Problem F
Fibonacci Lucky Numbers

Time limit: 2 seconds
Memory limit: 2048 megabytes

Problem Description

Welcome to the **Lucky 777 Slot Game**! This game is known for its complex mathematical challenges, where only the smartest can win the jackpot.

The slot machine is powered by a mysterious sequence—the **Fibonacci sequence**. But it's no ordinary Fibonacci sequence; it has a twist inspired by the number 7, the symbol of luck in slot games.

When you pull the lever of the **Lucky 777 Slot Machine**, it generates a gigantic number using an integer n and the power of sevens: 7^{7^n}. This number, however, is so massive that even the most powerful computers cannot handle it directly.

To claim the jackpot, you need to compute the last 10 digits of the $F_{7^{7^n}}$, the 7^{7^n}-th Fibonacci number.

Input Format

The first line contains an integer t indicating the number of test cases. Each of the following t lines is a test case and contains exactly one positive integer n.

Output Format

For each test case, output one line contains the last 10 digits of $F_{7^{7^n}}$.

Technical Specification

- $1 \leq t \leq 20$
- $1 \leq n \leq 10^9$

Sample Input 1

```
5
1
2
3
4
5
```

Sample Output 1

```
1353646637
3172443437
2364206637
9010523437
9481646637
```

Note

The Fibonacci sequence is defined as:

- $F_0 = 0$
- $F_1 = 1$
- $F_k = F_{k-1} + F_{k-2}$ for $k \geq 2$