SSE2025: Problem Solving Techniques and Process (Spring 2012)

Programming Lab #7

Due: May 17, 11:59 PM

A city is served by a number of fire stations. Residents have complained that distance between certain houses and the nearest station is too far, so a new station is to be built. You are to choose the location of the new station so as to reduce the distance to the nearest station from the houses of the poorest-served residents.

The city has up to 30 intersections, connected by road segments of various lengths. No more than 10 road segments intersect at a given intersection. The locations of houses and fire stations alike are considered to be at intersections. Furthermore, we assume that there is at least one house associated with every intersection. There may be more than one fire station per intersection.

Input

The first line of input contains two positive integers: the number of existing fire stations f ($f \leq 10$) and the number of intersections i ($i \leq 30$). Intersections are numbered from 1 to i consecutively. Then f lines follow, each containing the intersection number at which an existing fire station is found. A number of lines follow, each containing three positive integers: the number of an intersection, the number of a different intersection, and the length of the road segment connecting the intersections. All road segments are two-way (at least as far as fire engines are concerned), and there will exist a route between any pair of intersections.

Output

Output the lowest intersection number at which a new fire station can be built so as to minimize the maximum distance from any intersection to its nearest fire station.

Sample Input 1

```
1 6
3
1 2 10
2 3 10
3 4 10
4 5 10
5 6 10
6 1 10
```

Sample Output 1

```
6
```

Sample Input 2

```
1 6
2
1 2 10
2 3 10
2 4 10
4 5 10
4 6 10
```

Sample Output 2

```
4
```