**EXPERIMENT 12**

**Aim:** To implement matrix class with operations like addition, subtraction, multiplication and transpose.

**code:**

#include <iostream>

using namespace std;

class matrix3

{

int a[10][10],b[10][10],c[10][10],d[10][10],e[10][10],f[10][10],x,y,i,j;

public :

void values();

void transpose();

void sum();

void diff();

};

void matrix3::values()

{

cout << "Enter the rows "; cin >> x;

cout << "Enter the columns "; cin >> y;

cout << "Enter elements of first matrix\n\n";

for (i=1; i<=x; i++)

{

for ( j=1; j<=y; j++)

{

cin >> a[i][j];

}

}

cout << "Enter elements of second matrix\n\n";

for (i=1; i<=x; i++)

{

for (j=1; j<=y; j++)

{

cin >> c[i][j];

}

}

}

void matrix3::sum()

{

cout << "Sum of Matrices 1 and 2 is\n";

for (i=1; i<=x; i++)

{

for ( j=1; j<=y; j++)

{

e[i][j]=a[i][j]+c[i][j];

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

}

cout << endl;

}

}

void matrix3::diff()

{

cout << "Difference of Matrices 1 and 2 (1-2) is\n";

for (i=1; i<=x; i++)

{

for ( j=1; j<=y; j++)

{

f[i][j] = a[i][j]-c[i][j];

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

}

cout << endl;

}

}

void matrix3::transpose()

{

cout << "transpose of the matrix is\n";

for ( i=1; i<=x; i++)

{

for ( j=1; j<=y; j++)

{

b[i][j] = a[j][i];

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

}

cout << endl;

}

cout << "Transpose of the second matrix is\n";

for ( i=1; i<=x; i++)

{

for ( j=1; j<=y; j++)

{

d[i][j] = c[j][i];

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

}

cout << endl;

}

}

int main()

{

int input;

char ch;

matrix3 m;

m.values();

do

{

cout << "Enter your choice\n";

cout << " 1. Sum of 1 and 2\n" << " 2. Difference of 1 and 2\n" << " 3. Transpose of both 1 amd 2\n";

cin >> input;

switch (input)

{

case 1:

m.sum();

break;

case 2:

m.diff();

break;

case 3:

m.transpose();

break;

}

cout << "\nDo another y/n?";

cin >> ch;

}

while (ch!= 'n');

cout << "\n";

system ("pause");

return 0;

}