Birkan Saves the World

Time Limit: 2.0s **Memory Limit:** 256M

HELP, the end is approaching! Tak-o is trying to destroy the world. He has built 2 main bases, some middle towers to control specific areas and bridges between towers to send his troops around. Our superhero Birkan has an idea. If we can disconnect the 2 main bases by destroying towers and bridges, we will be able to stop Tak-o. Destroying towers and bridges have a cost. Help Birkan with computing the minimum cost of disconnecting Tak-o's bases to save our world.

- There is only one bridge between two towers, there are also bridges between bases and towers.
- We cannot destroy the bases yet.
- Note that some towers may be isolated and some paths may be dead-ends.

Input

- First line of input contains two integers $\mathbf{T}$ and $\mathbf{B}$, representing the number of towers+bases ($\mathbf{T}$) and the number of bridges ($\mathbf{B}$).
- Following $\mathbf{T}-2$ lines, one per tower, contain the information below, separated by spaces: An integer i, the identifier of the tower. The first base has id 1 and that the second has id $\mathbf{T}$. Another integer t, specifying the cost of destroying the tower.
- Then the remaining $\mathbf{B}$ lines, one per bridge, contain the following information separated by spaces: Two integers x and y specifying the identifiers of the towers linked by the bridge. Remember that the bridge is bidirectional. An integer z specifying the cost of destroying the bridge.
- The last line of the input will be '0 0'.

Output

For each test case, print a line with the minimum cost of interrupting the communication between the two bases. Print 0 if the bases are not connected.

Constraints

- $2 \leq \mathbf{T} \leq 50$
- $0 \leq \mathbf{B} \leq 1000$
- $2 \leq i \leq \mathbf{T}-1$
- $0 \leq t \leq 100000$
- $1 \leq x < y \leq \mathbf{T}$
- $0 \leq z \leq 100000$

Examples

Input

```
3 3
2 7
1 2 9
1 3 1
2 3 10
0 0
```

Output

```
8
```

Input

```
4 4
2 8
3 6
1 2 9
1 3 1
2 4 5
3 4 7
0 0
```

Output

```
6
```

Notes

For the first example, we should destroy the tower with ID:2 and the bridge between base1(tower ID:1) and base2(tower ID:3).