Teleportation Network

Submit solution

All submissions
Best submissions

Points: 100 (partial)
Time limit: 1.0s
Memory limit: 256M

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Problem type

Allowed languages
C, C++

DSA TAs have been assigned to different labs scattered across N buildings, each represented as a point in 3D space. To make collaboration smoother, they plan to build a teleportation network connecting the buildings.

```
LinkCost[A,B] = min(|xA - xB|, |yA - yB|, |zA - zB|)
```

where (xA,yA,zA) and (xB,yB,zB) are the 3D coordinates of buildings A and B, respectively. The network should be fully connected so any TA can reach any other via a chain of teleportation links, but since they are not paid enough, they also want to minimize the cost. Fortunately, some teleportation links already exist due to the construction going on in campus — M such links are already in place, and connecting those buildings doesn't incur any additional cost. No two building will occupy the exact same point in the campus.

Your job is to help the TAs figure out the **minimum** total cost of building such a teleportation network.

For the first batch (first 10 testcases), M = 0, i.e. there is no pre-constructed link

Input Format:

- The first line contains an integer N, the number of buildings and M, the number of existing links.
- Next N lines contain exactly 3 integers each. Each line contains the x, y, and z coordinate of one building (in order).
- The next M lines contain two integers i and j, denoting an already existing link between the buildings i and j.

Output Format:

- $1 \leq N \leq 10^5$
- $0 \leq M \leq N-1$
- $-10^9 \leq x, y, z \leq 10^9$ for all x, y, z coordinates

Sample Testcases

Input

```
2 0
1 5 10
7 8 2
```

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Output

```
3
```

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Input

```
5 1
3 2 1
1 -5 -4
-1 3 -8
10 -8 -9
5 8 -7
2 3
```

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Output

```
3
```

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Clarifications

Request clarification

No clarifications have been made at this time.