Experiment Number	2
Date of Experiment	19/12/2024
Date of Submission	09/01/2025
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Section	ECSc-6

- **Title of the experiment :**

  Operators, Selectors and Iterators

- **Aim of The experiment :**

  To learn writing, executing and debugging programs related to Java operators.
  To learn writing, executing and debugging programs related to Java decision control and loop control statements.

- **Programming Language used :**

  Java

- **Problem Statement & Solution :**

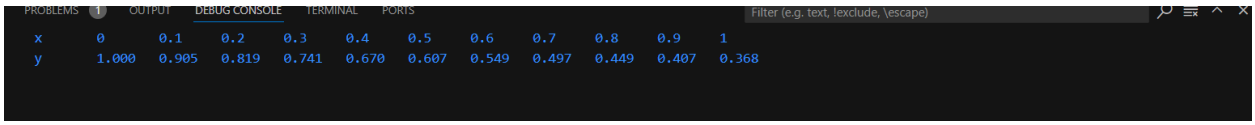
  1. Write a Java program to print a table of values of the function y = e^(-x) for x varying from 0 to 1 in steps of 0.1. The table appears as follows.

x	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
y											

Solution :

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

        System.out.println("x\t0\t0.1\t0.2\t0.3\t0.4\t0.5\t0.6\t0.7\t0.8\t0.9\t1");

        System.out.print("y\t");
        for (double x = 0; x <= 1; x += 0.1) {
            double y = Math.exp(-x);
            System.out.printf("%.3f\t", y);
        }
    }
```

Output :



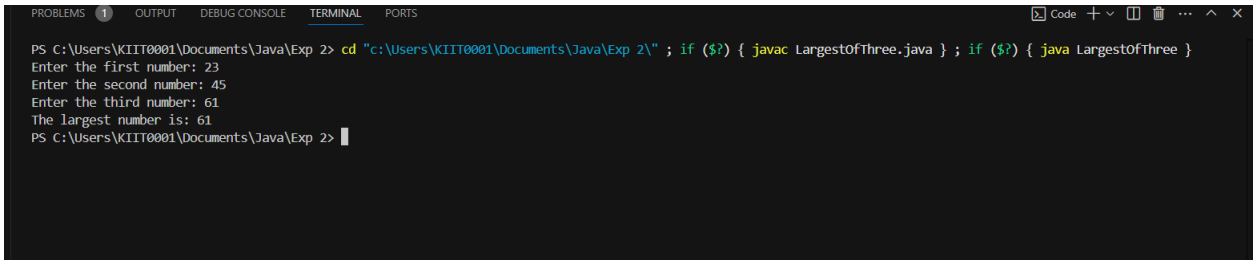
2. Write a Java program to find the largest of three numbers using a conditional operator.

Solution :

```
import java.util.Scanner;

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

            System.out.print("Enter the first number: ");
        int num1 = scanner.nextInt();

        System.out.print("Enter the second number: ");
```

```
        int num2 = scanner.nextInt();

        System.out.print("Enter the third number: ");
        int num3 = scanner.nextInt();
        int largest = (num1 > num2)
                    ? (num1 > num3 ? num1 : num3)
                    : (num2 > num3 ? num2 : num3);
        System.out.println("The largest number is: " + largest);
        scanner.close();
    }
}
```

Output :



3. Write a Java program to accept a point (x, y) and find whether it lies on the circle or inside the circle or outside the circle. The center of the circle is (0, 0) and the radius of the circle is 5. Equation of a circle with (0, 0) as the center and r as the radius is given by $x^2 + y^2 = r^2$

1. If $x^2 + y^2 < r^2$
, then the point (x, y) lies within the circle.

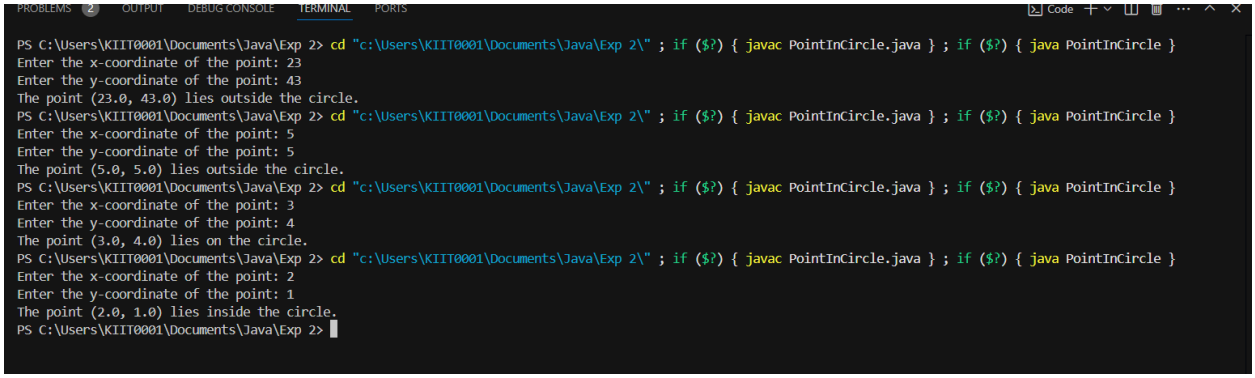
2. $x^2 + y^2 > r^2$
, then the point (x, y) lies outside the circle.

3. If $x^2 + y^2 = r^2$
, then the point (x, y) lies on the circle.

Solution :

```
import java.util.Scanner;

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

        System.out.print("Enter the x-coordinate of the point: ");
        double x = scanner.nextDouble();

        System.out.print("Enter the y-coordinate of the point: ");
        double y = scanner.nextDouble();

        double radius = 5.0;

        double distanceSquared = x * x + y * y;
        double radiusSquared = radius * radius;

        if (distanceSquared < radiusSquared) {
            System.out.println("The point (" + x + ", " + y + ") lies inside the circle.");
        } else if (distanceSquared > radiusSquared) {
            System.out.println("The point (" + x + ", " + y + ") lies outside the circle.");
        } else {
            System.out.println("The point (" + x + ", " + y + ") lies on the circle.");
        }

        scanner.close();
    }
}
```

Output :



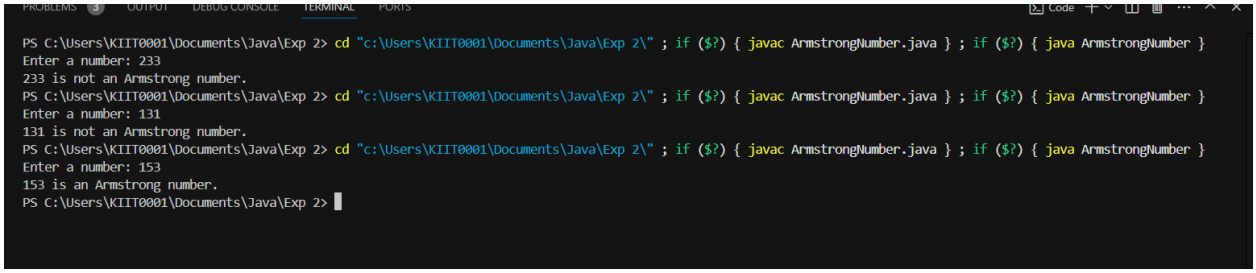
4. Write a Java program to find whether a number is an Armstrong number or not. (Hint: A number is an Armstrong number if the sum of the cubes of the digits of the number is equal to the number itself. For example, 153 = 13 + 53 + 33 = 1 + 125 + 27).

Solution :

```
import java.util.Scanner;

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

        System.out.print("Enter a number: ");
        int number = scanner.nextInt();
        int originalNumber = number;
        int sum = 0;

        while (number > 0) {
            int digit = number % 10;
            sum += digit * digit * digit;
            number /= 10;
        }

        if (sum == originalNumber) {
            System.out.println(originalNumber + " is an Armstrong number.");
        } else {
            System.out.println(originalNumber + " is not an Armstrong number.");
        }
```

```
        scanner.close();
    }
}
```

Output :

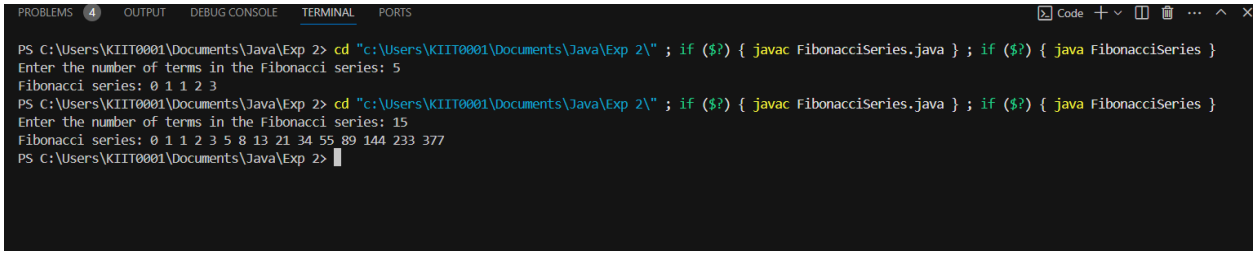


5. Write a Java program to generate a Fibonacci series.

Solution :

```
import java.util.Scanner;

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

        System.out.print("Enter the number of terms in the Fibonacci series: ");
        int terms = scanner.nextInt();

        int first = 0, second = 1;

        System.out.print("Fibonacci series: ");
        for (int i = 1; i <= terms; i++) {
            System.out.print(first + " ");
            int next = first + second;
            first = second;
            second = next;
        }

        scanner.close();
    }
}
```

Output :



- **Conclusion :**

Learned to develop Java programs using operators, if-else, for loop, etc.

Faculty Signature