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//C++ program to define a class to represent a Matrix.  
//Write constructor to initialize all matrix values to 0.  
//Include member functions to perform the following tasks:  
//1. To read the Matrix  
//2. To display the Matrix  
//3. To add two matrix.  
//4. Subtract one matrix from other  
//5. Matrix Multiplication
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```
#include <iostream>  
using namespace std;  
class matrix  
{  
    public:  
        int a[3][3], b[3][3],result[3][3];  
        matrix();//constructor declaration  
        void read (int x[3][3]);  
        void disp (int x[3][3]);  
        void add ();  
        void sub ();  
        void multi ();  
};  
matrix::matrix() //constructor definition  
{  
    for(int i=0;i<3;i++)  
    {  
        for(int j=0;j<3;j++) // initialization of matrices  
        {  
            a[i][j]=0;  
            b[i][j]=0;  
            result[i][j]=0;  
        }  
    }  
}  
void matrix::read (int x[3][3])  
{  
    for(int i=0;i<3;i++)  
        for(int j=0;j<3;j++) // reading the matrix  
            cin>>x[i][j];  
}  
  
void matrix::disp (int x[3][3])  
{  
    for(int i=0;i<3;i++)  
    {  
        for(int j=0;j<3;j++) // displaying the matrix  
            cout<<x[i][j]<<"\t";  
        cout<<endl;  
    }  
}
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void matrix::add()
{
    for(int i=0;i<3;i++)
    {
        for(int j=0;j<3;j++) // Addition the matrices
            result[i][j]=a[i][j]+b[i][j];
    }
    cout<<"\nAddition of entered matrices is: "<<endl;
    disp(result);
}

void matrix::sub()
{
    for(int i=0;i<3;i++)
    {
        for(int j=0;j<3;j++) // Subtraction the matrices
            result[i][j]=a[i][j] - b[i][j];
    }
    cout<<"\nSubtraction of entered matrices is: "<<endl;
    disp(result);
}

void matrix::multi()
{
    for(int i=0;i<3;i++)
    {
        for(int j=0;j<3;j++) // initialization of result matrix
        {
            result[i][j]=0;
        }
    }
}

for(int i = 0; i < 3; ++i) //Multiplication of matrices
{
    for(int j = 0; j < 3; ++j)
    {
        for(int k=0; k<3; ++k)
        {
            result[i][j] += a[i][k] * b[k][j];
        }
    }
}

cout<<"\nMultiplication of entered matrices is: "<<endl;
disp(result);
}

int main()
{
    matrix m; //object of the class created
}

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cout<<"\nInitialized matrix a is: "<<endl;
m.disp(m.a);
cout<<"\nInitialized matrix b is: "<<endl;
m.disp(m.b);
cout<<"\nInitialized matrix result is: "<<endl;
m.disp(m.result);

//read first matrix
cout<<"\nEnter first matrix: "<<endl;
m.read(m.a);
//display first matrix
cout<<"\nEntered matrix a is: "<<endl;
m.disp(m.a);

//read second matrix
cout<<"\nEnter second matrix: "<<endl;
m.read(m.b);
//display second matrix
cout<<"\nEntered matrix b is: "<<endl;
m.disp(m.b);

//Addition of matrices
m.add();

//Subtraction of matrices
m.sub();

//Multiplication of matrices
m.multi();
return 0;
}
/*
Initialized matrix a is:
0  0  0
0  0  0
0  0  0

Initialized matrix b is:
0  0  0
0  0  0
0  0  0

Initialized matrix result is:
0  0  0
0  0  0
0  0  0

Enter first matrix:
1 1 1

```

1 1 1
1 1 1

Entered matrix a is:

1 1 1
1 1 1
1 1 1

Enter second matrix:

4 4 4
4 4 4
4 4 4

Entered matrix b is:

4 4 4
4 4 4
4 4 4

Addition of entered matrices is:

5 5 5
5 5 5
5 5 5

Subtraction of entered matrices is:

-3 -3 -3
-3 -3 -3
-3 -3 -3

Multiplication of entered matrices is:

12 12 12
12 12 12
12 12 12
*/