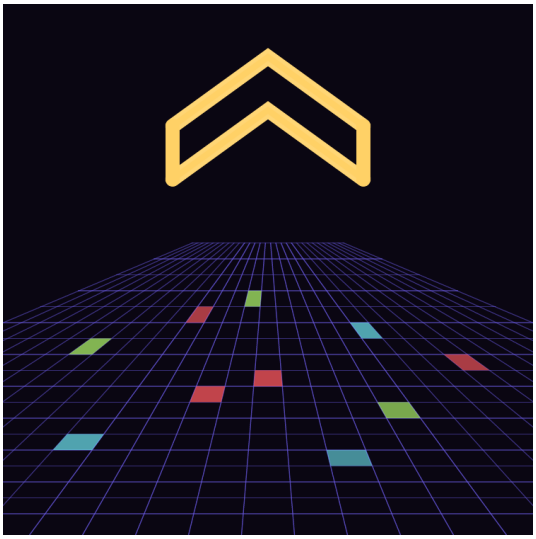
Expansion Plan 2

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	1024 megabytes



You are dealing with side quests in the video game Expansion Plan 2.

There is an infinite grid of **bonus levels**, with coordinates (x, y) (specifically, the cell immediately above $(0, 0)$ is $(0, 1)$, and the cell immediately on the right of $(0, 0)$ is $(1, 0)$). Initially, only the bonus level at $(0, 0)$ is **unlocked**.

Given a string $a_1 a_2 \ldots a_l$ of length l consisting of characters ¨4¨ and ¨8¨, you play l times in a row; at the i-th play you obtain a **score** equal to $s_i \in \{$¨4¨, ¨8¨$\}$. For each i from 1 to l:

- if $s_i =$ ¨4¨: for each bonus level, if it is orthogonally adjacent (i.e., it shares a side) to a level which was already **unlocked** before the i-th play, it becomes unlocked; otherwise, its state remains the same;
- if $s_i =$ ¨8¨: for each bonus level, if it is orthogonally or diagonally adjacent (i.e, it shares a side or a corner) to a level which was already **unlocked** before the i-th play, it becomes unlocked; otherwise, its state remains the same.

You are given a string s of length n consisting of characters ¨4¨ and ¨8¨.

You have to answer q queries. In each query, you start with an infinite grid where only the bonus level $(0, 0)$ is unlocked, and you are given four integers l, r, x, y. You have to determine whether the bonus level (x, y) is unlocked after getting the scores in the substring $[l, r]$ of s.

Input

The first line contains two integers n, q ($1 \le n, q \le 2 \cdot 10^5$) — the length of the string and the number of queries, respectively.

The second line contains a string s of length n consisting of characters ¨4¨ and ¨8¨.

Each of the next q lines contains four integers l, r, x, y ($1 \le l \le r \le n$, $-10^9 \le x, y \le 10^9$), representing a query on the substring $[l, r]$ and the bonus level (x, y).

Output

For each query, output `YES` if the bonus level (x, y) is **unlocked** after getting the scores in the substring $[l, r]$ of s, and `NO` otherwise.

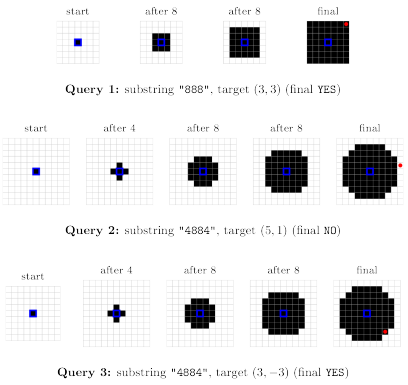
The judge is case-insensitive (for example, `YES`, `Yes`, `yes`, `yEs` will all be recognized as positive answers).

Example

standard input	standard output
10 6 4884884888 8 10 3 3 4 7 5 1 4 7 3 -3 1 7 -7 -5 1 10 0 0 1 1 1 1	YES NO YES NO YES NO

Note

Explanation of sample 1. The first three queries are illustrated below:



Query 1: substring "888", target $(3, 3)$ (final YES)

Query 2: substring "4884", target $(5, 1)$ (final NO)

Query 3: substring "4884", target $(3, -3)$ (final YES)

In the first query, $[l, r] = [8, 10]$, and $(x, y) = (3, 3)$. The substring $[8, 10]$ of s is ¨888¨. After getting the scores in this substring, the bonus level $(3, 3)$ is unlocked, so the answer is `YES`.

In the second query, the bonus level $(5, 1)$ is not unlocked after getting the scores in the substring ¨4884¨.