

Build the Tower

8. Build the Tower

The president of Yanyang University has decided to build a new tower in front of the auditorium and has invited the students of SCE to help with the project. The tower is one of a kind and is made up of N cuboids one over the other. Each cuboid has a height of 1 unit and the length and breadth of a cuboid is equal. The top most cuboid's length is 1 unit. The cuboid below it has a length of 2. All the cuboids below it have their lengths equal to the sum of the lengths of the 2 cuboids above it.

| Cuboid | Length | Breadth | Height |
|--------|--------|---------|--------|
| 1 | 1 | 1 | 1 |
| 2 | 2 | 2 | 1 |
| 3 | 3 | 3 | 1 |
| 4 | 5 | 5 | 1 |
| 5 | 8 | 8 | 1 |

As a token of appreciation the president has decided to give SCE a grant of

$$\text{\$ } ((\text{Volume of Tower}) \% 1000000007)$$

Your task is to calculate the amount of grant received by SCE for a given value of N .

Input

The first line contains the number of test cases (T) followed by T lines each containing a single integer N .

Output

For each test case output the grant that SCE receives for building the tower.

Constraints $T \leq 20$, $N \leq 10^{18}$

Sample Input

2
5
10

Sample Output

\$103
\$12815