The Tortoise and The Hare

Time limit: *2000 ms*
Memory limit: *256 MB*

In the TH-kingdom, there are N cities numbered from 1 to N, connected by M bidirectional roads of various lengths. Tortoise Tim and Hare Hank want to race starting from city S to city T. However, the race is unfair due to their enormous speed gap. To make the race fair, Tim can choose a city X, and forbid Hank to visit city X during the race. Nevertheless, there must be a path from S to T that doesn't visit X, otherwise the race cannot be held. Both Tim and Hank will follow the shortest path from S to T, i.e. a path with a minimum sum of its road lengths.

Help Tim decide which city X he should choose, so that Hank's shortest path from city S to city T is maximized.

Standard input

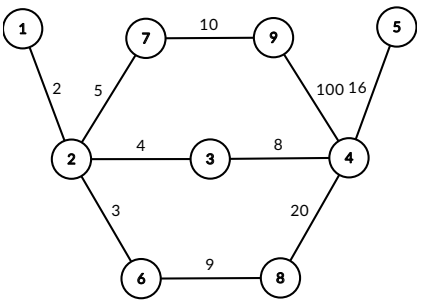
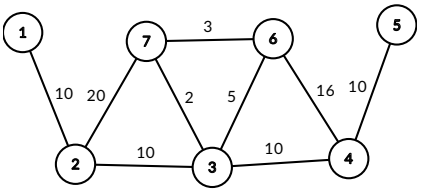
The first line contains 4 integers N, M, S, T. Each of the following M lines contains 3 integers. The ith line has a_i, b_i, d_i, describing a bidirectional road of length d_i connecting city a_i with city b_i.

Standard output

Print a number X, the city that Tim should choose. If there is no valid city, print -1 instead. If there are multiple solutions, you can output any of them.

Constraints and notes

- $3 \leq N \leq 3 \times 10^5$
- $N - 1 \leq M \leq 3 \times 10^5$
- $1 \leq S, T \leq N, S \neq T$
- $1 \leq a_i, b_i \leq N$
- $1 \leq d_i \leq 10^9$
- For 30% of the test cases, $1 \leq N, M \leq 1000$.

Input	Output	Explanation
9 10 1 5 1 2 2 2 3 4 2 6 3 2 7 5 3 4 8 6 8 9 4 8 20 7 9 10 4 9 100 4 5 16	3	 If visiting city $3, 6, 7, 8, 9$ is forbidden, the length of the shortest path between S and T is $50, 30, 30, 30, 30$ respectively. Choosing any other city will result in Hank not being able to get to city T.
7 9 1 5 1 2 10 2 7 20 2 3 10 3 7 2 3 6 5 6 7 3 3 4 10 4 6 16 4 5 10	3	The cities and roads are illustrated below:  If visiting city $3, 6, 7$ is forbidden, the length of the shortest path between S and T is $59, 40, 40$ respectively. Choosing any other city will result in Hank not being able to get to city T.