DMOPC '17 Contest 1 P1 - Fujō Neko

Saki is walking around the school fields when she notices that *something* might be stalking her. As such, she stops at Q locations on the field and takes a look in all 4 cardinal directions (north, south, east, and west) to see if she can locate these mysterious being**s**. Can you help Saki figure out if she's being stalked?

Constraints

For all subtasks,
$1 \leq x_i \leq C$
$1 \leq y_i \leq R$

Subtask 1 [20%]

$1 \leq R, C \leq 1\,000$
$1 \leq Q \leq 1\,000$

Subtask 2 [80%]

$1 \leq R, C \leq 1\,000$
$1 \leq Q \leq 10^6$

Input Specification

The first line will contain 2 space-separated integers, R and C, the number of rows and columns her school field has.
The next R lines will each have C integers, with a `X` representing a mysterious being, and an `.` representing flat land.
The next line will have an integer, Q.
The next Q lines will have two integers, x_i and y_i, her position on the field.

Output Specification

The output should have Q lines, either `Y` if she can see one of the mysterious beings, or `N` otherwise.

Note that fast input/output may be necessary.

Sample Input

```
4 4
X...
....
....
..X.
3
2 3
4 4
1 1
```

Sample Output

```
N
Y
Y
```

Explanation for Sample Output

Let `S` denote Saki's position. The first query looks like this:

```
X...
....
.S..
..X.
```

For the second query, the grid looks like the following:

```
X...
....
....
..XS
```

For the third query, the grid looks like this:

```
S...
....
....
..X.
```

Note that even though Saki is on the same square as a mysterious being, she can still see it.