//Program for Gauss Elimination

#include<iostream>

#include<iomanip>

#include<math.h>

#include<stdlib.h>

using namespace std;

#define n 3

int main()

{

int i,j,k;

cout.precision(4);

cout.setf(ios::fixed);

cout<<"\nEnter the no. of equations\n";

float a[n][n+1],x[n];

cout<<"\nEnter the elements of the augmented-matrix row-wise:\n";

for (i=0;i<n;i++)

for (j=0;j<=n;j++)

cin>>a[i][j];

for (i=0;i<n;i++)

for (k=i+1;k<n;k++)

if (abs(a[i][i])<abs(a[k][i]))

for (j=0;j<=n;j++)

{

double temp=a[i][j];

a[i][j]=a[k][j];

a[k][j]=temp;

}

for (i=0;i<n-1;i++)

for (k=i+1;k<n;k++)

{

double t=a[k][i]/a[i][i];

for (j=0;j<=n;j++)

a[k][j]=a[k][j]-t\*a[i][j];

}

cout<<"\n\nThe matrix after gauss-elimination is as follows:\n";

for (i=0;i<n;i++)

{

for (j=0;j<=n;j++)

cout<<a[i][j]<<setw(16);

cout<<"\n";

}

for (i=n-1;i>=0;i--)

{

x[i]=a[i][n];

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

if (j!=i)

x[i]=x[i]-a[i][j]\*x[j];

x[i]=x[i]/a[i][i];

}

cout<<"\nThe values of the variables are as follows:\n";

for (i=0;i<n;i++)

cout<<x[i]<<endl;

return 0;

}

