COSC 3304 – Algorithms Design and Analysis

Assignment 8

Due: 23:59:00pm, 03/28/2024

1. (20 points) What steps are when developing a dynamic-programming algorithm?

2. A 0-1 Knapsack problem is below:

    4 items
    Max weight is 5
    Item 1: weight 2; benefit 3
    Item 2: weight 4; benefit 5
    Item 3: weight 5; benefit 6
    Item 4: weight 3; benefit 4

i\W	0	1	2	3	4	5
0	0	0	0	0	0	0
1						
2						
3						
4						

    (1) (10 points) What is the subproblem of the shaded cell?

    (2) (50 points) Please solve this 0-1 Knapsack problem using the given table.

    (3) (20 points) Please show what items should be placed in the knapsack to maximize the benefit.