

Problems based on Recursion – 4

Assignment Questions



Q1 - Given a number n, print the following pattern without using any loop.

(Easy)

n, n-5, n-10, ..., 0, 5, 10, ..., n-5, n

There should be 0 or at most one occurrence of negative number in the series.

Sample Input: n = 16

Sample Output: 16, 11, 6, 1, -4, 1, 6, 11, 16

Sample Input: n = 10

Sample Output: 10, 5, 0, 5, 10

Q2 - Find m-th summation of first n natural numbers where m-th summation of first n natural numbers is defined as following:

(Medium)

If $m > 1$: $SUM(n, m) = SUM(SUM(n, m - 1), 1)$

Else : $SUM(n, 1) = \text{Sum of first n natural numbers.}$

Sample Input: n = 3, m = 2

Sample Output: $SUM(3, 2) = 21$

Explanation : $SUM(3, 2)$
= $SUM(SUM(3, 1), 1)$
= $SUM(6, 1)$
= 21

Sample Input: n = 4, m = 1

Sample Output: $SUM(4, 1) = 10$

Q3 - Given a number n which denotes the number of variables in the equation and a val which denotes the sum of these variables, count the number of such non-negative integral solutions that are possible.

(Medium)

Sample Input: n=5 val=1

Sample Output: 5

Explanation: The possible solutions are

0,0,0,0,1
0,1,0,0,0
0,0,0,1,0
0,0,1,0,0
0,0,0,0,1