Plurality

Deus ex machina is not going to make things easy for Neo. In front of Neo is a set of **N** balls.
Each ball can be any of K colors. Deus ex Machina wants Neo to figure out which ball's color appears the most (Plurality). We will call b_i as ball b with color i. **Plurality** exists in this set, i.e.,

$\exists\ b_i : |b_i| > |b_j|\ \forall\ j \neq i,\ i,j \in \{0,1,2,3\}$

Neo is allowed to ask the same question, pick any 2 balls from a set of N balls and ask Oracle if they are the same or not. If they are of the same color, the Oracle answers **YES** and if they are not, Oracle answers **NO**.

Input Format

First line contains 5 single space separated characters/Integers.

1st is N which is the cardinality of the balls set.
2nd is 1 indicating that Plurality exists.
3rd is an integer indicating the number of times oracle might lie (0 in this version of the game)
4th is k indicating each ball can have any of the k colors.
5th is an integer 1 indicating the oracle lies exactly 0 time(ignore this number)

Second line is an integer D, D lines follow. Each line shows all your previous questions to Oracle. Each question is of the format

```
A B YES/NO
```

$0 \leq A,B$

Constraints

$N \in \{20, 40, 60, 80\}$
$k \in \{2,3,4,5\}$ colors

A minimum of N/2 queries must be asked to Oracle before Neo makes a guess.
Any guess of color before that would result in loosing the game.

Output Format

Output 2 single spaced integers which serve as indices of the balls whose colors Oracle has to compare. When Neo is sure of the ball with the plurality, output 1 integer which is the index of the ball whose color is the plurality.

Sample Input

```
20 1 0 3 1
2
2 1 NO
3 4 NO
```

The 1st line says that there are 20 balls and plurality exists and each ball has any of the 3 colors. 2nd says that two queries were asked to oracle. The 1st one was whether the balls indexed at 2 and 1 are of the same color or not and the Oracle's reply was a NO and the 2nd one was whether the balls indexed at 3 and 4 were of the same color or not and the Oracle's reply was a NO.

Sample Output

```
5 6
```

Neo wants to know whether the balls indexed at 5 and 6 are of the same color or not.

```
1
```

Neo answers that the ball indexed at 1 appears most in the set.

Task

Complete the function nextQuestion with takes in all the 5 integers, along with a 2-D array query where query[i][j] = 1 if a query

```
i j
```

is asked and the Oracle says YES. The same value is set to 0 if the oracle says 0.

Note:- query[i][j] = query[j][i]

and the values is set to -1 if no query is asked for i and j.

Scoring

If M queries were asked to Oracle, on correct answer

M < N/2, score = 0
M >= (K - 1) * (N - K/2), score = 1
N/2 <= M < (K - 1) * (N - K/2), score =((K - 1) * (N - K/2) - M)/12

A minimum score of 1 is given for every correct submission.