CS302: Design and Analysis of Algorithms
Assignment 03

Due Date: 16th Nov 2020 before 9:00 am in class. Total Marks: 100 Points
Group Assignment of 2.

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1. Go through the website https://medium.com/@codingfreak/top-10-dynamic-programming-problems-5da486eeb360. Understand how these problems can be solved using Dynamic Programming. Now, solve each problem using an example [100 Points]

   (a) For Longest Common Subsequence, X: BDCCBA and Y: ABCBDCB

   (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 = "cat", str2 = "cut"

   (e) For Matrix Chain Multiplication, $p_0 = 3, p_1 = 2, p_2 = 5, p_3 = 5, p_4 = 3$, Show parenthesis at the end

   (f) For 0-1-knapsack-problem, Value = [20, 5, 10, 40, 15, 35], Weight = [1,2,3,8, 2, 4], W = 10

   (g) For Partition-problem, S = {3,1,1,2,2,1},

   (h) For Rod Cutting Problem, length[] = {1,2,3,4,5,6,7,8}. price[] = {1,5,8,9,10,17,17,20}, Rod Length: 4

   (i) For Coin-change-making-problem, S = {1,3,5,7}, Desired Change is 38

   (j) For Word Break Problem, S = { i, like, sam, sung, samsung, mobile, ice, cream, icecream, man, go, mango}, Input: Ilikemobile