Instructions:

1. For each of the following questions, first **create a flowchart** to outline the logic.
2. After completing the flowchart, **write a Java program** to implement the logic based on your flowchart.
3. Ensure your code follows basic Java syntax and logic.
4. You can explore user input (NOT MANDATORY)

Flowchart + Java Program Questions

1. **Check Positive Number:**
   - **Task**: Create a flowchart to check whether a number is positive.
   - **Next Step**: Write a Java program that checks if a predefined number is positive using an if-else statement and prints the appropriate message.

Ans-

```
/*
Flowchart

1. Start
2. Initialize the variable (i.e. a =5).
3. Check if a > 0.
        If true, print "number is positive."
        Otherwise, print "number is not positive."
5. stop
*/

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

        int a = 5;

        // 2. Check if 'a' is greater than zero
        if (a > 0) {
            System.out.println(a + " is positive.");
        } else {
            System.out.println(a + " is not positive.");
        }
    }
}
```

```
D:\Dac\Java\Day1\Assignment\javaProgram1>javac CheckPositiveNumber.java

D:\Dac\Java\Day1\Assignment\javaProgram1>java CheckPositiveNumber.java
5 is positive.

D:\Dac\Java\Day1\Assignment\javaProgram1>
```

2. **Check Negative Number:**

   - **Task**: Create a flowchart to check whether a number is negative.
   - **Next Step**: Write a Java program that checks if a predefined number is negative using an if-else statement and displays the result.

```
/*
flowchart-

1.Start
2.Initialize the variable  (i.e. a = -5).
3.Check if a < 0.
        If true, print "number is negative."
        Otherwise, print "number is not negative."
4.End
*/

public class CheckNegativeNumber {
    public static void main(String[] args) {
        int a = -5;

        // 2. Check if 'a' is less than zero
        if (a < 0) {
            System.out.println(a + " is negative.");
        } else {
            System.out.println(a + " is not negative.");
        }
    }
}
```

```
D:\Dac\Java\Day1\Assignment\javaProgram1>javac CheckNegativeNumber.java

D:\Dac\Java\Day1\Assignment\javaProgram1>java CheckNegativeNumber.java
-5 is negative.

D:\Dac\Java\Day1\Assignment\javaProgram1>
```

3. **Check Odd or Even Number:**

   - **Task**: Create a flowchart to determine whether a number is odd or even.
   - **Next Step**: Write a Java program that checks if a predefined number is odd or even. Use an if-else statement and the modulus operator (%) to determine whether the number is divisible by 2 or not.

```
/*
Flowchart-
1.Start
2.Initialize the variable (i.e a= 7).
3.Compute remainder = a % 2.
4.Check if remainder == 0.
        If true, print "number is even."
        Otherwise, print "number is odd."
5.End the process.

*/

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

        int a = 7;

        //
        int remainder = a % 2;

        // 3. Check if the remainder is zero
        if (remainder == 0) {
            System.out.println(a + " is even.");
        } else {
            System.out.println(a + " is odd.");
        }
    }
}
```

```
D:\Dac\Java\Day1\Assignment\javaProgram1>javac CheckOddEven.java

D:\Dac\Java\Day1\Assignment\javaProgram1>java CheckOddEven.java
7 is odd.

D:\Dac\Java\Day1\Assignment\javaProgram1>
```

4. **Display Good Morning Message Based on Time:**
    - **Task**: Create a flowchart to display a "Good Morning" message based on a given time.
    - **Next Step**: Write a Java program that displays a "Good Morning" message if the predefined time is between 5 AM and 12 PM. Use an if statement to implement the logic.

```
/*
flowchart-

1.Start
2.Initialize the variable time (an integer representing the hour, e.g., 9 for 9 AM).
3.Check if time is between 5 and 12 (i.e., time >= 5 && time < 12).
    If true, print "Good Morning".
    Otherwise, do nothing or display a different message (optional).
4.End

*/

public class GoodMorningBasedOnTime {
    public static void main(String[] args) {
        // 1. Initialize a predefined time (hour in 24-hour format)
        int time = 9;

        // 2. Check if the time is between 5 AM (05:00) and 12 PM (11:59)
        if (time >= 5 && time < 12) {
            System.out.println("Good Morning");
        }
        else {
            System.out.println("It's not morning now.");
        }
    }
}
```

```
D:\Dac\Java\Day1\Assignment\javaProgram1>javac GoodMorningBasedOnTime.java

D:\Dac\Java\Day1\Assignment\javaProgram1>java GoodMorningBasedOnTime.java
Good Morning

D:\Dac\Java\Day1\Assignment\javaProgram1>
```

```
/*
5. Print Area of a Square:
     Task: Create a flowchart to calculate and print the area of a square.
     Next Step: Write a Java program that calculates the area of a square using the formula
     area = side * side. Use a predefined side length.
*/
```

```
/*
1.Start
2.Define a variable side with a predefined value (e.g., 5).
3.Calculate the area using the formula: area = side × side
4.Print the calculated area.
5.End
*/

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

        int side = 5;

        // 2. Calculate the area of the square
        int area = side * side;

        System.out.println("The area of the square with side " + side + " is: " + area);
    }
}
```

```
D:\Dac\Java\Day1\Assignment\javaProgram1>javac AreaOfSquare.java

D:\Dac\Java\Day1\Assignment\javaProgram1>java AreaOfSquare.java
The area of the square with side 5 is: 25

D:\Dac\Java\Day1\Assignment\javaProgram1>
```

6. **Print Area of a Rectangle:**

   - **Task**: Create a flowchart to calculate and print the area of a rectangle.
   - **Next Step**: Write a Java program that calculates the area of a rectangle using the formula area = length * width. Use predefined values for length and width.

```
/*
1.Start
2.Define two variables: length and width.
3.Calculate the area using the formula: area = length × width
4.Print the calculated area.
5.End

*/

public class AreaOfRectangle {
    public static void main(String[] args) {
        double length = 10.0;
        double width  = 5.0;

        //  Calculate the area
        double area = length * width;

        // Print the result
        System.out.println("The area of the rectangle is: " + area);
    }
}
```

```
D:\Dac\Java\Day1\Assignment\javaProgram1>java AreaOfRectangle.java
The area of the rectangle is: 50.0

D:\Dac\Java\Day1\Assignment\javaProgram1>D
```

7. **Find the Largest of Three Numbers:**

   - **Task**: Create a flowchart to find the largest of three numbers.
   - **Next Step**: Write a Java program that finds and prints the largest of three predefined numbers using if-else statements.

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

        int a = 10;
        int b = 20;
        int c = 15;

        // Assume a is largest initially (alternative approach)
        int largest = a;

        //  Compare largest with b
        if (b > largest) {
            largest = b;
        }

        // Compare largest with c
        if (c > largest) {
            largest = c;
        }

        // Print the largest number
        System.out.println("The largest number is: " + largest);
    }
}
```

```
/*
1.Start the process.
2.Initialize three variables a, b, and c.
3.Compare a with b.
   If a >= b, compare a with c.
   If a >= c, a is the largest.
   Else, c is the largest.
   Else (b > a), compare b with c.
   If b >= c, b is the largest.
   Else, c is the largest.
4.printing the largest number.
5.End
*/
```

```
D:\Dac\Java\Day1\Assignment\javaProgram1>javac LargestOfThree.java

D:\Dac\Java\Day1\Assignment\javaProgram1>java LargestOfThree.java
The largest number is: 20

D:\Dac\Java\Day1\Assignment\javaProgram1>
```