COI '06 #3 Sabor

Time limit: 1.0s **Memory limit:** 64M

The president of the political **party in power** is holding a conference in the party headquarters. Politicians, members of the party, live in a two-dimensional grid, one member in each cell (except in cells containing obstacles). The headquarters are located in cell $(0, 0)$. This is also where the president of the party lives.

Politicians make steps in one of the four directions (up, down, left, right), moving to one of the four adjacent cells in one step. They can't enter cells with obstacles. The conference will be attended by all party members that can reach headquarters **in S steps or less**. Each member coming to the conference will **take the shortest route** to headquarters (or any such route, if there is more than one).

The president has observed that politicians **change their party affiliation** with **each step they take**, becoming a member of the other party (there are only two parties on the political scene).

Write a program that determines how many politicians come to the conference as members of the **party in power**, and how many come as members of the **opposing party**.

Input Specification

The first line contains two integers B and S $(0 \leq B \leq 10\,000, 1 \leq S \leq 10\,000\,000)$, the number of obstacles and the largest number of steps from the task description.

Each of the following B lines contains two integers, the coordinates of one obstacle. The absolute value of both coordinates will be less than 1000.

No two obstacles will be in the same cell and there will be no obstacle in cell $(0, 0)$.

Output Specification

Output two integers on a single line separated by a space, the number of politicians that come to the conference as members of the party in power and the opposing party, respectively.

Sample Input 1

```
0 2
```

Sample Output 1

```
9 4
```

Sample Input 2

```
4 5
-1 1
0 -1
0 1
1 0
```

Sample Output 2

```
10 16
```

Sample Input 3

```
4 50000
1 1
-1 -1
1 -1
-1 1
```

Sample Output 3

```
2500099997 2500000000
```