Problem B. Mai Senpai Forever!!

TimeLimit: 1 second
MemoryLimit: 256 megabytes

Mai is a rookie celebrity who has just debuted. The movie she starred in became a huge hit, so the number of fans has been growing extremely fast. According to the record:

- *On day* 1*, she gains* 1 *new fan.*
- *On day* 2*, she gains* A *new fans.*
- *On day* 3*, she gains* A^2 *new fans.*
- *In general, on day* i*, she gains* A^{i-1} *new fans.*

Because the number of fans grows exponentially, the total fan count becomes enormous and is hard to compute directly. The management company asks you to write a program to compute the total number of fans after day $N-1$. However, due to limited storage, you should output the result modulo M.

Input

The input consists of a single line containing three integers A, N, and M, separated by spaces.

- $1 \leq A, M \leq 10^9$
- $1 \leq N \leq 10^{15}$

Output

Output the number of fans on day $N-1$.

Examples

standard input	standard output
3 5 7	5
8 11 9	0
1000000000 1000000000000 998244353	899854825