

Problem A

Power Tower

Time limit: 1 second

In a futuristic city built on the concept of mathematical precision, there exists a grand tower with layers of cubes stacked into a perfect 3D matrix. Each cube, or "block," represents a crucial piece of the city's power grid. The matrix is initialized so that every block contains a power level 0. The first block is defined by the coordinates $(1, 1, 1)$, and the last block is defined by the coordinates (n, n, n) .

The city's engineers perform two types of operations to maintain the power distribution across the tower:

- **UPDATE Task:** When a specific block at coordinates (x, y, z) requires a power adjustment, the engineers use the following instruction to set the power level of block (x, y, z) to a new value W : `UPDATE x y z W`
- **QUERY Task:** To assess the total power in a section of the tower, the engineers use the instruction `QUERY x1 y1 z1 x2 y2 z2`. The system needs to calculate the sum of the power levels of all blocks where the x -coordinates lie between x_1 and x_2 (inclusive), the y -coordinates lie between y_1 and y_2 (inclusive), and the z -coordinates lie between z_1 and z_2 (inclusive).

Using these two operations, the engineers ensure that the city's power tower remains balanced and operational, efficiently managing the power grid.

Input

- The first line contains an integer T , the number of test cases.
- For each test case:
 - The first line contains two space-separated integers, n and m , n defines the $n \times n \times n$ cube, m defines the number of operations.
 - The next m lines contain operations in one of the two forms:
 1. `UPDATE x y z W`
 2. `QUERY x1 y1 z1 x2 y2 z2`

Output

Print the result of each instruction query on a new line.

Sample Input	Sample Output
2	5
4 5	0
UPDATE 1 1 1 5	28
QUERY 1 1 1 3 3 3	0
UPDATE 1 1 1 23	1
QUERY 2 2 2 4 4 4	0
QUERY 1 1 1 3 3 3	
2 4	
UPDATE 2 2 1 1	
QUERY 1 1 1 1 1 1	
QUERY 1 1 1 2 2 2	
QUERY 2 2 2 2 2 2	

Constraints

- $1 \leq T \leq 50$; $1 \leq n \leq 100$; $1 \leq m \leq 10^5$; $-10^9 \leq W \leq 10^9$