Procrastinating Pierre (Hard)

Time limit: 1s **Memory limit: 2GB**

Pierre needs to visit his in-laws on the other side of town. Being his in-laws, he's not particularly looking forward to the visit, and much prefers to stay at home for the time being. His city is represented by a graph with E edges as roads and V nodes as either intersections or buildings. Pierre lives at node 1, and his in-laws reside at node V.

The city is currently undergoing construction. Every road will eventually be closed, with some roads closing sooner than others. Pierre knows that road i will close at t_i seconds from now. Each road takes 1 second to traverse, and since Pierre doesn't want to get stuck on a road when it closes, he can only traverse a road if he arrives at time $t_i - 1$ or before.

What is the latest time, given in number of seconds from now, that he can depart home, and still reach his in-law's place? It may be the case that he has already procrastinated too long, and it is already impossible to reach his in-law's. If so, print `-1`.

Input and Output

The first line of input contains two integers, V and E. The next E lines describe edges, the ith of which contains three integers a_i, b_i and t_i, meaning a road connects nodes a_i and b_i and will close at time t_i. There may be more than one road connecting two nodes. It is not guaranteed that nodes 1 and V are connected.

Output one line containing one integer, the latest time Pierre can depart, or `-1` if it is impossible.

Constraints

$1 \leq E, V \leq 100,000, 1 \leq a_i, b_i \leq V, 0 \leq t_i \leq 10^9$ for all $1 \leq i \leq V$

Sample Input (stdin)

```
4 4
1 2 2
1 3 1
2 3 3
3 4 4
```

Sample Output (stdout)

```
1
```

Explanation

Pierre can leave home at time 1 and go through 1-2-3-4. At time 2, both edges leaving his house at node 1 will be closed, so time 1 is the latest Pierre can leave.