Balance (1)   P92795_en

Novè Concurs de Programació de la UPC - Final (2011-09-21)

Given n weights 2^0, 2^1, ..., 2^{n-1}, we have to place all the weights on a balance, one after another, in such a way that the right pan is never heavier than the left pan. Please compute the number of ways of doing this.

For example, for $n = 2$ there are exactly three ways: placing first 2 on the left pan and then 1 on the right pan, placing first 2 on the left pan and then 1 on the left pan, and placing first 1 on the left pan and then 2 on the left pan. Note that, for instance, placing first 1 on the right pan and then 2 on the left pan is an incorrect way, since after placing 1 the right pan is heavier than the left pan.

Input

Input consists of several cases, each with a natural number $1 \leq n \leq 10^6$.

Output

For every case, print the number of correct ways modulo $10^9 + 7$.

Sample input

```
1
2
3
1000000
```

Sample output

```
1
3
15
386044009
```

Observation

This problem is basically problem 4 of IMO 2011.

Problem information

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