

# 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  $1000000000 \bmod 6 = 4$

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*End of Problem 2*