

PromptScratchpadOur Solution(s)Video Explanation

Run Code

Solution 1Solution 2Solution 3Solution 4

```
1 // Copyright © 2020 AlgoExpert, LLC. All rights reserved.
2
3 using System;
4 using System.Collections.Generic;
5
6 public class Program {
7     // O(nm) time | O(nm) space
8     public static List<char> LongestCommonSubsequence(string str1, string str2) {
9         int[,] lengths = new int[str2.Length + 1, str1.Length + 1];
10        for (int i = 1; i < str2.Length + 1; i++) {
11            for (int j = 1; j < str1.Length + 1; j++) {
12                if (str2[i - 1] == str1[j - 1]) {
13                    lengths[i, j] = lengths[i - 1, j - 1] + 1;
14                } else {
15                    lengths[i, j] = Math.Max(lengths[i - 1, j], lengths[i, j - 1]);
16                }
17            }
18        }
19        return buildSequence(lengths, str1);
20    }
21
22    public static List<char> buildSequence(int[,] lengths, string str) {
23        List<char> sequence = new List<char>();
24        int i = lengths.GetLength(0) - 1;
25        int j = lengths.GetLength(1) - 1;
26        while (i != 0 && j != 0) {
27            if (lengths[i, j] == lengths[i - 1, j]) {
28                i--;
29            } else if (lengths[i, j] == lengths[i, j - 1]) {
30                j--;
31            } else {
32                sequence.Insert(0, str[j - 1]);
33                i--;
34                j--;
35            }
36        }
37        return sequence;
38    }
39 }
40
```