP 2: Download Eclipse Installer

- Then, click on the "Download" button to download Eclipse IDE.



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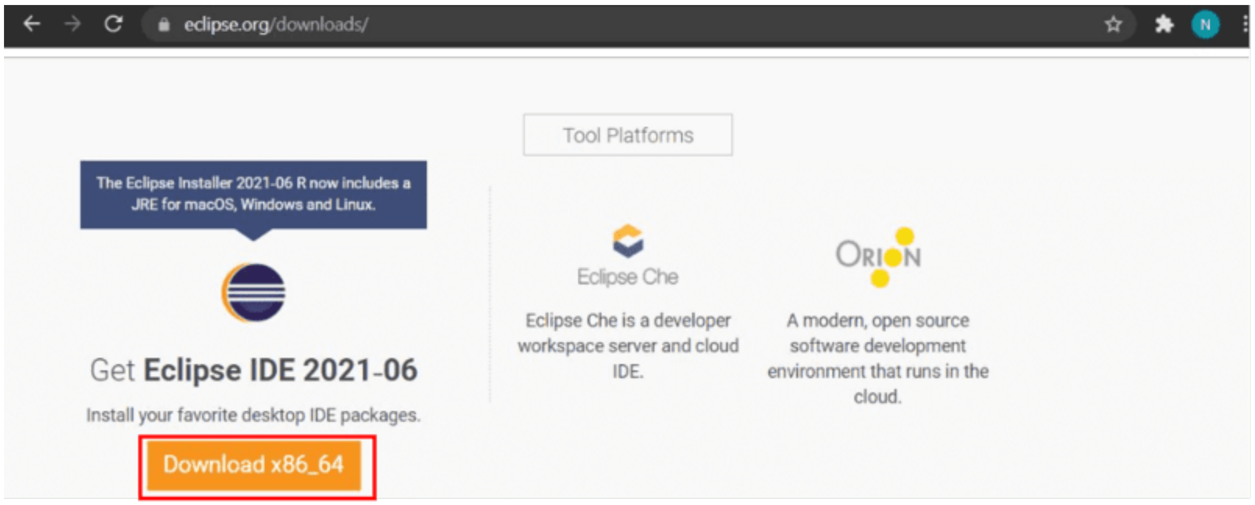
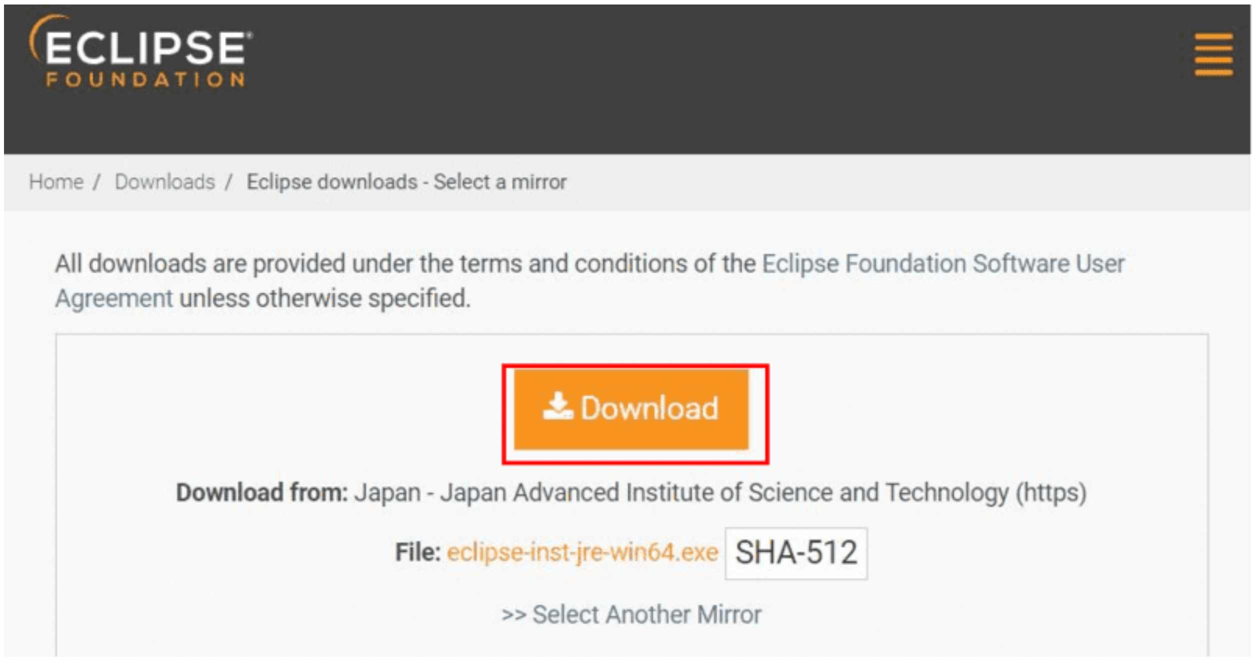
STEP 3: Download EXE

- Now, click on the "Download x86_64" button.


eclipse.org/downloads/
Tool Platforms
The Eclipse Installer 2021-06 R now includes a JRE for macOS, Windows and Linux.
Get Eclipse IDE 2021-06
Install your favorite desktop IDE packages.
Download x86_64
Eclipse Che
Eclipse Che is a developer workspace server and cloud IDE.
ORION
A modern, open source software development environment that runs in the cloud.

STEP 4: Then click on the "Download" button. After clicking on the download button the .exe file for the eclipse will be downloaded.



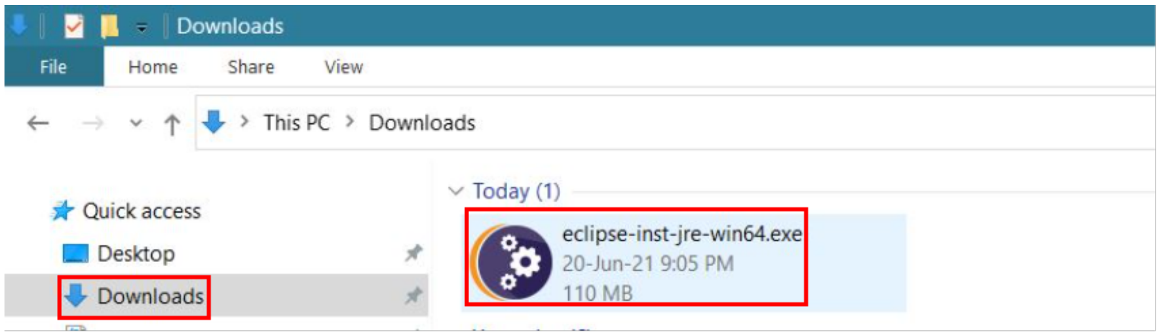
All downloads are provided under the terms and conditions of the Eclipse Foundation Software User Agreement unless otherwise specified.

Download from: Japan - Japan Advanced Institute of Science and Technology (https)

File: eclipse-inst-jre-win64.exe

STEP 5: Open Download EXE

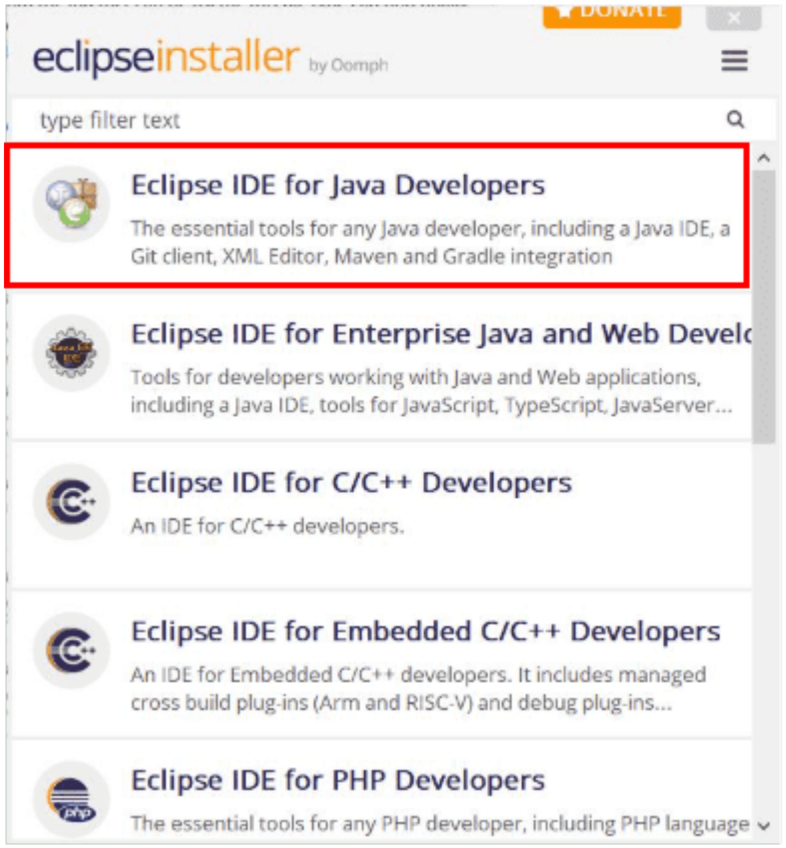
- Now go to File Explorer and click on "Downloads" after that click on the "eclipse-inst-jre-win64.exe" file for installing Eclipse IDE.



eclipse-inst-jre-win64.exe
20-Jun-21 9:05 PM
110 MB

STEP 6: Install Eclipse

- Then, click on "Eclipse IDE for Java Developers".



Eclipse IDE for Java Developers
The essential tools for any Java developer, including a Java IDE, a Git client, XML Editor, Maven and Gradle integration

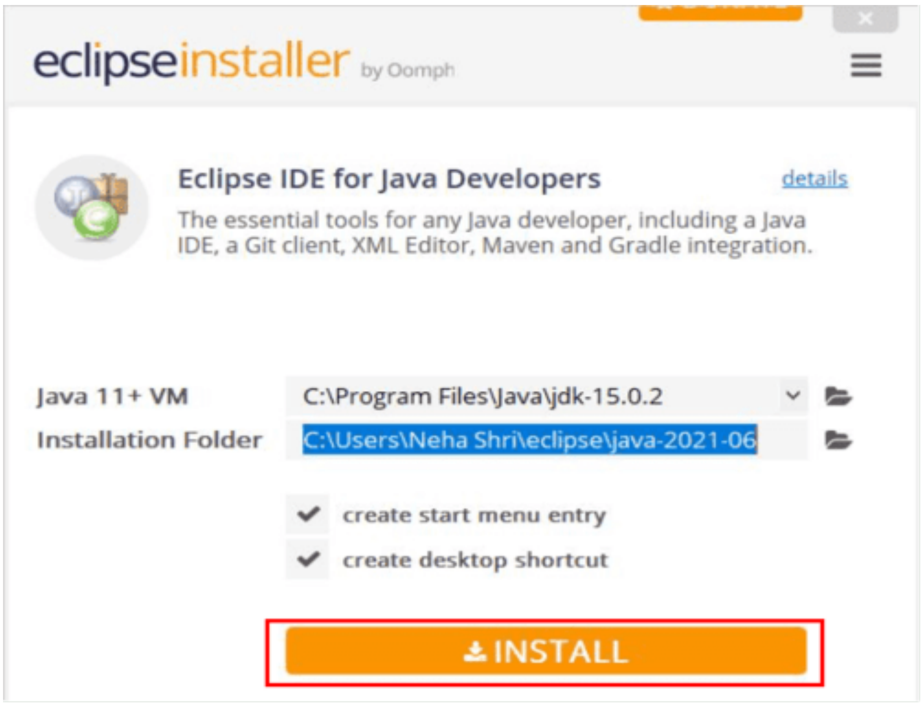
Eclipse IDE for Enterprise Java and Web Develc
Tools for developers working with Java and Web applications, including a Java IDE, tools for JavaScript, TypeScript, JavaServer...

Eclipse IDE for C/C++ Developers
An IDE for C/C++ developers.

Eclipse IDE for Embedded C/C++ Developers
An IDE for Embedded C/C++ developers. It includes managed cross build plug-ins (Arm and RISC-V) and debug plug-ins...

Eclipse IDE for PHP Developers
The essential tools for any PHP developer, including PHP language

STEP 7: Then, click on the "Install" button.


eclipseinstaller by Oomph

Eclipse IDE for Java Developers details

The essential tools for any Java developer, including a Java IDE, a Git client, XML Editor, Maven and Gradle integration.

Java 11+ VM: C:\Program Files\Java\jdk-15.0.2

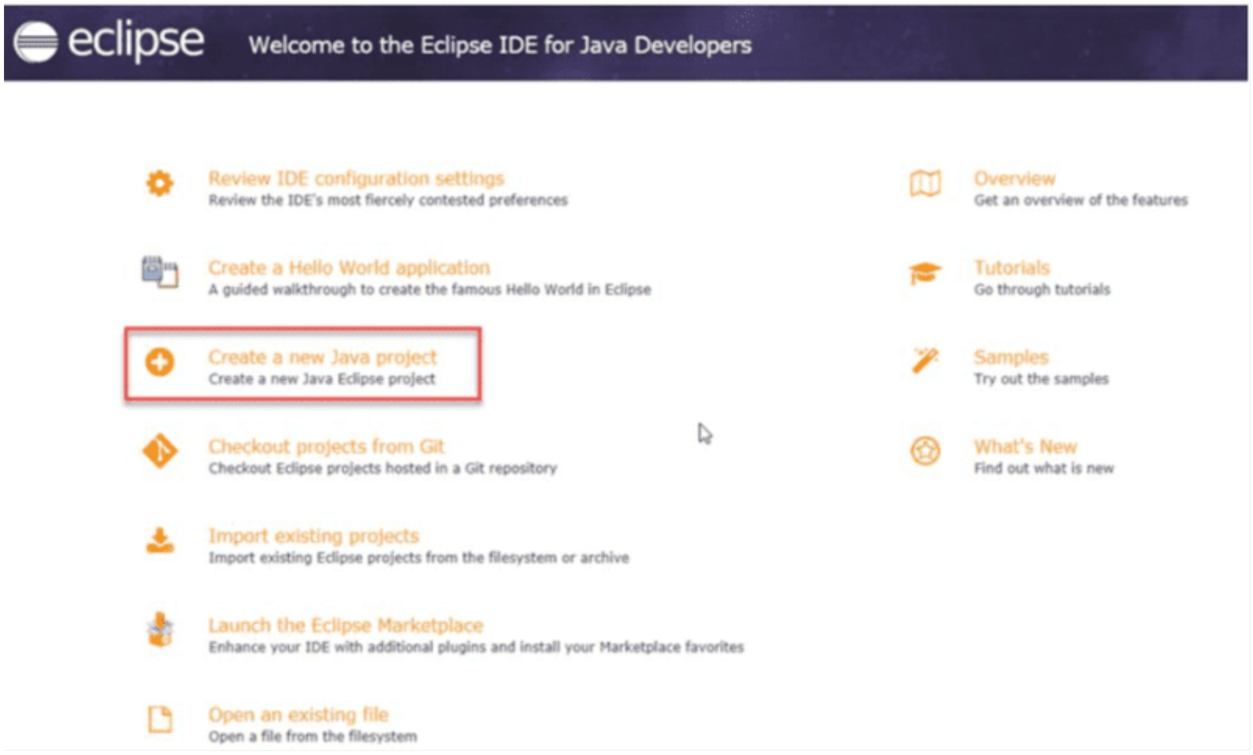
Installation Folder: C:\Users\Neha Shri\eclipse\java-2021-06

✓ create start menu entry

✓ create desktop shortcut

Step 8: Create New Project

Now click on "Create a new Java project".


eclipse Welcome to the Eclipse IDE for Java Developers

Review IDE configuration settings — Review the IDE's most fiercely contested preferences

Create a Hello World application — A guided walkthrough to create the famous Hello World in Eclipse

Create a new Java project — Create a new Java Eclipse project

Checkout projects from Git — Checkout Eclipse projects hosted in a Git repository

Import existing projects — Import existing Eclipse projects from the filesystem or archive

Launch the Eclipse Marketplace — Enhance your IDE with additional plugins and install your Marketplace favorites

Open an existing file — Open a file from the filesystem

Overview — Get an overview of the features

Tutorials — Go through tutorials

Samples — Try out the samples

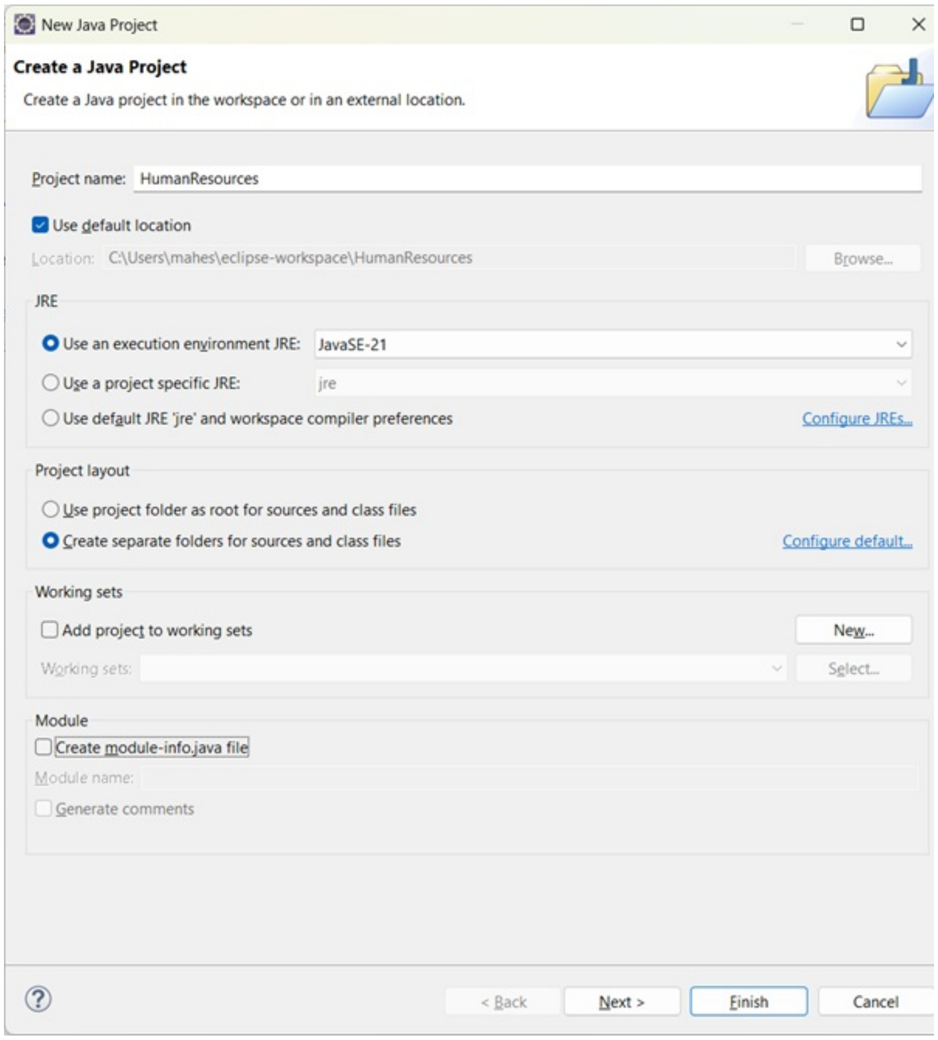
What's New — Find out what is new

STEP 9:Create a new java project

- By clicking on the File menu and choosing New → Java Project.

- By right clicking anywhere in the Project Explorer and selecting New → Java Project.
- By clicking on the New button ( ) in the Tool bar and selecting Java Project.

STEP 10: Enter the Project Name

- Select the Java Runtime Environment (JRE) or leave it at the default
- Select the Project Layout which determines whether there would be a separate folder for the source codes and class files. The recommended option is to create separate folders for sources and class files.
- 

New Java Project

Create a Java Project

Create a Java project in the workspace or in an external location.

Project name: HumanResources

[✓] Use default location

Location: C:\Users\mahes\eclipse-workspace\HumanResources Browse...

JRE

● Use an execution environment JRE: JavaSE-21

○ Use a project specific JRE: jre

○ Use default JRE 'jre' and workspace compiler preferences Configure JREs...

Project layout

○ Use project folder as root for sources and class files

● Create separate folders for sources and class files Configure default...

Working sets

☐ Add project to working sets New...

Working sets: Select...

Module

☐ Create module-info.java file

Module name:

☐ Generate comments

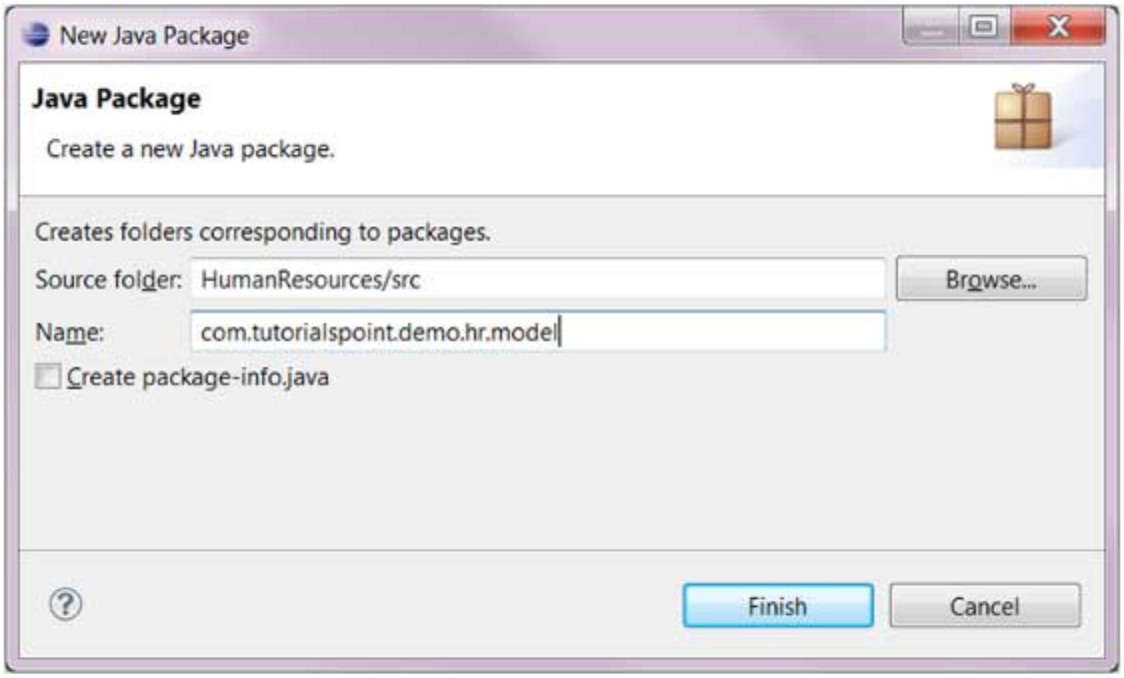
< Back Next > Finish Cancel

STEP 11: Create a new java package

- By clicking on the File menu and selecting New → Package.
- By right click in the package explorer and selecting New → Package.
- By clicking on the package icon which is in the tool bar( ).

STEP 11:

- Enter/confirm the source folder name.
- Enter the package name.
- Click on the Finish button.



Creates folders corresponding to packages.

Source folder: HumanResources/src

Name: com.tutorialspoint.demo.hr.model

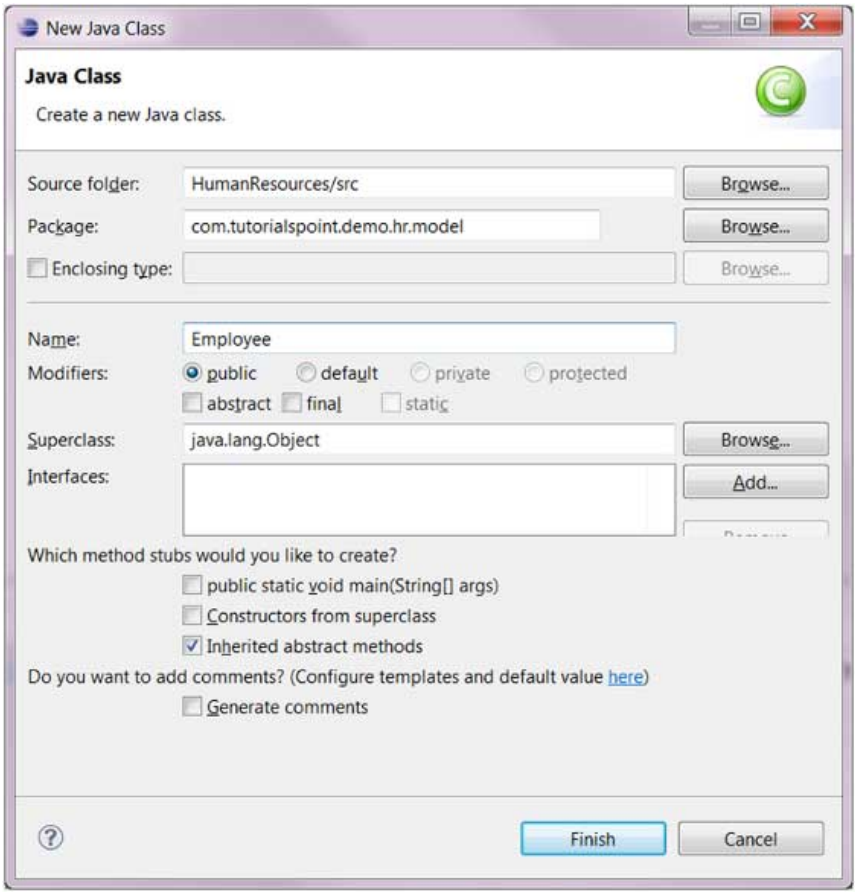
☐ Create package-info.java

STEP 12:Create a New Java class.

- By clicking on the File menu and selecting New → Class.
- By right clicking in the package explorer and selecting New → Class.
- By clicking on the class drop down button ( ) and selecting class ( ).

STEP 13:

- Ensure the source folder and package are correct.
- Enter the class name.
- Select the appropriate class modifier.
- Enter the super class name or click on the Browse button to search for an existing class.
- Click on the Add button to select the interfaces implemented by this class.
- Examine and modify the check boxes related to method stubs and comments.



New Java Class

Java Class

Create a new Java class.

Source folder: HumanResources/src

Package: com.tutorialspoint.demo.hr.model

[ ] Enclosing type:

Name: Employee

Modifiers: [✓ public] default private protected

[ ] abstract [ ] final [ ] static

Superclass: java.lang.Object

Interfaces:

Which method stubs would you like to create?

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

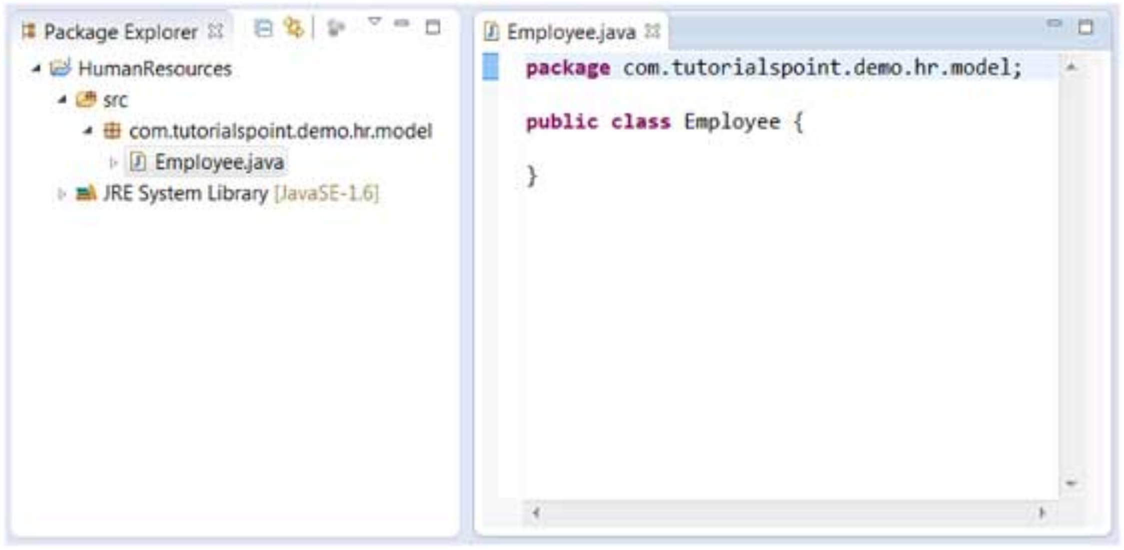
[ ] Constructors from superclass

[✓] Inherited abstract methods

Do you want to add comments? (Configure templates and default value here)

[ ] Generate comments

STEP 14: Class created successfully.



Package Explorer
HumanResources
src
com.tutorialspoint.demo.hr.model
Employee.java
JRE System Library [JavaSE-1.6]
Employee.java

```
package com.tutorialspoint.demo.hr.model;

public class Employee {

}
```

BASIC PROGRAMS:

Program 1: Hello World Program

Source Code:

class HelloWorld {

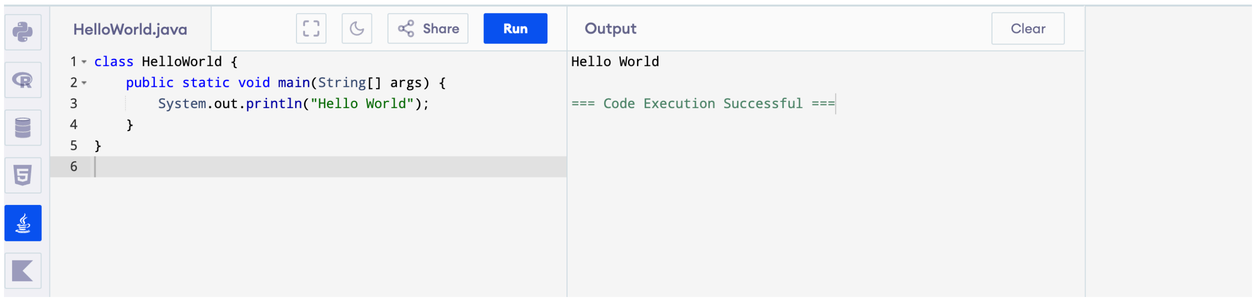
public static void main(String[] args) {

System.out.println("Hello World");

}

}

Output:



```
class HelloWorld {
    public static void main(String[] args) {
        System.out.println("Hello World");
    }
}
```

```
Hello World

=== Code Execution Successful ===
```

Program 2: Display Personal Details

Source Code:

class DisplayInfo {

public static void main(String[] args) {

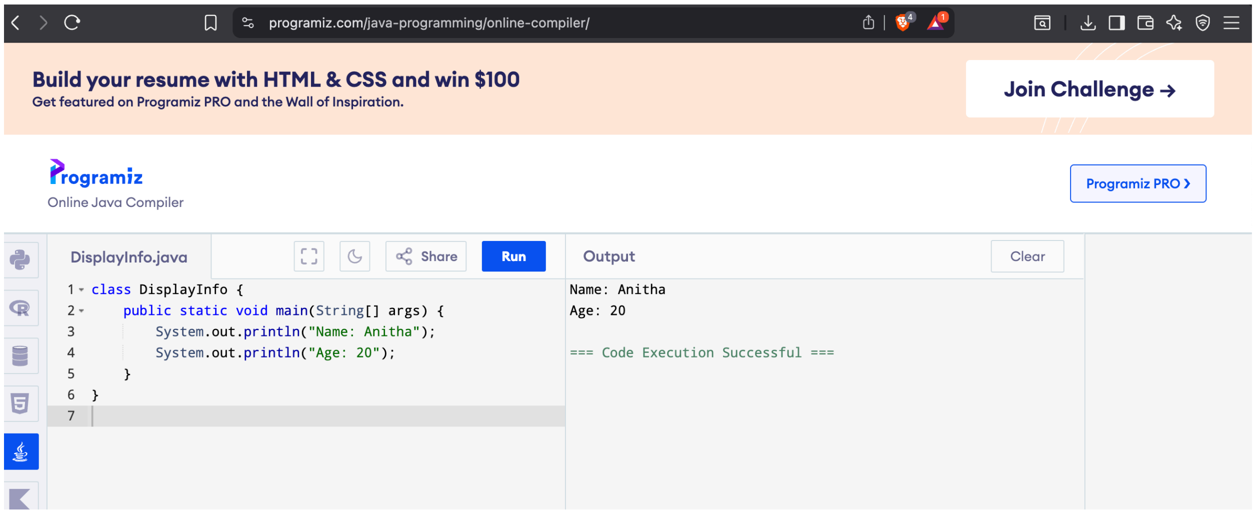
System.out.println("Name: Anitha");

System.out.println("Age: 20");

}

}

Output: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DisplayInfo.java
Share
Run
Output
Clear

```
class DisplayInfo {
    public static void main(String[] args) {
        System.out.println("Name: Anitha");
        System.out.println("Age: 20");
    }
}
```

```
Name: Anitha
Age: 20

=== Code Execution Successful ===
```

Program 3: Addition of Two Numbers

Source Code:

class AddTwoNumbers {

public static void main(String[] args) {

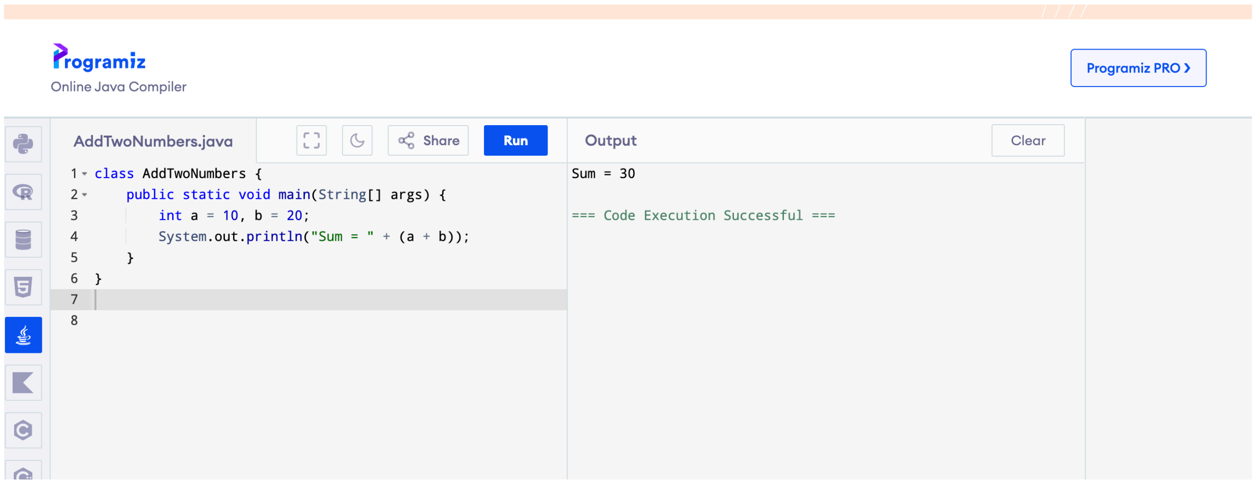
int a = 10, b = 20;

System.out.println("Sum = " + (a + b));

}

}

Output:



```java
class AddTwoNumbers {
    public static void main(String[] args) {
        int a = 10, b = 20;
        System.out.println("Sum = " + (a + b));
    }
}
```

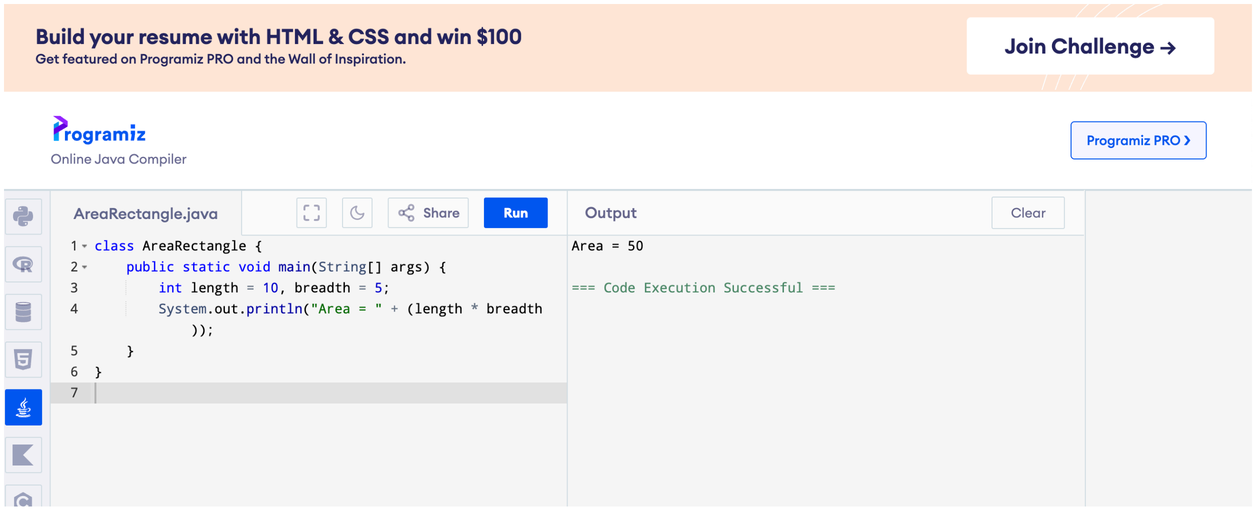
```
Sum = 30

=== Code Execution Successful ===
```

Program 4: Area of a Rectangle

Source Code:

```
class AreaRectangle {
public static void main(String[] args) {
int length = 10, breadth = 5;
System.out.println("Area = " + (length * breadth));
}
}
```

Output: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AreaRectangle.java
Share
Run
Output
Clear

```
class AreaRectangle {
    public static void main(String[] args) {
        int length = 10, breadth = 5;
        System.out.println("Area = " + (length * breadth
            ));
    }
}
```

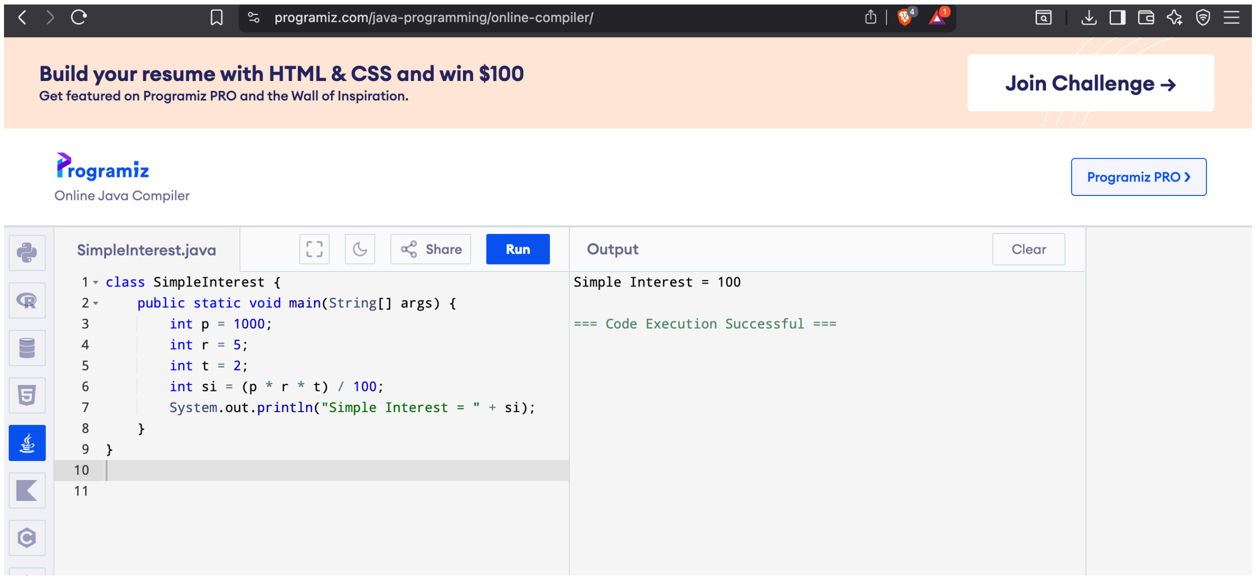
```
Area = 50

=== Code Execution Successful ===
```

Program 5: Simple Interest Calculation

Source Code:

```
class SimpleInterest {
public static void main(String[] args) {
int p = 1000;
int r = 5;
int t = 2;
int si = (p * r * t) / 100;
System.out.println("Simple Interest = " + si);
}
}
```

Output: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Online Java Compiler
Programiz PRO ›
SimpleInterest.java
Share
Run
Output
Clear

```
class SimpleInterest {
    public static void main(String[] args) {
        int p = 1000;
        int r = 5;
        int t = 2;
        int si = (p * r * t) / 100;
        System.out.println("Simple Interest = " + si);
    }
}
```

```
Simple Interest = 100

=== Code Execution Successful ===
```

POST LAB EXERCISE

1. Write a Java program to display your name and department.

Program:

```
class DisplayDetails {
    public static void main(String[] args) {
        System.out.println("Name: Anitha");
        System.out.println("Department: Computer Science");
    }
}
```

Output:

```
Name: Anitha
Department: Computer Science
```

2. Modify the program to print the output in the same line.

Program:

```
class DisplayDetailsSameLine {
    public static void main(String[] args) {
        System.out.print("Name: Anitha ");
        System.out.print("Department: Computer Science");
    }
}
```

Output:

```
Name: Anitha Department: Computer Science
```

3. What happens if main() is written without static?

Answer:

If the main() method is written without static, the program will not run.

Reason:

- The JVM calls main() without creating an object.
- A non-static method requires an object.
- Hence, JVM throws an error and execution fails.

4. Why is Java called platform independent?

Answer:

Java is called platform independent because Java programs can run on any operating system without modification.

Reason:

- Java source code is compiled into bytecode.
- Bytecode runs on JVM, which is available for different platforms (Windows, Linux, macOS).
- Hence, Java follows the principle:
  “Write Once, Run Anywhere.”

5. Write a program to find the cube of a number.

Program:

```
class CubeNumber {
    public static void main(String[] args) {
        int num = 5;
        int cube = num * num * num;
        System.out.println("Cube = " + cube);
    }
}
```

Output:

```
Cube = 125
```

Result:

Thus the Java IDE was successfully installed and a simple Java program was executed.

ASSESSMENT

Description	Max Marks	Marks Awarded
Pre Lab Exercise	**5**	
In Lab Exercise	**10**	
Post Lab Exercise	**5**	
Viva	**10**	
Total	**30**	
	Faculty Signature	