

Solution 1

```
1 // Copyright © 2020 AlgoExpert, LLC. All rights reserved.
2
3 package main
4
5 import "strings"
6
7 type intervals []*interval
8 type interval struct {
9     left int
10    right int
11 }
12
13 // O(n*m) | O(n) space
14 func UnderscorifySubstring(str string, substring string) string {
15     locations := getLocations(str, substring)
16     locations = locations.collapse()
17     return underscorify(str, locations)
18 }
19
20 func getLocations(str, substring string) intervals {
21     result := intervals{}
22     for start := 0; start < len(str); {
23         nextIndex := strings.Index(str[start:], substring)
24         if nextIndex == -1 {
25             break
26         }
27         nextIndex += start
28         result = append(result, &interval{nextIndex, nextIndex + len(substring)})
29         start = nextIndex + 1
30     }
31     return result
32 }
33
34 func (array intervals) collapse() intervals {
35     // If the array is empty, nothing to do
36     if len(array) == 0 {
37         return array
38     }
39
40     result := intervals{array[0]}
41     previous := array[0]
42     for i := 1; i < len(array); i++ {
43         current := array[i]
44         if current.left <= previous.right {
45             // Collapse the two intervals
46             previous.right = current.right
47         } else {
48             result = append(result, current)
49             previous = current
50         }
51     }
52     return result
53 }
54
55 func underscorify(str string, locations intervals) string {
56     if len(locations) == 0 {
57         return str
58     }
59
60     // We know the resulting string will have an additional 2*len(intervals)
61     // characters
62     result := make([]rune, len(str)+2*len(locations))
63     resultIndex := 0
64     locationIndex := 0
65     for i, r := range str {
66         location := locations[locationIndex]
67         if i == location.left {
68             result[resultIndex] = '_'
69             resultIndex += 1
70         } else if i == location.right {
71             result[resultIndex] = '_'
72             resultIndex += 1
73             if locationIndex+1 < len(locations) {
74                 locationIndex += 1
75             }
76         }
77         result[resultIndex] = r
78         resultIndex += 1
79     }
80
81     if locations[locationIndex].right == len(str) {
82         result[len(result)-1] = '_'
83     }
84     return string(result)
85 }
```

96