**Problem #1886: Determine Whether Matrix Can be Obtained by Rotation**

<https://leetcode.com/problems/determine-whether-matrix-can-be-obtained-by-rotation/description/>

**My Solution:**

**We are checking the following:**

1. **If mat and target are equal (after 360 degrees rotation).**
2. **Matrix dimensions of mat and target are the same (rows and columns)**
3. **Total of all the elements in both mat and target are the same.**
4. **Then we will rotate clockwise by 90 degrees, then 180 and 270.**

**Steps:**

1. If mat is equal to target, return True
2. If length of mat is not equal to length of target, then return False.

(since matrix is a square matrix and the dimensions of mat and target should be the same).

1. Initialize matTotal to 0.
2. Iterate through mat and find the sum of all the elements in mat.
3. Similarly initialize targetTotal to 0.
4. Iterate through target and find the sum of all the elements in target.
5. If matTotal is not equal to targetTotal, then return False.
6. Define a method rotate with mat as the input argument.

Let n be the length of mat.

Initialize res to an empty list.

For index j in range of n, initialize newrow to be an empty list.

For index I in the range of (n – 1), decrement by 1, and go upto 0 (including 0).

Append mat at row I and column j to newrow.

Append newrow to res when newrow is done.

Return res.

1. If target is equal to mat after applying rotate function, then return True.
2. If target is equal to mat after applying rotation twice, then return True.
3. If target is equal to mat after applying rotation thrice, then return True.
4. Otherwise return False.

NOTE: If rotate is applied 4 times to mat, then it comes back to the original matrix position which is the first thing that we considered.

class Solution:

def findRotation(self, mat: List[List[int]], target: List[List[int]]) -> bool:

if mat == target:

return True

if len(mat) != len(target):

return False

matTotal = 0

for i in range(len(mat)):

matTotal += sum(mat[i])

#print("matTotal = ", matTotal)

targetTotal = 0

for i in range(len(target)):

targetTotal += sum(target[i])

#print("targetTotal = ", targetTotal)

if matTotal != targetTotal:

#print("matTotal != targetTotal")

return False

def rotate(mat):

n = len(mat)

res = []

for j in range(n):

newrow = []

for i in range(n - 1, -1, -1):

newrow.append(mat[i][j])

res.append(newrow)

return res

if rotate(mat) == target:

return True

if rotate(rotate(mat)) == target:

return True

if rotate(rotate(rotate(mat))) == target:

return True

return False