Problem E. Utopian Tree

OS Linux

The Utopian Tree goes through 2 cycles of growth every year. Each spring, it *doubles* in height. Each summer, its height increases by *1* meter.

A Utopian Tree sapling with a height of *1* meter is planted at the onset of spring. How tall will the tree be after n growth cycles?

For example, if the number of growth cycles is $n = 5$, the calculations are as follows:

```
Period  Height
0       1
1       2
2       3
3       6
4       7
5       14
```

Function Description

Complete the *utopianTree* function in the editor below.

utopianTree has the following parameter(s):

- *int n*: the number of growth cycles to simulate

Returns

- *int:* the height of the tree after the given number of cycles

Input Format

The first line contains an integer, t, the number of test cases.
t subsequent lines each contain an integer, n, the number of cycles for that test case.

Constraints

$1 \leq t \leq 10$
$0 \leq n \leq 60$

Input	Output
3 0 1 4	1 2 7

Explanation

There are *3* test cases.

In the first case ($n = 0$), the initial height ($H = 1$) of the tree remains unchanged.

In the second case ($n = 1$), the tree doubles in height and is 2 meters tall after the spring cycle.

In the third case ($n = 4$), the tree doubles its height in spring ($n = 1$, $H = 2$), then grows a meter in summer ($n = 2$, $H = 3$), then doubles after the next spring ($n = 3$, $H = 6$), and grows another meter after summer ($n = 4$, $H = 7$). Thus, at the end of 4 cycles, its height is 7 meters.