CodInClub
Powered By BridgeLabz

Best Programming Practice

1. All values as variables including Fixed, User Inputs, and Results
2. Avoid Hard Coding of variables wherever possible
3. Proper naming conventions for all variables

```
String name = "Eric";
double height = input.nextDouble();
double totalDistance = distanceFromToVia + distanceViaToFinalCity;
```

4. Proper Program Name and Class Name
5. Follow proper indentation

1. **Sample Program 1 -** Write a program to display Sam with Roll Number 1, Percent Marks 99.99, and the result 'P' indicates Pass('P') or Fail ('F').

   IMP => Follow Good Programming Practice demonstrated below in all Practice Programs

```
// Creating Class with name DisplayResult indicating the purpose is to display
// result. Notice the class name is a Noun.
class DisplayResult {
    public static void main(String[] args) {

        // Create a string variable name and assign value Sam
        String name = "Sam";

        // Create a int variable rollNumber and assign value 1
        int rollNumber = 1;

        // Create a double variable percentMarks and assign value 99.99
        double percentMarks = 99.99;

        // Create a char variable result and assign value 'P' for pass
        char result = 'P';

        // Display the result
        System.out.println("Displaying Result:\n" +name+ " with Roll Number " +
                           rollNumber+ " has Scored " +percentMarks+
                           "% Marks and Result is " +result);
    }
}
```

2. **Sample Program 2 -** Eric Travels from Chennai to Bangalore via Vellore. From Chennai to Vellore distance is 156.6 km and the time taken is 4 Hours 4 Mins and from Vellore to Bangalore is 211.8 km and will take 4 Hours 25 Mins. Compute the total distance and total time from Chennai to Bangalore

```java
// Create TravelComputation Class to compute the Distance and Travel Time
class TravelComputation {

   public static void main(String[] args) {

      // Create a variable name to indicate the person traveling
      String name = "Eric";

      // Create a variable fromCity, viaCity and toCity to indicate the city
      // from city, via city and to city the person is travelling
      String fromCity = "Chennai", viaCity = "Velore", toCity = "Bangalore";

      // Create a variable distanceFromToVia to indicate the distance
      // between the fromCity to viaCity
      double distanceFromToVia = 156.6;

      // Create a variable timeFromToVia to indicate the time taken to
      // travel from fromCity to viaCity in minutes
      int timeFromToVia = 4 * 60 + 4;

      // Create a variable distanceViaToFinalCity to indicate the distance
      // between the viaCity to toCity
      double distanceViaToFinalCity = 211.8;

      // Create a variable timeViaToFinalCity to indicate the time taken to
      // travel from viaCity to toCity in minutes
      int timeViaToFinalCity = 4 * 60 + 25;

      // Create a variable totalDistance to indicate the total distance
      // between the fromCity to toCity
      double totalDistance = distanceFromToVia + distanceViaToFinalCity;

      // Create a variable totalTime to indicate the total time taken to
      // travel from fromCity to toCity in minutes
      int totalTime = timeFromToVia + timeViaToFinalCity;


      // Print the travel details
      System.out.println("The Total Distance travelled by " + name + " from " +
                         fromCity + " to " + toCity + " via " + viaCity +
                         " is " + totalDistance + " km and " +
                         "the Total Time taken is " + totalTime + " minutes");
   }
```

Level 3 Practice Programs

1. Write a TemperaturConversion program, given the temperature in Celsius as input outputs the temperature in Fahrenheit

   Hint =>

   a. Create a ***celsius*** variable and take the temperature as user input
   b. Use the Formulae Celsius to Fahrenheit: (°C × 9/5) + 32 = °F and assign to ***farenheitResult*** and print the result

   I/P => celcius

   O/P => The ____ celsius is _____ fahrenheit

```java
import java.util.*;

public class CelsiusToFahrenheit {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);

        System.out.print("Enter temperature in Celsius: ");
        double celsius = scanner.nextDouble();

        double fahrenheit = (celsius * 9 / 5) + 32;
        System.out.println("The " + celsius + " Celsius is " + fahrenheit + " Fahrenheit.");
    }
}
```

```
PS E:\JAVA PROGRAMS\STEP\lab1\level3> javac CelsiusToFahrenheit.java
PS E:\JAVA PROGRAMS\STEP\lab1\level3> java CelsiusToFahrenheit
Enter temperature in Celsius: 37
The 37.0 Celsius is 98.6 Fahrenheit.
PS E:\JAVA PROGRAMS\STEP\lab1\level3>
```

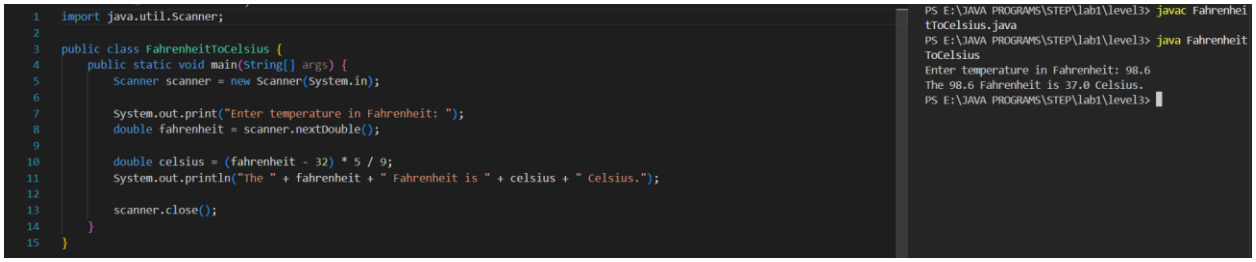
2. Write a TemperaturConversion program, given the temperature in Fahrenheit as input outputs the temperature in Celsius

   Hint =>

   c. Create a ***fahrenheit*** variable and take the user's input
   d. User the formulae to convert Fahrenheit to Celsius: (°F − 32) x 5/9 = °C and assign the result to ***celsiusResult*** and print the result

   I/P => fahrenheit

   O/P => The ____ fahrenheit is _____ celsius



```java
import java.util.Scanner;

public class FahrenheitToCelsius {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);

        System.out.print("Enter temperature in Fahrenheit: ");
        double fahrenheit = scanner.nextDouble();

        double celsius = (fahrenheit - 32) * 5 / 9;
        System.out.println("The " + fahrenheit + " Fahrenheit is " + celsius + " Celsius.");

        scanner.close();
    }
}
```

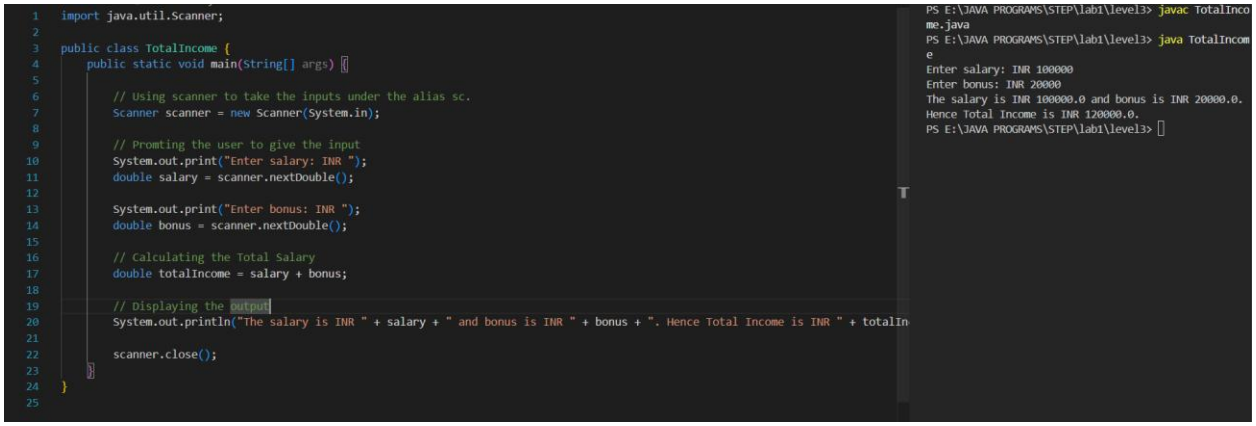
```
PS E:\JAVA PROGRAMS\STEP\lab1\level3> javac FahrenheitToCelsius.java
PS E:\JAVA PROGRAMS\STEP\lab1\level3> java FahrenheitToCelsius
Enter temperature in Fahrenheit: 98.6
The 98.6 Fahrenheit is 37.0 Celsius.
PS E:\JAVA PROGRAMS\STEP\lab1\level3>
```

3. Create a program to find the total income of a person by taking salary and bonus from user

   Hint =>

   a. Create a variable named salary and take user input.
   b. Create another variable bonus and take user input.
   c. Compute income by adding salary and bonus and print the result

   I/P => salary, bonus
   O/P => The salary is INR ___ and bonus is INR ___. Hence Total Income is INR ___



```java
import java.util.Scanner;

public class TotalIncome {
    public static void main(String[] args) {

        // Using scanner to take the inputs under the alias sc.
        Scanner scanner = new Scanner(System.in);

        // Promting the user to give the input
        System.out.print("Enter salary: INR ");
        double salary = scanner.nextDouble();

        System.out.print("Enter bonus: INR ");
        double bonus = scanner.nextDouble();

        // Calculating the Total Salary
        double totalIncome = salary + bonus;

        // Displaying the output
        System.out.println("The salary is INR " + salary + " and bonus is INR " + bonus + ". Hence Total Income is INR " + totalIn

        scanner.close();
    }
}
```

```
PS E:\JAVA PROGRAMS\STEP\lab1\level3> javac TotalIncome.java
PS E:\JAVA PROGRAMS\STEP\lab1\level3> java TotalIncome
Enter salary: INR 100000
Enter bonus: INR 20000
The salary is INR 100000.0 and bonus is INR 20000.0. Hence Total Income is INR 120000.0.
PS E:\JAVA PROGRAMS\STEP\lab1\level3>
```

4. Create a program to swap two numbers

   Hint =>

   a. Create a variable number1 and take user input.
   b. Create a variable number2 and take user input.
   c. Swap number1 and number2 and print the swapped output

   I/P => number1, number2
   O/P => The swapped numbers are ___ and ___

```java
import java.util.Scanner;

public class SwapNumbers {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);

        System.out.print("Enter first number: ");
        int number1 = scanner.nextInt();

        System.out.print("Enter second number: ");
        int number2 = scanner.nextInt();

        // Swapping numbers
        int temp = number1;
        number1 = number2;
        number2 = temp;

        System.out.println("The swapped numbers are " + number1 + " and " + number2);

        scanner.close();
    }
}
```

```
PS E:\JAVA PROGRAMS\STEP\lab1\level3> javac SwapNumbers.java
PS E:\JAVA PROGRAMS\STEP\lab1\level3> java SwapNumbers
Enter first number: 4
Enter second number: 5
The swapped numbers are 5 and 4
PS E:\JAVA PROGRAMS\STEP\lab1\level3>
```

5. Rewrite the Sample Program 2 with user inputs

   Hint =>

   a. Create variables and take user inputs for name, fromCity, viaCity, toCity
   b. Create variables and take user inputs for distances fromToVia and viaToFinalCity in Miles
   c. Create Variables and take time taken
   d. Finally, print the result and try to understand operator precedence.

   I/P => fee, discountPrecent
   O/P => The results of Int Operations are ___, ___, and ___

```java
import java.util.*;

public class TravelDetails {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);

        // Taking user inputs
        System.out.print("Enter your name: ");
        String name = sc.next();

        System.out.print("Enter starting city: ");
        String fromCity = sc.next();

        System.out.print("Enter via city: ");
        String viaCity = sc.next();

        System.out.print("Enter destination city: ");
        String toCity = sc.next();

        System.out.print("Enter distance from " + fromCity + " to " + viaCity + " (miles): ");
        double fromToVia = sc.nextDouble();

        System.out.print("Enter distance from " + viaCity + " to " + toCity + " (miles): ");
        double viaToFinalCity = sc.nextDouble();

        System.out.print("Enter time taken from " + fromCity + " to " + viaCity + " (minutes): ");
        double timeFromToVia = sc.nextDouble();

        System.out.print("Enter time taken from " + viaCity + " to " + toCity + " (minutes): ");
        double timeViaToFinalCity = sc.nextDouble();

        double totalDistance = (fromToVia + viaToFinalCity) * 1.60; // Converting miles to km
        double totalTime = timeFromToVia + timeViaToFinalCity; // Calculating the total time taken

        System.out.println("The Total Distance travelled by " + name + " from " + fromCity + " to " + toCity + " via " +
        viaCity + " is " + totalDistance + " km and the Total Time taken is " + totalTime + " minutes.");

        sc.close();
    }
}
```

```
PS E:\JAVA PROGRAMS\STEP\lab1\level3> javac TravelDetails.java
PS E:\JAVA PROGRAMS\STEP\lab1\level3> java TravelDetails
Enter your name: Aryan
Enter starting city: Chennai
Enter via city: Delhi
Enter destination city: Varanasi
Enter distance from Chennai to Delhi (miles): 1200
Enter distance from Delhi to Varanasi (miles): 600
Enter time taken from Chennai to Delhi (minutes): 180
Enter time taken from Delhi to Varanasi (minutes): 90
The Total Distance travelled by Aryan from Chennai to Varanasi via Delhi is 2896.812 km and the Total Time taken is 270.0 minutes.
PS E:\JAVA PROGRAMS\STEP\lab1\level3>
```

6. An athlete runs in a triangular park with sides provided as input by the user in meters. If the athlete wants to complete a 5 km run, then how many rounds must the athlete complete

   Hint => The perimeter of a triangle is the addition of all sides and rounds is distance/perimeter

   I/P => side1, side2, side3
   O/P => The total number of rounds the athlete will run is ___ to complete 5 km

```java
import java.util.*;

public class AtheleteRunning {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);

        // Taking Inputs from the user
        System.out.print("Enter first side of triangle (m): ");
        double side1 = sc.nextDouble();

        System.out.print("Enter second side of triangle (m): ");
        double side2 = sc.nextDouble();

        System.out.print("Enter third side of triangle (m): ");
        double side3 = sc.nextDouble();

        double perimeter = side1 + side2 + side3; // Calculating the perimeter of the triangle
        int rounds = (int) Math.ceil(5000 / perimeter);  // 5 km = 5000 meters and also doing the type conversion
        // Math.ceil is used to round off the outcome

        System.out.println("The total number of rounds the athlete will run is " + rounds + " to complete 5 km.");
    }
}
```

```
PS E:\JAVA PROGRAMS\STEP\lab1\level3> javac AtheleteRunning.java
PS E:\JAVA PROGRAMS\STEP\lab1\level3> java AtheleteRunning
Enter first side of triangle (m): 500
Enter second side of triangle (m): 500
Enter third side of triangle (m): 500
The total number of rounds the athlete will run is 4 to complete 5 km.
PS E:\JAVA PROGRAMS\STEP\lab1\level3>
```

7. Create a program to divide N number of chocolates among M children.

   Hint =>

   a. Get an integer value from user for the numberOfchocolates and numberOfChildren.
   b. Find the number of chocolates each child gets and number of remaining chocolates
   c. Display the results

   I/P => numberOfchocolates, numberOfChildren
   O/P => The number of chocolates each child gets is ___ and the number of remaining chocolates are ___

```java
import java.util.*;

public class ChocolateDistribution {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);

        // Taking Inputs
        System.out.print("Enter number of chocolates: ");
        int numberOfChocolates = scanner.nextInt();

        System.out.print("Enter number of children: ");
        int numberOfChildren = scanner.nextInt();

        int chocolatesPerChild = numberOfChocolates / numberOfChildren; // Calculating for choclates per child
        int remainingChocolates = numberOfChocolates % numberOfChildren; // Calculating for remaining chocolates

        // Displaying the output
        System.out.println("The number of chocolates each child gets is " + chocolatesPerChild + " and the number of remaining
        chocolates are " + remainingChocolates + ".");
    }
}
```

```
PS E:\JAVA PROGRAMS\STEP\lab1\level3> javac ChocolateDistribution.java
PS E:\JAVA PROGRAMS\STEP\lab1\level3> java ChocolateDistribution
Enter number of chocolates: 16
Enter number of children: 4
The number of chocolates each child gets is 4 and the number of remaining chocolates are 0.
PS E:\JAVA PROGRAMS\STEP\lab1\level3>
```

8. Write a program to input the Principal, Rate, and Time values and calculate Simple Interest.

   Hint => Simple Interest = Principal * Rate * Time / 100

   I/P => principal, rate, time
   O/P => The Simple Interest is ___ for Principal ___, Rate of Interest ___ and Time ___

```java
import java.util.Scanner;

public class SimpleInterest {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);

        // Taking the inputs
        System.out.print("Enter Principal amount: ");
        double principal = sc.nextDouble();

        System.out.print("Enter Rate of Interest: ");
        double rate = sc.nextDouble();

        System.out.print("Enter Time (years): ");
        double time = sc.nextDouble();

        // Calculating the SI
        double simpleInterest = (principal * rate * time) / 100;

        // Displaying the ouput
        System.out.println("The Simple Interest is " + simpleInterest + " for Principal " + principal + ", Rate of Interest " + ra

        sc.close();
    }
}
```

```
PS E:\JAVA PROGRAMS\STEP\lab1\level3> javac SimpleInterest.java
PS E:\JAVA PROGRAMS\STEP\lab1\level3> java SimpleInterest
Enter Principal amount: 500000
Enter Rate of Interest: 10
Enter Time (years): 2
The Simple Interest is 100000.0 for Principal 500000.0, Rate of Interest 10.0 and Time 2.0.
PS E:\JAVA PROGRAMS\STEP\lab1\level3>
```

9. Create a program to find the maximum number of handshakes among N number of students.

   Hint =>

   a. Get integer input for numberOfStudents variable.
   b. Use the combination = (n * (n - 1)) / 2 formula to calculate the maximum number of possible handshakes.
   c. Display the number of possible handshakes.

```java
import java.util.Scanner;

public class HandShakeCalculator {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);

        System.out.print("Enter number of students: ");
        int numberOfStudents = sc.nextInt();

        int maxHandshakes = (numberOfStudents * (numberOfStudents - 1)) / 2;
        System.out.println("The maximum number of possible handshakes is " + maxHandshakes + ".");

        sc.close();
    }
}
```

```
PS E:\JAVA PROGRAMS\STEP\lab1\level3> javac HandShakeCalculator.java
PS E:\JAVA PROGRAMS\STEP\lab1\level3> java HandShakeCalculator
Enter number of students: 72
The maximum number of possible handshakes is 2556.
PS E:\JAVA PROGRAMS\STEP\lab1\level3>
```

10. Create a program to convert weight in pounds to kilograms.

    Hint => 1 pound = 2.2 kg

    I/P => weight
    O/P => The weight of the person in pound is ___ and in kg is ___

```java
import java.util.Scanner;

public class WeightConversion {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);

        System.out.print("Enter weight in pounds: ");
        double weightInPounds = sc.nextDouble();

        double weightInKg = weightInPounds / 2.2;
        System.out.println("The weight of the person in pounds is " + weightInPounds + " and in kg is " + weightInKg + ".");

        sc.close();
    }
}

```

```
PS E:\JAVA PROGRAMS\STEP\lab1\level3> javac WeightConversion.java
PS E:\JAVA PROGRAMS\STEP\lab1\level3> java WeightConversion
Enter weight in pounds: 120
The weight of the person in pounds is 120.0 and in kg is 54.54545454545454.
PS E:\JAVA PROGRAMS\STEP\lab1\level3>
```