CS 101 Fall 2021 - Quiz 10-A

12/20/2021 - 25 Minutes **Name:** **ID number:**

NOTE: Please write down the subproblem, recurrence equation and the time complexity. Breifly explain why.

Problem 1 Longest Common Subsequence (5 pts)

Given two strings s1 and s2, find out the length of their longest common subsequence using dynamic programming. A subsequence of a string is a new string generated from the original string with some characters (can be none) deleted without changing the relative order of the remaining characters. For example, "ace" is a subsequence of "abcde". A common subsequence of two strings is a subsequence that both strings have.

Problem 2 "01"-Problem (5 pts)

In the computer world, use restricted resources to generate maximum benefit is what we always want to pursue.

Assume you are given a set of binary strings $strs$ of size l, and two integers m and n.

You need to find out the maximum number of strings in $strs$ that you can form using m 0's and n 1's (you don't need to use all of them and every 0 and 1 can only be used at most once).

For example, strs = { "10", "0", "1" }, m = 1, n = 1, the maximum number of strings in strs that you can form is 2.