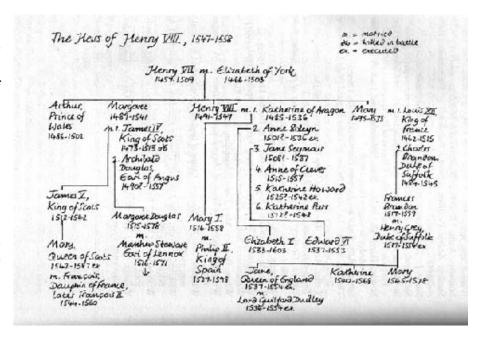
10299 Relatives

Given n, a positive integer, how many positive integers less than n are relatively prime to n? Two integers a and b are relatively prime if there are no integers x > 1, y > 0, z > 0 such that a = xy and b = xz.

Input

There are several test cases. For each test case, standard input contains a line with $n \leq 1,000,000,000$. A line containing '0' follows the last case.



Output

For each test case there should be single line of output answering the question posed above.

Sample Input

7

12

0

Sample Output

6

4