Simple Exponentiation

Problem ID: expo

Problem Statement

You are given t test cases. In each test case, you are given three integers: a, b, and m.

Your task is to compute $a^b \bmod m$, i.e., the remainder when a raised to the power b is divided by m.

Input

- The first line contains a single integer t ($1 \leq t \leq 10^5$) — the number of test cases.
- Each of the next t lines contains three space-separated integers a, b, and m ($1 \leq a, b, m \leq 10^9$).

Output

Print t lines. For each test case, output a single integer — the value of $a^b \bmod m$.

Subtasks

Subtask	Constraints	Points
1	$b \leq 100$	10
2	$b \leq 10^5$	20
3	b is a power of 2	30
4	No additional constraints	40

Sample Input 1

```
3
2 5 100
3 10 50
10 9 6
```

Sample Output 1

```
32
49
4
```

Explanation for Sample 1

- $2^5 = 32$, and $32 \bmod 100 = 32$
- $3^{10} = 59049$, and $59049 \bmod 50 = 49$
- $10^9 = 1000000000$, and $1000000000 \bmod 6 = 4$

End of Problem 2