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The recent rise in the number of people contracting the flu virus had led to the study on its spread pattern. Given a population of N people in a community, there will be some people who are naturally immune from the flu virus and there are those who are not. Depending on the movement of the person, he or she also has a varying radius of transmission as represented by circles in Figure 1. However, we shall assume that each person can only be infected at center of his/her area. Figure 1 illustrates the spread of the flu virus after 4 transmissions. The first infected person is labeled with a value of 0, infecting 2, 2, 1 and 1 person, respectively, for each transmission.

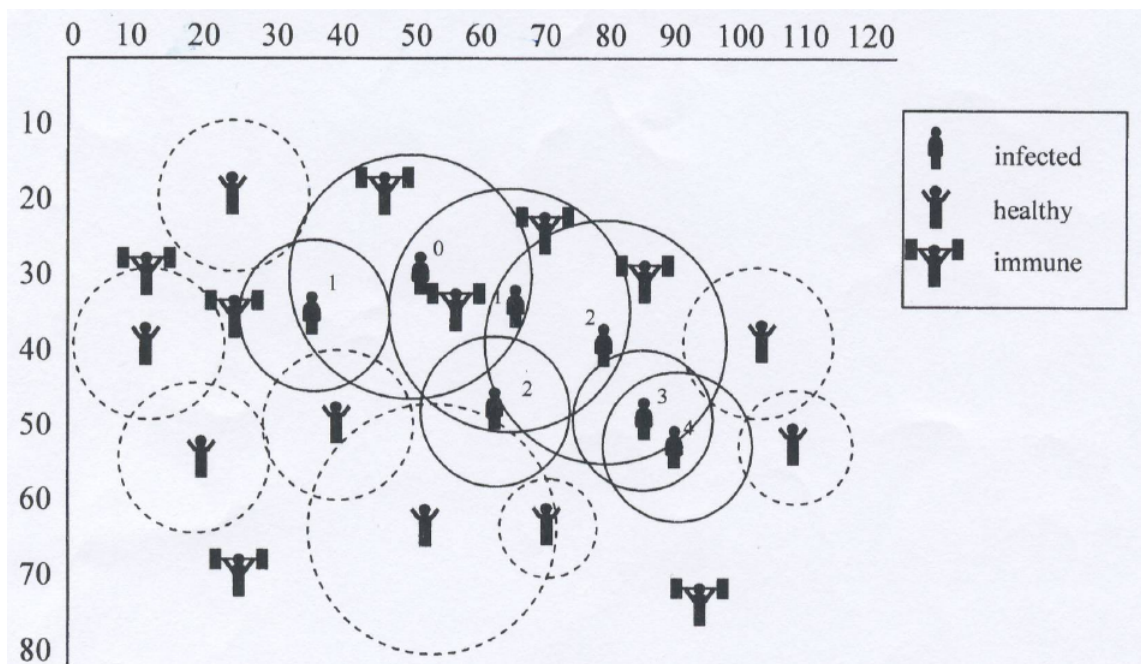


Figure 1

The flu virus is eventually contained at this point in time. We shall assume the center point of all people will remain the same.

Input

The input consists of multiple test cases. Each test case starts with a line containing an integer N ($1 \leq N \leq 30$) indicating the number of people in the population. Starting on the next line are 3-tuple data $(x \ y \ r)$ representing the persons x , y coordinates and r radius of transmission. Each 3-tuple data are space delimited. Persons who are immune to the flu virus have a radius of 0. The first entry in each test case is the first person affected with the flu virus. The last test case is followed by a line containing a single zero. The coordinate system sets the origin in the top left corner of the entire area. The variables x and y are positive integers not exceeding 200. The variable r is a non-negative integer not exceeding 200.

Output

For each test case, print the case number (starting with 1) followed by the number of transmission before the flu virus is eventually contained.

Sample Input

```
23
50 30 20
45 20 0
70 25 0
85 30 0
10 30 0
10 40 10
25 35 0
25 20 10
35 35 10
55 35 0
65 35 20
80 40 15
105 40 10
20 55 10
40 50 10
60 50 10
85 50 10
90 55 10
110 55 5
50 65 20
70 65 5
25 70 0
95 75 0
0
```

Sample Output

Case 1: 4 transmissions