Look at the following equation:

$$c = ab - \frac{a+b}{2} + 1$$

Now given the value of c, how many possible values of and a and b are there (a and b must be integers)? That is you will have to find the number of pairs (a,b) which satisfies the above equation.

Input
The input file contains around 3000 line of input. Each line contains an integers n ($0 < n \leq 10^{14}$). This n actually denotes the value of c. A line containing a single zero terminates the input. This line should not be processed.

Output
For each line of input produce one line of output. This line contains two integers. First integer denotes the value of c and the second integer denotes the number of pair of values of a and b that satisfies the above equation, given the value of c.

Sample Input

Sample Input	Output for Sample Input
| ```
1020
400
0
``` | ```
1020 8
400 2
``` |

Comments:
The 8 solution pairs for the first sample input are (1, 2039), (2, 680), (5, 227), (14, 76), (76, 14), (227 5), (680, 2) and (2039, 1).

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