import java.util.Scanner;

public class FibonacciCalculator {

public int[] fibonacciIterative(int n) {

if (n <= 1) {

int[] result = new int[n + 1];

for (int i = 0; i <= n; i++) {

result[i] = i;

}

return result;

}

int[] arr = new int[n + 1];

int[] result = new int[n + 1];

arr[0] = 0;

arr[1] = 1;

result[0] = 0;

result[1] = 1;

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

int curr = arr[i - 1] + arr[i - 2];

arr[i] = curr;

result[i] = curr;

}

return result;

}

public int fibonacciRecursive(int n) {

if (n <= 1) {

return n;

}

return fibonacciRecursive(n - 1) + fibonacciRecursive(n - 2);

}

public static void main(String[] args) {

FibonacciCalculator fibonacciCalculator = new FibonacciCalculator();

Scanner scanner = new Scanner(System.in);

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

int n = scanner.nextInt();

System.out.println("Choose the method to calculate Fibonacci:");

System.out.println("1. Iterative method");

System.out.println("2. Recursive method");

int choice = scanner.nextInt();

if (choice == 1) {

int[] result = fibonacciCalculator.fibonacciIterative(n);

System.out.print("Fibonacci(" + n + ") using iterative method: ");

for (int i = 0; i <= n; i++) {

System.out.print(result[i] + " ");

}

System.out.println();

} else if (choice == 2) {

int result = fibonacciCalculator.fibonacciRecursive(n);

System.out.println("Fibonacci(" + n + ") using recursive method: " + result);

} else {

System.out.println("Invalid choice!");

}

}

}