Century Permutations and Patterns

locked

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Problem Submissions Leaderboard Discussions Editorial

Rohit has a string **S** with length **N**. He also has **M** other strings **P1,P2,...,PM**, which are called patterns. The characters in the strings are indexed from 1.

Rohit was wondering if he could find the **M** patterns in the string S in the given order. That is, he wanted to know whether it is possible to choose M ranges, denoted by [li,ri] for each i (1≤ i ≤M), such that 1 ≤ l1 ≤ r1 < l2 ≤ r2 <...< lM ≤rM ≤N and for each valid i, the substring Sli,Sli+1,...,Sri equals Pi.

As this problem was too easy for Rohit, Virat decided to make a harder one. A permutation p=(p1,p2,...,pM) of integers 1 through M is called a century permutation if Rohit can reorder the M patterns into Pp1,Pp2,...,PpM and then find them in S, in this order (in the same way as described above).

Can you help Rohit find the number of Century permutations?

Input Format

- The first line of the input contains two space-separated integers N and M.
- The second line contains a single string S.
- M lines follow. For each i (1≤i≤M), the i-th of these lines contains a single string Pi.

Constraints

- 1≤N≤105
- 1≤M≤14
- 1≤|Pi|≤105 for each valid i
- S,P1,P2,...,PM contain only lowercase English letters

Output Format

Print a single line containing one integer - the number of Century permutations.

Sample Input 0

```
10 3
abbabacbac
ab
```

```
ac
b
```

Sample Output 0

```
3
```

Explanation 0

```
Among the 3!=6 possible permutations of (1,2,3), the Century permutations are (1,2,3), (3,1,2) and  (1,3,2) .
These correspond to permutations of patterns ("ab", "ac", "b"), ("b", "ab", "ac") and ("ab", "b", "ac")
respectively. Each of them can be found in S in the given order.
```

Sample Input 1

```
3 2
aaa
aa
aa
```

Sample Output 1

```
0
```

Explanation 1

```
We cannot match the two patterns in such a way that their ranges do not intersect.
```



```cpp
#include <cmath>
#include <cstdio>
#include <vector>
#include <iostream>
#include <algorithm>
using namespace std;


int main() {
    /* Enter your code here. Read input from STDIN. Print output to STDOUT */
    return 0;
}
```

Line: 1 Col: 1

Upload Code as File Test against custom input Run Code Submit Code