
Fibonacci-like sequences

P68314_en

Vintè Concurs de Programació de la UPC - Final (2022-09-21)

Inspired by the Fibonacci sequence $F_0 = 0, F_1 = 1, F_n = F_{n-1} + F_{n-2}$ for $n \geq 2$, Xavier defined his own sequence of numbers:

$$X_0 = 0, X_1 = 1, X_n = X_{X_{n-1}} + X_{X_{n-2}} \text{ for } n \geq 2.$$

Max also wanted his own sequence of numbers, so he modified Xavier's definition a bit:

$$M_0 = 1, M_1 = 0, M_n = M_{M_{n-1}} + M_{M_{n-2}} \text{ for } n \geq 2.$$

Can you compute the n -th term of any of these two new sequences?

Input

Input consists of several cases, each with a character c , which is 'X' or 'M', and a natural n between 0 and 10^9 .

Output

For each case, print X_n or M_n depending on c .

Sample input

```
X 0
X 1
X 2
X 3
M 0
M 1
M 2
M 3
```

Sample output

```
0
1
1
2
1
0
1
1
```

Problem information

Author : Félix Moreno

Generation : 2024-05-02 21:55:12

© Jutge.org, 2006–2024.

<https://jutge.org>