# ASSIGNMENT DAY 2

## 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 ___**

```
public class Question1 {
   public static void main(String[] args) {
      int currentYear = 2024, birthYear = 2000;
      int currentAge = currentYear - birthYear;
      System.out.print("Harry's age in 2024 is " + currentAge);
   }
}
```

**OUTPUT:**

Harry's age in 2024 is 24

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 ___**

```
public class Question2 {
   public static void main(String[] Args) {
      int maths = 94, physics = 95, chemistry = 96;
      float average = (float)(maths + physics + chemistry) / 3;
      System.out.println("Sam's average mark in PCM is " + average);
   }
}
```

**OUTPUT:**

Sam's average mark in PCM is 95.0

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

1. **Hint: 1 km = 1.6 miles**
2. **I/P => NONE**
3. **O/P => The distance ___ km in miles is ___**

```
public class Question3 {
   public static void main(String[] args) {
      float km = 10.8F;
      float miles = (float) (km * 0.621371);
      System.out.println(km + " km is equal to " + miles + " miles");
   }
}
```

**OUTPUT:**

10.8 km is equal to 6.710807 miles

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 =>**

**Use a single print statement to display multiline text and variables.**

**Profit = selling price - cost price**

**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 ___**

```
public class Question4 {
   public static void main(String[] args) {
      int cp = 129, sp = 191;
      int profit = sp - cp;
      float pp = (float) profit /cp * 100;
      System.out.println("The Cost Price is INR " + cp + " and Selling Price in INR " + sp);
      System.out.println("The profit is INR " + profit + " and the Profit Percentage is " + pp);
   }
}
```

**OUTPUT:**

The Cost Price is INR 129 and Selling Price in INR 191

The profit is INR 62 and the Profit Percentage is 48.062016

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 =>**

**Use Modulus Operator (%) to find the reminder.**

**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 ___**

```
public class Question5 {
   public static void main(String[] args) {
      int pens = 14, students = 3;
      int qop = pens / students;
      int rem = pens % students;
      System.out.println("The pen per student is " + qop + " and the remaining pen not
distributed is " + rem);
   }
}
```

**OUTPUT:**

The pen per student is 4 and the remaining pen not distributed is 2

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.**

```
public class Question6 {
   public static void main(String[] args) {
      int fee = 125000;
      int discount = 10;
      int discountAmt = fee / discount;
      int actualFee = fee - discountAmt;
      System.out.println("The discount amount is INR " + discountAmt + " and final
discounted fee is INR " + actualFee);
   }
}
```

**OUTPUT:**

The discount amount is INR 12500 and final discounted fee is INR 112500

**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 ____**

```
public class Question7 {
   public static void main(String[] args) {
      double radiusKm = 6378.0;
      double radiusMiles = radiusKm * 0.621371;
      double volumeKm3 = (4.0 / 3.0) * Math.PI * Math.pow(radiusKm, 3);
      double volumeMiles3 = (4.0 / 3.0) * Math.PI * Math.pow(radiusMiles, 3);
      System.out.printf("The volume of Earth in cubic kilometers is %.2f km³ and in cubic
miles is %.2f mi³.%n", volumeKm3, volumeMiles3);
   }
}
```

**OUTPUT:**

The volume of Earth in cubic kilometers is 1086781292542.89 km³ and in cubic miles is 260732455872.69 mi³.

**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.**

```
import java.util.Scanner;
public class Question8 {
   public static void main(String[] Args) {
      Scanner scanner = new Scanner(System.in);
      double km;
      System.out.print("Enter the kilometer: ");
      km = scanner.nextDouble();
      double miles = (double) (km * 0.621371);
      System.out.println("The total miles is " + miles + " mile for the given " + km + " km.");
   }
}
```

**OUTPUT:**

The total miles is 86.99194 mile for the given 140.0 km.

**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 ___**

```
import java.util.Scanner;
public class Question9 {
   public static void main(String[] args) {
      Scanner scanner = new Scanner(System.in);
      int fee, discountPercentage;
      System.out.print("Enter the fee amount: ");
      fee = scanner.nextInt();
      System.out.print("Enter the discount percentage: ");
      discountPercentage = scanner.nextInt();
      int discountAmt = fee / discountPercentage;
      int actualFee = fee - discountAmt;
      System.out.println("The discount amount is INR " + discountAmt + " and final
discounted fee is INR " + actualFee);
   }
}
```

**OUTPUT:**

Enter the fee amount: 100000

Enter the discount percentage: 10

The discount amount is INR 10000 and final discounted fee is INR 90000.

**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 ___**

```
import java.util.Scanner;
public class Question10 {
   public static void main(String[] args) {
```

```
        Scanner scanner = new Scanner(System.in);
        double height;
        System.out.print("Enter the your height: ");
        height = scanner.nextDouble();
        double inch = (height / 2.54);
        double feet = (inch / 12);
        System.out.printf("Your height in cm is %.2f while in feet is %.2f and inches is %.2f.",
height, feet, inch);
    }
}
```

**OUTPUT:**

Your height in cm is 165.50 while in feet is 5.43 and inches is 65.16.

**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 =>**

**Create a variable number1 and number 2 and take user inputs.**

**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 ___**

```
import java.util.Scanner;
public class Question11 {
    public static void main(String[] Args ){
        Scanner scanner = new Scanner(System.in);
        int var1, var2;
        System.out.print("Enter the variable 1: ");
        var1 = scanner.nextInt();
        System.out.print("Enter the variable 2: ");
        var2 = scanner.nextInt();
        float add = var1 + var2;
        float sub = var1 - var2;
        float mul = var1 * var2;
        float div = (float) var1 / var2;
        System.out.println("Addition: " + add);
        System.out.println("Subtraction: " + sub);
        System.out.println("Multiplication: " + mul);
        System.out.println("Division: " + div);
```

```
    }
}
```

**OUTPUT:**

Enter the variable 1: 10

Enter the variable 2: 7

Addition: 17.0

Subtraction: 3.0

Multiplication: 70.0

Division: 1.4285715

**12. 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 ___**

```
import java.util.Scanner;
public class Question12 {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        int base, height;
        System.out.print("Enter the base: ");
        base = scanner.nextInt();
        System.out.print("Enter the height: ");
        height = scanner.nextInt();
        float area = (float) (0.5 * base * height);
        System.out.printf("The area of the triangle is %.2f", area);
    }
}
```

**OUTPUT:**

Enter the base: 10

Enter the height: 15

The area of the triangle is 75.00

**13. 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 ____**

```
import java.util.Scanner;
public class Question13 {
   public static void main(String[] Args ){
      Scanner scanner = new Scanner(System.in);
      float side;
      System.out.print("Enter the side: ");
      side = scanner.nextFloat();
      float perimeter = (float) (4 * side);
      System.out.printf("The length of the side is %.2f whose perimeter is %.2f.", side,
perimeter);
   }
}
```

**OUTPUT:**

The length of the side is 25.00 whose perimeter is 100.00.

**14. 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 ___**

```
import java.util.Scanner;
public class Question14 {
   public static void main(String[] Args ){
      Scanner scanner = new Scanner(System.in);
      float distanceInFeet;
      System.out.print("Enter the distance in feet: ");
      distanceInFeet = scanner.nextFloat();
      float yard = (float) (distanceInFeet / 3);
      float mile = (float) (yard / 1760);
      System.out.printf("The total distance in feet is %.2f while in yard is %.2f and in mile is
%.2f.",distanceInFeet , yard, mile);
   }
}
```

**OUTPUT:**

Enter the distance in feet: 1713

The total distance in feet is 1713.00 while in yard is 571.00 and in mile is 0.32.

**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 ___**

```
import java.util.Scanner;
public class Question15 {
   public static void main(String[] Args ){
      Scanner scanner = new Scanner(System.in);
      float unitPrice, quantity;
      System.out.print("Enter the unit Price: ");
      unitPrice = scanner.nextFloat();
      System.out.print("Enter the Quantity: ");
      quantity = scanner.nextFloat();
      float totalPrice = unitPrice * quantity;
      System.out.printf("The total purchase price in INR %.2f, if the quantity %.2f and unit
price is INR %.2f.", totalPrice, quantity, unitPrice);
   }
}
```

**OUTPUT:**

Enter the unit Price: 17

Enter the Quantity: 100

The total purchase price in INR 1700.00, if the quantity 100.00 and unit price is INR 17.00.

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

**Hint => Get integer input for numberOfStudents variable.**

**Use the combination = (n * (n - 1)) / 2 formula to calculate the maximum number of possible handshakes. Display the number of possible handshakes.**

```
import java.util.Scanner;
public class Question16 {
   public static void main(String[] Args ){
      Scanner scanner = new Scanner(System.in);
      int students;
      System.out.print("Enter the number of students: ");
      students = scanner.nextInt();
      int handShakes = (students * (students - 1)) / 2;
      System.out.println("The total possible handshakes are " + handShakes);
   }
}
```

**OUTPUT:**

Enter the number of students: 25

The total possible handshakes are 300