

## 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><tr><th>Sample input</th><th>Sample output</th></tr><tr><td>9 8 7 6 5 4 3 2 1</td><td>9 8 7<br/>6 5 4<br/>3 2 1</td></tr><tr><td>1 1 1 2 2 2 3 3 3</td><td>1 1 1<br/>2 2 2<br/>3 3 3</td></tr></table>   | Sample input       | Sample output | 9 8 7 6 5 4 3 2 1       | 9 8 7<br>6 5 4<br>3 2 1                           | 1 1 1 2 2 2 3 3 3              | 1 1 1<br>2 2 2<br>3 3 3                                       | * |
| Sample input                   | Sample output   |                    |               |                         |   |                                |   |   |
| 9 8 7 6 5 4 3 2 1              | 9 8 7<br>6 5 4<br>3 2 1   |                    |               |                         |   |                                |   |   |
| 1 1 1 2 2 2 3 3 3              | 1 1 1<br>2 2 2<br>3 3 3   |                    |               |                         |   |                                |   |   |
| 2.                             | <p>WAP that will take (m x n) integers into a <i>m</i> by <i>n</i> array (2D) and print them both row-wise and column-wise.</p> <table><tr><th>Sample input (m,n)</th><th>Sample output</th></tr><tr><td>2 3<br/>1 2 3<br/>6 5 4</td><td>Row-wise: 1 2 3 6 5 4<br/>Column-wise: 1 6 2 5 3 4</td></tr><tr><td>3 3<br/>1 1 1<br/>2 2 2<br/>3 3 3</td><td>Row-wise: 1 1 1 2 2 2 3 3 3<br/>Column-wise: 1 2 3 1 2 3 1 2 3</td></tr></table> | Sample input (m,n) | Sample output | 2 3<br>1 2 3<br>6 5 4   | Row-wise: 1 2 3 6 5 4<br>Column-wise: 1 6 2 5 3 4 | 3 3<br>1 1 1<br>2 2 2<br>3 3 3 | Row-wise: 1 1 1 2 2 2 3 3 3<br>Column-wise: 1 2 3 1 2 3 1 2 3 | * |
| Sample input (m,n)             | Sample output   |                    |               |                         |   |                                |   |   |
| 2 3<br>1 2 3<br>6 5 4          | Row-wise: 1 2 3 6 5 4<br>Column-wise: 1 6 2 5 3 4   |                    |               |                         |   |                                |   |   |
| 3 3<br>1 1 1<br>2 2 2<br>3 3 3 | Row-wise: 1 1 1 2 2 2 3 3 3<br>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. <a href="http://www.mathsisfun.com/algebra/matrix-determinant.html">http://www.mathsisfun.com/algebra/matrix-determinant.html</a></p> <table><tr><th>Sample input</th><th>Sample output</th></tr><tr><td>1 2 3<br/>4 5 6<br/>7 8 9</td><td>0</td></tr></table>  | Sample input       | Sample output | 1 2 3<br>4 5 6<br>7 8 9 | 0   | *                              |   |   |
| Sample input                   | Sample output   |                    |               |                         |   |                                |   |   |
| 1 2 3<br>4 5 6<br>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: <a href="http://en.wikipedia.org/wiki/Main_diagonal">http://en.wikipedia.org/wiki/Main_diagonal</a></p> <table><tr><th>Sample input</th><th>Sample output</th></tr><tr><td>5<br/>1 2 3 4 5<br/>5 4 3 2 1<br/>2 2 2 2 2<br/>6 7 8 9 0<br/>1 9 3 7 4</td><td>Major diagonal: 1 4 2 9 4<br/>Minor diagonal: 5 2 2 7 1</td></tr></table> | Sample input | Sample output | 5<br>1 2 3 4 5<br>5 4 3 2 1<br>2 2 2 2 2<br>6 7 8 9 0<br>1 9 3 7 4 | Major diagonal: 1 4 2 9 4<br>Minor diagonal: 5 2 2 7 1        | *   |
|--|--|--------------|---------------|--|---|-----|
| Sample input   | Sample output  |              |               |  |   |     |
| 5<br>1 2 3 4 5<br>5 4 3 2 1<br>2 2 2 2 2<br>6 7 8 9 0<br>1 9 3 7 4 | Major diagonal: 1 4 2 9 4<br>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:<a href="http://en.wikipedia.org/wiki/Identity_matrix">http://en.wikipedia.org/wiki/Identity_matrix</a></p> <table><tr><th>Sample input</th><th>Sample output</th></tr><tr><td>5</td><td>1 0 0 0 0<br/>0 1 0 0 0<br/>0 0 1 0 0<br/>0 0 0 1 0<br/>0 0 0 0 1</td></tr></table>  | Sample input | Sample output | 5  | 1 0 0 0 0<br>0 1 0 0 0<br>0 0 1 0 0<br>0 0 0 1 0<br>0 0 0 0 1 | *   |
| Sample input   | Sample output  |              |               |  |   |     |
| 5  | 1 0 0 0 0<br>0 1 0 0 0<br>0 0 1 0 0<br>0 0 0 1 0<br>0 0 0 0 1  |              |               |  |   |     |
| 6.   | <p>WAP that will take inputs of two <math>m \times n</math> sized matrix into two 2D array, suppose A and B. Now do <math>C = A + B</math>. Finally display all the elements from matrix / 2D array C.</p> <table><tr><th>Sample input</th><th>Sample output</th></tr><tr><td>2 3<br/>1 2 3<br/>2 3 4<br/>1 1 1<br/>2 2 2</td><td>2 3 4<br/>4 5 6</td></tr></table>  | Sample input | Sample output | 2 3<br>1 2 3<br>2 3 4<br>1 1 1<br>2 2 2                            | 2 3 4<br>4 5 6  | *   |
| Sample input   | Sample output  |              |               |  |   |     |
| 2 3<br>1 2 3<br>2 3 4<br>1 1 1<br>2 2 2                            | 2 3 4<br>4 5 6   |              |               |  |   |     |
| 7.   | <p>WAP that will take inputs of two <math>3 \times 3</math> sized matrix into two 2D array, suppose A and B. Now do <math>C = A * B</math> (multiplication). Finally display all the elements from matrix / 2D array C.</p> <table><tr><th>Sample input</th><th>Sample output</th></tr><tr><td>1 2 3<br/>4 5 6<br/>7 8 9<br/>2 2 2<br/>2 2 2<br/>1 1 1</td><td>9 9 9<br/>24 24 24<br/>39 39 39</td></tr></table>   | Sample input | Sample output | 1 2 3<br>4 5 6<br>7 8 9<br>2 2 2<br>2 2 2<br>1 1 1                 | 9 9 9<br>24 24 24<br>39 39 39                                 | *** |
| Sample input   | Sample output  |              |               |  |   |     |
| 1 2 3<br>4 5 6<br>7 8 9<br>2 2 2<br>2 2 2<br>1 1 1                 | 9 9 9<br>24 24 24<br>39 39 39  |              |               |  |   |     |

| 8.  | <p>WAP that will take inputs of <math>m \times n</math> sized matrix into a 2D array and find the maximum element with index location from that matrix.</p> <table><tr><th>Sample input</th><th>Sample output</th></tr><tr><td>3 3<br/>1 2 3<br/>4 5 6<br/>2 9 2</td><td>Max: 9<br/>Location: [2][1]</td></tr><tr><td>2 3<br/>9 8 7<br/>3 4 5</td><td>Max: 9<br/>Location: [0][0]</td></tr></table>  | Sample input | Sample output | 3 3<br>1 2 3<br>4 5 6<br>2 9 2  | Max: 9<br>Location: [2][1] | 2 3<br>9 8 7<br>3 4 5 | Max: 9<br>Location: [0][0] | * |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |    |
|---|--|--------------|---------------|---|----------------------------|-----------------------|----------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|---|---|---|----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|----|
| Sample input  | Sample output  |              |               |   |                            |                       |                            |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |    |
| 3 3<br>1 2 3<br>4 5 6<br>2 9 2  | Max: 9<br>Location: [2][1]   |              |               |   |                            |                       |                            |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |    |
| 2 3<br>9 8 7<br>3 4 5   | Max: 9<br>Location: [0][0]   |              |               |   |                            |                       |                            |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |    |
| 9.  | <p>WAP that will take <math>(n \times n)</math> integer inputs into a square matrix of dimension <math>n</math> (where <math>n</math> 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><tr><th>Sample input</th><th>Sample output</th></tr><tr><td>5<br/><table><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>52</td></tr><tr><td>7<br/><table><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>23</td></tr></table> | Sample input | Sample output | 5<br><table><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 | 52 | 7<br><table><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 | 23 | ** |
| Sample input  | Sample output  |              |               |   |                            |                       |                            |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |    |
| 5<br><table><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 | 52 |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |    |
| 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   |                            |                       |                            |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |    |
| 7<br><table><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 | 23 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |    |
| 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                     |                            |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |    |

| 10.  | <p>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.</p> <table><tr><th>Sample input</th><th>Sample output</th></tr><tr><td>5<br/><div><div>1</div><div>2</div><div>3</div><div>4</div><div>5</div></div><div><div>2</div><div>3</div><div>4</div><div>1</div><div>6</div></div><div><div>3</div><div>4</div><div>9</div><div>6</div><div>7</div></div><div><div>4</div><div>2</div><div>6</div><div>7</div><div>8</div></div><div><div>5</div><div>4</div><div>3</div><div>2</div><div>1</div></div></td><td>71</td></tr><tr><td>7<br/><div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div></div><div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div></div><div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div></div><div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div></div><div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div></div><div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div></div><div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div></div></td><td>25</td></tr></table> | Sample input | Sample output | 5<br><div><div>1</div><div>2</div><div>3</div><div>4</div><div>5</div></div> <div><div>2</div><div>3</div><div>4</div><div>1</div><div>6</div></div> <div><div>3</div><div>4</div><div>9</div><div>6</div><div>7</div></div> <div><div>4</div><div>2</div><div>6</div><div>7</div><div>8</div></div> <div><div>5</div><div>4</div><div>3</div><div>2</div><div>1</div></div> | 71 | 7<br><div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div></div> <div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div></div> <div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div></div> <div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div></div> <div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div></div> <div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div></div> <div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div></div> | 25 | ** |
|--|--|--------------|---------------|--|----|--|----|----|
| Sample input   | Sample output  |              |               |  |    |  |    |    |
| 5<br><div><div>1</div><div>2</div><div>3</div><div>4</div><div>5</div></div> <div><div>2</div><div>3</div><div>4</div><div>1</div><div>6</div></div> <div><div>3</div><div>4</div><div>9</div><div>6</div><div>7</div></div> <div><div>4</div><div>2</div><div>6</div><div>7</div><div>8</div></div> <div><div>5</div><div>4</div><div>3</div><div>2</div><div>1</div></div>   | 71   |              |               |  |    |  |    |    |
| 7<br><div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div></div> <div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div></div> <div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div></div> <div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div></div> <div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div></div> <div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div></div> <div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div></div> | 25   |              |               |  |    |  |    |    |
| 11.  | <p>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.</p> <table><tr><th>Sample input</th><th>Sample output</th></tr><tr><td>5<br/><div><div>1</div><div>2</div><div>3</div><div>4</div><div>5</div></div><div><div>2</div><div>3</div><div>4</div><div>1</div><div>6</div></div><div><div>3</div><div>4</div><div>9</div><div>6</div><div>7</div></div><div><div>4</div><div>2</div><div>6</div><div>7</div><div>8</div></div><div><div>5</div><div>4</div><div>3</div><div>2</div><div>1</div></div></td><td>65</td></tr><tr><td>7<br/><div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div></div><div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div></div><div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div></div><div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div></div><div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div></div><div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div></div><div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div></div></td><td>33</td></tr></table> | Sample input | Sample output | 5<br><div><div>1</div><div>2</div><div>3</div><div>4</div><div>5</div></div> <div><div>2</div><div>3</div><div>4</div><div>1</div><div>6</div></div> <div><div>3</div><div>4</div><div>9</div><div>6</div><div>7</div></div> <div><div>4</div><div>2</div><div>6</div><div>7</div><div>8</div></div> <div><div>5</div><div>4</div><div>3</div><div>2</div><div>1</div></div> | 65 | 7<br><div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div></div> <div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div></div> <div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div></div> <div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div></div> <div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div></div> <div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div></div> <div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div></div> | 33 | ** |
| Sample input   | Sample output  |              |               |  |    |  |    |    |
| 5<br><div><div>1</div><div>2</div><div>3</div><div>4</div><div>5</div></div> <div><div>2</div><div>3</div><div>4</div><div>1</div><div>6</div></div> <div><div>3</div><div>4</div><div>9</div><div>6</div><div>7</div></div> <div><div>4</div><div>2</div><div>6</div><div>7</div><div>8</div></div> <div><div>5</div><div>4</div><div>3</div><div>2</div><div>1</div></div>   | 65   |              |               |  |    |  |    |    |
| 7<br><div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div></div> <div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div></div> <div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div></div> <div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div></div> <div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div></div> <div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div></div> <div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div></div> | 33   |              |               |  |    |  |    |    |

| 12.                               | <p>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 1<sup>st</sup> column with the n<sup>th</sup> column, swap 2<sup>nd</sup> column with the (n-1)<sup>th</sup> column and so on...</p> <table><tr><th>Sample input</th><th>Sample output</th></tr><tr><td>3 3<br/>1 2 3<br/>4 5 6<br/>2 9 2</td><td>3 2 1<br/>6 5 4<br/>2 9 2</td></tr><tr><td>2 6<br/>1 2 3 4 5 6<br/>9 8 7 6 5 4</td><td>6 5 4 3 2 1<br/>4 5 6 7 8 9</td></tr></table> | Sample input | Sample output | 3 3<br>1 2 3<br>4 5 6<br>2 9 2 | 3 2 1<br>6 5 4<br>2 9 2    | 2 6<br>1 2 3 4 5 6<br>9 8 7 6 5 4 | 6 5 4 3 2 1<br>4 5 6 7 8 9       | **  |
|-----------------------------------|---|--------------|---------------|--------------------------------|----------------------------|-----------------------------------|----------------------------------|-----|
| Sample input                      | Sample output   |              |               |                                |                            |                                   |                                  |     |
| 3 3<br>1 2 3<br>4 5 6<br>2 9 2    | 3 2 1<br>6 5 4<br>2 9 2   |              |               |                                |                            |                                   |                                  |     |
| 2 6<br>1 2 3 4 5 6<br>9 8 7 6 5 4 | 6 5 4 3 2 1<br>4 5 6 7 8 9  |              |               |                                |                            |                                   |                                  |     |
| 13.                               | <p>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.<br/>Reference: <a href="http://en.wikipedia.org/wiki/Symmetric_matrix">http://en.wikipedia.org/wiki/Symmetric_matrix</a></p> <table><tr><th>Sample input</th><th>Sample output</th></tr><tr><td>3<br/>1 7 3<br/>7 4 5<br/>3 5 6</td><td>Yes</td></tr><tr><td>2<br/>1 3<br/>4 2</td><td>No</td></tr></table>   | Sample input | Sample output | 3<br>1 7 3<br>7 4 5<br>3 5 6   | Yes                        | 2<br>1 3<br>4 2                   | No                               | **  |
| Sample input                      | Sample output   |              |               |                                |                            |                                   |                                  |     |
| 3<br>1 7 3<br>7 4 5<br>3 5 6      | Yes   |              |               |                                |                            |                                   |                                  |     |
| 2<br>1 3<br>4 2                   | No  |              |               |                                |                            |                                   |                                  |     |
| 14.                               | <p>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.</p> <table><tr><th>Sample input</th><th>Sample output</th></tr><tr><td>3 3<br/>1 7 3<br/>7 4 5<br/>3 5 6</td><td>1 7 3<br/>-1 4 5<br/>-1 -1 6</td></tr><tr><td>2 6<br/>2 2 2 2 2 2<br/>6 5 4 3 2 1</td><td>2 -1 -1 -1 -1 -1<br/>6 5 4 3 -1 1</td></tr></table>   | Sample input | Sample output | 3 3<br>1 7 3<br>7 4 5<br>3 5 6 | 1 7 3<br>-1 4 5<br>-1 -1 6 | 2 6<br>2 2 2 2 2 2<br>6 5 4 3 2 1 | 2 -1 -1 -1 -1 -1<br>6 5 4 3 -1 1 | *** |
| Sample input                      | Sample output   |              |               |                                |                            |                                   |                                  |     |
| 3 3<br>1 7 3<br>7 4 5<br>3 5 6    | 1 7 3<br>-1 4 5<br>-1 -1 6  |              |               |                                |                            |                                   |                                  |     |
| 2 6<br>2 2 2 2 2 2<br>6 5 4 3 2 1 | 2 -1 -1 -1 -1 -1<br>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<br>1 7 3<br>7 4 5<br>3 5 6    | 41            |
| 2 6<br>2 2 2 2 2 2<br>6 5 4 3 2 1 | 33            |