Devu Vs Police

It is holi festival, festival of colors. Devu is having fun playing holi and is throwing balloons with his girlfriend Glynis. Police saw this mischief and tried arresting his girlfriend, Devu being a mathematician asked police not to arrest his girlfriend and instead torture him with brain teaser. Devu was a young engineering fellow and he did not knew that policeman was equally good in mathematics, policeman gave Devu a problem which is as follows:

Let $f(n,k) = n^k$

Your aim is to answer $f(n_1,k_1)^{f(n_2,k_2)} \bmod n$

Can you help devu and his girlfriend rescue from modern police.

Input Format

You are given T which is the number of queries to solve.

Each Query consist of 5 space separated integers n_1, k_1, n_2, k_2, n

Constraints

- $1 \leq T \leq 10^4$
- $0 \leq n_1, k_1, n_2, k_2 \leq 10^9$
- $1 \leq n \leq 10^7$

Note The output to 0^0 should be 1.

Output Format

Output contains exactly T lines. i^{th} line containing the answer for the i^{th} query.

Sample Input

```
1
2 1 2 2 15
```

Sample Output

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1
```

Explanation

$f(2,1) = 2$

$f(2,2) = 4$

so answer is $16 \bmod 15 = 1$