Problem F. Fibonacci of Fibonacci

Input file:	*standard input*
Output file:	*standard output*
Time limit:	1 second
Memory limit:	512 mebibytes

The math class is coming again. You can't wait to tell Nozomi the game "Knight Garden", and she return a puzzle called "Fibonacci of Fibonacci" back to you.

We are all familiar with Fibonacci sequence, which can defined by the recurrence relation as follows.

$$F_0 = 0$$
$$F_1 = 1$$
$$F_n = F_{n-1} + F_{n-2}$$

Since calculating F_n mod 20160519 is too boring for you, she is asking you to calculate F_{F_n} mod 20160519.

Input

The first line contains an integer T.

Each of the following T lines contains an integer n in a single line.

- $1 \leq T \leq 10000$
- $1 \leq n \leq 10^9$

Output

For each test case, output an integer F_{F_n} mod 20160519 in a single line.

Examples

standard input	standard output
2 5 6	5 21