

One day, an ant called Alice came to an $M \times M$ chessboard. She wanted to go around all the grids. So she began to walk along the chessboard according to this way: (you can assume that her speed is one grid per second)

At the first second, Alice was standing at (1,1). Firstly she went up for a grid, then a grid to the right, a grid downward. After that, she went a grid to the right, then two grids upward, and then two grids to the left in a word, the path was like a snake.

For example, her first 25 seconds went like this:

(the numbers in the grids stands for the time when she went into the grids)

26 27 28 29 30 31					
25	24	23	22	21	32
10	11	12	13	20	43
9	8	7	14	19	34
2	3	6	15	18	25
1	4	5	16	17	36
1	2	3	4	5	

At the 8-th second , she was at (2,3), and at 20-th second, she was at (5,4).

Your task is to decide where she was at a given time (you can assume that M is large enough).

Input

Input file will contain several lines, and each line contains a number N ($1 \leq N \leq 2 * 10^9$), which stands for the time. The file will be ended with a line that contains a number '0'.

Output

For each input situation you should print a line with two numbers (x,y) , the column and the row number, there must be only a space between them.

Sample Input

8
20
25
0

Sample Output

2 3
5 4
1 5