```
_05)_Rotate_Matrix_by_90_Degree.cpp X
         #include <iostream>
                                                     Select "C:\Users\Akash Singh\Documents\Coding\" CHALLENGE "\365-Days-of-Code\177). Complete DSA (2D_Array[5-9])\_05)_Rotate_Matrix_by_90...
         using namespace std;
                                                    90 deg Rotated Matrix =
         const int R=4, C=4, n=4;
                                                    4 8 12 16
         void rotate90 (int mat[R][C])
       7 11 15
             int temp[n][n];
             for(int i=0; i<n; i++)
                                                       6 10 14
                 for (int j=0; j<n; j++)
  10
                     temp[n-j-1][i] = mat[i][j];
                                                    1 5 9 13
  11
  12
             for(int i=0; i<n; i++)
  13
                 for (int j=0; j<n; j++)
  14
                     mat[i][j] = temp[i][j];
  15
                                                    Process returned 0 (0x0)
                                                                                                execution time : 0.120 s
  16
             for(int i=0; i<n; i++)
  17
                                                    Press any key to continue.
  18
                     for (int j=0; j<n; j++)
  19
                         cout << mat[i][j] << ";
  20
                     cout << endl;
  21
  22
  23
  24
         int main()
  25
       ={
  26
             cout << "90 deg Rotated Matrix = \n";
  27
             int mat[4][4] = \{\{1, 2, 3, 4\},
  28
                              {5, 6, 7, 8},
  29
                              {9, 10, 11, 12},
  30
                              {13, 14, 15, 16}};
  31
  32
             rotate90 (mat);
  33
             cout << endl;
```

34

```
06) Rotate Matrix by 90 Degree.cpp X
          const int R=4, C=4, n=4;
          void rotate90 (int mat[R][C])
        -1
              for (int i=0; i<n; i++)
                  for(int j=i+1; j<n; j++)
    9
                       swap (mat[i][j], mat[j][i]);
  10
   11
              for(int i=0; i<n; i++)
   12
   13
                  int low=0, high=n-1;
  14
                  while (low < high)
   15
   16
                       swap (mat[low][i], mat[high][i]);
  17
                       low++:
  18
                       high--;
   19
   20
  21
  22
              for (int i=0; i<n; i++)
  23
  24
                       for(int j=0; j<n; j++)
  25
                           cout << mat[i][j] << " ";
                       cout << endl;
   26
   27
   28
  29
  30
          int main()
   31
   32
              cout<<"90 deg Rotated Matrix = \n";
   33
              int mat[4][4] = \{\{1, 2, 3, 4\},
  34
                                (5, 6, 7, 8),
   35
                                {9, 10, 11, 12},
   36
                                {13, 14, 15, 16}};
  37
  38
              rotate90 (mat);
   39
              cout << endl;
  40
```

```
Select "C:\Users\Akash Singh\Documents\Coding\" CHALLENGE "\365-Days-of-Code\177). Complete DSA (2D. Array[5-9])\ 06). Rotate Matr...
90 deg Rotated Matrix =
4 8 12 16
  7 11 15
  6 10 14
   5 9 13
Process returned 0 (0x0) execution time: 0.106 s
Press any key to continue.
```

```
_07)_Spiral_Traversal_of_Matrix.cpp X
          #include<iostream>
          using namespace std;
          const int R=4, C=4;
          void printSpiral(int mat[R][C], int R, int C)
        E(
              int top=0, left=0, bottom=R-1, right=C-1;
              while (top <= bottom && left <= right)
    9
   10
                   for(int i=left; i<=right; i++)
   11
                       cout << mat[top][i] << " ";
                       cout << endl;
                   top++;
                   for(int i=top; i<=bottom; i++)
                       cout<<mat[i][right]<<" ";
   17
                       cout << endl:
                  right --;
   19
                   if (top <= bottom)
                       for(int i=right; i>=left; i--)
                       cout<<mat[bottom][i]<<" ";
                       cout << endl:
                   bottom--;
                  if (left <= right)
                       for(int i=bottom; i>=top; i--)
                       cout << mat[i][left] << " ";
                       cout << endl:
                  left++;
```

```
Select "C:\Users\Akash Singh\Documents\Coding\' CHALLENGE "\365-Days-of-Code\177). Complete DSA (2D_Array[5-9])\_07)_Spiral_Traversa...
Spiral Matrix Traversal =
1 2 3 4
8 12 16
15 14 13
  5
6
10
Process returned 0 (0x0) execution time: 0.133 s
Press any key to continue.
```

```
08) Search in RowWise and ColumnWise.cpp X
          #include<iostream>
                                                               Select "C:\Users\Akash Singh\Documents\Coding\' CHALLENGE "\365-Days-of-Code\177). Complete DSA (2D_Array[5-9])\ 08)_Search_in_R...
          using namespace std;
                                                              Search in Row Wise & Column Wise =
          const int R=4, C=4;
                                                              Found at index (2,2)
          void Row Column search(int mat[R][C], int x)
              for(int i=0; i<R; i++)
                                                              Process returned 0 (0x0) execution time: 0.096 s
    8
    9
                  for (int j=0; j<C; j++)
                                                              Press any key to continue.
   10
   11
                      if (mat[i][j] == x)
   12
   13
                           cout << "Found at index ("<< i << "," << j << ")";
   14
                           return;
   15
   16
   17
   18
              cout << "Not Found";
   19
   20
   21
         int main()
   22
       - (
   23
              cout << "Search in Row Wise & Column Wise = \n";
   24
              int x=11;
   25
              int mat[4][4] = \{\{1, 2, 3, 4\},
   26
                                {5, 6, 7, 8},
   27
                                {9, 10, 11, 12},
   28
                                {13, 14, 15, 16}};
   29
   30
              Row Column search (mat, x);
   31
              cout << endl;
   32
```

```
_09) Search_in_RowWise_and_ColumnWise.cpp X
          #include<iostream>
          using namespace std;
          const int R=4, C=4;
          void Row Column search(int mat[R][C], int x)
    6
        - {
              int i=0, j=C-1;
              while (i<R && j>=0)
    9
   10
                  if(mat[i][j] == x)
   11
   12
                       cout << "Found at index ("<< i << ", " << j << ")";
   13
                       return;
   14
   15
                   else if (mat[i][j] > x)
   16
   17
                   else
   18
                       i++;
   19
   20
              cout << "Not Found";
   21
   22
   23
          int main()
   24
        ={
   25
              cout << "Search in Row Wise & Column Wise = \n";
   26
              int x=11;
   27
              int mat[4][4] = \{\{1, 2, 3, 4\},
   28
                                {5, 6, 7, 8},
   29
                                {9, 10, 11, 12},
   30
                                {13, 14, 15, 16}};
   31
   32
              Row Column search (mat, x);
   33
              cout << endl;
   34
```

Select "C:\Users\Akash Singh\Documents\Coding\' CHALLENGE "\365-Days-of-Code\177). Complete DSA (2D_Array[5-9])_09)_... — Search in Row Wise & Column Wise = Found at index (2,2) Process returned 0 (0x0) execution time: 0.114 s Press any key to continue.