D. Distinct Characters Queries

time limit per test: 2 seconds

memory limit per test: 256 megabytes

You are given a string s consisting of lowercase Latin letters and q queries for this string.

Recall that the substring $s[l; r]$ of the string s is the string $s_l s_{l+1} \ldots s_r$. For example, the substrings of "codeforces" are "code", "force", "f", "for", but not "coder" and "top".

There are two types of queries:

- $1\ pos\ c$ ($1 \le pos \le |s|$, c is lowercase Latin letter): replace s_{pos} with c (set $s_{pos} := c$);
- $2\ l\ r$ ($1 \le l \le r \le |s|$): calculate the number of distinct characters in the substring $s[l; r]$.

Input

The first line of the input contains one string s consisting of no more than 10^5 lowercase Latin letters.

The second line of the input contains one integer q ($1 \le q \le 10^5$) — the number of queries.

The next q lines contain queries, one per line. Each query is given in the format described in the problem statement. It is guaranteed that there is at least one query of the second type.

Output

For each query of the second type print the answer for it — the number of distinct characters in the required substring in this query.
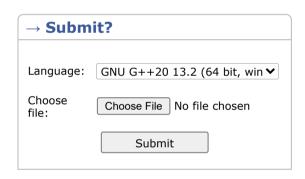
Examples

input	Copy

```
abacaba
5
2 1 4
1 4 b
1 5 b
2 4 6
2 1 7
```

output	Copy

```
3
1
2
```

input	Copy

```
dfcbbcfeeedbaea
15
1 6 e
1 4 b
2 6 14
1 7 b
1 12 c
2 6 8
2 1 6
1 7 c
1 2 f
1 10 a
2 7 9
1 10 a
1 14 b
1 1 f
2 1 11
```

output	Copy

```
5
2
5
2
6
```

Codeforces Round 590 (Div. 3)

Finished

Practice

☆

→ Virtual participation ⌄

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

[Start virtual contest]

→ Clone Contest to Mashup ⌄

You can clone this contest to a mashup.

[Clone Contest]

→ Submit?

Language: [GNU G++20 13.2 (64 bit, win ⌄]

Choose file: [Choose File] No file chosen

[Submit]

→ Last submissions

Submission	Time	Verdict
265038814	Jun/10/2024 13:25	Accepted

→ Problem tags

[data structures] [*1600]

No tag edit access

→ Contest materials

- Announcement ✕
- Tutorial ✕