

MENU DRIVEN PROGRAM LO1

Aim-

Write a menu-driven Java program that will read a number and should implement the following methods 1. Factorial() 2. testArmstrong() 3. testPalindrome () 4. testPrime () 5. Fibonacci series ()

Code-

```
import java.util.Scanner;
```

```
public class NumberOperations {  
    public static void main(String[] args) {  
        Scanner scanner = new Scanner(System.in);  
        int choice, number;  
  
        do {  
            System.out.println("\nMenu:");  
            System.out.println("1. Factorial");  
            System.out.println("2. Test Armstrong");  
            System.out.println("3. Test Palindrome");  
            System.out.println("4. Test Prime");  
            System.out.println("5. Fibonacci Series");  
            System.out.println("6. Exit");  
            System.out.print("Enter your choice: ");  
            choice = scanner.nextInt();  
  
            if (choice != 6) {  
                System.out.print("Enter a number: ");  
                number = scanner.nextInt();  
            } else {  
                break;  
            }  
        }  
  
        switch (choice) {  
            case 1:  
                System.out.println("Factorial of " + number + " is " + factorial(number));  
                break;
```

```

    case 2:
        if (testArmstrong(number)) {
            System.out.println(number + " is an Armstrong number.");
        } else {
            System.out.println(number + " is not an Armstrong number.");
        }
        break;
    case 3:
        if (testPalindrome(number)) {
            System.out.println(number + " is a Palindrome number.");
        } else {
            System.out.println(number + " is not a Palindrome number.");
        }
        break;
    case 4:
        if (testPrime(number)) {
            System.out.println(number + " is a Prime number.");
        } else {
            System.out.println(number + " is not a Prime number.");
        }
        break;
    case 5:
        fibonacciSeries(number);
        break;
    default:
        System.out.println("Invalid choice. Please try again.");
}
} while (choice != 6);

System.out.println("Program terminated.");
scanner.close();
}

public static long factorial(int n) {
    if (n == 0 || n == 1) {
        return 1;
    }
}

```

```
    return n * factorial(n - 1);  
}
```

```
public static boolean testArmstrong(int n) {  
    int originalNumber = n;  
    int result = 0;  
    int numberOfDigits = String.valueOf(n).length();  
  
    while (n != 0) {  
        int remainder = n % 10;  
        result += Math.pow(remainder, numberOfDigits);  
        n /= 10;  
    }  
  
    return result == originalNumber;  
}
```

```
public static boolean testPalindrome(int n) {  
    int originalNumber = n;  
    int reversedNumber = 0;  
  
    while (n != 0) {  
        int remainder = n % 10;  
        reversedNumber = reversedNumber * 10 + remainder;  
        n /= 10;  
    }  
  
    return originalNumber == reversedNumber;  
}
```

```
public static boolean testPrime(int n) {  
    if (n <= 1) {  
        return false;  
    }  
  
    for (int i = 2; i <= Math.sqrt(n); i++) {  
        if (n % i == 0) {
```

```

        return false;
    }
}

return true;
}

public static void fibonacciSeries(int n) {
    int first = 0, second = 1;
    System.out.print("Fibonacci series up to " + n + ": " + first + ", " + second);

    int next;
    for (int i = 2; i < n; i++) {
        next = first + second;
        System.out.print(", " + next);
        first = second;
        second = next;
    }
    System.out.println();
}
}

```

Output:

Menu:

1. Factorial
2. Test Armstrong
3. Test Palindrome
4. Test Prime
5. Fibonacci Series
6. Exit

Enter your choice: 1

Enter a number: 3

Factorial of 3 is 6

Menu:

1. Factorial
2. Test Armstrong
3. Test Palindrome
4. Test Prime

5. Fibonacci Series
6. Exit
Enter your choice: 2
Enter a number: 5
5 is an Armstrong number.

Menu:
1. Factorial
2. Test Armstrong
3. Test Palindrome
4. Test Prime
5. Fibonacci Series
6. Exit
Enter your choice: 3
Enter a number: 767
767 is a Palindrome number.

Menu:
1. Factorial
2. Test Armstrong
3. Test Palindrome
4. Test Prime
5. Fibonacci Series
6. Exit
Enter your choice: 4
Enter a number: 9
9 is not a Prime number.

Menu:
1. Factorial
2. Test Armstrong
3. Test Palindrome
4. Test Prime
5. Fibonacci Series
6. Exit
Enter your choice: 5
Enter a number: 5
Fibonacci series up to 5: 0, 1, 1, 2, 3

Menu:
1. Factorial
2. Test Armstrong
3. Test Palindrome
4. Test Prime

5. Fibonacci Series

6. Exit

Enter your choice: 6

Program terminated.

Conclusion:

we learned how to make a menu driven program in java using different methods.