Connecting Railway Stations

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

The dwarves have just built their new underground village. Now it is time to plan the network of railways that will operate within it.

The village consists of N intersections and $N-1$ tunnels connecting them. The tunnels have been constructed in such a way that it is possible to reach any intersection from any other. At each intersection that is a dead end (meaning it is connected by only one tunnel), there is a train station.

Your task is to determine the routes for the trains in the village. To meet the dwarves' requirements, all stations must be paired (fortunately, there is an even number of them), and there will be one train operating between each pair, using the shortest possible path. The tunnels have their limitations, though. Although each tunnel is of the same length (equal to 1), their widths allow only a limited number of routes to pass through.

The dwarves want the total length of the train routes to be as long as possible. Can you calculate what the maximum length can be?

Input

The first line of input contains one integer N, representing the number of intersections in the village.

Each of the next $N-1$ lines contains three integers a_i, b_i, c_i, representing a tunnel between intersections a_i and b_i. The value c_i is an upper limit on the number of routes that can pass through this tunnel.

Output

In the first and the only line, print a single integer representing the maximum total length of paths between the chosen pairs of stations.

If there is no way to pair the stations while satisfying the constraints, print `-1`.

Limits

$2 \leq N \leq 200\,000$, $1 \leq a_i, b_i \leq N$, $0 \leq c_i \leq N$, all intersections are connected, and the number of stations (i.e. dead ends) is even.

Examples

standard input	standard output
10 1 2 2 2 3 1 3 4 3 5 1 1 6 1 2 7 2 3 8 3 2 9 3 1 10 4 7	10
5 1 2 3 1 3 1 1 4 0 1 5 2	-1

Note

In the first example, connecting stations at intersections 5–9, 6–7, and 8–10 gives a total length of train routes equal to $4 + 3 + 3 = 10$.