Ada and Palaces

Ada the Ladybug was playing chess agains her good friend Velvet Mite Vinit. They came up with new figure, called **palace**. In fact, palace is just **tower** with **king** inside. It can attack as king and tower combined: Either anywhere to same column or row **or** anywhere to adjacent (by side or diagonal) field.

Their question is simple: How many ways can **N** palaces be placed on **NxN** chessboard so none of them attacks any other. Since this number might be pretty big, output answer modulo 10^9+7

Input

The first line of input will contain $1 \leq T \leq 10^5$, the number of test-cases.

Each of the testcases will contain single integer $1 \leq N \leq 10^7$, the size of chessboard.

Output

For each test-case output the number of possibilities modulo 1000000007.

Example Input

```
8
1
2
3
7
10
1000
10000
9999999
```

Example Output

```
1
0
0
646
479306
711794305
450342414
838796194
```