

## 10949 Kids in a Grid

Two kids are walking in a  $H \times W$  grid. Each square in the grid contains a character (whose ASCII code lies between 33 and 127). Both kids can move north, east, west and south each step. The first kid walked  $N$  steps, the second kid walked  $M$  steps. ( $0 \leq N \leq M \leq 20000$ ).

If we write down all the characters each kid walks on, we get two strings  $S_A$  and  $S_B$ . your task is to delete as few characters as possible, so that the two new strings are the same.

### Input

the first line contains a single integer  $t$  ( $1 \leq t \leq 15$ ), the number of test cases. Each test case contains several lines. The first line contains two integers  $H$  and  $W$  ( $1 \leq H, W \leq 20$ ), the next  $H$  lines contains the grid. Next line contains three integers  $N$ ,  $X_0$  and  $Y_0$  ( $1 \leq X_0 \leq H, 1 \leq Y_0 \leq W, X$  increases from North to South, while  $Y$  increases from West to East), indicating the first kinds walks from  $(X_0, Y_0)$ , for  $N$  steps. The next line contains a string of  $N$  characters,  $N, E, W, S$  stands for North, West, South and East, respectively. The second kid's information follows, which is the same format.

You may assume the walk sequence is correct: they will never go outside the grid.

### Output

For each case, print the case number and two integers  $X_A$  and  $X_B$ , indicating the number of characters deleted from  $S_A$  and  $S_B$ , respectively.

**Note:** In the first sample,  $S_A = ABCD G$ ,  $S_B = ADEB$ , we must delete 3 characters from  $S_A$  and 2 from  $S_B$ , so that they are the same (both  $A_B$  or  $A_D$ )

### Sample Input

```
2
3 4
ABCD
DEFG
ABCD
4 1 1
EEES
3 3 1
NES
3 4
ABCD
DEFG
ABCD
4 1 1
EEES
3 3 1
NES
```

### Sample Output

```
Case 1: 3 2
Case 2: 3 2
```