E. President and Roads

time limit per test: 2 seconds
memory limit per test: 256 megabytes

Berland has n cities, the capital is located in city s, and the historic home town of the President is in city t ($s \neq t$). The cities are connected by one-way roads, the travel time for each of the road is a positive integer.

Once a year the President visited his historic home town t, for which his motorcade passes along some path from s to t (he always returns on a personal plane). Since the president is a very busy man, he always chooses the path from s to t, along which he will travel the fastest.

The ministry of Roads and Railways wants to learn for each of the road: whether the President will definitely pass through it during his travels, and if not, whether it is possible to repair it so that it would definitely be included in the shortest path from the capital to the historic home town of the President. Obviously, the road can not be repaired so that the travel time on it was less than one. The ministry of Berland, like any other, is interested in maintaining the budget, so it wants to know the minimum cost of repairing the road. Also, it is very fond of accuracy, so it repairs the roads so that the travel time on them is always a positive integer.

Input

The first lines contain four integers n, m, s and t ($2 \leq n \leq 10^5$; $1 \leq m \leq 10^5$; $1 \leq s, t \leq n$) — the number of cities and roads in Berland, the numbers of the capital and of the Presidents' home town ($s \neq t$).

Next m lines contain the roads. Each road is given as a group of three integers a_i, b_i, l_i ($1 \leq a_i, b_i \leq n$; $a_i \neq b_i$; $1 \leq l_i \leq 10^6$) — the cities that are connected by the i-th road and the time needed to ride along it. The road is directed from city a_i to city b_i.

The cities are numbered from 1 to n. Each pair of cities can have multiple roads between them. It is guaranteed that there is a path from s to t along the roads.

Output

Print m lines. The i-th line should contain information about the i-th road (the roads are numbered in the order of appearance in the input).

If the president will definitely ride along it during his travels, the line must contain a single word "`YES`" (without the quotes).

Otherwise, if the i-th road can be repaired so that the travel time on it remains positive and then president will definitely ride along it, print space-separated word "`CAN`" (without the quotes), and the minimum cost of repairing.

If **we can't make the road be such that president will definitely ride along it**, print "`NO`" (without the quotes).

Examples

input

```
6 7 1 6
1 2 2
1 3 10
2 3 7
2 4 8
3 5 3
4 5 2
5 6 1
```

output

```
YES
CAN 2
CAN 1
CAN 1
CAN 1
CAN 1
YES
```

input

```
3 3 1 3
1 2 10
2 3 10
1 3 100
```

output

```
YES
YES
CAN 81
```

input

```
2 2 1 2
1 2 1
1 2 2
```

output

```
YES
NO
```

Note

The cost of repairing the road is the difference between the time needed to ride along it before and after the repairing.

In the first sample president initially may choose one of the two following ways for a ride: $1 \rightarrow 2 \rightarrow 4 \rightarrow 5 \rightarrow 6$ or $1 \rightarrow 2 \rightarrow 3 \rightarrow 5 \rightarrow 6$.

The only programming contests Web 2.0 platform
Server time: Feb/08/2025 21:45:21^{UTC+2} (i1).
Desktop version, switch to [mobile version](#).

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