

Cow Relays

<https://vjudge.csgrandeur.cn/problem/POJ-3613>

For their physical fitness program, N ($2 \leq N \leq 1,000,000$) cows have decided to run a relay race using the T ($2 \leq T \leq 100$) cow trails throughout the pasture.

Each trail connects two different intersections ($1 \leq I_{1i} \leq 1,000$; $1 \leq I_{2i} \leq 1,000$), each of which is the termination for at least two trails. The cows know the $length_i$ of each trail ($1 \leq length_i \leq 1,000$), the two intersections the trail connects, and they know that no two intersections are directly connected by two different trails. The trails form a structure known mathematically as a graph.

To run the relay, the N cows position themselves at various intersections (some intersections might have more than one cow). They must position themselves properly so that they can hand off the baton cow-by-cow and end up at the proper finishing place.

Write a program to help position the cows. Find the shortest path that connects the starting intersection (S) and the ending intersection (E) and traverses exactly N cow trails.

Input

* Line 1: Four space-separated integers: N , T , S , and E

* Lines 2.. $T+1$: Line $i+1$ describes trail i with three space-separated integers: $length_i$, I_{1i} , and I_{2i}

Output

* Line 1: A single integer that is the shortest distance from intersection S to intersection E that traverses exactly N cow trails.

Sample

Input	Output
2 6 6 4 11 4 6 4 4 8 8 4 9 6 6 8 2 6 9 3 8 9	10