I: Mountain hike

Memory limit: **128 MB**

Johnny is particularly fond of hiking. Unfortunately, his knees are not what they used to be anymore, and descending is particularly difficult for him. Hence his plans for the next Saturday are as follows: he will start the hike at the Valley of Three Lakes and then ascend the Mount Doom. Then, he will take a bus to the Valley of Five Lakes and ascend the Misty Mountain. Because of the knees problem, it is crucial that both parts of the trip (ignoring the bus drive) consist only of ascending segments. Johnny has already prepared a list of all ascending segments and determined the length of every such segment. Each segment connects two locations. As he gets bored rather easily, both parts of his trip should be also strictly disjoint. Help Johnny to determine the whole hike so that the total walking distance is as small as possible.

Input

The first line of input contains two integers n and m, separated by single space, which denote the number of locations and the number of segment respectively ($2 \le n \le 1\,000$, $1 \le m \le 10\,000$). Each of the following m lines contains three integers a_i, b_i, and x_i, separated by single spaces, which describe the i-th possible segment: from location a_i to location b_i of length x_i ($1 \le a_i, b_i \le n$, $1 \le x_i \le 10^6$); every such segment is ascending, that is height above mean sea level of its end location is strictly larger than height above mean sea level of its start location.

The next line contains integers s_1, t_1, and finally the last line contains s_2, t_2 ($1 \le s_i, t_i \le n$), separated by single spaces, which denote the start and end locations of both parts of the trip, that is, Valley of Three Lakes, Mount Doom, Valley of Five Lakes, and finally Misty Mountain respectively. You can assume that $s_1 \ne t_1$ and $s_2 \ne t_2$, but should not make any further assumptions.
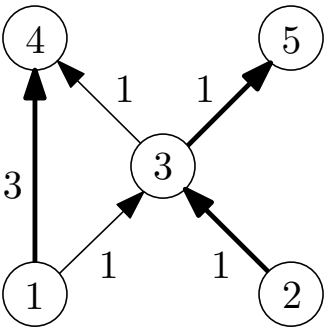
Output

The output should consist of exactly one line, containing either the smallest possible total walking distance or the word NIE if it is not possible to plan the hike according to Johnny's requirements.

Example

Input	Output
5 5 1 3 1 2 3 1 3 4 1 3 5 1 1 4 3 1 4 2 5	5

The above example describes the following locations and segments. There is exactly one way of choosing disjoint paths from 1 to 4 and from 2 to 5, shown in bold. The total walking distance of the hike corresponding to this choice is 5.

Input	Output
4 5 1 2 1 1 3 1 1 4 1 2 4 1 3 4 1 1 4 2 3	NIE

The above example describes the following locations and segments. It is not possible to start at 2 and reach 3.