Multi-Dimensional Array related problems (Total 15 questions)

SL	Problem statement	Difficulty levels
1.	WAP that will take 9 integers into a 3 by 3 array (2D) and show them as traditional matrix view. <table><tr><td>**Sample input**</td><td>**Sample output**</td></tr><tr><td>9 8 7 6 5 4 3 2 1</td><td>9 8 7 6 5 4 3 2 1</td></tr><tr><td>1 1 1 2 2 2 3 3 3</td><td>1 1 1 2 2 2 3 3 3</td></tr></table>	*
2.	WAP that will take (m x n) integers into a *m by n* array (2D) and print them both row-wise and column-wise. <table><tr><td>**Sample input (m,n)**</td><td>**Sample output**</td></tr><tr><td>2 3 1 2 3 6 5 4</td><td>Row-wise: 1 2 3 6 5 4 Column-wise: 1 6 2 5 3 4</td></tr><tr><td>3 3 1 1 1 2 2 2 3 3 3</td><td>Row-wise: 1 1 1 2 2 2 3 3 3 Column-wise: 1 2 3 1 2 3 1 2 3</td></tr></table>	*
3.	WAP that will take inputs of a 3 by 3 matrix into a 2D array. Now find the determinant of this matrix. http://www.mathsisfun.com/algebra/matrix-determinant.html <table><tr><td>**Sample input**</td><td>**Sample output**</td></tr><tr><td>1 2 3 4 5 6 7 8 9</td><td>0</td></tr></table>	*
4.	WAP that will take inputs of a n sized square matrix into a 2D array. Now	*

show all the elements of its two diagonals. Reference:
http://en.wikipedia.org/wiki/Main_diagonal

Sample input	Sample output
5 1 2 3 4 5 5 4 3 2 1 2 2 2 2 2 6 7 8 9 0 1 9 3 7 4	Major diagonal: 1 4 2 9 4 Minor diagonal: 5 2 2 7 1

5.	WAP that will take the size of an identity matrix from the user and generate the identity matrix into a 2D array. Finally display it. Reference:http://en.wikipedia.org/wiki/Identity_matrix	*

Sample input	Sample output
5	1 0 0 0 0 0 1 0 0 0 0 0 1 0 0 0 0 0 1 0 0 0 0 0 1

6.	WAP that will take inputs of two *m x n* sized matrix into two 2D array, suppose A and B. Now do C = A + B. Finally display all the elements from matrix / 2D array C.	*

Sample input	Sample output
2 3 1 2 3 2 3 4 1 1 1 2 2 2	2 3 4 4 5 6

7.	WAP that will take inputs of two *3 x 3* sized matrix into two 2D array, suppose A and B. Now do C = A * B (multiplication). Finally display all the elements from matrix / 2D array C.	***

Sample input	Sample output
1 2 3 4 5 6 7 8 9 2 2 2 2 2 2 1 1 1	9 9 9 24 24 24 39 39 39

8.	WAP that will take inputs of *m x n* sized matrix into a 2D array and find the maximum element with index location from that matrix.	*

Sample input	Sample output
3 3 1 2 3 4 5 6 2 9 2	Max: 9 Location: [2][1]
2 3 9 8 7 3 4 5	Max: 9 Location: [0][0]

9.	WAP that will take (n x n) integer inputs into a square matrix of dimension n (where n must be an odd number). Then calculate sum of the integers at first row, last row and two diagonals without overlap. Please see the sample input-output.	**

Sample input	Sample output
5 1 2 3 4 5 2 3 4 1 6 3 4 9 6 7 4 2 6 7 8 5 4 3 2 1	52
7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	23

| 10. | WAP that will take (n x n) integer inputs into a square matrix of dimension n (where n must be an odd number). Then calculate sum of the integers based on following position pattern (consider only the boxed position during the sum). Please see the input-output. | ** |

Sample input	Sample output
5 1 2 3 4 [5] 2 3 [4] 1 [6] [3 4 9 6 7] [4] 2 [6] 7 8 [5] 4 [3] 2 1	71
7 [1] 1 1 [1] 1 1 [1] 1 1 1 [1] 1 1 [1] 1 1 1 [1] 1 1 [1] [1 1 1 1 1 1 1] [1] 1 1 [1] 1 1 1 [1] 1 1 [1] 1 1 1 [1] 1 1 [1 1 1 1]	25

| 11. | WAP that will take (n x n) integer inputs into a square matrix of dimension n (where n must be an odd number). Then calculate sum of the integers based on following position pattern (consider only the boxed position during the sum). Please see the input-output. | ** |

Sample input	Sample output
5 1 [2] 3 [4] 5 [2 3 4 1 6] 3 [4] 9 [6] 7 [4 2 6 7 8] 5 [4] 3 [2] 1	65
7 1 [1] 1 [1] 1 [1] 1 [1 1 1 1 1 1 1] 1 [1] 1 [1] 1 [1] 1 [1 1 1 1 1 1 1]	33

| 1 1 1 1 1 1 1 |
| 1 1 1 1 1 1 1 |
| 1 1 1 1 1 1 1 |

| 12. | WAP that will take (m x n) integer inputs into a matrix of dimension m x n. Now reverse that matrix within itself and display it. Reversal means swap 1st column with the nth column, swap 2nd column with the (n-1)th column and so on… | ** |

Sample input	Sample output
3 3 1 2 3 4 5 6 2 9 2	3 2 1 6 5 4 2 9 2
2 6 1 2 3 4 5 6 9 8 7 6 5 4	6 5 4 3 2 1 4 5 6 7 8 9

| 13. | WAP that will take (n x n) integer inputs into a square matrix of dimension n. Now determine whether the matrix is symmetric or not.
 Reference: http://en.wikipedia.org/wiki/Symmetric_matrix | ** |

Sample input	Sample output
3 1 7 3 7 4 5 3 5 6	Yes
2 1 3 4 2	No

| 14. | WAP that will take (m x n) positive integer inputs into a matrix of dimension m x n. Now replace all the duplicate integers by -1 in that matrix. Finally display it. | *** |

Sample input	Sample output
3 3 1 7 3 7 4 5 3 5 6	1 7 3 -1 4 5 -1 -1 6
2 6 2 2 2 2 2 2 6 5 4 3 2 1	2 -1 -1 -1 -1 -1 6 5 4 3 -1 1

15. WAP that will take (m x n) integer inputs into a matrix of dimension m x n. Now just simply add all the integers in that matrix and show the result. *

Sample input	Sample output
3 3 1 7 3 7 4 5 3 5 6	41
2 6 2 2 2 2 2 2 6 5 4 3 2 1	33