

**Program 1:** Write a Java program to print "Hello, Java!" on the console.

**Definition:** This program helps students understand **basic Java program structure, syntax, and using System.out.println()**.

**Program 2:** Write a program to declare variables of all primitive data types in Java, assign values, and print them.

**Definition:** Students learn **data types, literals, variable declaration, and printing values**.

**Program 3:** Write a program that takes two numbers from the user and performs **addition, subtraction, multiplication, division, and modulus**, displaying the results.

**Definition:** Introduces **Scanner class, arithmetic operators, input/output, and type casting**.

**Program 4:** Write a program to swap two numbers without using a third variable.

**Definition:** Helps students practice **operators, assignment, and expressions**.

**Program 5:** Write a program that takes an integer input from the user and determines whether it is **even or odd**.

**Definition:** Demonstrates **conditional statements, modulo operator, and branching**.

**Program 6:** Write a Java program to find the largest of three numbers using **nested if-else statements**.

**Definition:** Teaches **decision-making, logical operators, and control flow**.

**Program 7:** Write a program that calculates the sum of the first n natural numbers using a **for loop**.

**Definition:** Introduces **loops, iteration, accumulation, and basic arithmetic**.

**Program 8:** Write a program to display the multiplication table of a given number using a **while loop**.

**Definition:** Students practice **loops, input/output, and controlling iteration**.

**Program 9:** Write a program to calculate the factorial of a number using a **recursive method**.

**Definition:** Teaches **methods/functions, recursion, and return statements**.

**Program 10:** Write a program to calculate **simple interest** using the formula  $SI = (P * R * T) / 100$ .

Take principal (P), rate (R), and time (T) as inputs from the user.

**Definition:** Students learn **input handling, arithmetic expressions, and printing formatted output**.

**Program 11: Question:** Write a Java program to create a class Student with fields name and rollNo. Include methods to display the student details.

**Definition:** Students learn **how to define classes, create objects, use instance variables, and write methods to access and display data**.

**Program 12:** Write a Java program to demonstrate **method overloading** by creating multiple methods with the same name but different parameters to perform addition of integers and doubles.

**Definition:** Students learn **compile-time polymorphism, method definitions, and parameter handling in Java**.

**Program 13:** Write a Java program to demonstrate **method overriding**. Create a superclass with a method, and a subclass that overrides the method. Call the method using a subclass object.

**Definition:** Students learn **run-time polymorphism, inheritance, and overriding methods**.

**Program 14:** Write a Java program to pass an object of a class as a parameter to a method. The method should display the object's data.

**Definition:** Students learn **how objects are passed to methods, reference handling, and accessing object data inside methods.**

**Program 15:** Write a Java program to calculate the factorial of a number using **recursion.**

**Definition:** Students learn **writing recursive methods, using base cases, and understanding the call stack in Java.**

**Program 16:** Write a Java program to print the first n Fibonacci numbers using recursion.

**Definition:** Students learn **how to write recursive methods, implement base and recursive cases, and understand the flow of recursive calls in generating a Fibonacci sequence.**