

Solution 1

```
1 // Copyright © 2020 AlgoExpert, LLC. All rights reserved.
2
3 using System;
4 using System.Collections.Generic;
5
6 public class Program {
7     // O(n*m) | O(n) space
8     public static string UnderscorifySubstring(string str, string substring) {
9         List<int[]> locations = collapse(getLocations(str, substring));
10        return underscorify(str, locations);
11    }
12
13    public static List<int[]> getLocations(string str, string substring) {
14        List<int[]> locations = new List<int[]>();
15        int startIdx = 0;
16        while (startIdx < str.Length) {
17            int nextIdx = str.IndexOf(substring, startIdx);
18            if (nextIdx != -1) {
19                locations.Add(new int[] {nextIdx, nextIdx + substring.Length});
20                startIdx = nextIdx + 1;
21            } else {
22                break;
23            }
24        }
25        return locations;
26    }
27
28    public static List<int[]> collapse(List<int[]> locations) {
29        if (locations.Count == 0) {
30            return locations;
31        }
32        List<int[]> newLocations = new List<int[]>();
33        newLocations.Add(locations[0]);
34        int[] previous = newLocations[0];
35        for (int i = 1; i < locations.Count; i++) {
36            int[] current = locations[i];
37            if (current[0] <= previous[1]) {
38                previous[1] = current[1];
39            } else {
40                newLocations.Add(current);
41                previous = current;
42            }
43        }
44        return newLocations;
45    }
46
47    public static string underscorify(string str, List<int[]> locations) {
48        int locationsIdx = 0;
49        int stringIdx = 0;
50        bool inBetweenUnderscores = false;
51        List<string> finalChars = new List<string>();
52        int i = 0;
53        while (stringIdx < str.Length && locationsIdx < locations.Count) {
54            if (stringIdx == locations[locationsIdx][i]) {
55                finalChars.Add("_");
56                inBetweenUnderscores = !inBetweenUnderscores;
57                if (!inBetweenUnderscores) {
58                    locationsIdx++;
59                }
60                i = i == 1 ? 0 : 1;
61            }
62            finalChars.Add(str[stringIdx].ToString());
63            stringIdx += 1;
64        }
65        if (locationsIdx < locations.Count) {
66            finalChars.Add("_");
67        } else if (stringIdx < str.Length) {
68            finalChars.Add(str.Substring(stringIdx));
69        }
70        return String.Join("", finalChars);
71    }
72 }
73
```