

## 5775 Folding Game

Alice and Bob are playing a game. Alice places a rectangular piece of paper in front of Bob with width  $W$  and height  $H$ . Then she proceeds to fold the paper  $N$  times. Each fold is either horizontal or vertical. Folding the paper horizontally leaves another rectangle of the same width  $W$  and smaller height  $h$ . Similarly, a vertical fold leaves a rectangle with same height  $H$  and smaller width  $w$ .

In the end, Alice puts her finger on some point on the resulting rectangle and asks “Bob, how many layers of paper are directly beneath my finger?”.

### Input

There will be several test cases in the input. Each test case will begin with a line with three integers:

$W H N$

Where  $W$  and  $H$  ( $0 < W, H \leq 1,000,000$ ) are the width and height of the paper, and  $N$  ( $0 \leq N \leq 20$ ) is the number of folds.  $W$  and  $H$  are guaranteed to be even. On each of the subsequent  $N$  lines there will be a letter and a number, separated by a single space:

$D K$

The letter  $D$  is one of {‘T’, ‘B’, ‘L’, ‘R’} indicating whether the fold is from the Top, Bottom, Left or Right. It will always be capital. The number  $K$  indicates where Alice makes the fold, measured from the given edge. For example, if  $D$  is ‘T’, then Alice starts with the paper lying flat, lifts the TOP edge and folds it downward.  $K$  is guaranteed to be on the paper, and it is guaranteed to be even.

On the final line of each case there will be two integers:

$X Y$

Which indicate the point where Alice puts her finger. This is measured from the bottom left corner, with  $X$  being the distance towards the right, and  $Y$  being the distance towards the top. The point  $(X, Y)$  is guaranteed to be on the fully folded paper. Both  $X$  and  $Y$  are also guaranteed to be odd. Since  $W$ ,  $H$  and  $K$  are all even, this assures that the point  $(X, Y)$  will not be over any edge or fold.

The input ends with a line with three 0’s.

### Output

For each case output a single integer on its own line, indicating the number of layers of paper at the given point  $(X, Y)$ . Output no extra spaces, and do not separate answers with blank lines.

### Sample Input

```
10 10 1
B 4
5 1
10 10 1
B 4
7 5
10 10 1
T 6
3 1
10 10 1
```

T 6  
9 3  
14 10 2  
L 4  
R 4  
3 3  
0 0 0

### Sample Output

2  
1  
1  
2  
3