

Cube Summation



[Chinese Version](#)

[Russian Version](#)

You are given a 3-D Matrix in which each block contains 0 initially. The first block is defined by the coordinate (1,1,1) and the last block is defined by the coordinate (N,N,N). There are two types of queries.

```
UPDATE x y z W
```

updates the value of block (x,y,z) to W.

```
QUERY x1 y1 z1 x2 y2 z2
```

calculates the sum of the value of blocks whose x coordinate is between x1 and x2 (inclusive), y coordinate between y1 and y2 (inclusive) and z coordinate between z1 and z2 (inclusive).

Input Format

The first line contains an integer T, the number of test-cases. T testcases follow.

For each test case, the first line will contain two integers N and M separated by a single space.

N defines the $N * N * N$ matrix.

M defines the number of operations.

The next M lines will contain either

```
1. UPDATE x y z W
2. QUERY x1 y1 z1 x2 y2 z2
```

Output Format

Print the result for each QUERY.

Constraints

$1 \leq T \leq 50$

$1 \leq N \leq 100$

$1 \leq M \leq 1000$

$1 \leq x1 \leq x2 \leq N$

$1 \leq y1 \leq y2 \leq N$

$1 \leq z1 \leq z2 \leq N$

$1 \leq x,y,z \leq N$

$-10^9 \leq W \leq 10^9$

Sample Input

```
2
4 5
UPDATE 2 2 2 4
QUERY 1 1 1 3 3 3
UPDATE 1 1 1 23
QUERY 2 2 2 4 4 4
QUERY 1 1 1 3 3 3
2 4
UPDATE 2 2 2 1
QUERY 1 1 1 1 1 1
QUERY 1 1 1 2 2 2
QUERY 2 2 2 2 2 2
```

Sample Output

```
4
```

```
4
27
0
1
1
```

Explanation

First test case, we are given a cube of $4 * 4 * 4$ and 5 queries. Initially all the cells $(1,1,1)$ to $(4,4,4)$ are 0.

UPDATE 2 2 2 4 makes the cell $(2,2,2) = 4$

QUERY 1 1 1 3 3 3. As $(2,2,2)$ is updated to 4 and the rest are all 0. The answer to this query is 4.

UPDATE 1 1 1 23. updates the cell $(1,1,1)$ to 23. **QUERY 2 2 2 4 4 4**. Only the cell $(1,1,1)$ and $(2,2,2)$ are non-zero and $(1,1,1)$ is not between $(2,2,2)$ and $(4,4,4)$. So, the answer is 4.

QUERY 1 1 1 3 3 3. 2 cells are non-zero and their sum is $23+4 = 27$.