

Counting Expressions II

Count the number of distinct expressions involving n different operands **a**, **b**, **c**, etc. Only operators $+$, $-$, $*$, $/$ and parentheses are permitted. Single minus operator (for ex. $-a*b$) is not allowed.

Two expressions are distinct if for some valid input values (i.e. You won't divide some number by zero) **a**, **b**, **c**, ... , the two expressions lead to different results. For example, $a/b/c$ and $a/(b*c)$ are the same expressions, but $a/b+c$ and $a/(b+c)$ are not.

Input

Multiply test cases. For each test case:

A single line - n . ($1 \leq n \leq 2000$).

Input terminates by a single zero.

Output

For each test case:

The number of different expressions, modulo 1000000007.

Example

Input:

3
0

Output:

68

The time limit has been changed to 1 second. If you find it too strict, please submit a pre-computed table to get Accepted :-)