Problem D. Flower's Land 2

Input file: `standard input`
Output file: `standard output`
Time limit: 6 seconds
Memory limit: 1024 megabytes

f: "*Cyan Fish! Come and check out my new problem about bracket sequences!*"
Q: "*What?! Isn't that a well-known problem?*"
f: "*Ugh... Well, then how about this one?*"

Little Cyan Fish and Big Flower Letter are two close friends. In celebration of the 17th anniversary of the founding of Flower's Land, Little Cyan Fish has devised a new game:

- The game is played with a string $s = s_1 s_2 \cdots s_n$ composed of the digits 0, 1, and 2.
- The game proceeds as follows:
  1. The player selects an index i $(1 \le i < n)$ such that $s_i = s_{i+1}$.
     - Notably, if no such i exists, the game ends immediately.
  2. The characters s_i and s_{i+1} are then removed, and the player returns to step 1.
- If the player can completely erase the string (leaving an empty string), he wins the game. If not, he loses.

Keen to challenge Little Cyan Fish, Big Flower Letter presents him with a string $s = s_1 s_2 \cdots s_n$ of length n. She then proposes the following operations:

- `1` l r: For each $l \le i \le r$, update $s_i \leftarrow (s_i + 1) \bmod 3$.
- `2` l r: Assuming $t = s[l \cdots r] = s_l s_{l+1} \cdots s_{r-1} s_r$, Little Cyan Fish needs to determine if the player can win the game if they were to play it using the string t.

Can you help Little Cyan Fish respond to all the queries?

Input

The first line of the input contains two integers n and q $(1 \le n, q \le 5 \times 10^5)$, representing the length of string s and the number of queries.

The next line of the input contains a string s, indicating the string that Big Flower Letter presents to Little Cyan Fish. It is guaranteed that $|s| = n$ and s is composed of the digits 0, 1, and 2.

The next q lines describe all the operations in the following format.

- `1` l r
- `2` l r

It is guaranteed that $1 \le l \le r \le n$.

Output

For each operation 2, if the player can win the game, output a single line containing a single word `Yes`. Otherwise, output a single line containing a single word `No`.

Example

standard input	standard output
8 9 01211012 2 4 5 2 3 6 1 6 8 1 6 8 2 3 6 2 1 8 1 1 1 1 7 7 2 1 8	Yes No Yes No Yes

Note

In the sample test, we start with $s =$ `01211012`.

Operation 1 is a query operation. With $s[4 \cdots 5] =$ `11`, we can select the index $i = 1$ in the first round to win the game. Therefore, we should output `Yes`.

Operation 2 is a query operation. For $s[3 \cdots 6] =$ `2110`, it's impossible to remove all characters. As a result, we should output `No`.

Operation 3 is an update operation. We need to update all s_i where $6 \le i \le 8$. After this modification, s becomes `01211120`.

Operation 4 is an update operation. We need to update all s_i where $6 \le i \le 8$. After this modification, s becomes `01211201`.

Operation 5 is a query operation. For $s[3 \cdots 6] =$ `2112`, we can select the index $i = 2$ in the first round. The string then becomes `22`, and we can select the index $i = 1$ in the next round to win the game. Therefore, we should output `Yes`.

Operation 6 is a query operation. For $s[1 \cdots 8] =$ `01211201`, it's impossible to remove all characters. As a result, we should output `No`.

Operation 7 is an update operation. We need to update all s_i where $1 \le i \le 1$. After this modification, s becomes `11211201`.

Operation 8 is an update operation. We need to update all s_i where $7 \le i \le 7$. After this modification, s becomes `11211211`.

Operation 9 is a query operation. For $s[1 \cdots 8] =$ `11211211`, it's possible to remove all characters. Therefore, we should output `Yes`.