```cpp
//tri-diagonal matrix

#include <iostream>
using namespace std;

int main()
{       int r,c,i,j,count;
        count=0;
        int oned[50];
        int k=0;


        cout<<"Enter order of the tridiagonal matrix: "<<endl;
        cin>>r;



        int arr[r][r];

        //input the matrix
        for(i=0;i<r;i++)
        {       for(j=0;j<r;j++)
                {       if (abs(i-j)<=1){
                                cout<<"Enter element arr["<<i<<"]["<<j<<"] of matrix: "<<endl;
                                cin>>arr[i][j];
                        }
                        else
                                arr[i][j]=0;

                }

        }
        cout<<"The Matrix is:\n\n";

        //print the 2d matrix
        for(i=0;i<r;i++)
        {       for(j=0;j<r;j++)
                {
                        cout<<arr[i][j]<<"\t";

                }
                cout<<"\n";
        }
        cout<<"\n\n";

        cout<<"The following Matrix can be mapped to a 1D array as follows: \n\n";
        //Map 2d array to 1d array
        for(i=0;i<r;i++)
        {       for(j=0;j<r;j++)
                {       if(arr[i][j]!=0){

                                oned[k]=arr[i][j];
                                k++;

                        }
                }

        }
        //Display 1d array
        for(i=0;i<k;i++)
                cout<<oned[i]<<"\t";
```

```cpp
//Display 1d array
for(i=0;i<k;i++)
        cout<<oned[i]<<"\t";

int m,n,index;

cout<<"\n\n";
//Retrieving the elements
cout<<"\nEnter the rowno and colno of the element you want to retrive: " ;
cin>>m>>n;
index = 2*m+n ;
cout<<"\nThe element "<<arr[m][n]<<" is present in location "<<index<<endl;

return 0;
```

```
dse100@telnet:~/week2$ ./a.out
Enter order of the tridiagonal matrix:
5
Enter element arr[0][0] of matrix:
1
Enter element arr[0][1] of matrix:
2
Enter element arr[1][0] of matrix:
3
Enter element arr[1][1] of matrix:
4
Enter element arr[1][2] of matrix:
5
Enter element arr[2][1] of matrix:
6
Enter element arr[2][2] of matrix:
7
Enter element arr[2][3] of matrix:
8
Enter element arr[3][2] of matrix:
9
Enter element arr[3][3] of matrix:
1
Enter element arr[3][4] of matrix:
2
Enter element arr[4][3] of matrix:
3
Enter element arr[4][4] of matrix:
4
The Matrix is:

1       2       0       0       0
3       4       5       0       0
0       6       7       8       0
0       0       9       1       2
0       0       0       3       4


The following Matrix can be mapped to a 1D array as follows:

1       2       3       4       5       6       7       8       9       1       2       3       4


Enter the rowno and colno of the element you want to retrive: 3 2

The element 9 is present in location 8
```