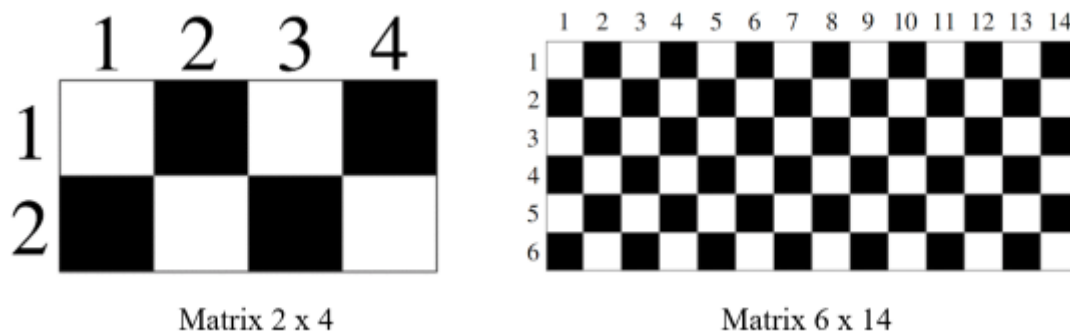


A Meowy Night

Input file: **standard input**
Output file: **standard output**
Time limit: 3 seconds
Memory limit: 256 megabytes

Meow is sitting under its roof full of squares which can be transparent or black while watching the night sky blink. These patterns change over time as the roof turns transparent and black in rectangles. Meow decided to look at the roof as a cartesian plane with c as its columns and r as its rows with each coordinate representing a square. Only squares that are transparent at the time can Meow see the stars through that square, meaning that the stars behind black squared cannot be seen.

The roof always starts off in a chequered pattern of transparent and black squares with a transparent square at the top left corner. For example:



The roof will then change shades in solid rectangles of (x_1, y_1, x_2, y_2) where (x_1, y_1) marks a corner of the rectangle and (x_2, y_2) marks the opposite corner of the rectangle. All squares within this rectangle will then be changed to either black or white based on input conditions (including the coordinates themselves).

All stars in the sky have different brightness levels, b ($0 < b < 100$). These stars are through the transparent parts of the roof, thus Meow can group these stars into each square.

Meow wants to know the total brightness of the starts shining through its roof. Your job is to total up the brightness of the stars shining through Meow's transparent roof at a certain time with the roof's colour patterns considered.

Input

The first line contains 2 numbers, c and r for columns and rows of the roof ($0 < n, m < 1000$)

The second line is the number of queries, n ($0 < n < 105$)

The following n lines follows these 4 types of **query formats**:

1. $+ x y b$ – Add stars at coordinate x and y , b shows brightness level
2. $B x_1 y_1 x_2 y_2$ – The roof changes colour between 2 coordinates x_1, y_1 and x_2, y_2 to **Black** (including the coordinates themselves)
3. $T x_1 y_1 x_2 y_2$ – The roof changes colour between 2 coordinates x_1, y_1 and x_2, y_2 to **Transparent** (including the coordinates themselves)
4. $?$ – Print total brightness of all stars behind **Transparent Squares**

($0 < x < c, 0 < y < r$)

Output

Print total brightness of all stars that Meow can see!

Example

standard input	standard output
4 4	10
12	20
+ 2 1 5	0
+ 2 2 5	15
+ 4 4 5	
+ 2 3 5	
?	
T 1 1 4 4	
?	
B 1 1 4 4	
?	
T 1 1 2 2	
T 3 3 4 4	
?	