Problems based on Recursion - 6

Assignment Questions

PW SKILLS

Q1 - Given an array arr of size N and a target value target The task is to find all the indices of the given *target* value in the array using recursion. (Medium)

Input: arr = {1, 2, 9, 2, 2, 9}, target = 2
Output: 1 3 4

Element 2 is present at indices 1, 3, 4 (0 based indexing)

Input: arr[] = {8, 8, 8}, target = 8
Output: 0 1 2

Q2 - Given an array of integers, print a sum triangle using recursion from it such that the first level has all array elements. After that, at each level the number of elements is one less than the previous level and elements at the level will be the Sum of consecutive two elements in the previous level. (Medium)

Sample Input: [5,4,3,2,1]
Sample Output:
5, 4, 3, 2, 1
9, 7, 5, 3
16, 12, 8
28, 20
48

Q3 - Given an array of size n, generate and print all possible combinations of r elements in array. (Hard)

Input1:
n = 4
{1, 2, 3, 4}
r = 2
Output1:
{1, 2}
{1, 3}
{1, 4}
{2, 3}
{2, 4}
{3, 4}

Input2:
n = 5
{1, 2, 3, 4, 5}
r = 3
Output2:
{1, 2, 3}
{1, 2, 4}
{1, 2, 5}
{1, 3, 4}
{1, 3, 5}
{1, 4, 5}
{2, 3, 4}
{2, 3, 5}
{2, 4, 5}
{3, 4, 5}

Q4 - Given two sorted arrays A and B of length m and n respectively, generate all possible arrays such that the first element is taken from A then from B then from A, and so on in increasing order till the arrays are exhausted using recursion. The generated arrays should end with an element from B. (Hard)

Input1:
m = 3
n = 4
A = {10, 15, 25}
B = {1, 5, 20, 30}
Output1:
10 20
10 20 25 30
10 30
15 20
15 20 25 30
15 30
25 30

Input2:
m = 2
n = 1
A = {5, 7}
B = {10}
Output2:
5 10
7 10