

A child has drawn N ($N \leq 100$) numbered circles of different colors. He has connected some of the circles by colored oriented line segments. Every pair of circles may have any number of segments, with any colors, connecting them. Each color (either circle color or segment color) is assigned its own unique positive integer number not greater than 100.

Starting the game the child first of all chooses three different integers L , K and Q within the range between 1 and N . Then he places one pawn into the circle number L and another one into the circle number K , whereupon he begins to move them using the following rules:

- a pawn can be moved along the line segment, if this segment has the same color with the circle where another pawn is placed,
- the pawn can be moved only in the direction of the segment (all segments are oriented),
- two pawns can never be placed in the same circle at the same time,
- the move order is free (i.e. it is not necessary to move pawns alternately),
- the game ends, when one of the pawns (any of the two) reaches the last circle number Q .

You are to write a program to find out the shortest (i.e. containing a minimal number of moves) solution for this game, if it exists.

Input

The first line of the input contains an integer indicating the number of datasets, and it's followed by a blank line.

The first line of each dataset contains integers N, L, K, Q separated by spaces. The second line consists of N integers c_1, c_2, \dots, c_n , separated by spaces, in the given order, where c_i is the color of the circle number i . The third line consists of a single integer M ($0 \leq M \leq 10000$) denoting the total number of segments. Then follow M lines, each containing a description of one oriented segment. Each segment is described by three integer numbers A_j, B_j, C_j , separated by spaces, where A_j and B_j are the numbers of the circles connected by the j -th segment with direction from A_j to B_j , and C_j represents the color of this segment.

There's a blank line between datasets.

Output

For each test case, the first line of the output should contain the word 'YES', if the game can come to the end, and 'NO' otherwise (without quotes). If the answer is 'YES', the second line of the output should contain just a single integer — the minimum number of the moves the child should make to finish the game.

Print a blank line between consecutive outputs.

Sample input

```
1
5 3 4 1
2 3 2 1 4
8
2 1 2
4 1 5
4 5 2
5 1 3
3 2 2
3 2 4
5 3 1
3 5 1
```

Sample Output

```
YES
3
```