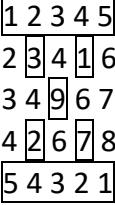
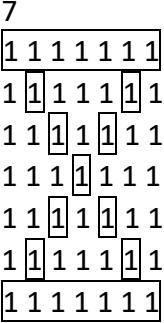
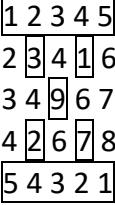
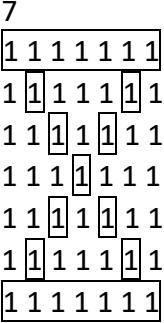
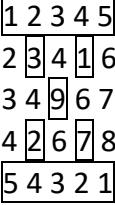
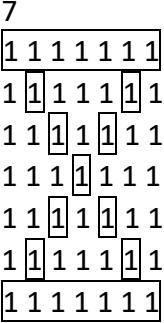


Multi-Dimensional Array related problems

(Total 15 questions)

SL	Problem statement	Difficulty levels						
1.	<p>WAP that will take 9 integers into a 3 by 3 array (2D) and show them as traditional matrix view.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <th style="text-align: center;">Sample input</th><th style="text-align: center;">Sample output</th></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>	Sample input	Sample output	9 8 7 6 5 4 3 2 1	9 8 7 6 5 4 3 2 1	1 1 1 2 2 2 3 3 3	1 1 1 2 2 2 3 3 3	*
Sample input	Sample output							
9 8 7 6 5 4 3 2 1	9 8 7 6 5 4 3 2 1							
1 1 1 2 2 2 3 3 3	1 1 1 2 2 2 3 3 3							
2.	<p>WAP that will take ($m \times n$) integers into a m by n array (2D) and print them both row-wise and column-wise.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <th style="text-align: center;">Sample input (m,n)</th><th style="text-align: center;">Sample output</th></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>	Sample input (m,n)	Sample output	2 3 1 2 3 6 5 4	Row-wise: 1 2 3 6 5 4 Column-wise: 1 6 2 5 3 4	3 3 1 1 1 2 2 2 3 3 3	Row-wise: 1 1 1 2 2 2 3 3 3 Column-wise: 1 2 3 1 2 3 1 2 3	*
Sample input (m,n)	Sample output							
2 3 1 2 3 6 5 4	Row-wise: 1 2 3 6 5 4 Column-wise: 1 6 2 5 3 4							
3 3 1 1 1 2 2 2 3 3 3	Row-wise: 1 1 1 2 2 2 3 3 3 Column-wise: 1 2 3 1 2 3 1 2 3							
3.	<p>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</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <th style="text-align: center;">Sample input</th><th style="text-align: center;">Sample output</th></tr> <tr> <td>1 2 3 4 5 6 7 8 9</td><td>0</td></tr> </table>	Sample input	Sample output	1 2 3 4 5 6 7 8 9	0	*		
Sample input	Sample output							
1 2 3 4 5 6 7 8 9	0							

4.	<p>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</p> <table border="1" data-bbox="192 249 1356 530"> <thead> <tr> <th data-bbox="192 249 780 297">Sample input</th><th data-bbox="780 249 1356 297">Sample output</th></tr> </thead> <tbody> <tr> <td data-bbox="192 297 780 530"> 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 </td><td data-bbox="780 297 1356 530"> Major diagonal: 1 4 2 9 4 Minor diagonal: 5 2 2 7 1 </td></tr> </tbody> </table>	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	*
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.	<p>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</p> <table border="1" data-bbox="192 720 1356 967"> <thead> <tr> <th data-bbox="192 720 780 768">Sample input</th><th data-bbox="780 720 1356 768">Sample output</th></tr> </thead> <tbody> <tr> <td data-bbox="192 768 780 967"> 5 </td><td data-bbox="780 768 1356 967"> 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 </td></tr> </tbody> </table>	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	*
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.	<p>WAP that will take inputs of two $m \times n$ 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.</p> <table border="1" data-bbox="192 1172 1356 1440"> <thead> <tr> <th data-bbox="192 1172 780 1220">Sample input</th><th data-bbox="780 1172 1356 1220">Sample output</th></tr> </thead> <tbody> <tr> <td data-bbox="192 1220 780 1440"> 2 3 1 2 3 2 3 4 1 1 1 2 2 2 </td><td data-bbox="780 1220 1356 1440"> 2 3 4 4 5 6 </td></tr> </tbody> </table>	Sample input	Sample output	2 3 1 2 3 2 3 4 1 1 1 2 2 2	2 3 4 4 5 6	*
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.	<p>WAP that will take inputs of two 3×3 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.</p> <table border="1" data-bbox="192 1645 1356 1913"> <thead> <tr> <th data-bbox="192 1645 780 1693">Sample input</th><th data-bbox="780 1645 1356 1693">Sample output</th></tr> </thead> <tbody> <tr> <td data-bbox="192 1693 780 1913"> 1 2 3 4 5 6 7 8 9 2 2 2 2 2 2 1 1 1 </td><td data-bbox="780 1693 1356 1913"> 9 9 9 24 24 24 39 39 39 </td></tr> </tbody> </table>	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	***
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.	<p>WAP that will take inputs of $m \times n$ sized matrix into a 2D array and find the maximum element with index location from that matrix.</p> <table border="1"> <thead> <tr> <th>Sample input</th><th>Sample output</th></tr> </thead> <tbody> <tr> <td> 3 3 1 2 3 4 5 6 2 9 2 </td><td> Max: 9 Location: [2][1] </td></tr> <tr> <td> 2 3 9 8 7 3 4 5 </td><td> Max: 9 Location: [0][0] </td></tr> </tbody> </table>	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]	*
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.	<p>WAP that will take $(n \times n)$ 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.</p> <table border="1"> <thead> <tr> <th>Sample input</th><th>Sample output</th></tr> </thead> <tbody> <tr> <td> 5  </td><td>52</td></tr> <tr> <td> 7  </td><td>23</td></tr> </tbody> </table>	Sample input	Sample output	5 	52	7 	23	**
Sample input	Sample output							
5 	52							
7 	23							

11.	<p>WAP that will take ($n \times n$) 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.</p> <table border="1" data-bbox="192 1220 1356 1915"> <thead> <tr> <th data-bbox="192 1220 780 1262">Sample input</th><th data-bbox="780 1220 1356 1262">Sample output</th></tr> </thead> <tbody> <tr> <td data-bbox="192 1262 780 1543"> <p>5</p> <table border="1" data-bbox="204 1290 326 1507"> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr> <tr><td>2</td><td>3</td><td>4</td><td>1</td><td>6</td></tr> <tr><td>3</td><td>4</td><td>9</td><td>6</td><td>7</td></tr> <tr><td>4</td><td>2</td><td>6</td><td>7</td><td>8</td></tr> <tr><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr> </table> </td><td data-bbox="780 1262 1356 1543">65</td></tr> <tr> <td data-bbox="192 1543 780 1915"> <p>7</p> <table border="1" data-bbox="204 1571 367 1888"> <tr><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr> <tr><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr> <tr><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr> <tr><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr> <tr><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr> <tr><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr> <tr><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr> </table> </td><td data-bbox="780 1543 1356 1915">33</td></tr> </tbody> </table>	Sample input	Sample output	<p>5</p> <table border="1" data-bbox="204 1290 326 1507"> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr> <tr><td>2</td><td>3</td><td>4</td><td>1</td><td>6</td></tr> <tr><td>3</td><td>4</td><td>9</td><td>6</td><td>7</td></tr> <tr><td>4</td><td>2</td><td>6</td><td>7</td><td>8</td></tr> <tr><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr> </table>	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	<p>7</p> <table border="1" data-bbox="204 1571 367 1888"> <tr><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr> <tr><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr> <tr><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr> <tr><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr> <tr><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr> <tr><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr> <tr><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr> </table>	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	33	**
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12.	<p>WAP that will take $(m \times n)$ integer inputs into a matrix of dimension $m \times n$. Now reverse that matrix within itself and display it. Reversal means swap 1st column with the n^{th} column, swap 2nd column with the $(n-1)^{\text{th}}$ column and so on...</p> <table border="1"> <thead> <tr> <th>Sample input</th><th>Sample output</th></tr> </thead> <tbody> <tr> <td>3 3 1 2 3 4 5 6 2 9 2</td><td>3 2 1 6 5 4 2 9 2</td></tr> <tr> <td>2 6 1 2 3 4 5 6 9 8 7 6 5 4</td><td>6 5 4 3 2 1 4 5 6 7 8 9</td></tr> </tbody> </table>	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	**
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.	<p>WAP that will take $(n \times n)$ 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</p> <table border="1"> <thead> <tr> <th>Sample input</th><th>Sample output</th></tr> </thead> <tbody> <tr> <td>3 1 7 3 7 4 5 3 5 6</td><td>Yes</td></tr> <tr> <td>2 1 3 4 2</td><td>No</td></tr> </tbody> </table>	Sample input	Sample output	3 1 7 3 7 4 5 3 5 6	Yes	2 1 3 4 2	No	**
Sample input	Sample output							
3 1 7 3 7 4 5 3 5 6	Yes							
2 1 3 4 2	No							
14.	<p>WAP that will take $(m \times n)$ positive integer inputs into a matrix of dimension $m \times n$. Now replace all the duplicate integers by -1 in that matrix. Finally display it.</p> <table border="1"> <thead> <tr> <th>Sample input</th><th>Sample output</th></tr> </thead> <tbody> <tr> <td>3 3 1 7 3 7 4 5 3 5 6</td><td>1 7 3 -1 4 5 -1 -1 6</td></tr> <tr> <td>2 6 2 2 2 2 2 2 6 5 4 3 2 1</td><td>2 -1 -1 -1 -1 -1 6 5 4 3 -1 1</td></tr> </tbody> </table>	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	***
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 $(m \times n)$ integer inputs into a matrix of dimension $m \times n$. 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

*