Problem K. K-value

Input file:	*standard input*
Output file:	*standard output*
Time limit:	6 seconds
Memory limit:	256 mebibytes

There is a country with N cities. All these cities are connected by weighted roads such that there is one simple route between any two cities.

Consider all simple paths which contain between L and R roads (both inclusive). Your task is to find the path among them which has the minimum possible k-value.

The k-value of a simple path is calculated as follows. Let the number of roads in the path be r. Take the list of weights of all r roads in the path and sort it in non-descending order. The k-value is then the element number $(\lfloor r/k \rfloor + 1)$ of this list.

Input

The first line of input contains a single integer N ($1 \le N \le 10^5$). Each of the following $(N-1)$ lines contains three integers a, b and w which represent two cities connected by a road and the weight of the road ($1 \le a, b \le N$, $a \ne b$, $1 \le w \le 10^9$).

The next line contains three integers k, L and R ($1 < k < 50$, $1 \le L \le R \le 50$).

Output

Print the minimum possible k-value of a path which contains between L and R roads, inclusive. If no such path exists, print -1.

Example

standard input	standard output
5 1 2 1 2 3 2 3 4 3 4 5 4 2 3 4	2