



EAST WEST UNIVERSITY

LAB REPORT 9

Course:CSE 207

Sec:3

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Program Name: Object-Oriented Programming(Data Structure)

Date: 5/6/2024

Submitted to:

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Main Class:

```
package lab9;
import java.util.Scanner;
public class RecursiveFunctions {
    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);
        // Factorial
        System.out.print("Enter a nonnegative integer for factorial: ");
        int n = input.nextInt();
        System.out.println("Factorial of " + n + " is " + factorial(n));
        // Fibonacci
        System.out.print("Enter an index for Fibonacci: ");
        int index = input.nextInt();
        System.out.println("Fibonacci number at index " + index + " is " +
fibonacci(index));
        // Print numbers in reverse
        System.out.println("Numbers from 1 to 100 in reverse order:");
        printReverse(100);
        // Print JAVA 100 times
        System.out.println("Printing 'JAVA' 100 times:");
        printJava(100);
        // Palindrome check
        System.out.print("Enter a word to check for palindrome: ");
        String word = input.next();
        System.out.println("Is " + word + " a palindrome? " + isPalindrome(word, 0,
word.length() - 1));
        input.close();
    }
    // Factorial method
    public static long factorial(int n) {
        if (n == 0) {
            return 1;
        } else {
            return n * factorial(n - 1);
        }
    }
    // Fibonacci method
    public static long fibonacci(int index) {
```

```

    if (index <= 1) {
        return index;
    } else {
        return fibonacci(index - 1) + fibonacci(index - 2);
    }
}

// Print numbers in reverse
public static void printReverse(int number) {
    if (number > 0) {
        System.out.println(number);
        printReverse(number - 1);
    }
}

// Print JAVA 100 times
public static void printJava(int times) {
    if (times > 0) {
        System.out.println("JAVA");
        printJava(times - 1);
    }
}

// Palindrome check
public static boolean isPalindrome(String word, int start, int end) {
    if (start >= end) {
        return true;
    }
    if (word.charAt(start) != word.charAt(end)) {
        return false;
    }
    return isPalindrome(word, start + 1, end - 1);
}
}

```

Output:

```
<terminated> RecursiveFunctions (1) [Java Application] C:\Program Files\Java\jdk-21\bin\javaw.exe (May 6, 2024, 7:58:12 AM – 7:58:25 AM) [p
Enter a nonnegative integer for factorial: 7
Factorial of 7 is 5040
Enter an index for Fibonacci: 11
Fibonacci number at index 11 is 89
Numbers from 1 to 100 in reverse order:
100
99
98
97
96
95
94
93
92
91
90
89
88
87
86
85
84
83
82
81
80
79
78
77
76
75
74
73
72
71
70
69
68
67
66
65
64
63
62
61
60
59
58
57
56
55
54
```

```
Printing 'JAVA' 100 times:
```

[illegible]

WOW

```
Is 'WOW' a palindrome? true
```