Power of Phi(medium)

Vertu was very impressed by the golden ratio $\varphi=(1+\sqrt{5})/2$ and about it occurring in nature and all that. He now begins to wonder if any non negative integral power of φ is also special. Since he does not like working with decimals, he decided to approximate the positive integral power of φ to its closest integer. Help him by printing the closest integer to φ^n, given **n**.

Input

The first line contains **T**, the number of test cases. **T** lines follow, each containing one positive integer **n**.

Output

For each of these integers, print the closest integer to φ^n. If you think there are two closest possible integers, print either of them. Print the answer modulo (10^9+7).

Constraints

T <= 100000

$0 <= $ **n** $ <= 10^9$

Example

INPUT:
2
1
3

OUTPUT:
2
4