

All Blue

time limit per test: 1 second
memory limit per test: 256 megabytes
input: standard input
output: standard output

points: 100 · problem code: allblue · author: jbroeksteeg

Sanjindra is close to finding the All Blue and fulfilling their dream! However, there remains yet one obstacle in their path: a treacherous portion of the Calm Belt filled with evil sea monsters. Sanjindra knows that their ship, the Thousand Sunny, is strong and can take **less than k** points of damage before that it will sink.

The portion of the Calm Belt can be modelled as a graph with n nodes, connected by m routes. Each route has a two endpoints (a_i and b_i), a distance (w_i), and the damage the sea monsters will do (d_i).

As Namindra, the navigator of the ship, it is your job to find **the shortest route** from nodes x to y which takes **less than k points of damage**. Can you help Sanjindra with this task?

Input Format

The first line of input will consist of 3 integers, k n m . Each of the next lines will consist of 4 integers a_i b_i w_i and d_i , as described in the description. Finally, the last line will contain two integers x and y , the point Sanjindra starts and wants to end.

Output Format

The output should consist of a single integer, the minimum length of the path if it is possible, or **1 if it is not**.

Constraints

$$1 \leq k \leq 200$$

$$2 \leq n \leq 2000$$

$$n \leq m \leq 10000$$

$$0 \leq a_i, b_i \leq n - 1$$

$$1 \leq w_i \leq 1e5$$

$$0 \leq c_i \leq 200$$

Sample Input

```
10 4 7
0 1 4 4
0 2 7 2
2 0 8 1
2 1 2 2
3 1 1 6
2 3 1 1
0 3 6 12
0 3
```

Sample Output

7