

## B. Pear TreaP

time limit per test: 10 seconds  
memory limit per test: 1024 megabytes

Have you ever heard of an eer-tree? It is a very special tree that does super cool stuff with palindromes. As you would expect of such a structure, the word eer-tree is a palindrome itself. Even cooler, if we do the same thing with a treap, we get a Pear Treap! What an epic palindrome!

What's that I hear? "Pear Treap isn't actually a palindrome," you say? Nonsense! I always write a and e together as one character, so it is totally a palindrome. Anyhow, here's your palindromic treap problem, as promised:

You have a string initially containing  $n$  lowercase characters. Please perform the  $q$  operations (that is, please solve each query before reading the next one) of the following types:

- Delete all characters from position  $l$  to position  $r$  inclusive.
- Insert the character  $c$  at position  $p$ . After this query, the character at position  $p$  will be  $c$ , and all characters initially with indecies  $\geq p$  will be moved one space to the right.
- Is the substring from position  $l$  to position  $r$  a palindrome? A substring from  $l$  to  $r$  is the continuous block of characters starting at position  $l$ , ending at position  $r$ .

### Input

The first line will contain two integers:  $n$  and  $q$ . ( $1 \leq n, q \leq 3 * 10^5$ )

The second line will contain a string of  $n$  lowercase letters. It will not contain the character that is  $a$  and  $e$  combined into one character.

The following  $q$  lines each contain three integers, an are of one of the following forms:

- 1  $l$   $r$ . In this case  $1 \leq l \leq r \leq currentStringLen$ . This query will not appear if the string is empty.
- 2  $c$   $p$ . In this case  $1 \leq p \leq currentStringLen + 1$ .  $c$  is a lowercase character.
- 3  $l$   $r$ . In this case  $1 \leq l \leq r \leq currentStringLen$ . This query will not appear if the string is empty.

### Output

For each query of type 3, please print either "yes" or "no" depending on whether that substring is a palindrome or not.

### Examples

input	Copy
4 4 aaaa 1 3 4 3 1 1 3 1 1 2 a 3	
output	Copy
yes yes	

input	Copy
5 5 aaaaa 2 b 3 1 1 1 3 5 5 1 5 5 1 3 3	
output	Copy
yes	

### Note

For the full Pear Treap experience, you can pretend that I am forcing you to solve this problem ONLINE. There is no such requirement as this is just practice and that would make the statement more annoying, but it could easily show up in a real contest or as a subproblem.


Algorithms Thread Treaps Contest

Finished

Practice



→ About Contest



Algorithms Thread Treap Contest, written by SecondThread.

→ 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
<a href="#">304486642</a>	Feb/05/2025 04:59	Accepted
<a href="#">304296553</a>	Feb/03/2025 20:35	Accepted
<a href="#">304295609</a>	Feb/03/2025 20:30	Accepted
<a href="#">304294348</a>	Feb/03/2025 20:22	Accepted
<a href="#">303548019</a>	Jan/29/2025 20:04	Accepted
<a href="#">303547693</a>	Jan/29/2025 20:02	Accepted
<a href="#">303454771</a>	Jan/29/2025 06:40	Wrong answer on test 4
<a href="#">303454729</a>	Jan/29/2025 06:39	Wrong answer on test 4
<a href="#">303454539</a>	Jan/29/2025 06:36	Runtime error on test 3
<a href="#">303454502</a>	Jan/29/2025 06:35	Wrong answer on test 4