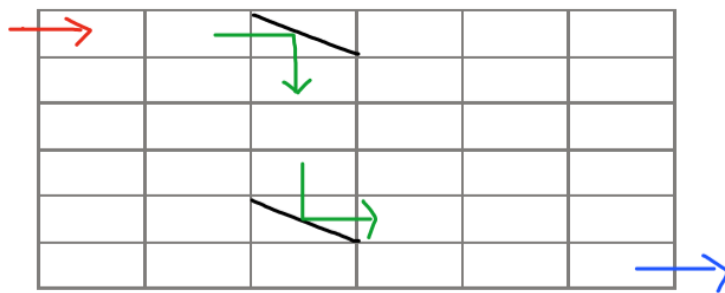


# Cow Herding (Easy Version)

Input file:           standard input  
Output file:         standard output  
Time limit:          1 second  
Memory limit:       256 megabytes

Farmer John plans to place direction signs between the barn and the pasture so that the cows can find their way to the pasture. Each direction sign turns the cows ninety degrees to the left or to the right.

The area between the barn and the pasture is an  $R \times C$  rectangular grid. Cows enter the top row of the grid horizontally from the left. They change their direction if they move onto the same unit as a sign. Each sign has a 45-degree diagonal orientation, either '/' or '\'. There are  $N$  '/' signs and  $M$  '\' signs. Cows change their direction as if they are reflected on the sign. The cows need to exit the grid at the bottom row of the grid horizontally towards the right.



Red arrow is how you start, blue arrow is how you need to exit. Green arrows show how you reflect off of signs.

FJ has already placed some signs on the grid for you. Help him find the number of different places where one other sign may be placed, in any orientation, so that the cows will get to the pasture. The upper left corner of the grid is (1, 1). There are no two signs at the same position and cows may not visit every single sign from the entrance to the exit.

## Input

The first line contains four integers:  $R, C, N, M$  ( $1 \leq R, C, N, M \leq 10^3$ ).

Each of the next  $N$  lines contains two integers  $r_i$  and  $c_i$  ( $1 \leq r_i \leq R$  and  $1 \leq c_i \leq C$ ) specifying that there is a '/' sign in row  $r_i$  column  $c_i$ .

Each of the last  $M$  lines contains two integers  $r_i$  and  $c_i$  ( $1 \leq r_i \leq R$  and  $1 \leq c_i \leq C$ ) specifying that there is a '\' sign in row  $r_i$  column  $c_i$ .

## Output

If there is no need for an additional sign, print "Moo". That means that the available signs already guide the cows to the pasture.

If one more sign is not enough to guide the cows to the pasture, print "Impossible".

Otherwise, the first line of the output denotes the number of different positions to place the additional sign with an integer  $K$ .

Each of the following  $K$  lines describes such a place with two integers  $x_i$  (row index) and  $y_i$  (column index) ( $1 \leq x_i \leq R$  and  $1 \leq y_i \leq C$ ). Those  $K$  lines should be printed in increasing lexicographic order (sort by  $x$  first, breaking ties by  $y$ .)

## Example

standard input	standard output
18 16 11 8	2
3 7	10 9
6 2	12 7
6 5	
6 9	
8 13	
10 7	
11 10	
12 9	
14 3	
14 7	
15 10	
1 5	
3 13	
6 11	
8 11	
10 2	
11 12	
15 3	
18 12	