Write a program in C++ to solve any set of linear equations using "Naive Gauss Elimination".

PROGRAM

```cpp
#include<iostream>
#include<iomanip>
#include<math.h>
#include<stdio.h>
using namespace std;
int main()
{
    int n,i,j,k;
    cout.precision(4);
    cout.setf(ios::fixed);
    cout<<"\nEnter the no. of equations\n";
    cin>>n;
    float a[n][n+1],x[n];
    cout<<"\nEnter the elements of the 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 ((a[i][i])<(a[k][i]))
                for (j=0;j<=n;j++)
                {
                    double temp=a[i][j];
```

```cpp
            a[i][j]=a[k][j];
            a[k][j]=temp;
        }
cout<<"\nThe new matrix is:\n";
for (i=0;i<n;i++)
{
    for (j=0;j<=n;j++)
        cout<<a[i][j]<<setw(16);
    cout<<"\n";
}
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;

}
```

OUTPUT

| options | compilation | execution |

```
Enter the no. of equations
3

Enter the elements of the augmented-matrix row-wise:
2 -1 2 10
1 -2 1 8
3 -1 2 11

The matrix after Pivotisation is:
3.0000          -1.0000          2.0000          11.0000
2.0000          -1.0000          2.0000          10.0000
1.0000          -2.0000          1.0000           8.0000


The matrix after gauss-elimination is as follows:
3.0000          -1.0000          2.0000          11.0000
-0.0000          -0.3333          0.6667           2.6667
0.0000          -0.0000         -3.0000          -9.0000

The values of the variables are as follows:
1.0000
-2.0000
3.0000

Exit code: 0 (normal program termination)
```