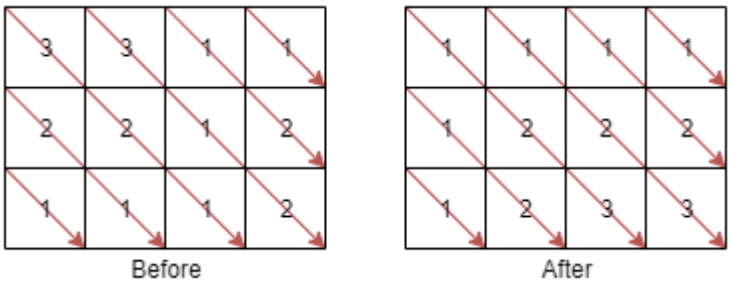
# 1329. Sort the Matrix Diagonally

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:**




```
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],[84,28,14,11,5,50]]
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`

```
class Solution:
    def diagonalSort(self, mat: List[List[int]]) -> List[List[int]]:
        mapDiagonal = collections.defaultdict(list)

        for i in range(len(mat)):
```

```
            for j in range(len(mat[0])):
                mapDiagonal[i-j].append(mat[i][j])
        for key in mapDiagonal.keys():
            mapDiagonal[key].sort(reverse = True)
        # print(mapDiagonal)
        for i in range(len(mat)):
            for j in range(len(mat[0])):
                mat[i][j] = mapDiagonal[i-j].pop()
        return mat
```