Data Structures & Applications
Fall 2020
Lab 04 – Recursion

Instructor: Saif Hassan Date: 12th October, 2020

Instructions:

- At the end of this Lab, you will have to submit all files on LMS.
- File format should be **`.zip/.rar`** file containing required **`.java`** files and additional if required.
- File Name should be your **`CMSID_Name_Lab04.zip.`**
- Create a project named lab04_dsa and perform following tasks.

Note: Keep this code with you till the course ends.

Task 00: (Simple Recursion)

a) Write a program to ask user input N and print numbers from 1 – N in ascending/descending order. (using recursion)
b) Print 1d character array values using recursion in forward/reverse direction.

Task 01: (Fibonacci Series)

a) Write a program to generate Fibonacci series till N. N is any user input. (Using iterative approach)
b) Write a program to generate Fibonacci series till N. N is any user input. (Using recursive approach)
c) Calculate and compare time, whether a or b takes less time **(using code).**

Task 02: (Factorial)

a) Design a method to calculate factorial of N number where N is any user input. (Using iterative approach)
b) Design a method to calculate factorial of N number where N is any user input. (Using recursive approach)
c) Calculate and compare time, whether a or b takes less time **(using code)**.

Task 03: (Printing Linkedlist):

a) Write a program to print all nodes from linkedlist. (Using iterative approach)

b) Write a program to print all nodes from linkedlist. (Using recursive approach)
c) Calculate and compare time, whether a or b takes less time **(using code).**

Task 04: (Search using recursion)

Write a program to store random values in array of integers and ask user any input Search, find out whether Search value is present in array or not. (Using recursion/Iterative) and compare time of both

If present then return 1 otherwise 0.