

Problem 8 : IITK party

Problem

Its party times here in IITK, and all the guys are having fun together. They have also invited a few girls to spice up the things a bit. All the boys and girls are sitting around a round table. In the party all the people form couples together, and looking at typical male to female ratio in IIT, few guys consider forming couples among themselves better than having a girl as their partner. In this process a girl is left out, and all others have formed pairs with either a boy or a girl. They sit down and on a round table and play the game of “Shells”, in which each person has a collection of infinite number of shells. Each girl is given infinite number of bowls. And she passes it onto the next person sitting beside her. The next person (male or female) puts a shell into the bowl and passes it on and the next person adds another shell and passes it on to the next person in the same cyclic order (clockwise or anticlockwise) and so on. Now if a girl is able to pass her bowl in such a way that it reaches another girl and the number of shells in it equals $(n + 1)/2$ (where n is the total number of persons), she wins the game. In each turn a girl tries to win the game following every possible move. If she discovers that it is impossible to do so, then the next girl is given a chance and so on. The game start with the girl left out to cheer her up. You have to find the minimum number of girls to be included in the party such that for every possible arrangement around the round table it is always possible that at least one girl wins the game.

Input

Each line of the input contains n , total number of students around the table. Input is terminated by the case $n = 0$, which is not to be processed. n will always fit in a 64-bit signed integer.

Output

For each input case, output the minimum number of girls to be included.

Sample Input

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7
11
13
0
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Sample Output

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4
6
7
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