Experiment Number : 01 **Date:**

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?
   JDK (Java Development Kit) is a software package used to develop Java programs.
   Why it is required:

- To write Java programs
- To compile Java code (javac)
- To run Java programs

2. Difference between JDK, JRE, and JVM.

Term	Meaning	Purpose
JDK	Java Development Kit	Used to develop + run Java programs
JRE	Java Runtime Environment	Used to run Java programs
JVM	Java Virtual Machine	Executes bytecode

3. What is the purpose of the main() method in Java?
   main() method is the starting point of a Java program.
   Purpose:

- Program execution starts from main()
- JVM looks for main() to run the program
  Without main(), Java program will not execute.

IN LAB EXERCISE

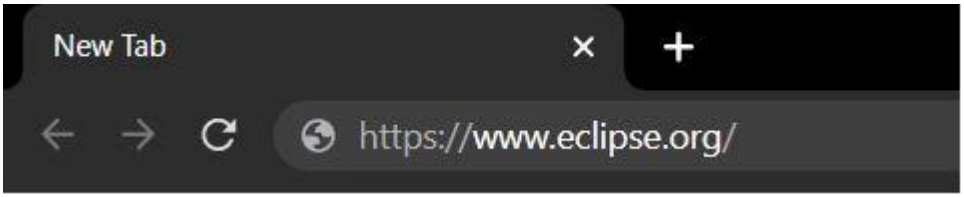
Objective:

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.

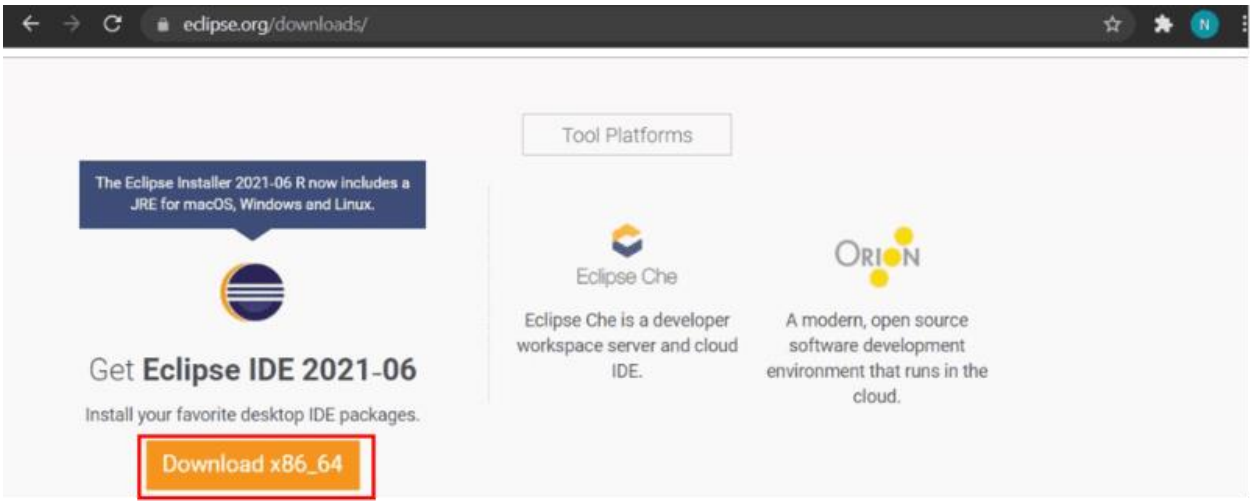


STEP 2: Download Eclipse Installer

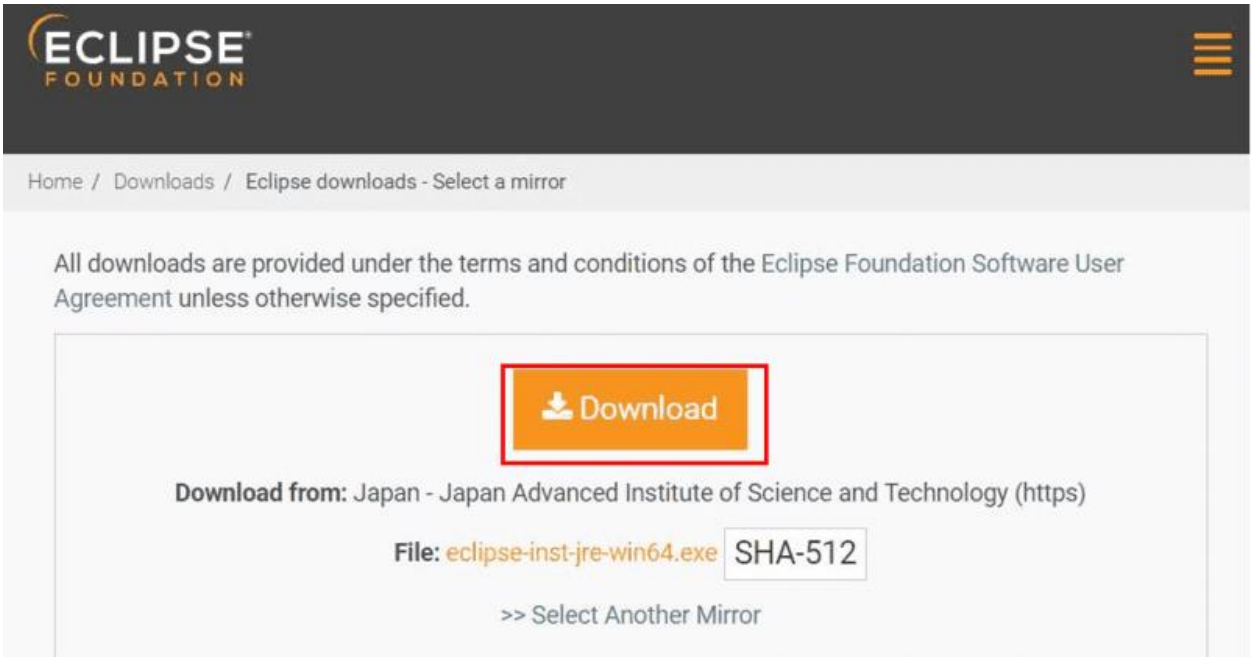
- Then, click on the "Download" button to download Eclipse IDE.

STEP 3: Download EXE

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

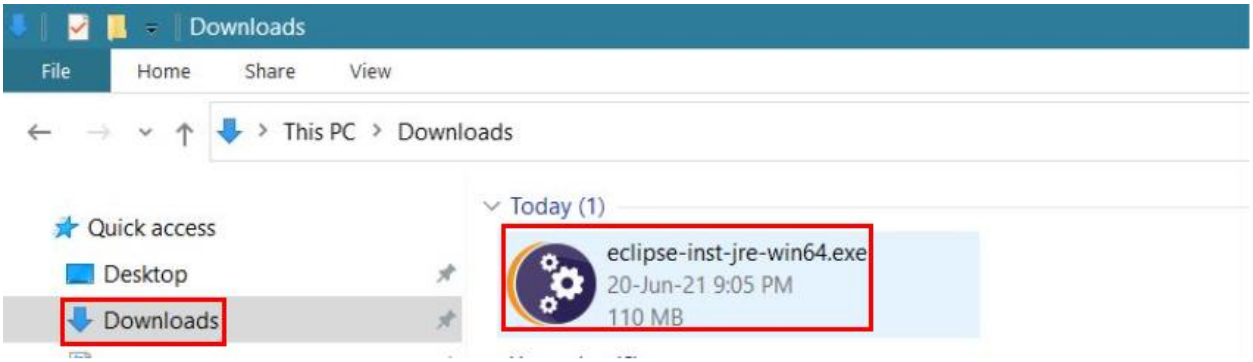


STEP 4: Then click on the "Download" button. After clicking on the download button the .exe file for the eclipse will be downloaded.



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**.**



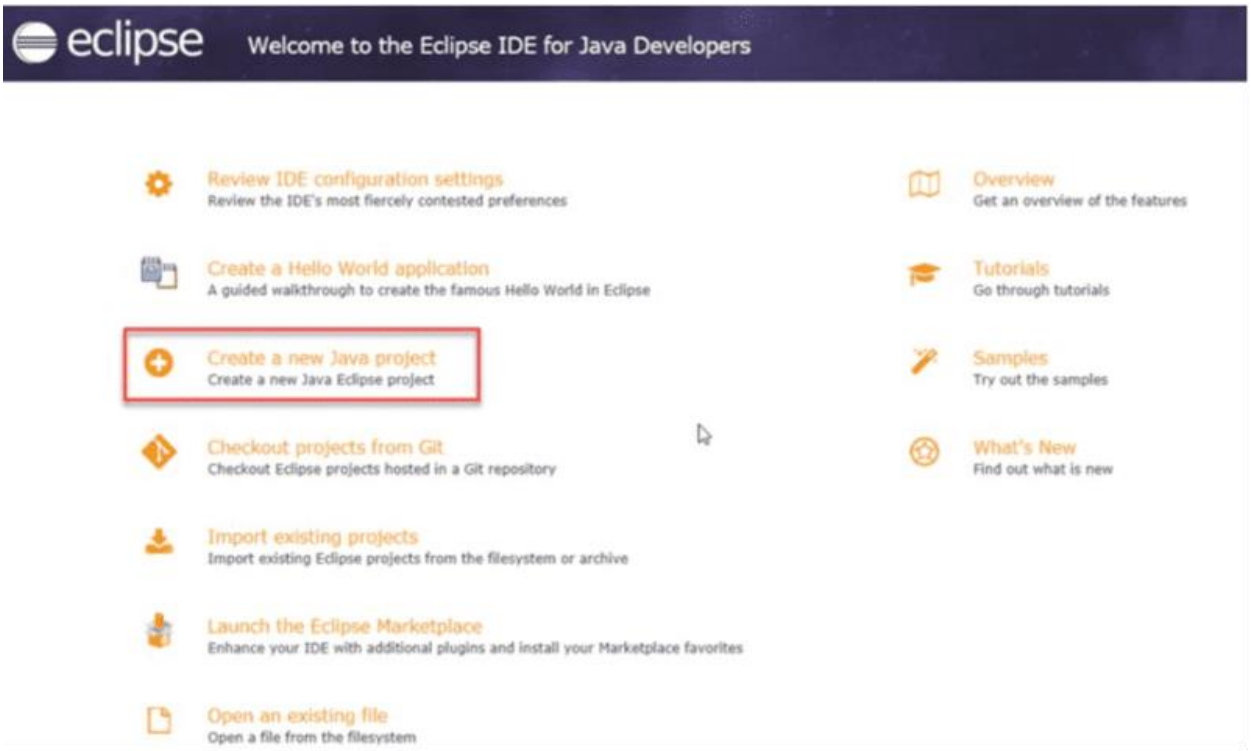
STEP 6: Install Eclipse

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

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

Step 8: Create New Project

Now click on "Create a new Java project".



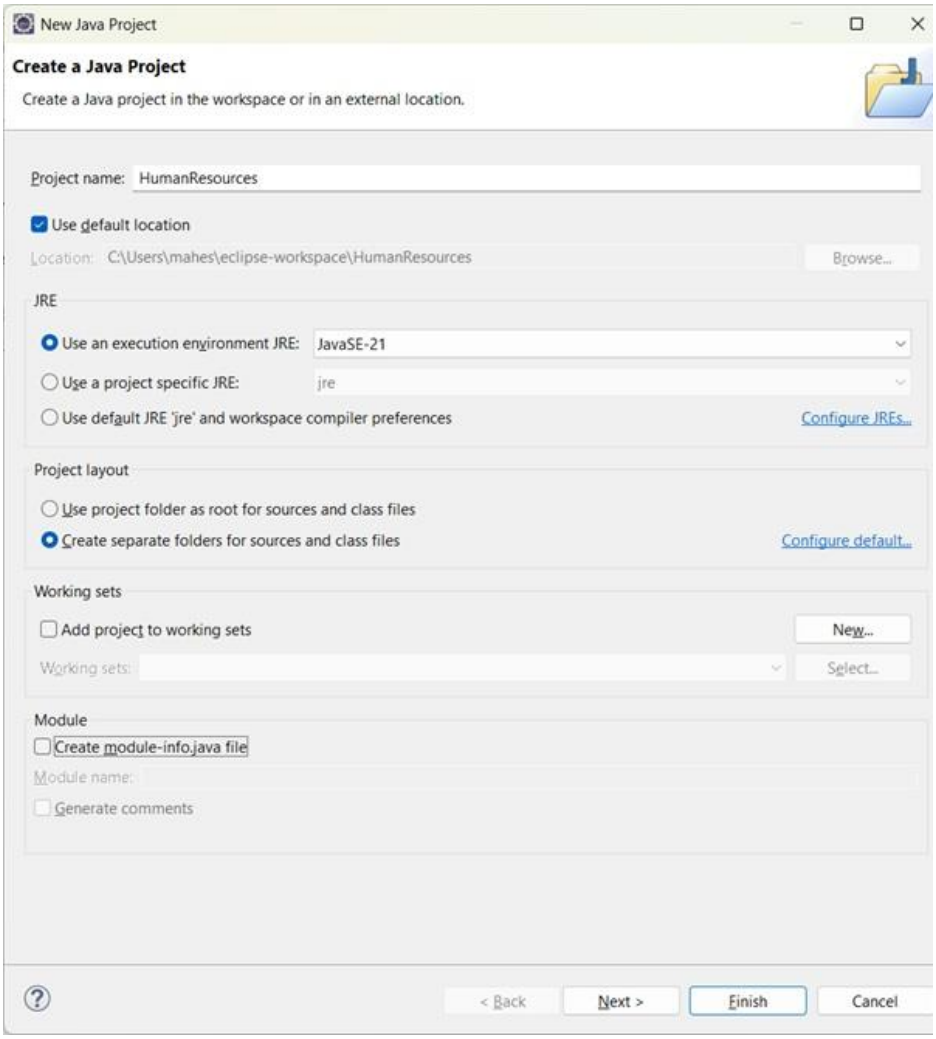
STEP 9:Create a new java project

- 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.

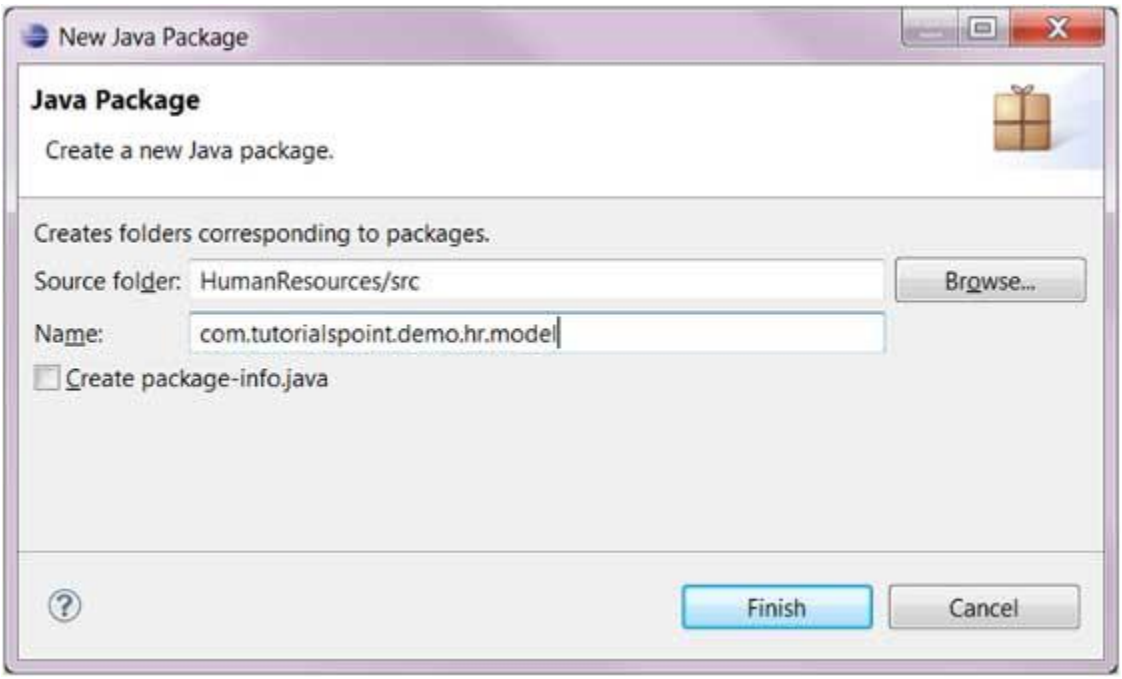


STEP 11: Create a new java package

- 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.

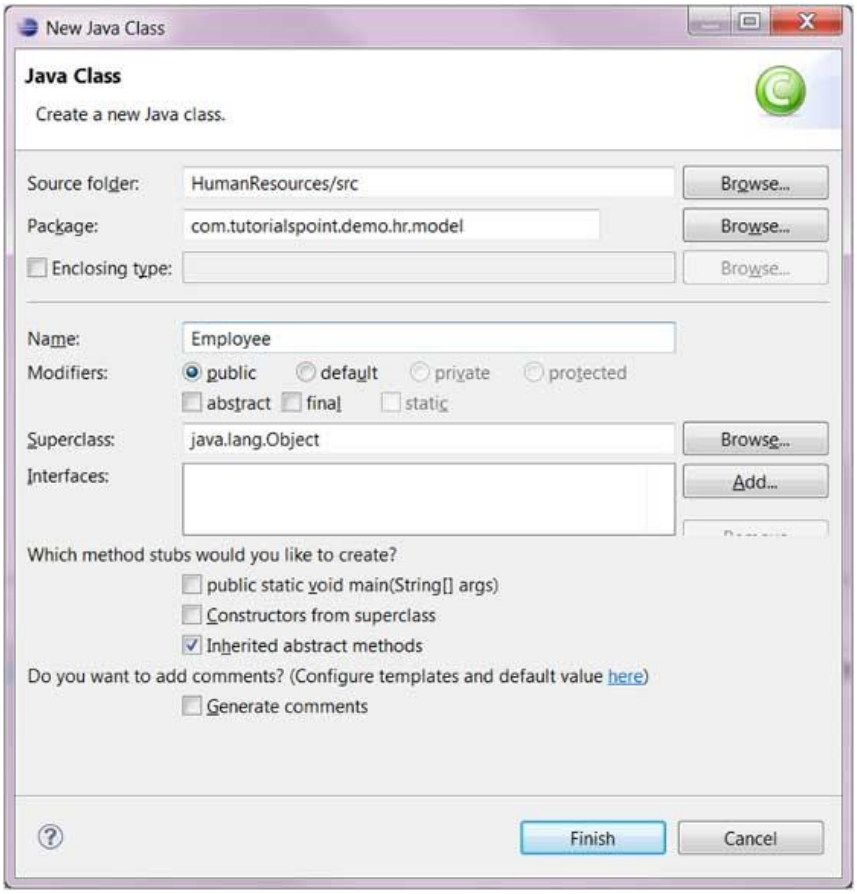


STEP 12:Create a New Java class.

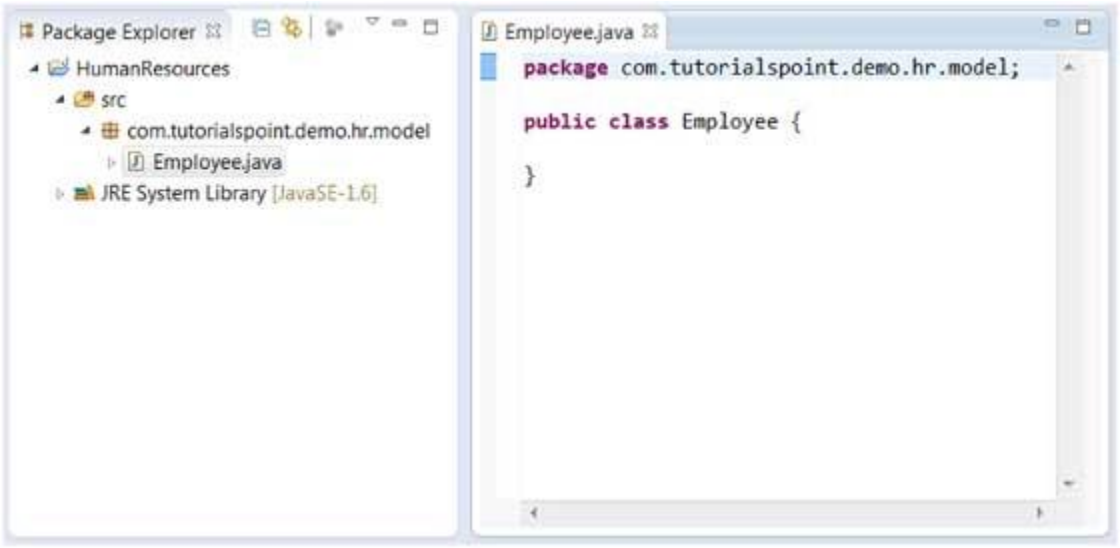
- By clicking on the File menu and selecting New → Class.
- By right clicking in the package explorer and selecting New → Class.
- By clicking on the class drop down button ( ) and selecting class ( ).

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.



STEP 14: Class created successfully.



BASIC PROGRAMS:

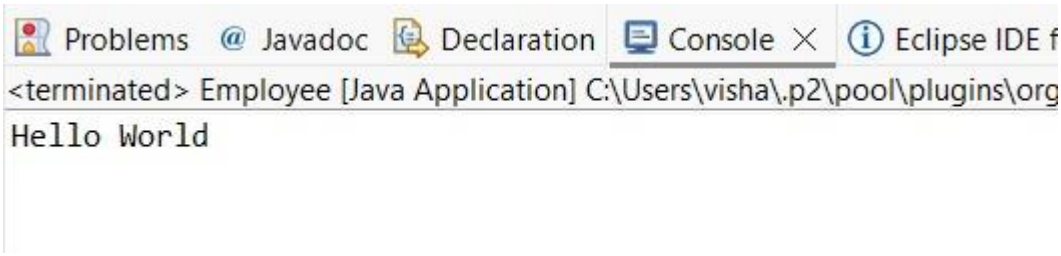
Program 1: Hello World Program

Source Code:

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

Output:

Hello World



Program 2: Display Personal Details

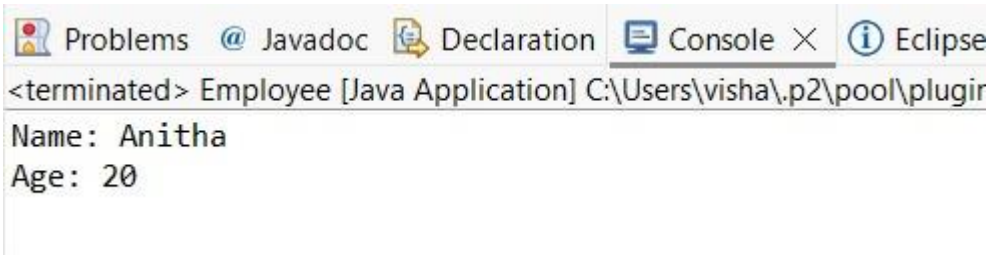
Source Code:

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

Output:

Name: Anitha

Age: 20



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:

Sum = 30

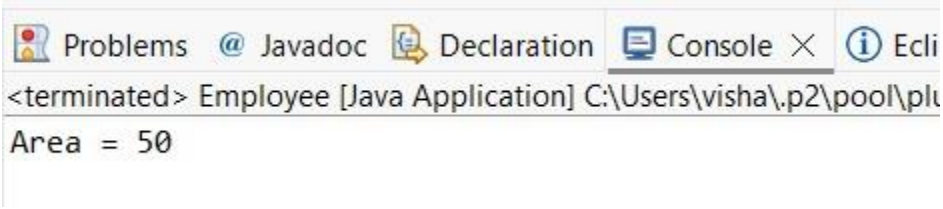
Program 4: Area of a Rectangle

Source Code:

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

Output:

Area = 50



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:

Simple Interest = 100

POST LAB EXERCISE

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

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

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

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

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

   Program will not run

   Reason (simple):

- JVM calls main() without creating an object
- Without static, JVM cannot access main()

4. Why is Java called platform independent?
   - Java code is converted into bytecode
   - Bytecode runs on JVM
   - JVM exists for Windows, Linux, Mac

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

```
class Cube {
  public static void main(String[] args) {
    int num = 3;
    int cube = num * num * num;
    System.out.println("Cube = " + cube);
  }
}
```

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	