k-island clustering

Task: In this task, we consider a clustering problem that is a maximization problem. We call it the *k-island clustering* problem. Given are n points P in a metric space, and a number $k \geq 2$. The goal is to find a clustering with k clusters that *maximizes* the *minimum* distance between any two clusters in the partitioning, i.e., a partitioning $(P_i)_{i=1}^{k}$ that maximizes

$$\min_{i,j \in [k]} \min_{x \in P_i, y \in P_j} d(x, y).$$

The distances are given by a graph metric, i.e., the input contains an undirected weighted graph $G = (P, E)$, and the distance between $i, j \in P$ is the length of a shortest path between i and j in G. The input graph is connected, so all distances are finite.

Input: The first line contains n, the second line contains k. We adopt the names $0, \ldots, n-1$ for the n vertices. The third line contains m, the number of edges. Each edge is then given by a line containing three integers, the vertices i and j that it connects, and the (integral) weight w that the edge has. For every pair of vertices, there is at most one edge specified.

Output: The value of an optimum solution.

Sample Input:

```
10
2
12
0 1 1
0 4 5
1 2 1
2 3 1
3 4 1
4 5 1
5 6 1
6 7 1
7 8 2
8 9 1
1 3 6
6 9 4
```

Sample Output:

```
2
```