2D Array Problems Set 5

Assignment Questions

PW SKILLS

Q1 - Given a 2D matrix with m rows and n columns containing integers. Print and return the row number with maximum sum in the array. (Easy)

Note: In case multiple rows have the same sum then return any row number with that sum.

m=3
n=3
arr[] = {{1,9,6}, {4,5,2}, {7,8,3}}

Output: 3

Explanation: The 3rd row has the maximum sum which is 18

m=3
n=3
arr[] = {{1,2,3}, {1,3,2}, {2,1,3}}

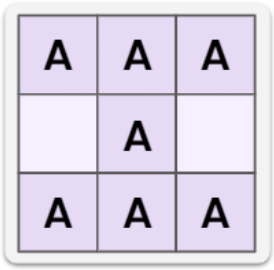
Output: 1

Explanation: All the rows have the same sum i.e. 6 so return any row number.

Q2 - Given a matrix arr[][] of integers, print the prefix sum matrix for it. (Medium)

Sample Input:[[1,2,3],[4,5,6],[7,8,9]]
Sample Output:[[1,3,6],[5,12,21],[12,27,45]]
Sample Input:[[1,0,1],[0,1,0]]
Sample Output:[[1,1,2],[1,2,3]]

Q3 - You are given an m x n integer matrix grid. Here m>=3 and n>=3 (Hard)
We define an hourglass as a part of the matrix with the following shape:



Return *the maximum sum of the elements of an hourglass.*

Note that an hourglass cannot be rotated and must be entirely contained within the matrix.

Sample Input: [[**1,2,3**],
[4,**5**,6],
[**7,8,9**]]

Sample Output: 35

Explanation: This has only one hourglass shape i.e. 1+2+3+5+7+8+9=35

Sample Input: [[**6,2,1,**3],
[4**,2,**1,5],
[**9,2,8,**7],
[4,1,2,9]]

Sample Output:30

Explanation: Amongst all possible hourglass in this matrix the maximum sum will be of the hourglass 6+2+1+2+9+2+8