Knuth-Morris-Pratt algorithm in Java → Number of distinct substrings in a string

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Hard 22 minutes Share:

Code Challenge — Write a program

Given a string s. Write a program that counts the number of distinct substrings contained in s.

NB: Remember about the empty string.

Hint: Suppose we already know the number of distinct substrings for $s[(i+1) : |s|]$. Now let's add a symbol $s[i]$ to the beginning of this substring. Thus, we add $|s[i : |s|]|$ new substrings. But how many of them did not appear before?

Sample Input 1:

```
aba
```

Sample Output 1:

```
6
```

Sample Input 2:

```
x
```

Sample Output 2:

```
2
```

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: 5 seconds Memory limit: 256 MB

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Share something, Sergey Kubatko

Sort by: Last posted

SK **Sergey Kubatko** 27 days ago

https://e-maxx.ru/algo/prefix_function can help

♡ 0 Reply

DM **Dmitrij Morozov** about 2 months ago Report

My slution with hashSet took over 30 sec for test#12 with 10 000 sumbols.
I revorked prefix func for my special algorithm. The algorithm passed the test in 355 ms.

hint: You need only "prefix" func.

0 Reply

DM **Dmitrij Morozov** about 2 months ago Report

OMG DONE!

0 Reply

DM **Dmitrij Morozov** about 2 months ago Report

i tried use hashSet but it soo slow for 12 test

0 Reply

MB **Maciej Bystrzyński** about 2 months ago Report

It was good challenge ;).

0 Reply

G **Gurhan** 3 months ago Report

Failed test #12. Time limit exceeded. Why?

0 Reply

G **Gurhan** 3 months ago Report

I just copied the answer from https://www.geeksforgeeks.org/count-distinct-substrings-string-using-suffix-trie/ but it couldn't pass it. Any idea?

0 Reply

G **Gurhan** 3 months ago Report

Failed test #3. Wrong answer.

0 Reply

AS **Andrey Shinkaryov** 4 months ago Report

Try to read about z-function if you are confused.

0 Reply

U2 **User 283691** 5 months ago Report

This is really challenging and fun at the same time! If you are using the whole KMP algorithm you will be exceeding time, and prefix function is what it only needs to solve this problem. The hint was very useful - the beauty was in subtraction, not in addition

0 Reply

MT **Mohammad Tahawi** 5 months ago Fixed

s[(i+1)...is|] // three dots used

0 Show all

P **Potäto** 5 months ago Report

Tough problem, but a lot of fun. It helps to actually generate the substrings, and to compare the results with a naive implementation such as this one: https://www.geeksforgeeks.org/count-number-of-distinct-substring-in-a-string/ . But then you can optimize by only calculating the number of combinations, rather than actually generating them.

0 Reply

A **andioz** 6 months ago Report

Uff, this one was very hard for me. I don't understand why the hint is working, maybe more explanation of the theory in the into would be helpful to fully understand the correctness of the implementation.

♡ 0 Reply

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

Interesting challenge. Two days struggled with finding a formula on your own)). In the forehead will not solve - you have exceeded the time limit, and the cycles get confused... Use the prefix function.

♡ 0 Show original ↑ Reply

SS **Sergii Shapoval** 6 months ago Report

for aba we will have empty, a, b, ab, ba, aba, so we consider only order same as in parent string

♡ 0 Reply