Minimum Transfer Wait

There are N stations and T scheduled train segments. Each segment is described by four integers u, v, *dep*, and *arr*: a train departs station u at time *dep* and arrives at station v at time *arr*, with $dep < arr$.

You begin at station 1 at time 0. After you ride a segment, you reach its destination station at that segment's arrival time. You may then board any segment from that station whose departure time is no earlier than the time you arrived there.

The waiting time before a segment is its departure time minus the time you most recently reached its departure station. For the first segment, use time 0 as the time you reached station 1. Travel time aboard a segment does not count as waiting.

You may wait at a station for any amount of time. In particular, a segment that departs at exactly your arrival time can be boarded and adds zero waiting time. Schedules may contain several arrivals and departures at the same time, and a route may visit the same station more than once. Once a segment arrives at station N, the trip is complete.

Find the minimum total waiting time to reach station N, or report that it is impossible.

Input

The first line contains two integers N and T ($2 \le N \le 100\,000$, $1 \le T \le 200\,000$).

Each of the next T lines contains four integers u, v, *dep*, and *arr* ($1 \le u, v \le N$, $u \ne v$, $0 \le dep < arr \le 10^9$): a train from station u to station v departing at time *dep* and arriving at time *arr*.

Output

Output a single integer: the minimum sum of the waiting times before every boarded segment on a route from station 1 to station N, or -1 if station N cannot be reached.

Sample Input 1

```
3 3
1 2 1 4
2 3 5 7
1 3 2 9
```

Sample Output 1

```
2
```

Sample Input 2

```
4 2
1 2 0 5
3 4 0 5
```

Sample Output 2

```
-1
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