

## 1193 Radar Installation

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.

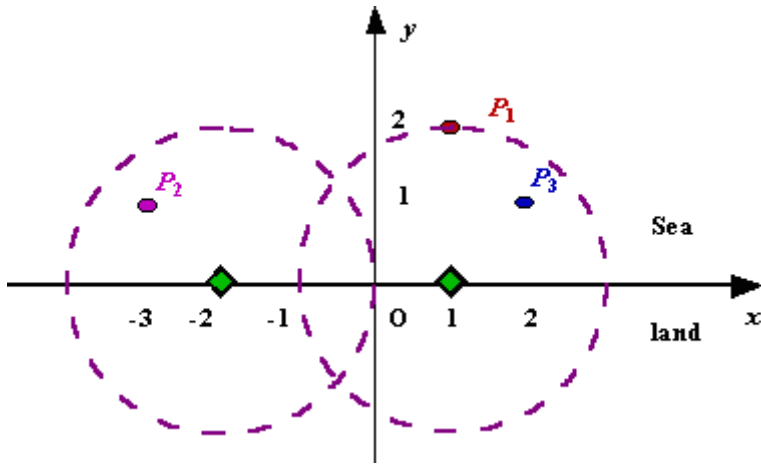


Figure 1: A Sample Input of *Radar Installation*

### Input

The input consists of several test cases. The first line of each case contains two integers  $n$  ( $1 \leq n \leq 1000$ ) 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. Then a blank line follows to separate the cases.

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