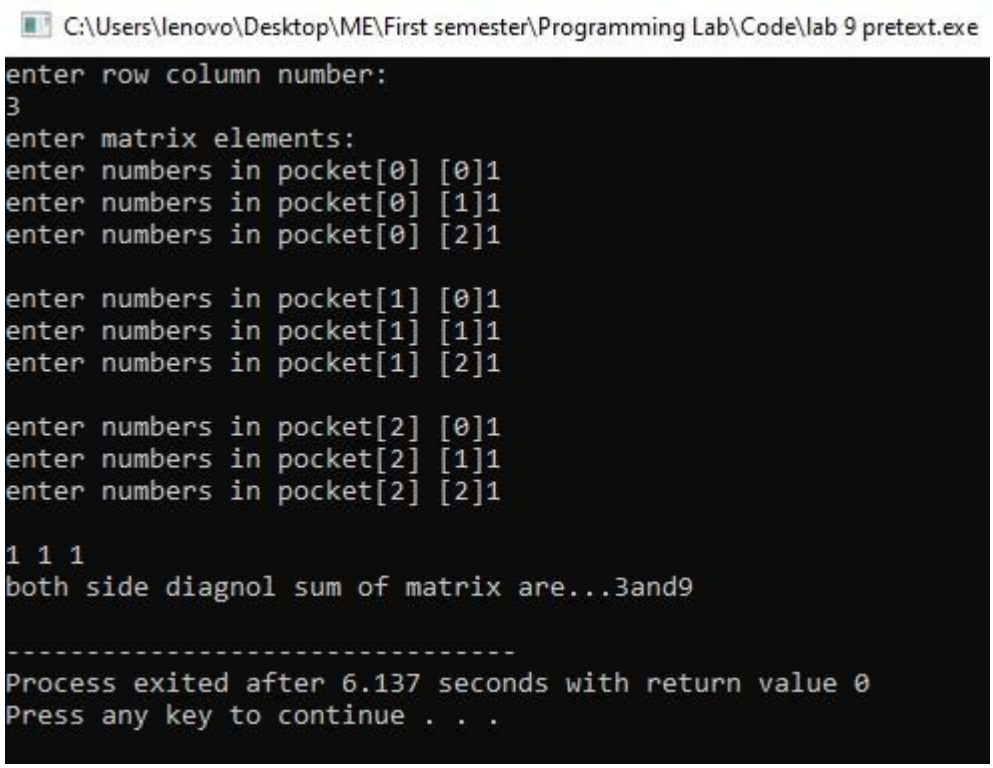
```
//task 1
// sum of diagonals

int num[20][20],i,j,n,sum1=0,sum2=0;
cout<<"enter row column number: "<<endl;
cin>>n;
  cout<<"enter matrix elements: "<<endl;
for(i=0;i<n;i++){
        for(j=0;j<n;j++){

                cout<<"enter numbers in pocket["<<i<<"] ["<<j<<"]";
cin>>num[i][j];

        }
        cout<<endl;
        }
        for(i=0;i<n;i++){
for(j=0;j<n;j++){
cout<<num[i][j]<<" ";

                }cout<<endl;
for(i=0;i<n;i++){                       for
(j=0;j<n;j++){
```

```
if(i==j){
sum1=sum1+num[i][j];
                                }
                                if(i+j==n-1);
        sum2=sum2+num[1][2];
                        }

                }

        }
 cout<<"both side diagnol sum of matrix are..."<<sum1<<"and"<<sum2<<endl; return 0; }
```




```
// task 2
// addition of matrix

        int a[4][3];
                int b[4][3];
        int i = 0;
int j = 0;              int
m=0;        int n=0;

                int addition=0;
 cout<<"Enter size of matrix 1: "<<endl;
cin>>n;
```

```
 for(i=1;i<=n;i++){
        for(j=1;j<=n;j++){

                cout<<"enter numbers in pocket["<<i<<"] ["<<j<<"]: ";
cin>>a[i][j];

        }
        cout<<endl;
        }

        cout << "Matrix 1: "<<endl;

        for(i=1;i<=n;i++){
for(j=1;j<=n;j++){
cout<<a[i][j]<<" ";

                }cout<<endl;

                }

                cout<<"Enter size of matrix 2: "<<endl;
                cin>>m;
```

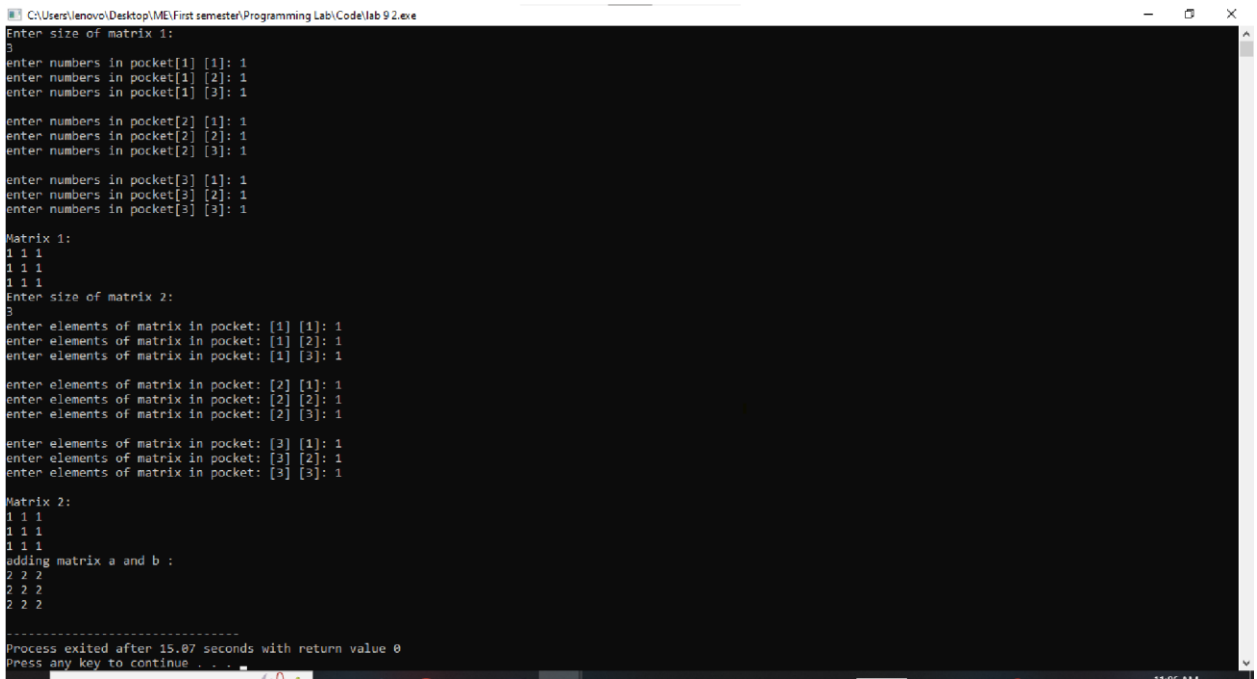
```
                for(i=1;i<=m;i++){
for(j=1;j<=m;j++){
                        cout<<"enter elements of matrix in pocket: ["<<i<<"]
["<<j<<"]: ";
                        cin>>b[i][j];
                }cout<<endl;
                }

                cout << "Matrix 2: " << endl;

                for(i=1;i<=m;i++){
for(j=1;j<=m;j++){                  cout<<b[i][j]<<"
";

                        }cout<<endl;

                }
                        cout<<"adding matrix a and b :"<< endl;

                        for(i=1;i<=n;i++){
for(j=1;j<=n;j++){
```

```
                addition=a[i][j]+b[i][j];
        cout <<addition << " ";

                  } cout << endl;
                }
                return 0;

                }
```

//task 3

//Transpose of matrix

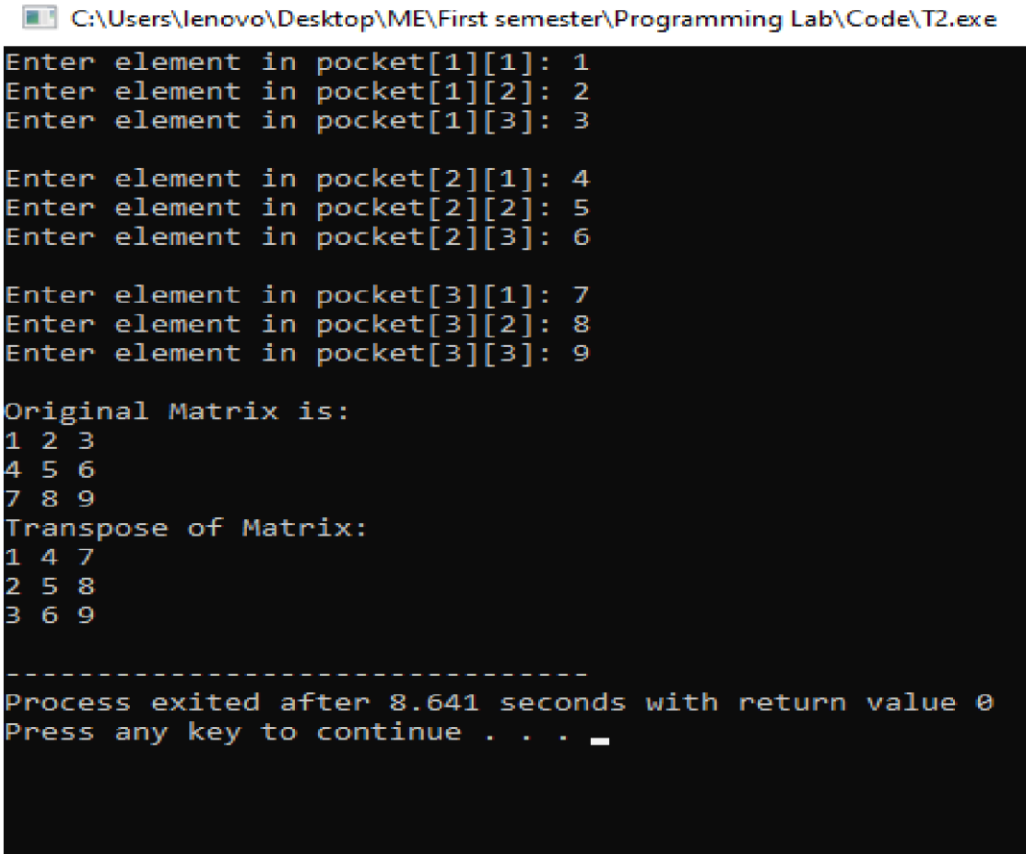
```
#include<iostream>
```



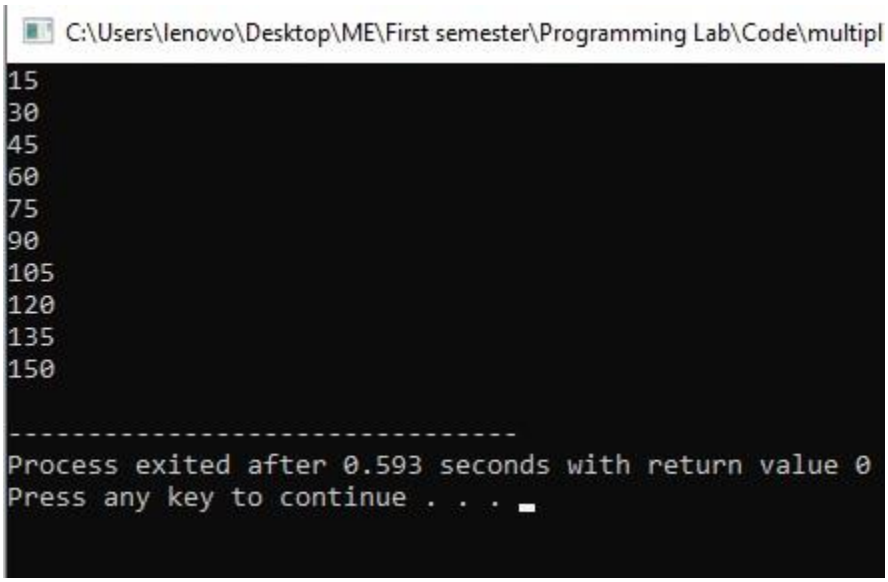
```
using namespace std; int
main()

{

        int a[4][3];
int i = 0 ;      int j
= 0;



for(i=1;i<=3;i++)
{
        for(j=1;j<=3;j++)
        {
                cout<<"Enter element in pocket["<<i<<"]["<<j<<"]: ";
        cin>>a[i][j];

        }
      cout<<endl;
}
```

```
cout << "Original Matrix is:"<< endl;

for(i=1;i<=3;i++)
{
        for(j=1;j<=3;j++)
        {
                cout<<a[i][j]<<" ";
        }
                cout<<endl;
}

cout << "Transpose of Matrix:"<<endl;

for(i=1;i<=3;i++)
{
        for(j=1;j<=3;j++)
        {
                if ( i != j )
                {
                        cout << a[j][i] <<" ";
                }
```

```
            else if ( i = j )
            {
                cout <<a[i][j]<<" ";
            }


        }
            cout<<endl;
}
   return 0;
}
```



```
//task 4
// printing table of 15 using recursion

#include<iostream> using
namespace std; void
table (int x,int y)
{
        if (y!=1)
        {
                table(x,y-1);
        }
cout<<x*y<<endl;




}
int main(){
        table(15,10);
return  0;
}
```



/

```
//   multiplication of matrix
//task 5

#include<iostream>
using namespace std;
int main() {
int matrix1[3][3], matrix2[3][3],
multiplied[3][3],element;
//loop to get input for matrix one
cout << "Write element for matrix 1" << endl;
for (int i = 0; i < 3; i++) {
for (int j = 0; j < 3; j++) {
        cout << "Enter the element of coloumn " << i
+ 1 << " and row " << j + 1 << ": " << endl;
        cin >> matrix1[i][j];
}
}
//loop to get input for matrix two
```

```
cout << "Write element for matrix 2" << endl;;
for (int i = 0; i < 3; i++) {
for (int j = 0; j < 3; j++) {
        cout << "Enter the element of coloumn " << i
+ 1 << " and row " << j + 1 << ": " << endl;
        cin >> matrix2[i][j];
}
}
//loops for the multiplication of matrices
//outer loop for the coloumn of matrix 1
for (int i = 0; i < 3; i++) {
//inner loop 1 for the rows of matrix 2
for (int j = 0; j < 3; j++) {
        int sum = 0;
        //inner loop 2 for row of matrix one and
coloumn of matrix 2
        for (int k = 0; k < 3; k++) {
                element=matrix1[i][k] * matrix2[k][j];
                sum += element;
        }
        multiplied[i][j] = sum;
}
}
//loops to display the matrices
cout << "Matrix 1" << endl;
for (int i = 0; i < 3; i++) {
for (int j = 0; j < 3; j++) {
        cout << matrix1[i][j] << "\t";
}
cout << endl;
}
cout << "Matrix 2" << endl;
for (int i = 0; i < 3; i++) {
for (int j = 0; j < 3; j++) {
```

```
        cout << matrix2[i][j] << "\t";
}
cout << endl;
}
cout << "Multiplication of the two matrices" <<
endl;
for (int i = 0; i < 3; i++) {
for (int j = 0; j < 3; j++) {
        cout << multiplied[i][j] << "\t";
}
cout << endl;
}
return 0;
}
```