Radar Installation

Source: http://acm.tju.edu.cn/toj/showp1115.html

Assume the coasting is an infinite straight line. Land is in one side of coasting, sea in the other. Each small island is a point locating in the sea side. And any radar installation, locating on the coasting, can only cover *d* distance, so an island in the sea can be covered by a radius installation, if the distance between them is at most *d*.

We use Cartesian coordinate system, defining the coasting is the x-axis. The sea side is above x-axis, and the land side below. Given the position of each island in the sea, and given the distance of the coverage of the radar installation, your task is to write a program to find the minimal number of radar installations to cover all the islands. Note that the position of an island is represented by its x-y coordinates.

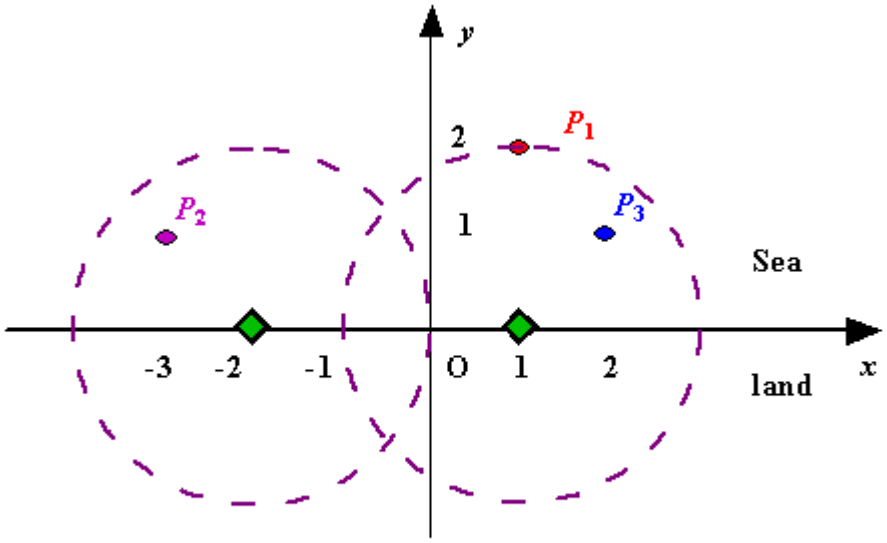

Figure 1 A Sample Input of *Radar Installations*

Input

The input consists of several test cases. The first line of each case contains two integers *n* ($1 \le n \le 1000$) and *d*, where *n* is the number of islands in the sea and *d* is the distance of coverage of the radar installation. This is followed by *n* lines each containing two integers representing the coordinate of the position of each island.

The input is terminated by a line containing pair of zeros.

Output

For each test case output one line consisting of the test case number followed by the minimal number of radar installations needed. "-1" installation means no solution for that case.

Sample Input

```
3 2
1 2
-3 1
2 1
1 2
0 2
0 0
```

Sample Output

```
Case 1: 2
Case 2: 1
```