Lab Manual 09

Lab task submission

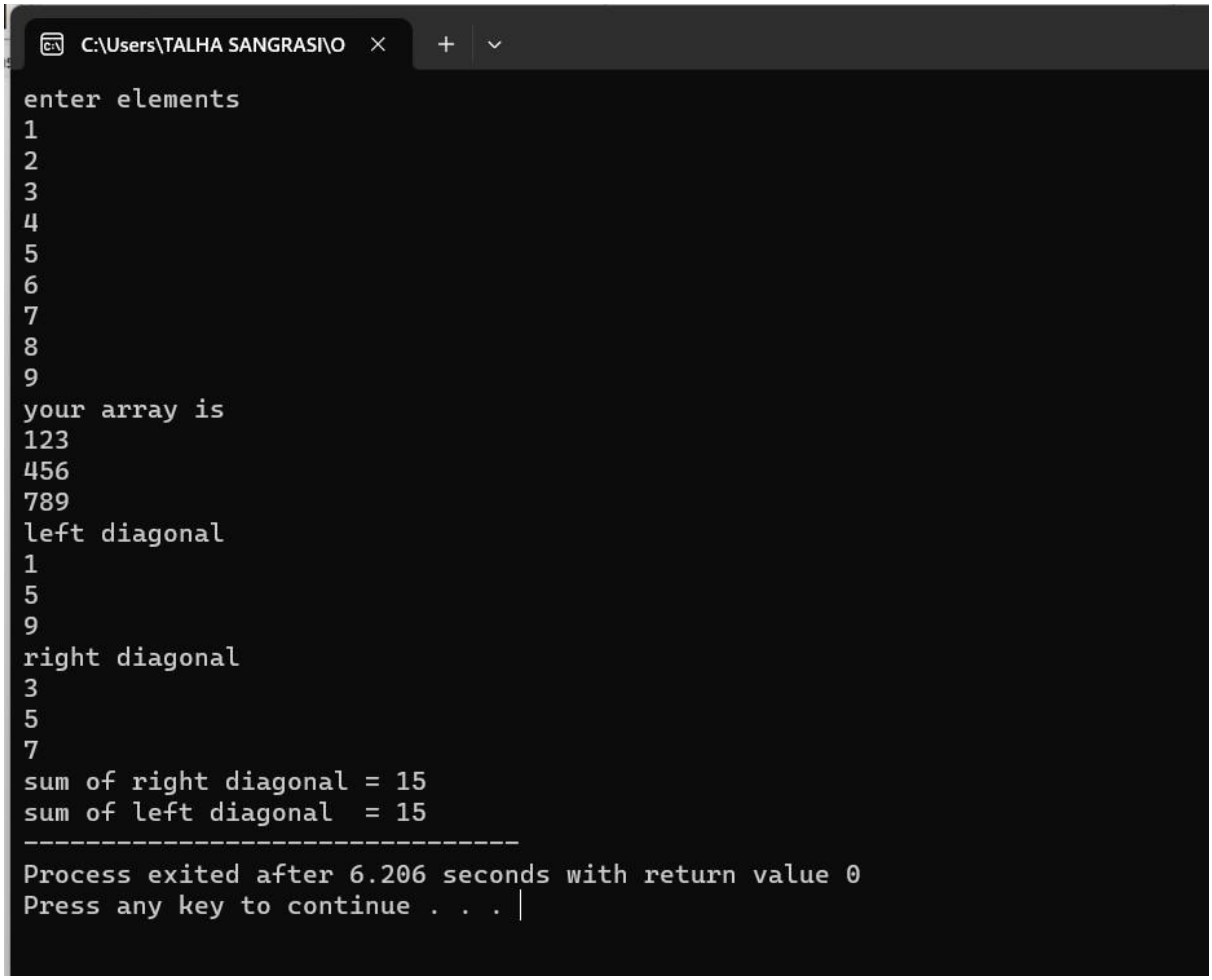
Task 01

```
#include <iostream> using
namespace std;
int main()
{
        int i,j,k;          int
array[3][3];     int
sum1(0),sum2(0);
cout<<"enter elements\n";
for(i=0;i<3;i++){
                for(j=0;j<3;j++){
                        cin>>array[i][j];
                }
        }
        cout<<"your array is \n";
                for(i=0;i<3;i++){
for(j=0;j<3;j++){
                        cout<<array[i][j];
        }
        cout<<endl;
}
   cout<<"left diagonal \n";
for(i=0;i<3;i++){
                for(j=0;j<3;j++){
                        if(i==j){
```

```
                cout<<array[i][j]<<endl;
sum2+=array[i][j];
                }

}
}
    cout<<"right diagonal \n";
    for(i=0;i<3;i++){
                for(j=0;j<3;j++){
                        if(i*j==1){
                                cout<<array[i][j]<<endl;
                sum1=sum1+array[i][j];
                        }
                        else if(i-j==2){
cout<<array[i][j]<<endl;
sum1=sum1+array[i][j];
                        }
                        else if(i-j==-2){
cout<<array[i][j]<<endl;
sum1=sum1+array[i][j];
                        }
                        }
          }
          cout<<"sum of right diagonal = "<<sum1<<endl;
   cout<<"sum of left diagonal  = "<<sum2;

}
```



Task 02

```
#include <iostream> using

namespace std;


int sum_of_matrices(int array1[3][3],int array2[3][3]){

        for(int i=0;i<3;i++){     for(int

j=0;j<3;j++){              int sum=

array1[i][j]+array2[i][j];

                cout<<sum<<" ";

        }

        cout<<endl;
```

```
   }
}

int main()
{
        int array1[3][3];       int array2[3][3];
int i,j,k,l,sum(0);       cout<<"enter elements for
first matrix\n";          for(i=0;i<3;i++){
for(j=0;j<3;j++){
                cin>>array1[i][j];
        }
        }
        cout<<"enter elements for second matrix\n";
for(i=0;i<3;i++){         for(j=0;j<3;j++){
                cin>>array2[i][j];
        }
        }
        cout<<"first matrix\n";
for(i=0;i<3;i++){         for(j=0;j<3;j++){
                cout<<array1[i][j]<<" ";
        }
        cout<<endl;
        }cout<<"second matrix\n";
        for(i=0;i<3;i++){ for(j=0;j<3;j++){

                cout<<array2[i][j]<<" ";

        }
        cout<<endl;
        }
```

```
        cout<<endl;
        cout<<"sum of matrices = \n";


  sum_of_matrices( array1, array2);
        }
```

```
enter elements for first matrix
1
2
3
4
5
6
7
8
9
enter elements for second matrix
9
8
7
6
5
4
3
2
1
first matrix
1 2 3
4 5 6
7 8 9
second matrix
9 8 7
6 5 4
3 2 1

sum of matrices =
10 10 10
10 10 10
10 10 10

--------------------------------
```

Task 03

```
#include <iostream> using

namespace std;

int transpose(int array[3][3],int array0[3][3]){
```

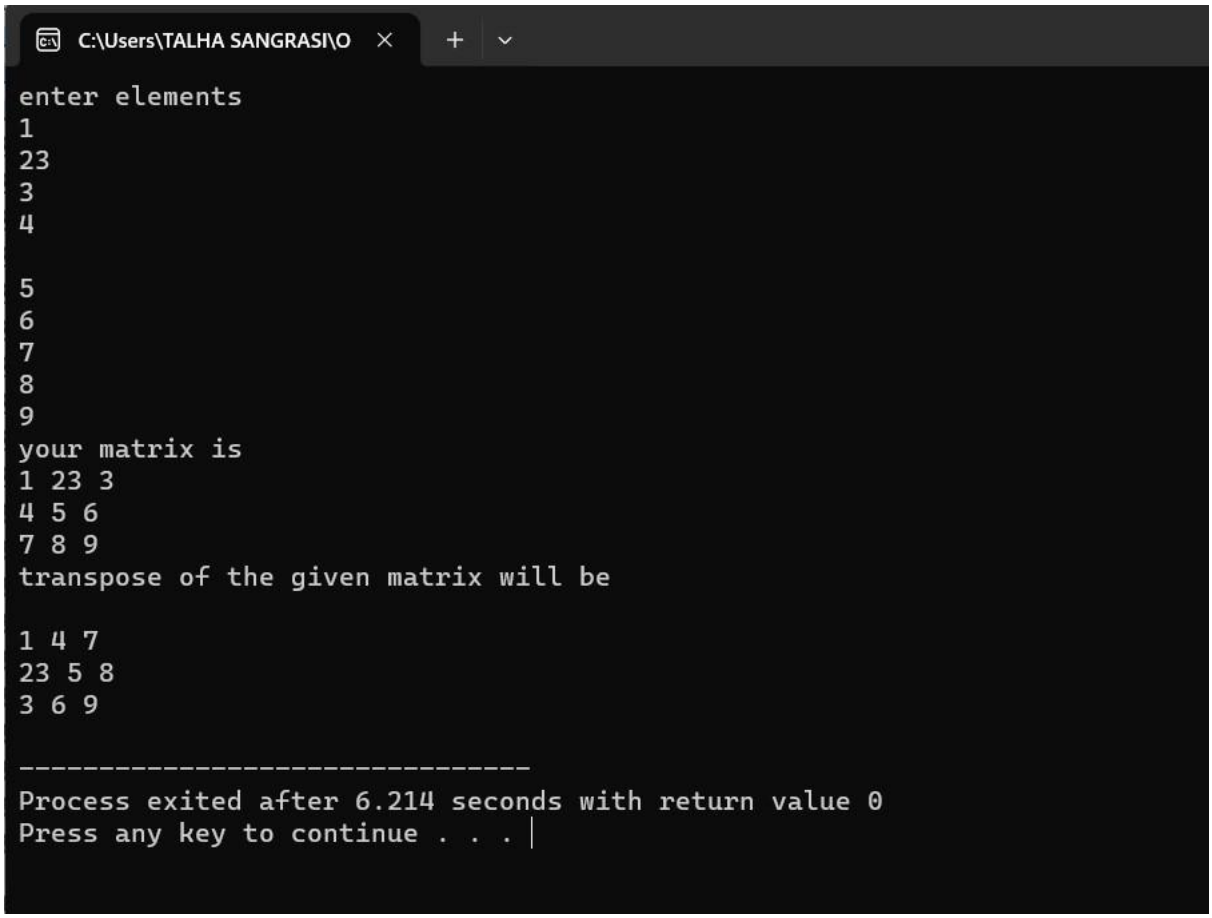
```
                    for(int i=0;i<3;i++){
                for(int j=0;j<3;j++){
                        cout<<array0[i][j]<<" ";

  }
      cout<<endl;
}
}

int main()
{
        int array[3][3];
        int array0[3][3]={0,0,0,0,0,0,0,0,0};
int i,j,k(0);
                cout<<"enter elements\n";
        for(i=0;i<3;i++){
                for(j=0;j<3;j++){
                        cin>>array[i][j];
                }
        }
        cout<<"your matrix is \n";
                for(i=0;i<3;i++){
for(j=0;j<3;j++){
cout<<array[i][j]<<" ";
        }
        cout<<endl;
}
    for(i=0;i<3;i++){
for(j=0;j<3;j++){
```

```
            array0[i][j]=array[j][i];
        }
        }
        cout<<"transpose of the given matrix will be \n"<<endl;


        transpose(array,array0);
}
```



Task 04

```
#include <iostream> using

namespace std;
```

```
void multiply_matrices(int array1[3][3], int array2[3][3]) {
   int result[3][3];

   for (int i = 0; i < 3; i++) {
for (int j = 0; j < 3; j++) {
result[i][j] = 0;

         for (int k = 0; k < 3; k++) {
result[i][j] += array1[i][k] * array2[k][j];
         }

         cout << result[i][j] << " ";
      }
      cout << endl;
   }
}

int main() {    int
array1[3][3];    int
array2[3][3];

   cout << "Enter elements for first matrix:\n";
   for (int i = 0; i < 3; i++) {
for (int j = 0; j < 3; j++) {
cin >> array1[i][j];

      }
   }

   cout << "Enter elements for second matrix:\n";
```

```
    for (int i = 0; i < 3; i++) {
for (int j = 0; j < 3; j++) {
cin >> array2[i][j];
        }
    }

    cout << "First matrix:\n";
    for (int i = 0; i < 3; i++) {
for (int j = 0; j < 3; j++) {
cout << array1[i][j] << " ";
        }
        cout << endl;
    }

    cout << "Second matrix:\n";
    for (int i = 0; i < 3; i++) {
for (int j = 0; j < 3; j++) {
cout << array2[i][j] << " ";
        }
        cout << endl;
    }

    cout << endl;     cout << "Product
of matrices:\n";
multiply_matrices(array1, array2);

    return 0;
}
```

Task 05

#include <iostream> using

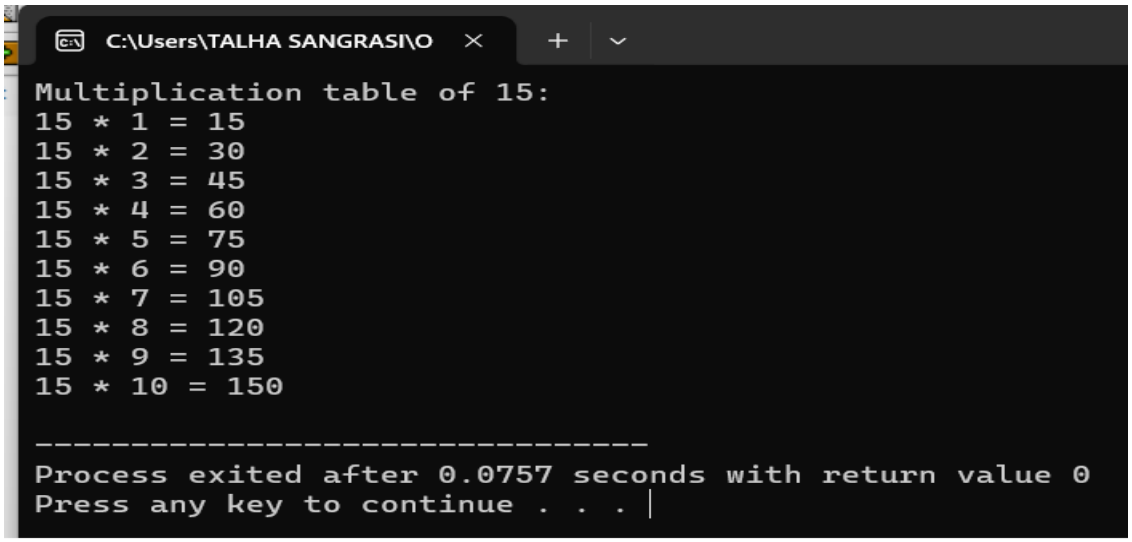
namespace std;

```
void Table(int n, int m) {     if (m <= 10) {         cout <<
n << " * " << m << " = " << n * m << endl;
        Table(n, m + 1);
    }
}

int main() {     int
number = 15;

    cout << "Multiplication table of " << number << ":\n";
    Table(number, 1);

    return 0;
}
```



Home task submission

Task 01

```
#include <iostream>
using namespace std;
int main()
{
	int i,j;
	double array[3][3];
	cout<<"enter array\n";
	for (i=0;i<3;i++){
		for(j=0;j<3;j++){
			cin>>array[i][j];
		}
	}
	cout<<"you entered \n";
		for (i=0;i<3;i++){
		for(j=0;j<3;j++){
			cout<<array[i][j]<<" ";
		}
		cout<<endl;
	}
	double det=array[0][0] * (array[1][1] * array[2][2] - array[2][1] * array[1][2]) -
array[0][1] * (array[1][0] * array[2][2] - array[2][0] * array[1][2]) +
	  array[0][2] * (array[1][0] * array[2][1] - array[2][0] * array[1][1]);
   double adj[3][3];
	adj[0][0] = array[1][1] * array[2][2] - array[2][1] * array[1][2];
		adj[0][1] = -(array[1][0] * array[2][2] - array[2][0] * array[1][2]);
	adj[0][2] = array[1][0] * array[2][1] - array[2][0] * array[1][1];
	adj[1][0] = -(array[0][1] * array[2][2] - array[2][1] * array[0][2]);
	adj[1][1] = array[0][0] * array[2][2] - array[2][0] * array[0][2];
	adj[1][2] = -(array[0][0] * array[2][1] - array[2][0] * array[0][1]);
	adj[2][0] = array[0][1] * array[1][2] - array[1][1] * array[0][2];
	adj[2][1] = -(array[0][0] * array[1][2] - array[1][0] * array[0][2]);
	adj[2][2] = array[0][0] * array[1][1] - array[1][0] * array[0][1];
	if (det == 0) {
      cout << "The matrix is singular" <<endl;
      }
      else{
	  double inv[3][3];
     for (int i = 0; i < 3; i++) {
      for (int j = 0; j < 3; j++) {
```

```
            inv[i][j] = adj[i][j] / det;
        }
    }
    cout << "Inverse of the matrix is:" <<endl;
           for (int i = 0; i < 3; ++i) {
           for (int j = 0; j < 3; ++j) {
          cout << inv[i][j] << " ";
        }
        cout <<endl;
    }
                    }

}
```