BAHRIA UNIVERSITY,
(Karachi Campus)

Department of Software Engineering

Assignment #02– Spring 2022

COURSE TITLE:	**D&AA**	COURSE CODE:	**CSC-321**
Class:	**BSE 4**	Shift:	**Morning**
Course Instructor:	**ENGR. BUSHRA FAZAL KHAN**	Assignment Date:	**24-May-2022**
Max. Marks:	**4 Points**	Assignment Due:	**31-May-2022**

Psudo-code for backtracking algorithm of Sum of subset problem is given below. Explain the mechanism for given data

n=4, W=13, and w_1=3, w_2=4, w_3=5, w_4=6

► Algorithm 5.4 The Backtracking Algorithm for the Sum-of-Subsets Problem

Problem: Given n positive integers (weights) and a positive integer W, determine all combinations of the integers that sum to W.

Inputs: positive integer n, sorted (nondecreasing order) array of positive integers w indexed from 1 to n, and a positive integer W.

Outputs: all combinations of the integers that sum to W.

```
void sum_of_subsets (index i,
                     int weight; int total)
{
  if (promising(i))
     if (weight == W)
        cout << include[1] through include[i];
     else{
        include[i + 1] = "yes";          // Include w[i + 1].
        sum_of_subsets(i + 1, weight + w[i +1], total - w[i + 1]);
        include[i + 1] = ''no";          // Do not include w[i + 1].
        sum_of_subsets(i + 1, weight, total - w[i + 1]);
     }
}

bool promising (index i);
{
return (weight + total >= W) && (weight == W || weight + w[i + 1] <= W);
}
```