

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 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

```
// 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 = "Vellore", 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 ____

CODE

```
1 public class AgeCalculator{
2     public static void main(String[] args){
3
4         int birthYear = 2000;
5         int currentYear = 2024;
6         int age = currentYear - birthYear;
7
8         //Printing the age
9         System.out.print("Harry's current age is "+age+" years");
10    }
11 }
```

OUTPUT

```
PS E:\JAVA PROGRAMS\STEP\lab1\level1> javac AgeCalculator.java
PS E:\JAVA PROGRAMS\STEP\lab1\level1> java AgeCalculator
Harry's current age is 24 years
PS E:\JAVA PROGRAMS\STEP\lab1\level1> |
```

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 ____

CODE

```
1 public class AverageCalculator{
2     public static void main(String[] args ){
3
4         //Declaring variables with values
5         int maths = 94;
6         int physics = 95;
7         int chemistry = 96;
8
9         //Calculating the average
10        int average = (maths + physics +chemistry )/3;
11
12        //Printing the average
13        System.out.print("The Average of Sam's marks is "+average);
14    }
15 }
```

OUTPUT

```
PS E:\JAVA PROGRAMS\STEP\lab1\level1> javac AverageCalculator.j
ava; java AverageCalculator
The Average of Sam's marks is 95
PS E:\JAVA PROGRAMS\STEP\lab1\level1> |
```

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 ____

CODE

```
1 public class Converter{
2     public static void main(String[] args ){
3
4         //Declaring the variables with values
5         float miles = 1.6f;
6         float distance = 10.8f;
7
8         //Converting the Distance in miles
9         float cvtdist = distance * miles;
10
11        //Printing the converted Value
12        System.out.print("10.8 km in miles is "+cvtdist + " miles");
13    }
14 }
```

OUTPUT

```
PS E:\JAVA PROGRAMS\STEP\lab1\level1> javac Converter.java; java
a Converter
10.8 km in miles is 17.28 miles
PS E:\JAVA PROGRAMS\STEP\lab1\level1> |
```

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 ____

CODE

```
1 public class ProfitCalculator{
2     public static void main(String [] args){
3
4         //Declaring the variables with some values
5         int costPrice = 129;
6         int sellingPrice = 191;
7
8         //Calculating the profit
9         int profit = sellingPrice - costPrice;
10
11        //Calculating the profit percentage
12        int profitPercentage = (profit / costPrice) * 100;
13
14        System.out.println();//Printing new line
15
16        //Printing the Selling and Cost Price
17        System.out.println("The CostPrice is INR "+costPrice+" and the Selling Price is INR "+sellingPrice);
18
19        //Printing the output
20        System.out.println("The profit made is "+profit+" and the profit percentage is " +profitPercentage);
21
22        System.out.println();//Printing new line
23    }
24 }
25 }
```

OUTPUT

```
PS E:\JAVA PROGRAMS\STEP\lab1\level1> javac ProfitCalculator.java; java ProfitCalculator
The CostPrice is INR 129 and the Selling Price is INR 191
The profit made is 62 and the profit percentage is 48
PS E:\JAVA PROGRAMS\STEP\lab1\level1> |
```

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 remainder.
- 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 ____

CODE

```
1 public class PenDistribution{
2     public static void main(String[] args){
3
4         //Declared the variables
5         int pen = 14, stud = 3;
6
7
8         //Calculating the pen per student
9         int penPerStudent = pen / stud;
10
11         //Calculating the remaining pens
12         int remainingPen = pen % stud;
13
14         System.out.println(); // Printing new line
15
16
17         //Printing the output
18         System.out.print("The Pen per Student is "+penPerStudent+" and the remaining no distributed pen is "+remainingPen);
19
20     }
21 }
```

OUTPUT

```
PS E:\JAVA PROGRAMS\STEP\lab1\level1> javac PenDistrib
ution.java; java PenDistribution
The Pen per Student is 4 and the remaining no distrib
uted pen is 2
PS E:\JAVA PROGRAMS\STEP\lab1\level1> |
```

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 =>

- Create a variable named fee and assign 125000 to it.
- Create another variable discountPercent and assign 10 to it.
- Compute discount and assign it to the discount variable.
- 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 ____

CODE

```
1 public class UniversityFee{
2     public static void main(String[] args){
3
4         //Declaring the variables with given data
5         int fee = 125000;
6         double discountPercent = 10.0;
7
8
9         // Calculating the discount
10        double discount = (discountPercent/100) * fee;
11
12        // Calculating the Discounted Fee
13        double newFee = fee - discount;
14
15        // Printing the output
16        System.out.print("The discount amount is INR "+discount+" and the discount fee is "+newFee);
17
18    }
19 }
```

OUTPUT

```
PS E:\JAVA PROGRAMS\STEP\lab1\level1> javac Universit
yFee.java; java UniversityFee
The discount amount is INR 12500.0 and the discount f
ee is 112500.0
PS E:\JAVA PROGRAMS\STEP\lab1\level1> |
```

7. Write a Program to compute the volume of Earth in km³ and miles³

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 ____

CODE

```

1 public class VolumeOfEarth{
2     public static void main(String[] args){
3
4         // Declaring the variables with given values
5         int radiusInKm = 6378;
6         double miles = 1.6;
7
8         // Converting the distance in miles
9         double radiusInMiles = radiusInKm * miles;
10
11        // Calculating the volume of earth in cubic km
12        double volumeInKm = 4.0/3 * 3.14 * Math.pow(radiusInKm,3);
13
14        // Calculating the volume of earth in cubic miles
15        double volumeInMiles = 4.0/3 * 3.14 * Math.pow(radiusInMiles,3);
16
17        //Displaying the output
18        System.out.print("Volume of earth in km^3 "+volumeInKm+ " in miles^3 "+volumeInMiles);
19    }
20 }

```

OUTPUT

```

PS E:\JAVA PROGRAMS\STEP\lab1\level1> javac VolumeOfEarth.java; java VolumeOfEarth
Volume of earth in km^3 1.0862303407430399E12 in miles^3 4.449199475683493E12
PS E:\JAVA PROGRAMS\STEP\lab1\level1>

```

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

Hint =>

- Create a variable km and assign type as double as in `double km;`
- Create `Scanner` Object to take user input from Standard Input that is the Keyboard as in `Scanner input = new Scanner(System.in);`
- Use `Scanner` Object to take user input for km as in `km = input.nextInt();`
- 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

CODE

```

1 import java.util.*;
2
3 public class ScanConverter{
4     public static void main(String[] args){
5
6         //Using the scanner to take the input with the alias sc
7         Scanner sc = new Scanner(System.in);
8
9
10        //declaring the variables
11        double km;
12        double miles = 1.6;
13
14        //Prompting the user to feed the distance for converting
15        System.out.print("Enter the distance you want to convert : ");
16        km = sc.nextInt();// used for taking input as integer
17
18
19        //converting the distance from Km to Miles and storing in the output variable of double datatype
20        double output = km * miles;
21
22        //Printing the result
23        System.out.print("Distance in miles would be :"+output);
24    }
25 }

```

OUTPUT

```

PS E:\JAVA PROGRAMS\STEP\lab1\level1> javac ScanConverter.java; java ScanConverter
Enter the distance you want to convert : 10
Distance in miles would be :16.0
PS E:\JAVA PROGRAMS\STEP\lab1\level1>

```

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

Hint =>

- Create a variable named fee and take user input for fee.
- Create another variable discountPercent and take user input.
- Compute the discount and assign it to the discount variable.
- 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 ____

CODE

```
1 import java.util.*;
2
3 public class ScanFee{
4     public static void main(String[] args){
5
6         //Using Scanner to receive the input from the user under the alias sc
7         Scanner sc = new Scanner (System.in);
8
9         // Prompting the user to enter the fee amount
10        System.out.print("Enter the fee :");
11        int fee = sc.nextInt();//taking the input as integer
12
13        //Prompting the user to enter the discount percent
14        System.out.print("Enter the discount percent :");
15        double discountPercent = sc.nextInt();//Storing it under double datatype
16
17        // Calculating the discount
18        double discount = (discountPercent/100) * fee;
19
20        // calculating the new fee
21        double newFee = fee - discount;
22
23        // Displaying the output
24        System.out.printf("The Discount you avail %.2f and the new fee is %.2f",discount,newFee);
25    }
26 }
```

OUTPUT

```
PS E:\JAVA PROGRAMS\STEP\lab1\level1> javac ScanFee.java
PS E:\JAVA PROGRAMS\STEP\lab1\level1> java ScanFee
Enter the fee :125000
Enter the discount percent :10
The Discount you avail 12500.00 and the new fee is 112500.00
PS E:\JAVA PROGRAMS\STEP\lab1\level1>
```

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 ____

CODE

```
1 import java.util.*;
2
3 public class HeightCalculator{
4     public static void main(String[] args){
5         //Using Scanner to accept the values from the user
6         Scanner sc = new Scanner(System.in);
7
8         //declaring the variables with values
9         int foot = 12; double inch = 2.54;
10
11        //Prompting the user to feed the foot part of the height
12        System.out.print("Enter your Height (only foot) :");
13        int foots = sc.nextInt();
14
15        //Prompting the user to feed the inch part of the height
16        System.out.print("Enter your Height (only inches) :");
17        int inches = sc.nextInt();
18
19        //Converting the height from foots and inches to centimeters
20        double height = ((foots * foot) * inch) + (inches * inch);
21
22        //Printing the converted height
23        System.out.print("Your Height in cm would be :"+height);
24    }
25 }
```

OUTPUT

```
PS E:\JAVA PROGRAMS\STEP\lab1\level1> javac HeightCalculator.java
PS E:\JAVA PROGRAMS\STEP\lab1\level1> java HeightCalculator
Enter your Height (only foot) :5
Enter your Height (only inches) :7
Your Height in cm would be :170.18
PS E:\JAVA PROGRAMS\STEP\lab1\level1>
```