Exponentiation AZ101

? Ask Doubt

Time-Limit: 1 sec Score: 0.00/100 Difficulty :

Memory: 256 MB Accepted Submissions: 100 Relevant For: AZ-101 AZ-201

Description

You are given four integers - A, B, C, and P. P is a prime number.
Find $A^{B^C} \% P$.

NOTE: $0^0 = 1$.

Input Format

The first line of the input contains one integer T - the number of test cases. Then T test cases follow.
The first line of each test case contains four space-separated integers A, B, C, P.

Output Format

For each test case, print $A^{B^C} \% P$

Constraints

$1 \leq T \leq 2 \times 10^5$
$0 \leq A, B, C \leq 10^9$
$2 \leq P \leq 10^4$

Sample Input 1

Copy

```
3
2 4 2 7
1 6 20 5
3 1 200 3
```

Sample Output 1

Copy

```
2
1
0
```

Note

C++14[GCC]

Submit

```
1
```