Due: 25th October 2022, 8:00am
20% penalty for 1 day late
40% penalty for 2 days late
Submission not allowed afterwards

CS2009: Design and Analysis of Algorithms
Assignment 03
Total Marks: 100 points

Group assignment (Submission as group of **3** students)

Go through the website.

Understand how these problems can be solved using Dynamic Programming. Now, solve each problem using an example.

a) For Longest-Common-Subsequence, X: {B, First Alphabet in the Name of Group Member 1, C, A, B, A} and Y: {First vowel in the Name of Group Member 2, B, C, B, D, A, B}

b) For Shortest-Common-Supersequence, X: First Name of Group Member 1 and Y: First Name of Group Member 2

c) For Longest-Increasing-Subsequence, {4th Digit of Group Member 1, 10, 2, 4th Digit of Group Member 2, 20}

d) For Levenshtein-distance (edit-distance) problem, str1 = "PLASMA", str2 = "ALTRUISM"

e) For Matrix Chain Multiplication, $p0 = 2$, $p1 = 25$, $p2 = 3$, $p3 = 16$, $p4 = 1$ $p5$ = length of first name of Group member 3, Show parenthesis at the end.

f) For 0-1-knapsack-problem, Value =[3, 5, 4, 8, 10], Weight =[1, 2, 3, 4, 5], W = 5

g) For Partition-problem, The Set contains 6 numbers. The first three numbers are the conversion of first three alphabets of Group member 1 into respective numbers, and the last three numbers are from the first three alphabets of Group member 3.
Just for an example (don't solve this example): if two group members are: Ahmed and Waqas then S = {1, 8, 13, 23, 1, 17}. That is by letting A = 1, B=2, C = 3, etc.

h) For Rod Cutting Problem, length[] = {1, 2, 3, 4, 5, 6, 7, 8}, price[] = {1, 5, 8, 9, 10, 16, 18, 20}, Rod Length: 8.

i) For Coin-change-making-problem, S = {1,5,6,8}, Desired Change is 13

j) For Word Break Problem, S = {i, like, ice, cream, icecream, mobile, apple}, Input: ilikeapple.