Homies and Not Homies

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	1024 megabytes

Homies and Not Homies are rivals from the start of time. Homies recent project involved bulbs and lights. They bought a bunch of bulbs and arranged them in rows. When the electricity is turned on, row i represents the number i in binary representation (without leading zeros).

For example, if $n = 3$, the bulbs will be arranged in the following way:

- the first row will be: 1
- the second row will be: 10
- the third row will be: 11

where 0 represents an off-bulb and 1 represents an on-bulb.

Not Homies, Homies archenemy, have vandalized the light bulbs. But due to their limited brain function, they can only comprehend even numbers, so they only destroyed bulbs at even indexes (starting from left to right). When the Homies saw this, they decided to make fun of them by counting the number of light bulbs that are still turned on.

Input

The first line contains one integer t $(1 \le t \le 10^4)$ — the number of test cases.

The first line of each test case consists of a single integer n $(1 \le n \le 10^9)$ — the number of rows.

Output

Output the number of bulbs that are still on after Not Homies messed with the bulbs.

Example

standard input	standard output
3 5 7 10	6 9 13

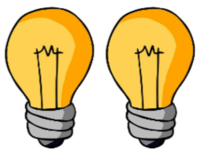
Note

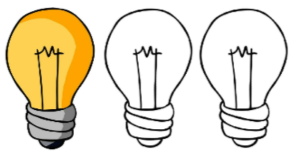
Consider the second testcase:

Those are the light bulbs before and after Not Homies messed with them, as you can see **the parity of the light bulbs** is relative to the largest active light bulb.

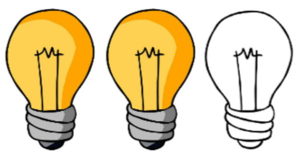
1: 

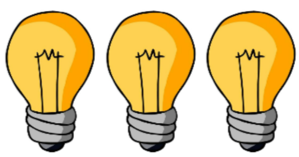
2: 

3: 

4: 

5: 

6: 

7: 

1: 

2: 

3: 

4: 

5: 

6: 

7: