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2D GCD

locked

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Problem

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Given a $N \times M$ 2D Array.

Where every cell of the 2D Array denotes gcd of respective indices.

For example-

A 3x3 Array has entries

$\text{gcd}(1,1)$ $\text{gcd}(1,2)$ $\text{gcd}(1,3)$

$\text{gcd}(2,1)$ $\text{gcd}(2,2)$ $\text{gcd}(2,3)$

$\text{gcd}(3,1)$ $\text{gcd}(3,2)$ $\text{gcd}(3,3)$

You are given queries $i1$ $j1$ $i2$ $j2$.

You have to find the sum of matrix formed by upper left corner $(i1,j1)$ and lower right corner $(i2,j2)$.

Input Format

First line indicates number of testcases.

Next line have space separated two integer n and m .

Next T lines contains queries $i1$ $j1$ $i2$ $j2$.

Constraints

- $1 \leq T \leq 60000$
- $1 \leq n, m \leq 1000000$
- $i1 \leq i2$ and $j1 \leq j2$

Output Format

Print ans modulo 10^9+7 for each query in newline.

Sample Input 0

```
2
3 2
1 1 2 2
2 1 3 2
```

Sample Output 0

```
5
5
```

Explanation 0

[f](#) [t](#) [in](#)

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Max Score: 25

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Sum of all the gcd of cells from (1,1) to (2,2) is 5 that is,
 $\text{gcd}(1,1) + \text{gcd}(1,2) + \text{gcd}(2,1) + \text{gcd}(2,2) = 1 + 1 + 1 + 2 = 5$

Sum of all the gcd of cells from (2,1) to (3,2) is 5 that is,
 $\text{gcd}(2,1) + \text{gcd}(2,2) + \text{gcd}(3,1) + \text{gcd}(3,2) = 1 + 2 + 1 + 1 = 5$

Current Buffer (saved locally, editable)  

C  

```
1 #include <stdio.h>
2 #include <string.h>
3 #include <math.h>
4 #include <stdlib.h>
5
6 int main() {
7
8     /* Enter your code here. Read input from STDIN. Print output to STDOUT */
9     return 0;
10 }
```

Line: 1 Col: 1

 [Upload Code as File](#) ☐ Test against custom input

Run Code

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