## Museum

Time Limit: 3 s Memory Limit: 1024 MB
A tourist just walked into a museum that houses a treasured collection of clean drinking water from different parts of the world. Fortunately, it is only a temporary exhibition to raise awareness but might become a permanent thing in the future.

The museum consists of $n$ rooms (numbered from 1 to $n$ ) that are connected with each other by doors and passages. Each passage connects two rooms directly, without passing through other rooms. The layout of the museum is such that between every pair of rooms, there is exactly one simple path (possibly passing through one or more intermediary rooms). The tourist is currently located in room $x$. He has a map of the museum and thus knows for every passage $i$ that it connects rooms $a_{i}$ and $b_{i}$, and that it takes $c_{i}$ time to walk the length of that passage.

He would like to visit $k$ different rooms (including the starting room $x$ ). He will spend an insignificant amount of time in every room. It doesn't matter in which room he finishes his visit. What is the shortest possible time in which he can achieve this?

## Constraints

- $1 \leq n \leq 10000$
- $1 \leq k, x \leq n$
- $1 \leq a_{i}, b_{i} \leq n$
- $0 \leq c_{i} \leq 10000$


## Subtask 1 (20 points)

- $n \leq 20$


## Subtask 2 ( 25 points)

- $k \leq 100$
- every room has at most 3 adjacent rooms


## Subtask 3 (35 points)

- $k \leq 100$


## Subtask 4 ( 20 points)

- no additional constraints


## Input

First line contains integers $n, k$ and $x$. The following $n-1$ lines describe passages between rooms with integers $a_{i}, b_{i}$ and $c_{i}$, indicating that there is a passage between rooms $a_{i}$ and $b_{i}$ that takes $c_{i}$ time to move through.

## Output

Output the minimum time required to visit $k$ rooms.

## Examples

Input
1183
133
325
645
1113
912
9102
3710
671
781
751
Input
Output
311
0
124
230

Output
29


