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

```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 and 4 Mins and from Vellore to Bangalore is 211.8 km and will take 4 Hours and 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 1 Practice Programs

1. Write a program to find the age of Harry if the birth year is 2000. Assume the Current Year is 2024

   I/P => NONE

   O/P => Harry's age in 2024 is ___

```java
package LabPractice_L1;

public class LP1 {

   public static void main(String[] args){

       System.out.println("Harry's age in 2024 is " + (2024-2000));

   }

}
```

2. Sam's mark in Maths is 94, Physics is 95 and Chemistry is 96 out of 100. Find the average percent mark in PCM

   I/P => NONE

   O/P => Sam's average mark in PCM is ___

```java
package LabPractice_L1;

public class LP2 {

   public static void main(String[] args){

       int Maths = 96;

       int Physics = 95;

       int Chemistry = 96;

       double Avg = (Maths + Physics + Chemistry)/ 3;

       System.out.println(Avg);

   }

}
```

3. Create a program to convert the distance of 10.8 kilometers to miles.

   Hint: 1 km = 1.6 miles

   I/P => NONE

O/P => The distance ___ km in miles is ___

```
package LabPractice_L1;

public class LP3 {

   public static void main(String[] args){

       double Km = 10.8;

       double Mi = Km / 1.6;

       System.out.println("The distance 10.8 kms in miles is " + Mi);

   }

}
```

4. Create a program to calculate the profit and loss in number and percentage based on the cost price of INR 129 and the selling price of INR 191.

   Hint =>

   a. Use a single print statement to display multiline text and variables.
   b. Profit = selling price - cost price
   c. Profit Percentage = profit / cost price * 100

   I/P => NONE

   O/P =>

   The Cost Price is INR ___ and Selling Price is INR ___

   The Profit is INR ___ and the Profit Percentage is ___

```
package LabPractice_L1;

public class LP4 {

   public static void main(String[] args){

       int CP = 129;

       int SP = 191;

       int Profit = SP - CP;

       double PP = (Profit * 100)/CP;

       System.out.println("The Cost Price is INR " + CP + " and Selling
Price is INR " + SP + "\n" + "The Profit is INR " + Profit + " and the
Profit Percentage is " + PP);

   }

}
```

5. Suppose you have to divide 14 pens among 3 students equally. Write a program to find how many pens each student will get if the pens must be divided equally. Also, find the remaining non-distributed pens.

   Hint =>

   a. Use Modulus Operator (%) to find the reminder.
   b. Use Division Operator to find the Quantity of pens

   I/P => NONE

   O/P => The Pen Per Student is ___ and the remaining pen not distributed is ___

```
package LabPractice_L1;

public class LP5 {

   public static void main(String[] args){

       int pens = 14;

       int students = 3;

       int nonDistribute = 14 % 3;

       int Distribute = pens - nonDistribute;

       int penPerStudent = Distribute / 3;

       System.out.println("The Pen Per Student is " + penPerStudent + " and
the remaining pen not distributed is " + nonDistribute);

   }

}
```

6. The University is charging the student a fee of INR 125000 for the course. The University is willing to offer a discount of 10%. Write a program to find the discounted amount and discounted price the student will pay for the course.

   Hint =>

   a. Create a variable named fee and assign 125000 to it.
   b. Create another variable discountPercent and assign 10 to it.
   c. Compute discount and assign it to the discount variable.
   d. Compute and print the fee you have to pay by subtracting the discount from the fee.

   O/P => The discount amount is INR ___ and final discounted fee is INR ___

```
package LabPractice_L1;

public class LP6 {

   public static void main(String[] args){

       int fee = 125000;
```

```
        int discountPercent = 10;
        int discountFee = (fee * 10) / 100;
        int feeToPay = fee - discountFee;
        System.out.println("The discount amount is INR " + discountFee + "
and final discounted fee is INR " + feeToPay);
    }
}
```

7. Write a Program to compute the volume of Earth in km^3 and miles^3

   Hint => Volume of a Sphere is (4/3) * pi * r^3 and radius of earth is 6378 km
   O/P => The volume of earth in cubic kilometers is ____ and cubic miles is ____

```
package LabPractice_L1;
public class LP7 {
    public static void main(String[] args){
        double ROEKM = 6378;
        double ROEM = ROEKM * 0.621371;
        double VOSKM = (4.0/3.0) * 3.14 * (ROEKM * ROEKM * ROEKM);
        double VOSM = (4.0/3.0) * Math.PI * Math.pow(ROEM, 3);
        System.out.println("The volume of earth in cubic kilometers is " +
VOSKM + " and cubic miles is " + VOSM);
    }
}
```

8. Create a program to convert distance in kilometers to miles.

   Hint =>

   a. Create a variable km and assign type as double as in `double km;`
   b. Create `Scanner` Object to take user input from Standard Input that is the Keyboard as in `Scanner input = new Scanner(System.in);`
   c. Use `Scanner` Object to take user input for km as in `km = input.nextInt();`
   d. Use 1 mile = 1.6 km formulae to calculate miles and show the output

   I/P => km
   O/P => The total miles is ___ mile for the given ___ km

```
package LabPractice_L1;
import java.util.Scanner;
```

```
public class LP8 {

   public static void main(String[] args){

        Scanner input = new Scanner(System.in);

        System.out.print("Km = ");

        double km = input.nextInt();

        double mi = km * 0.621371;

        System.out.println("The total miles is " + mi + " miles for the given
" + km + "kms");

        input.close();

    }

}
```

9. Write a new program similar to the program # 6 but take user input for Student Fee and University Discount

   Hint =>

   a. Create a variable named fee and take user input for fee.
   b. Create another variable discountPercent and take user input.
   c. Compute the discount and assign it to the discount variable.
   d. Compute and print the fee you have to pay by subtracting the discount from the fee.

   I/P => fee, discountPrecent
   O/P => The discount amount is INR ___ and final discounted fee is INR ___

```
package LabPractice_L1;

import java.util.Scanner;

public class LP9 {

   public static void main(String[] args){

        Scanner input = new Scanner(System.in);

        System.out.print("Student Fee: ");

        int studentFee = input.nextInt();

        System.out.print("Discount Percent: ");

        int discountPercent = input.nextInt();

        int discountFee = (studentFee * 10) / 100;

        int feeToPay = studentFee - discountFee;

        System.out.println("The discount amount is INR " + discountFee + "
and final discounted fee is INR " + feeToPay);
```

```
        input.close();
    }
}
```

10. Write a program that takes your height in centimeters and converts it into feet and inches

    Hint => 1 foot = 12 inches and 1 inch = 2.54 cm

    I/P => height

    O/P => Your Height in cm is ___ while in feet is ___ and inches is ___

```
package LabPractice_L1;
import java.util.Scanner;
public class LP10 {
    public static void main(String[] args){
        Scanner input = new Scanner(System.in);
        System.out.print("Height: ");
        double height = input.nextDouble();
        double inches = height / 2.54;
        double feet = inches / 12;
        System.out.println("Your Height in cm is " + height + " while in feet
is " + feet + " and inches is " + inches);
        input.close();
    }
}
```

11. Write a program to create a basic calculator that can perform addition, subtraction, multiplication, and division. The program should ask for two numbers (floating point) and perform all the operations

    Hint =>

    a. Create a variable number1 and number 2 and take user inputs.
    b. Perform Arithmetic Operations of addition, subtraction, multiplication and division and assign the result to a variable and finally print the result

    I/P => number1, number2
    O/P => The addition, subtraction, multiplication and division value of 2 numbers ___ and ___ is ___, ____, ____, and ___

```
package LabPractice_L1;
```

```java
import java.util.Scanner;

public class LP11 {

   public static void main(String[] args){

       Scanner input = new Scanner(System.in);

       System.out.print("Number 1 : ");

       int number1 = input.nextInt();

       System.out.print("Number 2 : ");

       int number2 = input.nextInt();

       System.out.println("The addition, subtraction, multiplication and
division value of 2 numbers " + number1 + " and " + number2 + " is " +
(number1 + number2) + ", " + (number1 - number2) + ", " + (number1 *
number2) + " and " + (number1 / number2));

       input.close();

   }

}
```

10. Write a program that takes the base and height to find area of a triangle in square inches and square centimeters

    Hint => Area of a Triangle is ½ * base * height

    I/P => base, height

    O/P => Your Height in cm is ___ while in feet is ___ and inches is ___

```java
package LabPractice_L1;

import java.util.Scanner;

public class LP12 {

   public static void main(String[] args){

       Scanner input = new Scanner(System.in);

       System.out.print("Base: ");

       double base = input.nextDouble();

       System.out.print("Height: ");

       double height = input.nextDouble();

       double area = (base * height) / 2;

       System.out.println("Area of triangle in square centimeters is " +
area + " and in square inches is " + area / 2.54);

       input.close();
```

```
    }
}
```

11. Write a program to find the side of the square whose parameter you read from user

    Hint => Perimeter of Square is 4 times side

    I/P => perimeter

    O/P => The length of the side is ___ whose perimeter is ____

```
package LabPractice_L1;

import java.util.Scanner;

public class LP13 {

   public static void main(String[] args){

        Scanner input = new Scanner(System.in);

        System.out.print("Perimeter: ");

        float perimeter = input.nextFloat();

        float side = perimeter / 4;

        System.out.println("The length of side is " + side + " whose
perimeter is " + perimeter);

        input.close();

   }

}
```

12. Write a program the find the distance in yards and miles for the distance provided by user in feets

    Hint => 1 mile = 1760 yards and 1 yard is 3 feet

    I/P => distanceInFeet

    O/P => Your Height in cm is ___ while in feet is ___ and inches is ___

```
package LabPractice_L1;

import java.util.Scanner;

public class LP14 {

   public static void main(String[] args){

        Scanner input = new Scanner(System.in);

        System.out.print("Distance in Feet: ");

        float distanceInFeet = input.nextFloat();
```

```
        float distanceInYard = distanceInFeet / 3;

        float distanceInMile = distanceInYard / 1760;

        System.out.println("The distance in yards is " + distanceInYard + "
and the distance in miles is " + distanceInMile + " for the given distance
in feet " + distanceInFeet);

        input.close();

    }

}
```

15. Write a program to input the unit price of an item and the quantity to be bought. Then, calculate the total price.

    Hint => NA

    I/P => unitPrice, quantity

    O/P => The total purchase price is INR ___ if the quantity ___ and unit price is INR ___

```
package LabPractice_L1;

import java.util.Scanner;

public class LP15 {

    public static void main(String[] args){

        Scanner input = new Scanner(System.in);

        System.out.print("Unit Price: ");

        float unitPrice = input.nextFloat();

        System.out.print("Quantity: ");

        float quantity = input.nextFloat();

        float totalPrice = unitPrice * quantity;

        System.out.println("The total purchase price is INR " + totalPrice +
" if the quantity " + quantity + " and unit price is INR " + unitPrice);

        input.close();

    }

}
```

16. 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.

```
package LabPractice_L1;

import java.util.Scanner;

public class LP16 {

   public static void main(String[] args){

       Scanner input = new Scanner(System.in);

       System.out.print("Number of Students: ");

       int numberOfStudents = input.nextInt();

       int handshakePossible = (numberOfStudents * (numberOfStudents -
1)) / 2;

       System.out.println("The number of handshakes possible are " +
handshakePossible);

       input.close();

   }

}
```