Matrix Rotation

Mark has been given an array A of integers (size 'n\*n') and he have to perform the below operations:

* Construct a square matrix B from the given array elements. The array A elements are needed to be considered in a Row Major order.
* Rotate the matrix B in clockwise direction and print the elements of the matrix after the rotation operation.   
  Say the output matrix after the rotation is C. Define a function clockwiserotation(int row,int col, int matrix[][]) to perform this operation.
  + Also, the function clockwiserotation() consider matrix C and perform the below operations:
    - For every odd column, decrement the value present in the matrix cell by 1
    - For every even column, increment the value present in the matrix cell by 1
    - Prints the matrix after performing the increment and decrement operations.
* Rotate the matrix B in anti-clockwise direction and print the elements of the matrix after the rotation operation.   
  Say the output matrix after the rotation is D. Define a function anticlockwiserotation(int row,int col, int matrix[][]) to perform this operation.
  + Also, the function anticlockwiserotation() consider matrix D and perform the below operations:
    - For every odd column, increment the value present in the matrix cell by 1
    - For every even column, decrement the value present in the matrix cell by 1
    - Prints the matrix after performing the increment and decrement operations.

Explanation:

For example, let 2 be the size of matrix and Array A={2,3,4,5} are passed as inputs   
So, Initially the array has to be convered into a square matrix B using Row-Major order.   
In Row Major order, the elements of a particular row are stored at adjacent memory locations. i.e For an array [a0, a1, a2, ….am], based on the number of columns (e.g., n) the matrix can be constructed by taking first n elements from the array as first row, followed by next n elements as the next row and so on.   
**Example**   
Let the input array A is {a0,a1,a2,a3,a4,a5,a6,a7,a8}. Then, the square matrix B contains 3 rows and 3 columns.   
B[3][3] =

a0 a1 a2   
a3 a3 a5   
a6 a7 a8

So, from the example Array A={2,3,4,5} Matrix B will be   
2 3   
4 5

Clockwise rotation operation

The first column of the original matrix becomes the first row of the output matrix when rotated 90 degrees clockwise, and the final number of the first column of the original matrix becomes the first number of the first row of the matrix, and so on.

Matrix 'B' after clockwise rotation operation will be Matrix 'C'

4 2

5 3

Then, the first column (odd) values are {4,5} are decremented by '1'. So they will become {3,4}

Similarly, the second column (even) values {2,3} are incremented by '1'. So, they will become {3,4}

Final Resultant matrix for clockwise rotation is

3 3

4 4

Anti Clockwise rotation operation

The last column of the original matrix becomes the first row of the output matrix when rotated 90 degrees anti-clockwise, and the first number of the last column of the original matrix becomes the first number of the first row of the matrix, and so on.

Matrix 'B' after Clockwise rotation operation will be Matrix 'D'

3 5

2 4

Then, the first column (odd) values are {3,2} are incremented by '1'. So they will become {4,3}

Similarly, the second column (even) values {5,4} are decremented by '1'. So, they will become {4,3}

Final Resultant matrix for anti clockwise rotation is

4 4

3 3

Input Format

eg:

2

2 3 4 5

First line is size the of matrix   
Second line is the array of integers of size n\*n

Output Format

Print Output-1A as the first line of output followed by the matrix obtained after performing the Clockwise rotation operation   
Next, print Output-1B in a newline followed by the matrix obtained after performing the column based arithmetic operartions on matrix C (The matrix obtained after performing Clockwise rotation)   
Print Output-2A in a newline followed by the matrix obtained after performing the anti Clockwise rotation operation   
Next, print Output-2B in a newline followed by the matrix obtained after performing the column based arithmetic operartions on matrix D (The matrix obtained after performing anti Clockwise rotation)

There should be no newline after printing the matrix D

Example Output

Output-1A

4 2

5 3

Output-1B

3 3

4 4

Output-2A

3 5

2 4

Output-2B

4 4

3 3

Program Constraints:

Size of the matrix: 0 < n <= 10   
Entries of the matrix should be integers