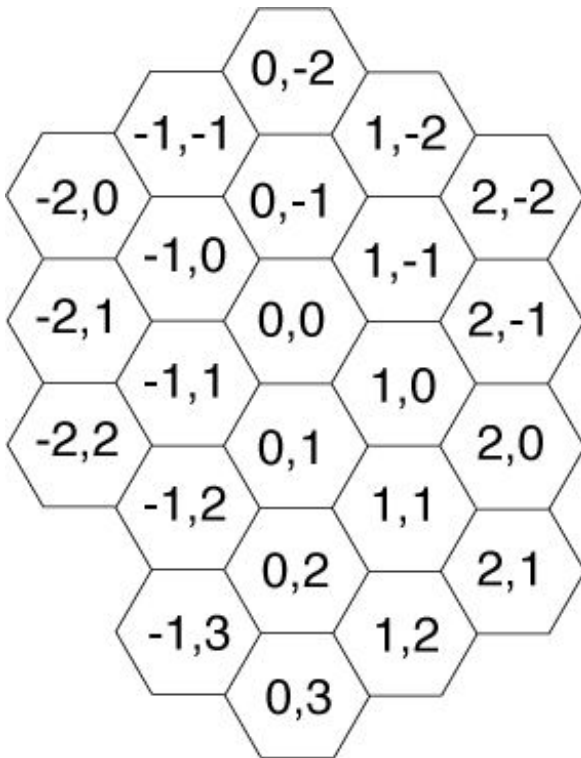# Bee Maja

Maja is a bee. She lives in a bee hive with thousands of other bees. This bee hive consists of many hexagonal honey combs where the honey is stored in.

But bee Maja has a problem. Willi told her where she can meet him, but because Willi is a male drone and Maja is a female worker they have different coordinate systems.
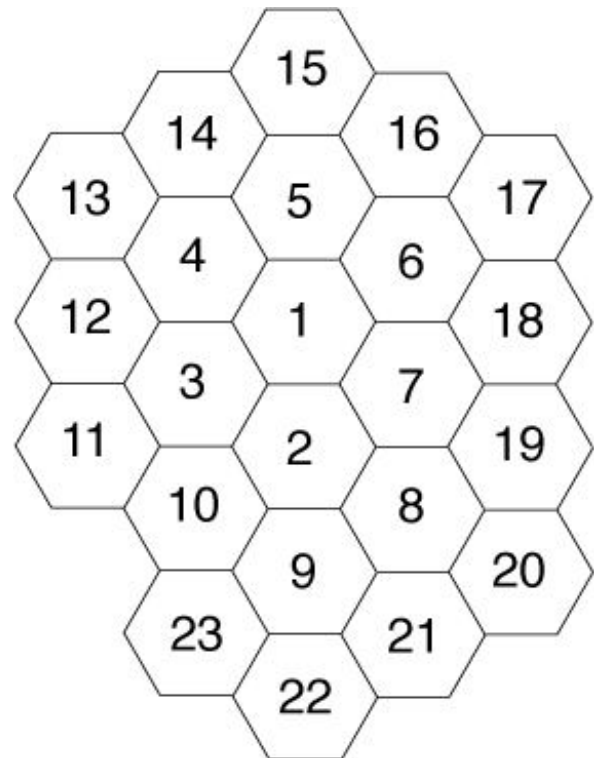
Maja's Coordinate System	**Willi's Coordinate System**
Maja who often flies directly to a special honey comb has laid an advanced two dimensional grid over the whole hive.	Willi who is more lazy and often walks around just numbered the cells clockwise starting from 1 in the middle of the hive.

Help Maja to convert Willi's system to hers. Write a program which for a given honey comb number gives the coordinates in Maja's system.

Input

The input contains one or more integers which represent Willi's numbers. Each number stands on its own in a separate line, directly followed by a newline. The honey comb numbers are all less than 100 000.

Output

You should output the corresponding Maja coordinates to Willi's numbers, each coordinate pair on a separate line.

Sample Input

1
2
3
4

5

Sample Output

0 0
0 1
-1 1
-1 0
0 -1