CodInClub

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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

```java
// 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

```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 2 Practice Programs

1. Write a program to take 2 numbers and print their quotient and reminder

   Hint => Use division operator (/) for quotient and moduli operator (%) for reminder

   I/P => number1, number2

   O/P => The Quotient is ___ and Reminder is ___ of two number ___ and ___

   Code:

```
import java.util.Scanner;

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

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

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

        int quotient = number1 / number2;
        int remainder = number1 % number2;

        System.out.println("The Quotient is " + quotient + " and Remainder
is " + remainder + "                of two numbers " + number1 + " and " +
number2);

        scanner.close();
    }
}
```

   Output:

   Enter the first number: 10

   Enter the second number: 3

   The Quotient is 3 and Remainder is 1 of two numbers 10 and 3

2. Write an ***IntOperation*** program by taking a, b, and c as input values and print the following integer operations a + b *c, a * b + c, c + a / b, and a % b + c. Please also understand the precedence of the operators.

   Hint =>

   a. Create variables a, b, c of int data type.
   b. Take user input for a, b, and c.
   c. Compute 3 integer operations and assign result to a variable
   d. Finally print the result and try to understand operator precedence.

   I/P => fee, discountPrecent

   O/P => The results of Int Operations are —-, —, and —-

   Code:

```
import java.util.Scanner;

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

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

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

        System.out.print("Enter the third number (c): ");
        int c = scanner.nextInt();

        int result1 = a + b * c;
        int result2 = a * b + c;
        int result3 = c + a / b;
        int result4 = a % b + c;

        System.out.println("The results of Int Operations are " + result1 +
", " + result2 + ", " +    result3 + " and " + result4);

        scanner.close();
    }
}
```

   Output:

   Enter the first number (a): 5

Enter the second number (b): 3

Enter the third number (c): 2

The results of Int Operations are 11, 17, 2 and 4

3. Similarly, write the ***DoubleOpt*** program by taking double values and doing the same operations.

Code:

```
import java.util.Scanner;

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

        System.out.print("Enter the first number (a): ");
        double a = scanner.nextDouble();

        System.out.print("Enter the second number (b): ");
        double b = scanner.nextDouble();

        System.out.print("Enter the third number (c): ");
        double c = scanner.nextDouble();

        double result1 = a + b * c;
        double result2 = a * b + c;
        double result3 = c + a / b;
        double result4 = a % b + c;

        System.out.println("The results of Double Operations are " +
result1 + ", " + result2 + ", " + result3 + " and " + result4);

        scanner.close();
    }
}
```

Output:

Enter the first number (a): 5.5

Enter the second number (b): 3.2

Enter the third number (c): 2.1

The results of Double Operations are 11.22, 19.71, 3.821875 and 2.1

4. 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

   Code:

```
import java.util.Scanner;

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

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

        double fahrenheit = (celsius * 9/5) + 32;

        System.out.println("The " + celsius + " Celsius is " + fahrenheit +
" Fahrenheit.");

        scanner.close();
    }
}
```

   Output:

   Enter the temperature in Celsius: 25

   The 25.0 Celsius is 77.0 Fahrenheit.

5. 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

   Code:

```
import java.util.Scanner;

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

        // Taking user input for Fahrenheit temperature
        System.out.print("Enter temperature in Fahrenheit: ");
        double fahrenheit = scanner.nextDouble();

        // Converting Fahrenheit to Celsius
        double celsiusResult = (fahrenheit - 32) * 5 / 9;

        // Displaying the result
        System.out.printf("The %.2f Fahrenheit is %.2f Celsius.%n",
fahrenheit, celsiusResult);

        scanner.close();
    }
}
```

   Output:

   Enter temperature in Fahrenheit: 100

   The 100.00 Fahrenheit is 37.78 Celsius.

6. 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 ___

Code:

```
import java.util.Scanner;

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

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

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

        double totalIncome = salary + bonus;

        System.out.println("The salary is INR " + salary + " and bonus is
INR " + bonus + ". Hence, Total Income is INR " + totalIncome);

        scanner.close();
    }
}
```

Output:

Enter your salary (INR): 50000

Enter your bonus (INR): 5000

The salary is INR 50000.0 and bonus is INR 5000.0. Hence, Total Income is INR 55000.0

7. 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 ___

Code:

```
import java.util.Scanner;

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

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

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

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

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

        scanner.close();
    }
}
```

Output:

Enter the first number: 10

Enter the second number: 20

The swapped numbers are 20 and 10

8. 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 ___

Code:

```
import java.util.Scanner;

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

        System.out.print("Enter your name: ");
        String name = scanner.nextLine();

        System.out.print("Enter your departure city: ");
        String fromCity = scanner.nextLine();

        System.out.print("Enter the via city: ");
        String viaCity = scanner.nextLine();

        System.out.print("Enter your destination city: ");
        String toCity = scanner.nextLine();

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

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

        System.out.print("Enter the total time taken in hours: ");
        double timeTaken = scanner.nextDouble();

        double totalDistance = fromToVia + viaToFinalCity;
        double averageSpeed = totalDistance / timeTaken;

        System.out.println("Hello " + name + ", your journey details:");
```

```
        System.out.println("From: " + fromCity + " Via: " + viaCity + " To:
" + toCity);
        System.out.println("Total Distance: " + totalDistance + " miles");
        System.out.println("Total Time Taken: " + timeTaken + " hours");
        System.out.println("Average Speed: " + averageSpeed + " miles per
hour");

        scanner.close();
    }
}
```

Output:

Enter your name: John

Enter your departure city: New York

Enter the via city: Chicago

Enter your destination city: Los Angeles

Enter the distance from New York to Chicago in miles: 800

Enter the distance from Chicago to Los Angeles in miles: 2000

Enter the total time taken in hours: 10

Hello John, your journey details:

From: New York Via: Chicago To: Los Angeles

Total Distance: 2800.0 miles

Total Time Taken: 10.0 hours

Average Speed: 280.0 miles per hour

9. 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

   Code:

```java
import java.util.Scanner;

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

        System.out.print("Enter the first side of the triangular park in
meters: ");
        double side1 = scanner.nextDouble();

        System.out.print("Enter the second side of the triangular park in
meters: ");
        double side2 = scanner.nextDouble();

        System.out.print("Enter the third side of the triangular park in
meters: ");
        double side3 = scanner.nextDouble();

        double perimeter = side1 + side2 + side3;
        double totalDistance = 5000; // 5 km in meters
        double rounds = totalDistance / perimeter;

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

        scanner.close();
    }
}
```

Output:

Enter the first side of the triangular park in meters: 300

Enter the second side of the triangular park in meters: 400

Enter the third side of the triangular park in meters: 500

The total number of rounds the athlete will run is 5 to complete 5 km.

10. 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 ___

Code:

```
import java.util.Scanner;

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

        System.out.print("Enter the total number of chocolates: ");
        int numberOfChocolates = scanner.nextInt();

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

        int chocolatesPerChild = numberOfChocolates / numberOfChildren;
        int remainingChocolates = numberOfChocolates % numberOfChildren;

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

        scanner.close();
    }
}
```

Output:

Enter the total number of chocolates: 25

Enter the number of children: 4

The number of chocolates each child gets is 6 and the number of remaining chocolates are 1

11. 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 ___

```
import java.util.Scanner;

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

        System.out.print("Enter the Principal amount (INR): ");
        double principal = scanner.nextDouble();

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

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

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

        System.out.println("The Simple Interest is " + simpleInterest + "
for Principal " + principal + ", Rate of Interest " + rate + "% and Time "
+ time + " years.");

        scanner.close();
    }
}
```

Output:

Enter the Principal amount (INR): 5000

Enter the Rate of Interest (%): 5

Enter the Time (years): 2

The Simple Interest is 500.0 for Principal 5000.0, Rate of Interest 5.0% and Time 2.0 years.

12. 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 ___

Code:

```
import java.util.Scanner;

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

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

        double weightInKg = weightInPounds / 2.2;

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

        scanner.close();
    }
}
```

Output:

Enter the weight in pounds: 150

The weight of the person in pounds is 150.0 and in kg is 68.18