Fibonacci-like sequences
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**

<table>
<thead>
<tr>
<th>X 0</th>
<th>X 1</th>
<th>X 2</th>
<th>X 3</th>
<th>M 0</th>
<th>M 1</th>
<th>M 2</th>
<th>M 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Sample output**

<p>| | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

**Problem information**

Author: Félix Moreno
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