Pre-Course - Computer Programming
DSSC - 2021/2022

Unit 7

Ex. 1

Write a recursive function to compute the sum of all the integer numbers in the interval between two parameters n and m.

Ex. 2

Write a recursive function to compute the n-th number in the sequence of Fibonacci.

Ex. 3

Write a function to compute the square root of a `double` value by using a recursive implementation of the bisection algorithm.

Ex. 4

A *sub-array* of an array A is an array that exclusively includes elements contained by A itself preserving their relative ordering. For instance, $B = [3, 5, 5]$ is a sub-array of $A = [2, 3, 4, 5, 6, 5]$, but $C = [5, 3, 5]$ is not because 3 comes before all the 5s in A, while it occurs after a 5 in B.

Write a function to get all the sub-arrays of a given array.

Ex. 5

Given a value n and a currency C, a *change for n in C* is a set of coins of C whose total value amounts to n. A change for n in C is *minimal* if there are no changes for n in C consisting in fewer coins.

Write a function that takes as parameters:

- a natural number n
- an array C containing the values of all the coins in a currency

and returns a minimal change for n in that currency. For instance, when the actual parameters are $n = 15$ and $C = [4, 5, 8]$, the function will return $[5, 5, 5]$.