

Solution 1

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