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 $f(n1,k1)^{f(n2,k2)} \% n$

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 n1 k1 n2 k2 n

Output Format

Output contains exactly T lines. i[th] line containing the answer for the ith query.

Constraints

$1 <= T <= 10000$
$0 <= n1,k1,n2,k2 <= 10^9$
$1 <= n <= 10^7$

Note The output to 0^0 should be 1.

Sample Input

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

Sample Output

```
1
```

Explanation

$f(2,1) = 2$

$f(2,2) = 4$

so answer is 16 mod 15 = 1