East West University
Department of Computer Science and Engineering

CSE207 – Data Structures: LAB 04
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Recursion

1. Write a program to find GCD of two numbers. You must have to use recursive function to solve this problem.

Sample Input	Sample Output
a. 18, 24	6
b. 13, 23	1

2. (a). Suppose, you are given a number n. You have to print n, n-1, n-2,……1 on the console. Write a recursive function to solve the problem.

Sample Input	Sample Output
a. 6	6 5 4 3 2 1

(b). Rewrite the previous program to print 1, 2, ……n-2, n-1, n on the console.

Sample Input	Sample Output
a. 7	1 2 3 4 5 6 7

3. Write a program to calculate summation up to n-element of a Fibonacci sequence. You have to calculate the n-th element of the series using recursion.

Hint: Fibonacci sequence is 0 1 1 2 3 5 8 13 21 ……. Every n-th element is the sum of previous two(n-1 and n-2)-th element. Suppose, you want to calculate the sum of first 9 terms of the Fibonacci sequence. First you have to calculate each of the term using a recursive function. Then add the newly calculated term one by one.

Sample Input	Sample Output
a. 8	20

4. Write a program to delete n-th node of a given linked list using recursion.

For example, a linked list

6	2	57	53	18

After deleting 3rd node, the list will be,

6	2	53	18

5. Write a program to sort a linked list using recursion.

   For example, a linked list:

61	26	59	31	18

   After sorting the list,

18	26	31	59	61