

Sigma function is an interesting function in Number Theory. It is denoted by the Greek letter Sigma (σ). This function actually denotes the sum of all divisors of a number. For example $\sigma(24) = 1 + 2 + 3 + 4 + 6 + 8 + 12 + 24 = 60$. Sigma of small numbers is easy to find but for large numbers it is very difficult to find in a straight forward way. But mathematicians have discovered a formula to find sigma. If the prime power decomposition of an integer $n = p_1^{e_1} * p_2^{e_2} * p_3^{e_3} * \dots * p_{n-1}^{e_{n-1}} * p_n^{e_n}$, then

$$\sigma(n) = \frac{p_1^{e_1+1} - 1}{p_1 - 1} * \frac{p_2^{e_2+1} - 1}{p_2 - 1} * \frac{p_3^{e_3+1} - 1}{p_3 - 1} * \dots * \frac{p_{n-1}^{e_{n-1}+1} - 1}{p_{n-1} - 1} * \frac{p_n^{e_n+1} - 1}{p_n - 1}$$

For some n the value of $\sigma(n)$ is odd and for others it is even. Given a value n , you will have to find how many integers from 1 to n have even value of σ .

Input

The input file contains at most 100 lines of inputs.

Each line contains an integer N ($0 < N < 1000000000001$).

Input is terminated by a line containing a single zero. This line should not be processed.

Output

For each line of input produce one line of output. This line denotes how many numbers between 1 and N (inclusive) has even value of function σ .

Sample Input

```
3
10
1000
0
```

Sample Output

```
1
5
947
```