Columbia College
Vancouver, Canada

Introduction to Computer Science and Programming 1
CSCI120

Chapter11: Recursion

Lab

Note: This document has been designed and developed as part of an initiative for creating an OER (Open Education Resource) package for the course CSCI 120 at Columbia College.

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Requirements

- Both teammates need to submit their assignments on Moodle.
- Write the name of both teammates at the beginning of the answer file.
- Setup zoom meetings to work on the assignment together with your teammate (Meetings less than 40 minutes are free in Zoom. And you can have as many meetings as you want)
- You can record your zoom meeting on Cloud or on a local computer. Please record one of your meetings on Cloud and submit the link of the Zoom meeting video when submitting your assignment.
- If you have to have several zoom meetings, you do not need to record them all to submit. Just submit the link to the recording of one of your zoom meetings with your teammate.
- If your teammate does not participate in the meetings and the group work, please mention in your answers that you have done the project alone.
- To find the teams, please check the Module Teams on Thinkfic.

Problem1

- Write a recursive function which reverse a string word. You cannot use reverse function of Python. You need to design a recursive algorithm and implement it. What is time complexity of your solution?

Problem2

- Write e recursive function to check whether a string word whose length is even, is palindrome or not. A palindrome word is a word which is equal to its reversed.

Problem3

- Write recursive function which calculates a**b (a to the power of b) recursively without using the power operation.

Problem4

- Suppose a list of numbers is given. Write a recursive function which calculates the Even Factor of a given index of the list.
- Even Factor of a given index, i, is the number of numbers in the list whose index is lower (smaller) than i.
- Example: sampleList = [10,11,15,13,10,1]
    - Even Factor of index 3 is 1. Because there is only one even number (10) before index 3.

  - Even Factor of index 0 is 0. Because there is no even number in the list before index 0.
  - Even Factor of index 5 is 2 because there are 2 even numbers (10 and 10) before index 5.
- Write a recursive function which calculate the even number of a given index for a list.

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Problem5

- Write a recursive function that calculate A / B (A and B are integers) recursively without using the division operator.

Good Luck ☺