F - Max Combo

Editorial (/contests/abc415/tasks/abc415_f/editorial)

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Time Limit: 4 sec / Memory Limit: 1024 MiB

Score : 525 points

Problem Statement

There is a string S of length N consisting of lowercase English letters. Process a total of Q queries as follows:

- Type 1 : Change the i-th character of S to x.
- Type 2 : Let t be the substring of the current S from the l-th character through the r-th character. Find $f(t)$ defined as follows for this string:
  - $f(t)$ is the maximum length of consecutive identical characters in t.
  - More precisely, when choosing integers a, b such that $1 \leq a \leq b \leq |t|$ and all characters from the a-th through the b-th character of t are equal, $f(t)$ is the maximum possible value of $b - a + 1$.
  - For example, $f(\texttt{ aaaccbbbb })=4$, $f(\texttt{ bbaaabb })=3$, $f(\texttt{ x })=1$.

Constraints

- N is an integer between 1 and 5×10^5, inclusive.
- S is a string of length N consisting of lowercase English letters.
- Q is an integer between 1 and 5×10^5, inclusive.
- Type 1 queries satisfy the following constraints:
  - i is an integer between 1 and N, inclusive.
  - x is a lowercase English letter.
- Type 2 queries satisfy the following constraints:

- l, r are integers satisfying $1 \leq l \leq r \leq N$.

Input

The input is given from Standard Input in the following format:

$$
\begin{aligned}
&N \quad Q \\
&S \\
&\mathrm{Query}_1 \\
&\mathrm{Query}_2 \\
&\vdots \\
&\mathrm{Query}_Q
\end{aligned}
$$

Here, Query_i represents the i-th query.

Type 1 queries are given in the following format:

```
1 i x
```

Type 2 queries are given in the following format:

```
2 l r
```

Output

Every time a type 2 query appears, output the answer on one line.

The use of fast input and output methods is recommended because of potentially large input and output.

Sample Input 1 Copy

Copy

```
10 5
babaacczcc
2 1 4
1 3 a
2 1 10
1 8 c
2 1 10
```

Sample Output 1 Copy

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Copy

```
1
4
5
```

This input contains five queries.

- Initially, the string S is babaacczcc.
- The 1st query is type 2 with $l = 1, r = 4$.
  - The extracted string is baba, and $f(\texttt{baba}) = 1$.
- The 2nd query is type 1 with $i = 3, x =$ a.
  - The string S after the change is baaaacczcc.
- The 3rd query is type 2 with $l = 1, r = 10$.
  - The extracted string is baaaacczcc, and $f(\texttt{baaaacczcc}) = 4$.
- The 4th query is type 1 with $i = 8, x =$ c.
  - The string S after the change is baaaaccccc.
- The 5th query is type 2 with $l = 1, r = 10$.
  - The extracted string is baaaaccccc, and $f(\texttt{baaaaccccc}) = 5$.

Sample Input 2 Copy

```
1 1
a
1 1 z
```

Copy

Sample Output 2 Copy

```

```

Copy

The output may be empty.

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