Strongly Connected Digraphs

Count the number of labeled strongly connected digraphs with the given number of vertices.

Input Format

The first line contains T, the number of queries.
Following are T lines. Each line contains one integer N, denoting the number of vertices.

Output Format

Output T lines. Each line is the number of labeled strongly connected digraphs with N vertices, modulo $(10^9 + 7)$.

Constraints

$1 \leq T \leq 1000$
$1 \leq N \leq 1000$

Sample Input

```
5
1
2
3
4
1000
```

Sample Output

```
1
1
18
1606
871606913
```

Explanation

You can refer to oeis.