Fork’s Treasure

Fork has an incomplete treasure map. The treasure map is an n \* m matrix. Now Fork knows K treasure locations, and the i-th treasure’s location is represented by (xi, yi).

Fork first wants to get the complete treasure map. Fork obtained the following rule through observation: For any two treasures A and B in different rows and columns, if there is a treasure at (xa, yb), then there must be a treasure at (xb, ya). New treasure locations can also be found through discovered treasures and other known treasures. When new treasures cannot be found, the treasure map is complete. There is at most one treasure in a location.

Fork happily got the complete treasure map and began to hunt for treasure. Initially Fork is in the (1,1) position. Due to the limitation of the tool, Fork can only move to the right or up. The fork wants to get the most treasures. Can you tell Fork how many treasures he can get?

Input format:

The first line contains three integer numbers n, m, and K (1 <= n, m <= 5000, 1 <= K <= n \* m)---the length and width of the treasure map and the number of known treasures.

Next K lines describe the position of the treasure i in form xi,yi (1<=i<=K,1≤xi<=n,1<= yi≤m).

Output format:

Output two integers----the number of treasures in the complete treasure map and the maximum number of treasures obtained by Fork.

In:

5 4 5

2 1

2 3

4 2

4 3

5 2

Ans:

9 5