North American Invitational Programming Contest 2015

March 28, 2015

Hosted by: THE UNIVERSITY OF CHICAGO

Problem A

Area of Effect

Problem ID: areaofeffect

Liam (angryneeson52) is playing his favorite tower defense game! This game involves destroying minions of his opponent while defending his own villages.

Liam's favorite attack is an Area of Effect attack. The Area of Effect attack is a perfect circle. Liam simply picks a center and a radius for the attack and every minion in or on that circle gets destroyed! Minions are small enough to be considered points.

The game isn't as simple as just destroying all minions. Liam must also avoid hitting his villages with his attacks. The attack may touch the walls of a village but must not enter the village. Villages are also perfect circles.

His attack also has a limit on its maximum radius. The attack can be reduced in radius but cannot go above the maximum.

Determine the maximum number of minions Liam can destroy in a single attack without damaging any of his own villages.

Input

Each input will consist of a single test case. Note that your program may be run multiple times on different inputs. Each input begins with a line with 3 space-separated integers, $n\ m\ r$, where:

- n ($1 \leq n \leq 10$) is the number of Liam's villages
- m ($1 \leq m \leq 2\,000$) is the number of opposing minions
- r ($1 \leq r \leq 20\,000$) is the maximum radius of Liam's Area of Effect attack

The next n lines will each contain 3 space-separated integers $vx\ vy\ vr$ which represent the location ($-20\,000 \leq vx, vy \leq 20\,000$) and radius ($1 \leq vr \leq 20\,000$) of one of Liam's villages. No two villages will intersect or overlap.

The next m lines will each contain 2 space-separated integers $mx\ my$ which represent the location ($-20\,000 \leq mx, my \leq 20\,000$) of one of the enemy minions. No two minions will occupy the same point, and no enemy minion will be inside any of Liam's villages.

Output

Output a single integer representing the maximum number of enemy minions that Liam can destroy with a single attack.

Sample Input 1

```
1 3 3
0 0 1
3 3
-3 3
3 -3
```

Sample Output 1

```
1
```

Sample Input 2

```
1 5 3
0 0 1
3 3
-3 3
3 -3
3 0
0 3
```

Sample Output 2

```
3
```

Sample Input 3

```
4 10 100
0 0 3
10 0 3
10 10 3
0 10 3
0 4
0 5
0 6
5 3
5 -3
5 5
6 7
3 6
10 4
8 4
```

Sample Output 3

```
5
```