B. Ilya and Queries

Ilya the Lion wants to help all his friends with passing exams. They need to solve the following problem to pass the IT exam.

You've got string $s = s_1s_2... s_n$ (n is the length of the string), consisting only of characters "." and "#" and m queries. Each query is described by a pair of integers l_i, r_i ($1 \leq l_i < r_i \leq n$). The answer to the query l_i, r_i is the number of such integers i ($l_i \leq i < r_i$), that $s_i = s_{i+1}$.

Ilya the Lion wants to help his friends but is there anyone to help him? Help Ilya, solve the problem.

Input

The first line contains string s of length n ($2 \leq n \leq 10^5$). It is guaranteed that the given string only consists of characters "." and "#".

The next line contains integer m ($1 \leq m \leq 10^5$) — the number of queries. Each of the next m lines contains the description of the corresponding query. The i-th line contains integers l_i, r_i ($1 \leq l_i < r_i \leq n$).

Output

Print m integers — the answers to the queries in the order in which they are given in the input.

Examples

input

```
......
4
3 4
2 3
1 6
2 6
```

output

```
1
1
5
4
```

input

```
#..###
5
1 3
5 6
1 5
3 6
3 4
```

output

```
1
1
2
2
0
```