**Experiment: 2**

PART A

(PART A: TO BE REFERRED BY STUDENTS)

**Aim:** **To study the Control statements in JAVA**

**Learning Outcomes: The learner would be able to**

1. Understand the syntax and use Selection statements (if, if-else, else-if ladder, nested if-else) in JAVA
2. Understand the syntax and use Iterative statements (for, while, do-while), Jump statements (goto) in JAVA
3. Compile and execute codes using JDK and command prompt

**Theory:**

**Tasks:**

1. WAP to accept 3 nos. From command line arguments and print maximum, minimum and total of all three nos.
2. Write a Java program that calculates the sum of digits of a given integer.
3. Write a Java program that prints the Fibonacci sequence up to the nth term, where n is provided as input.
4. Write a Java program that checks whether a given number is a palindrome or not.
5. Write a Java program that checks whether a given number is prime or not.
6. Write a Java program that checks whether a given number is an Armstrong number. An Armstrong number is a number that is equal to the sum of its own digits raised to the power of the number of digits.
7. Write a Java program that reverses a given number.
8. Write a Java program that calculates the factorial of a given number using recursion.
9. Write a Java program that accepts a range of numbers between n1 till n2 and prints all the prime numbers in between this range.
10. Generate the following pattern:

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\*\*\*\*\*\*\*\*\*

1. Generate the following pattern:

1

1 2 1

1 2 3 2 1

1 2 3 4 3 2 1

1 2 3 4 5 4 3 2 1

**PART B**

(PART B: TO BE COMPLETED BY STUDENTS)

Students must execute all the tasks in Experiment-1 and copy paste the code, along with the snapshot of the output in Part-B. Upload and Submit the Part-B in soft copy on the portal. The filename should be **PPS\_batch\_rollno\_experimentno Example: PPS\_A1\_A001\_P1**

|  |  |
| --- | --- |
| **Roll No.: C126** | **Name: Rushabh Shah** |
| **Prog/Yr/Sem: Sem 7** | **Batch: D1** |
| **Date of Experiment: 11-01-2025** | **Date of Submission:** |

Q1.

import java.util.Scanner;

public class q1 {

    public static void main(String[] args) {

        int num1, num2, num3, largest, smallest;

        Scanner sc = new Scanner(System.in);

        // Input numbers

        System.out.print("Enter first number: ");

        num1 = sc.nextInt();

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

        num2 = sc.nextInt();

        System.out.print("Enter third number: ");

        num3 = sc.nextInt();

        if (num1 > num2 && num1 > num3) {

            largest = num1;

            System.out.println("Largest number is: " + largest);

        } else if (num2 > num1 && num2 > num3) {

            largest = num2;

            System.out.println("Largest number is: " + largest);

        } else {

            largest = num3;

            System.out.println("Largest number is: " + largest);

        }

        if (num1 < num2 && num1 < num3) {

            smallest = num1;

            System.out.println("Smallest number is: " + smallest);

        } else if (num2 < num1 && num2 < num3) {

            smallest = num2;

            System.out.println("Smallest number is: " + smallest);

        } else {

            smallest = num3;

            System.out.println("Smallest number is: " + smallest);

        }

        int sum = num1 + num2 + num3;

        System.out.println("Sum of the three numbers is: " + sum);

        sc.close();

    }

}

Q2.

import java.util.Scanner;

public class q2 {

    public static void main(String[] args) {

        int sum = 0, rem, number;

        Scanner sc = new Scanner(System.in);

        System.out.print("Enter a number: ");

        number = sc.nextInt();

        while (number != 0) {

            rem = number % 10;

            sum += rem;

            number /= 10;

        }

        System.out.println("Sum of digits is: " + sum);

        sc.close();

    }

}

Q3.

import java.util.Scanner;

public class q3 {

    public static void main(String args[]) {

        Scanner sc = new Scanner(System.in);

        System.out.print("Enter the number of terms in the Fibonacci sequence: ");

        int count = sc.nextInt();

        int n1 = 0, n2 = 1, n3;

        if (count >= 1) {

            System.out.print(n1);

        }

        if (count >= 2) {

            System.out.print(" " + n2);

        }

        for (int i = 2; i < count; ++i) {

            n3 = n1 + n2;

            System.out.print(" " + n3);

            n1 = n2;

            n2 = n3;

        }

        sc.close();

    }

}

Q4.

import java.util.Scanner;

public class q4 {

    public static void main(String[] args) {

        int rev = 0, rem, a, temp;

        Scanner sc = new Scanner(System.in);

        System.out.println("Enter a number: ");

        a = sc.nextInt();

        temp = a;

        while (a != 0) {

            rem = a % 10;

            rev = rev \* 10 + rem;

            a = a / 10;

        }

        System.out.println("Reverse of number is: " + rev);

        if (rev == temp)

            System.out.println("Palindrome");

        else

            System.out.println("Not Palindrome");

        sc.close();

    }

}

Q5.

import java.util.Scanner;

public class q5 {

    public static void main(String[] args) {

        Scanner sc = new Scanner(System.in);

        System.out.println("Enter value of n:");

        int n = sc.nextInt();

        int flag = 0;

        for (int i = 1; i <= n; i++) {

            if (n % i == 0) {

                flag++;

            }

        }

        if (flag == 2) {

            System.out.println(n + " is a prime number.");

        } else {

            System.out.println(n + " is not a prime number.");

        }

        sc.close();

    }

}

Q6.

import java.util.Scanner;

public class q6 {

    public static void main(String[] args) {

        Scanner sc = new Scanner(System.in);

        System.out.print("Enter a 3-digit number: ");

        int n = sc.nextInt();

        if (n < 100 || n > 999) {

            System.out.println("Please enter a valid 3-digit number.");

            sc.close();

            return;

        }

        int sum = 0;

        int temp = n;

        while (n != 0) {

            int rem = n % 10;

            sum += rem \* rem \* rem;

            n /= 10;

        }

        System.out.println("Sum of cubes of digits: " + sum);

        if (temp == sum) {

            System.out.println(temp + " is an Armstrong Number.");

        } else {

            System.out.println(temp + " is not an Armstrong Number.");

        }

        sc.close();

    }

}

Q7.

import java.util.Scanner;

public class q7 {

    public static void main(String[] args) {

        Scanner sc = new Scanner(System.in);

        System.out.println("Enter number:");

        int n1 = sc.nextInt();

        int rem;

        int rev = 0;

        while (n1 != 0) {

            rem = n1 % 10;

            rev = rev \* 10 + rem;

            n1 = n1 / 10;

        }

        System.out.println("Reversed number: " + rev);

        sc.close();

    }

}

Q8.

import java.util.Scanner;

public class q8 {

    public static void main(String[] args) {

        Scanner sc = new Scanner(System.in);

        System.out.println("Enter a number: ");

        int num = sc.nextInt();

        System.out.println("Factorial of " + num + " is " + factorial(num));

        sc.close();

    }

    public static int factorial(int n) {

        if (n <= 1) {

            return 1;

        }

        return n \* factorial(n - 1);

    }

}

Q9.

import java.util.Scanner;

public class q9 {

    public static void main(String[] args) {

        Scanner sc = new Scanner(System.in);

        System.out.print("Enter the starting number (n1): ");

        int n1 = sc.nextInt();

        System.out.print("Enter the ending number (n2): ");

        int n2 = sc.nextInt();

        for (int i = n1; i <= n2; i++) {

            int flag = 0;

            for (int j = 1; j <= i; j++) {

                if (i % j == 0) {

                    flag++;

                }

            }

            if (flag == 2) {

                System.out.print(i + " ");

            }

        }

        sc.close();

    }

}

Q10.

import java.util.Scanner;

public class q10 {

    public static void main(String[] args) {

        Scanner sc = new Scanner(System.in);

        System.out.print("Enter the number of rows: ");

        int n = sc.nextInt();

        for (int i = 1; i <= n; i++) {

            for (int j = 1; j <= n - i; j++) {

                System.out.print("  ");

            }

            for (int j = 1; j <= 2 \* i - 1; j++) {

                System.out.print("\* ");

            }

            System.out.println();

        }

        sc.close();

    }

}

Q11.

import java.util.Scanner;

public class q11 {

    public static void main(String[] args) {

        Scanner sc = new Scanner(System.in);

        System.out.print("Enter the number of rows: ");

        int n = sc.nextInt();

        for (int i = 1; i <= n; i++) {

            for (int j = 1; j <= n - i; j++) {

                System.out.print("  ");

            }

            for (int j = 1; j <= i; j++) {

                System.out.print(j + " ");

            }

            for (int j = i - 1; j >= 1; j--) {

                System.out.print(j + " ");

            }

            System.out.println();

        }

        sc.close();

    }

}

OUTPUT





