

Our Solution(s)

Run Code

Your Solutions

Run Code

Solution 1

```
1 # Copyright © 2020 AlgoExpert, LLC. All rights reserved.
2
3 # O(n + m) time | O(m) space
4 def knuthMorrisPrattAlgorithm(string, substring):
5     pattern = buildPattern(substring)
6     return doesMatch(string, substring, pattern)
7
8
9 def buildPattern(substring):
10     pattern = [-1 for i in substring]
11     j = 0
12     i = 1
13     while i < len(substring):
14         if substring[i] == substring[j]:
15             pattern[i] = j
16             i += 1
17             j += 1
18         elif j > 0:
19             j = pattern[j - 1] + 1
20         else:
21             i += 1
22     return pattern
23
24
25 def doesMatch(string, substring, pattern):
26     i = 0
27     j = 0
28     while i + len(substring) - j <= len(string):
29         if string[i] == substring[j]:
30             if j == len(substring) - 1:
31                 return True
32             i += 1
33             j += 1
```

Solution 1 Solution 2 Solution 3

```
1 def knuthMorrisPrattAlgorithm(string, substring):
2     # Write your code here.
3     pass
4
```

Our Tests

Custom Output

Submit Code

```
1 # Test 1
2 # Input: string = "ababab", substring = "abab"
3 # Output: True
4
5 # Test 2
6 # Input: string = "ababab", substring = "ababab"
7 # Output: True
8
9 # Test 3
10 # Input: string = "ababab", substring = "abababab"
11 # Output: False
```

```
10 # Add a new row to the DataFrame
11 df = df.append({'name': 'John', 'age': 25, 'gender': 'Male'})
12 # Print the DataFrame
13 print(df)
14 # Save the DataFrame to a CSV file
15 df.to_csv('data.csv', index=False)
16 # Load the DataFrame from a CSV file
17 df = pd.read_csv('data.csv')
18 # Print the DataFrame
19 print(df)
```

Run or submit code when you're ready.