

Title: Write a java program to display Fibonacci series of any number. **Aim:** To implement a Java program to display the Fibonacci series of any number.

Objective: To understand and implement the concept of generating Fibonacci series using Java programming.

Introduction: The Fibonacci series is a sequence of numbers where each number is the sum of the two preceding ones, usually starting with 0 and 1. In this lab, we will write a Java program to display the Fibonacci series of any number provided by the user.

Java Program:

```
java
import java.util.Scanner;

// Main class
public class FibonacciSeries {
    // Method to display Fibonacci series
    static void displayFibonacci(int n) {
        int first = 0, second = 1, next;

        System.out.println("Fibonacci series of " + n + ":");
        System.out.print(first + " " + second + " ");

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

    // Main method
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter the number of terms: ");
        int n = scanner.nextInt();
        scanner.close();
    }
}
```

```
        displayFibonacci(n);
    }
}
```

Explanation:

1. We import the `java.util.Scanner` class to take input from the user.
2. We define a class named `FibonacciSeries`.
3. Inside the class, we define a method `displayFibonacci(int n)` to display the Fibonacci series up to `n` terms.
 - We initialize variables `first` and `second` to 0 and 1 respectively, which are the first two terms of the Fibonacci series.
 - We print the first two terms.
 - Using a `for` loop, we calculate and print the next terms of the Fibonacci series until we reach `n` terms.
 - The next term is the sum of the previous two terms (`next = first + second`).
 - We update `first` and `second` for the next iteration.
4. In the `main` method, we create a `Scanner` object to take input from the user for the number of terms in the Fibonacci series.
5. We prompt the user to enter the number of terms and store the input in the variable `n`.
6. We then call the `displayFibonacci` method with the number of terms provided by the user.

Conclusion: In this lab, we have learned how to implement a Java program to display the Fibonacci series of any number of terms. We used a loop to generate the series and explained the concept of swapping variables to calculate the next term in the series. This demonstrates the use of loops and user input in Java programming.