

BG and WOW Cities!!

Famous lazy boy – BG lives in country “Treepal” , this country is famous for its peculiar connections between different cities . There are N cities in country, which are connected by $N-1$ bidirectional ways. Every district is reachable from others. Cities are numbered from 1 to N and city 1 is capital city. Nobody knows the city where BG belongs. He lives in an unknown city , say X . BG is not only lazy. He is inventor of different words. He calls cities as WOW city if these cities belongs to the way while going from his city X to capital city 1. That city himself doesn't belong to the way to capital city 1.

Now, you are given the Q tasks to perform , in every task you are given a particular city number (X) where BG belongs and a city number (say- Y). Your task is to answer correctly, whether city number Y is WOW city or not assuming for this case that BG belongs to city X ? If Y is WOW city assuming X as a city where BG stands then you have to print “WOW” , otherwise you have to print “NO WAY”.

Input

There is only one test case. First line begins with N , number of cities in “Treepal” and then follows $N-1$ lines giving the description of connection between different cities. After that Q is given , and then Q lines follows city X and Y as described above.

Constraints:

$$N \leq 1000$$

$$Q \leq \min(N*(N-1)/2 , 2000)$$

$$1 \leq X, Y \leq N$$

Output

For each query of input, print one line of output denoting the query number as “Case num: ”

then print the desire output. See the sample output for more details.

Example

Input:

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

Output:

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Case 1: WOW
Case 2: NO WAY
Case 3: WOW
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