

Problem D - Apple Watering

Daniel needs to water his apple trees. He's planning on NOT watering k of the apple trees, because he's feeling lazy. He also requires that the $n - k$ apple trees that he IS watering to be connected to each other so he doesn't walk by any of the trees he isn't planning on watering (and feels guilty).

As before, each tree is labeled with a number between 0 and $n - 1$. There are gravel roads between the trees and each tree has a unique path to tree 0 in front of Daniel's house.

Help Daniel figure out the time it takes to water $n - k$ of his trees if he starts by any tree and returns back to the same tree he started with. **The tree Daniel starts at can be any tree, not necessarily the one in front of his house.**

Input

The first line contains a single integer, T specifying the number of test cases.

Each test case begins with two integers n ($1 \leq n \leq 2 \times 10^5$) denoting the number of trees in Daniel's orchard and k ($1 \leq k \leq \min(n - 1, 20)$). Then follows $n - 1$ lines containing sets of three integers a, b ($0 \leq a, b < n$) and t ($1 \leq t \leq 10^9$) denoting that the labeled trees a and b are connected by a road that takes time t to walk across.

Output

For each test case on its own line output a single integer, the minimum time it will take for Daniel to water $n - k$ trees and return where he started.

Sample Input

```
2
4 0
0 1 5
0 2 6
0 3 7
5 1
0 3 20
0 2 30
0 4 1000
3 1 10
```

Sample Output

```
36
120
```
