

## Lesson 4 – Recursion - Lab Homework

### Find the solutions for the given problem using **recursive approach**.

1. For this exercise, you will write your own exponential function. Use the fact that for any (real number)  $x$  and any natural number  $n > 0$ ,

$$X^n = X * X^{n-1}$$

write a recursive function

double power (double x, int n)

that returns  $x^n$  and that uses only multiplication (and addition and subtraction if necessary) for its computation. (For this exercise, do **not** use the Math function pow(x,n).) Enclose the function in a class called Exponential.

Demonstrate that your method works by doing the following: In the main method, create an instance of Exponential, and, from this instance, call power(2,10), and print the result to the console.

2. Using recursion to find the minimum character in the given string input.

If your input is “akel” in return ‘a’

3. Write a recursive solution for reversing the given n elements of an array. Do not use auxiliary array to store the results. Work only with the given array to reverse. Think about the method signature and the arguments. If you want, you can have public utility method with and private recursive method. Inputs are not necessarily in sorted order.

Before Reverse: [1, 3, 5, 7, 9, 13]

After Reverse: [13, 9, 7, 5, 3, 1]

4. Write a recursive solution to check whether the given number is Palindrome or not. you can have public utility method and private a recursive method. Return a boolean value.

Example: If you input an int value 121 – return true

If your input is negative return false.

If the input is 102 return false.

5. Write a recursive solution to return max value from the given array.

Example: [5, -3, 6, 1, 9, 4 ], Max = 9

6. Perform JUnit testing for any two problems from 1 to 5.

### Interview Practice

Try individually the Interview problems from leetcode.com, Neet code, or Hacker Rank at least two problems related to Arrays, Strings and Math problems using Recursion.

You can talk about your logic during the interview discussion session in the afternoon class. Not necessary to submit.