A **matrix diagonal** is a diagonal line of cells starting from some cell in either the topmost row or leftmost column and going in the bottom-right direction until reaching the matrix's end. For example, the **matrix diagonal** starting from `mat[2][0]`, where `mat` is a `6 x 3` matrix, includes cells `mat[2][0]`, `mat[3][1]`, and `mat[4][2]`.

Given an `m x n` matrix `mat` of integers, sort each **matrix diagonal** in ascending order and return *the resulting matrix*.

Example 1:

Before   After
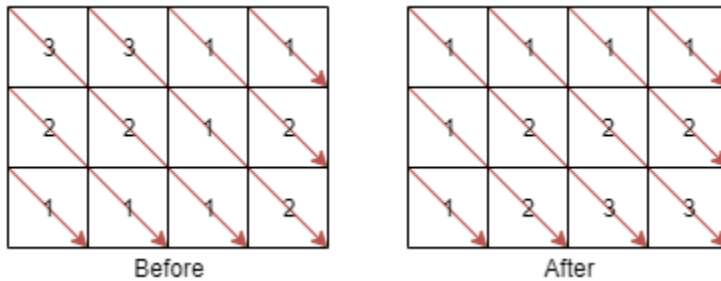
```
Input: mat = [[3,3,1,1],[2,2,1,2],[1,1,1,2]]

Output: [[1,1,1,1],[1,2,2,2],[1,2,3,3]]
```

Example 2:

```
Input: mat =
[[11,25,66,1,69,7],[23,55,17,45,15,52],[75,31,36,44,58,8],[22,27,33,25,68,4],[84,28,1
4,11,5,50]]

Output:
[[5,17,4,1,52,7],[11,11,25,45,8,69],[14,23,25,44,58,15],[22,27,31,36,50,66],[84,28,75
,33,55,68]]
```

Constraints:

- `m == mat.length`
- `n == mat[i].length`
- `1 <= m, n <= 100`
- `1 <= mat[i][j] <= 100`