

Fibonacci recursive sequences (medium)

Let FIB the Fibonacci function :

$FIB(0)=0$; $FIB(1)=1$

and

for $N \geq 2$ $FIB(N) = FIB(N-1) + FIB(N-2)$

Example : we have $FIB(6)=8$, and $FIB(8)=21$.

Let $F(K, N)$ a new function:

$F(0, N) = N$ for all integers N .

$F(K, N) = F(K-1, FIB(N))$ for $K > 0$ and all integers N .

Example : $F(2, 6) = F(1, FIB(6)) = F(0, FIB(FIB(6))) = FIB(FIB(6)) = FIB(8) = 21$

Input

The input begins with the number T of test cases in a single line.

In each of the next T lines there are three integers: K, N, M .

Output

For each test case, print $F(K, N)$,
as the answer could not fit in a 64bit container,
give your answer modulo M .

Example

Input:

```
3
4 5 1000
3 4 1000
2 6 1000
```

Output:

```
5
1
21
```

Constraints

```
1 <= T <= 10^3
0 <= K <= 10^2
0 <= N <= 10^9
2 <= M <= 10^9
```

You would perhaps have a look, after, at the [hard edition](#) with more difficult constraints.

Edit 2017-02-11, after compiler update. My old Python code ends in 0.08s. New TL.