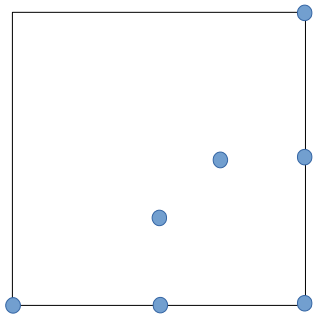
Jump (jumppoint)

1second, 32MB

You are at the top of a tree at co-ordinate (0,0). Your goal is to get to a tree at co-ordinate (100,100) The maximum distance you can jump is **R** units. Therefore, from the top of the tree you are currently on, you can jump to any trees with in distance **R** from your current tree. Find the minimum number of jumps needed to get to the tree at co-ordinate (100,100).

The following is a example of tree locations.



The trees which are not your starting tree or the destination tree are at co-ordinates (50,0), (100,0), (100,50), (50,30), and (70,50). If your jump distance **R** is 50, you have to make 4 jumps. If **R**=60, you can make only 3 jumps.

Write a program that takes the co-ordinates of all trees (not including the starting tree and the destination tree). Then find the minimum number of jumps you need to get to the destination tree at co-ordinate (100,100).

Input

The first line contains **N** and **R**, where **N** is the number of trees (not including the starting tree and the destination tree) (1 <= **N** <= 1,000), and **R** is the maximum jumping distance (1 <= **R** <= 200).

The next N lines contains the locations of trees. Each line contains two integers; the first is the x co-ordinate and the second is the y co-ordinate. The co-ordinates are between 0 an 100, inclusively.

Output

The output contains a single integer. If you cannot get to the destination tree, answer -1.

Example

Input	Output
5 60 50 0 100 0 100 50 50 30 70 50	3

Remarks If you can **R** = 50, the answer will be 4.