

The number of path

Given a matrix of n rows and m columns numbered from top to bottom, left to right, each cell in the matrix is a random number whose absolute value does not exceed 10^9 . From the upper left position, find a path to the lower right corner position so that the number of squares to go through is minimal (each move only goes to the square with a common edge). Among those ways, find a way to maximize the sum of the values of the cells on the path and how many path have the same maximum sum.

Input

The first line is 2 integers n, m ($n, m \leq 2 \times 10^3$).

The i th line of the next n lines contains m space-separated integers. The j th value in line i corresponds to the a_{ij} value in the matrix ($|a| \leq 10^9$).

Output

The first integer is the total value of the path, the second is the number of paths as described. (the 2nd number should be remainder after dividing by 10^7)

Example

Input:

```
6 4
12 11 -12 11
12 11 10 12
-11 11 -10 -10
12 -10 -11 10
11 11 11 -10
12 -11 12 12
```

Output:

```
82 2
```