Knuth-Morris-Pratt algorithm in Java → Finding substrings in a matrix

📊 Hard   🕐 28 minutes   ❓   Share:

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Code Challenge — Write a program

Given two matrices: a pattern p and a text t. Write a program that counts the number of occurrences of p in t.

Input: the first line contains two numbers x and y -- the number of rows and columns in a pattern. Each of the next x lines contains a string of length y. The following lines contain a text in the same format. It is guaranteed that the sizes of rows and columns both for the pattern and for the text are not equal to zero.

Output: the number of occurrences of the pattern in the text.

Hint: try to solve the problem when p and t have the same number of columns and then extend the solution for arbitrary strings.

Sample Input 1:
```
1 1
a
2 2
ab
ba
```

Sample Output 1:
```
2
```

Sample Input 2:
```
2 2
aa
bb
4 4
aabb
bbaa
aabb
bbaa
```

Sample Output 2:
```
3
```

Code Editor   **IDE**

🧊 Solve in IDE

✓ **IDE is responding** IntelliJ IDEA 2019.3

✓ **Plugin is responding** 3.2-2019.3-3686

✓ **Correct**

　　Thanks for your feedback!

> Write here how we could improve this problem

Continue

Time limit: 3 seconds   Memory limit: 256 MB

Comments (9)   Hints (0)   Useful links (0)   Solutions (0)

Share something, Sergey Kubatko

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CM   **Chimmuanya Mogbo** 17 days ago Report

Help please!
Which input method is used by this program?
especially in processing matrix dimensions?

♡ 0   **Reply**

AS   **Azat Sariyev** 17 days ago Report

Why sample output 2 is 3, not 8?

♡ 0   **Reply**

SK   **Sergey Kubatko** 27 days ago

confirmed, Test#14 case can be solved by prefix cached function

♡ 1   **Reply**

F   **farmac** 28 days ago Report

Output 1962799 if pattern is matrix 100x100 and text 1500x1500.

♡ 0   **Reply**

A   **alinaalam** 3 months ago Report

For everyone getting "Time limit exceeded" for Test # 14, try figuring out a solution which doesn't redo work if the rows are the same

♡ 0   **Reply**

A   **alinaalam** 3 months ago Report

I am also getting "Time limit exceeded" for test #14
Any hints?

♡ 0   **Reply**

MT   **Mohammad Tahawi** 5 months ago Report

Failed Test #14. Time limit exceeded.

Do we need to adjust the prefix function somehow to handle 2d pattern ?

♡ 0   **Reply**

LA   **LAURENT APICELLA** 6 months ago Report

So difficult! But great problem!

♡ 0   **Reply**

O-   **Oleg - User 326711** 6 months ago Report

Please specify in the condition of overlapping patterns should be considered? aa to aaa, one or two times?

♡ 1   **Show original ⬆**   **Reply**