

A sequence consisting of one digit, the number 1 is initially written into a computer. At each successive time step, the computer simultaneously transforms each digit 0 into the sequence '1 0' and each digit 1 into the sequence '0 1'. So, after the first time step, the sequence '0 1' is obtained; after the second, the sequence '1 0 0 1', after the third, the sequence '0 1 1 0 1 0 0 1' and so on.

How many pairs of consecutive zeroes will appear in the sequence after n steps?

Input

Every input line contains one natural number n ($0 < n \leq 1000$).

Output

For each input n print the number of consecutive zeroes pairs that will appear in the sequence after n steps.

Sample Input

2
3

Sample Output

1
1