Sonya and string shifts

Attempted by: 112 / Accuracy: 18% / ★★★★☆

Tag(s): Medium-Hard

Pussycat Sonya has a string **S** of length **N**. And she's asked **Q** queries of form: What is the minimal number of circular shifts in left direction of string **S** she needs to perform to get lexicographically smallest string, if she can do K_i such shifts at most?

Input:
The first line of input contains one integer **N** - the length of the string **S**.
The second line contains string **S**.
The third line contains one integer **Q** - the number of queries.
Each of the next **Q** lines contains one integer K_i.

Output:
Print the answers for all queries.

Constraints:

$1 \le N, Q \le 10^6$
$0 \le K_i < N$

SAMPLE INPUT

```
8
pussycat
3
2
5
7
```

SAMPLE OUTPUT

```
0
5
6
```

Explanation

Let's take a look at all circular shifts in left direction of string **"pussycat"**:
0: **"pussycat"**
1: **"ussycatp"**
2: **"ssycatpu"**
3: **"sycatpus"**
4: **"ycatpuss"**

5: **"catpussy"**
6: **"atpussyc"**
7: **"tpussyca"**
We need exactly **i** operations to get **i**-th shift.

And now let's sort them lexicographically:
6: **"atpussyc"**
5: **"catpussy"**
0: **"pussycat"**
2: **"ssycatpu"**
3: **"sycatpus"**
7: **"tpussyca"**
1: **"ussycatp"**
4: **"ycatpuss"**

Time Limit:	10.0 sec(s) for each input file.
Memory Limit:	256 MB
Source Limit:	1024 KB
Marking Scheme:	Marks are awarded when all the testcases pass.
Allowed Languages:	C, C++, Clojure, C#, D, Erlang, F#, Go, Groovy, Haskell, Java, Java 8, JavaScript(Rhino), JavaScript(Node.js), Lisp, Lisp (SBCL), Lua, Objective-C, OCaml, Octave, Pascal, Perl, PHP, Python, Python 3, R(RScript), Racket, Ruby, Rust, Scala, Swift, Visual Basic

CODE EDITOR

```
1  Loading...
```

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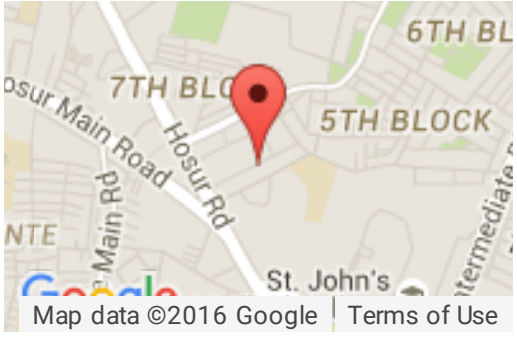

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