



**Computer Programming (b)**

**E1124**



## **Lecture 6**

### **Revision**

**INSTRUCTOR**

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## ➤ Example 1

➤ Write a C++ Program to Find Transpose of a Matrix using array.

```
#include <iostream>
using namespace std;
int main()
{
    int a[5][5], trans[5][5], r, c, i, j;
    cout << "Enter rows of matrix: ";
    cin >> r;
    cout << "Enter columns of matrix: ";
    cin >> c;
    cout << "\nEnter Elements to Matrix Below :: \n";
    for(i=0;i<r;i++)
    {
        for(j=0;j<c;++j)
        {
            cout << "\nEnter a1[" << i << "][" << j << "] Element :: ";
            cin >> a[i][j];
        }
    }
}
```

```
// Displaying the matrix a[ ][ ]
cout << "\n The Entered Matrix is :: \n" << endl;
for (i = 0; i < r; ++i)
{
    for (j = 0; j < c; ++j)
    {
        cout << "\t" << a[i][j];
    }
    cout << endl;
}
// Finding transpose of matrix a[][] and storing it in array trans[][].
for(i = 0; i < r; ++i)
    for(j = 0; j < c; ++j)
    {
        trans[j][i]=a[i][j];
    }
// Displaying the transpose,i.e, Displaying array trans[][].
cout << endl << "Transpose of Matrix :: " << endl;
for (i = 0; i < r; ++i)
{
    for (j = 0; j < c; ++j)
    {
        cout << "\t" << trans[i][j];
    }
    cout << endl;
}
return 0;}
```

## ➤ Output

```
"C:\Users\Dr Ayman Soliman\Documents\C-Free\Temp\  
Enter rows of matrix: 2  
Enter columns of matrix: 2  
Enter Elements to Matrix Below ::  
Enter a1[0][0] Element :: 1  
Enter a1[0][1] Element :: 2  
Enter a1[1][0] Element :: 3  
Enter a1[1][1] Element :: 4  
  
The Entered Matrix is ::  
  
    1    2  
    3    4  
  
Transpose of Matrix ::  
    1    3  
    2    4  
Press any key to continue . . .
```

## ➤ Example 2

➤ Write a C++ Program to Find Sum of Diagonals elements in a Matrix

```
#include<iostream>
using namespace std;
int main()
{
    int a[10][10],d1sum=0,d2sum=0,m,i,j;
    cout<<"Enter size of matrix :: ";
    cin>>m;
    cout<<"\nEnter Elements to Matrix Below :: \n";

    for(i=0;i<m;i++)
    {
        for(j=0;j<m;++j)
        {
            cout<<"\nEnter a["<<i<<"]["<<j<<"] Element :: ";
            cin>>a[i][j];
        }
    }
}
```

```
    cout<<"\nThe given matrix is :: \n\n";
    for (i = 0; i < m; ++i)
    {
        for (j = 0; j < m; ++j)
        {
            cout<<"\t"<<a[i][j];
        }
        cout<<endl;
    }
    for(i=0;i<m;++i)
    for(j=0;j<m;++j)
    {
        if(i==j)
            d1sum+=a[i][j];
        if(i+j==(m-1))
            d2sum+=a[i][j];
    }
    cout<<"\nSum of 1st diagonal is :: "<<d1sum;
    cout<<"\n\nSum of 2nd diagonal is :: "<<d2sum;
    return 0;
}
```

## ➤ Output

```
"D:\courses\c++\2020-2021\second term\Lectures\lec solutions\lec6_1.exe"  
Enter size of matrix :: 2  
Enter Elements to Matrix Below ::  
Enter a[0][0] Element :: 1  
Enter a[0][1] Element :: 2  
Enter a[1][0] Element :: 3  
Enter a[1][1] Element :: 4  
The given matrix is ::  
      1      2  
      3      4  
  
Sum of 1st diagonal is :: 5  
Sum of 2nd diagonal is :: 5Press any key to continue . . .
```

Thank  
you

