

Look at the following equation:

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

Now given the value of  $c$ , how many possible values of  $a$  and  $b$  are there ( $a$  and  $b$  must be positive 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

```
1020
400
0
```

## Sample Output

```
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  $(2039, 1)$ .