

## Assignment 4

Code:

```
#include<iostream>
#include<graphics.h>
#include<math.h>

using namespace std; class
transform
{
    public: int
        m,a[20][20],c[20][20];
        int i,j,k; public:

        void object(); void
        accept();
        void operator*(float b[20][20])
        {
            for(int i=0;i<m;i++)
            {
                for(int j=0;j<m;j++)
                { c[i][j]=0;
                    for(int k=0;k<m;k++)
                    { c[i][j]=c[i][j]+(a[i][k]*b[k][j]);
                        }
                    }
                }
            }
        };
        void transform::object()
        {
            int gd,gm;
            gd=DETECT;
            initgraph(&gd,&gm,NULL);
            line(300,0,300,600);
            line(0,300,600,300); for(i=0;i<m-1;i++)

            {
                line(300+a[i][0],300-a[i][1],300+a[i+1][0],300-a[i+1][1]);
            }
            line(300+a[0][0],300-a[0][1],300+a[i][0],300-a[i][1]);
            for(i=0;i<m-1;i++)
            {
                line(300+c[i][0],300-c[i][1],300+c[i+1][0],300-c[i+1][1]);
            }
        }
```

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        line(300+c[0][0],300-c[0][1],300+c[i][0],300-c[i][1]);
        int temp; cout<<"Press 1 to continue";
        cin>>temp;
        closegraph();
    }
    void transform::accept()
    {
        cout<<"\n";
        cout<<"Enter the number of edges";
        cin>>m;
        cout<<"\nEnter the co-ordinates:";
        for(int i=0;i<m;i++)
        { for(int j=0;j<3;j++)
            { if(j>=2)
                a[i][j]=1;
                else
                cin>>a[i][j]
                ;
            }
        }
    };
    int main()
    { int ch,tx,ty,sx,sy; float
        deg,theta,b[20][20];
        transform t; t.accept();
        cout<<"\nEnter your choice";
        cout<<"\n1.Translation"
            "\n2.Scaling"
            "\n3.Rotation"; cin>>ch;
        switch(ch)

    {
        case 1:cout<<"\nTRANSLATION
            OPERATION\n"; cout<<"Enter value for tx
            and ty:"; cin>>tx>>ty;
            b[0][0]=b[2][2]=b[1][1]=1;
            b[0][1]=b[0][2]=b[1][0]=b[1][2]=0; b[2][0]=tx;
            b[2][1]=ty; t*b;

            t.object();
            break;
        case 2:cout<<"\nSCALING
            OPERATION\n"; cout<<"Enter value
            for sx,sy:"; cin>>sx>>sy; b[0][0]=sx;
            b[1][1]=sy;
            b[0][1]=b[0][2]=b[1][0]=b[1][2]=0;
            b[2][0]=b[2][1]=0; b[2][2]=1; t*b;

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        t.object();
        break;
case 3:cout<<"\nROTATION
OPERATION\n"; cout<<"Enter value for
angle:"; cin>>deg;
theta=deg*(3.14/100);
b[0][0]=b[1][1]=cos(theta);
b[0][1]=sin(theta); b[1][0]=sin(-theta);
b[0][2]=b[1][2]=b[2][0]=b[2][1]=0;
b[2][2]=1; t*b;
        t.object();
        break;
default:
    cout<<"\nInvalid choice";
}
getch();
return 0;
}

```

OUTPUT:

```

student@student: ~/Documents
(base) student@student:~$ cd Documents
(base) student@student:~/Documents$ g++ cg4.cpp -o cg.cpp -lgraph
(base) student@student:~/Documents$ ./cg.cpp

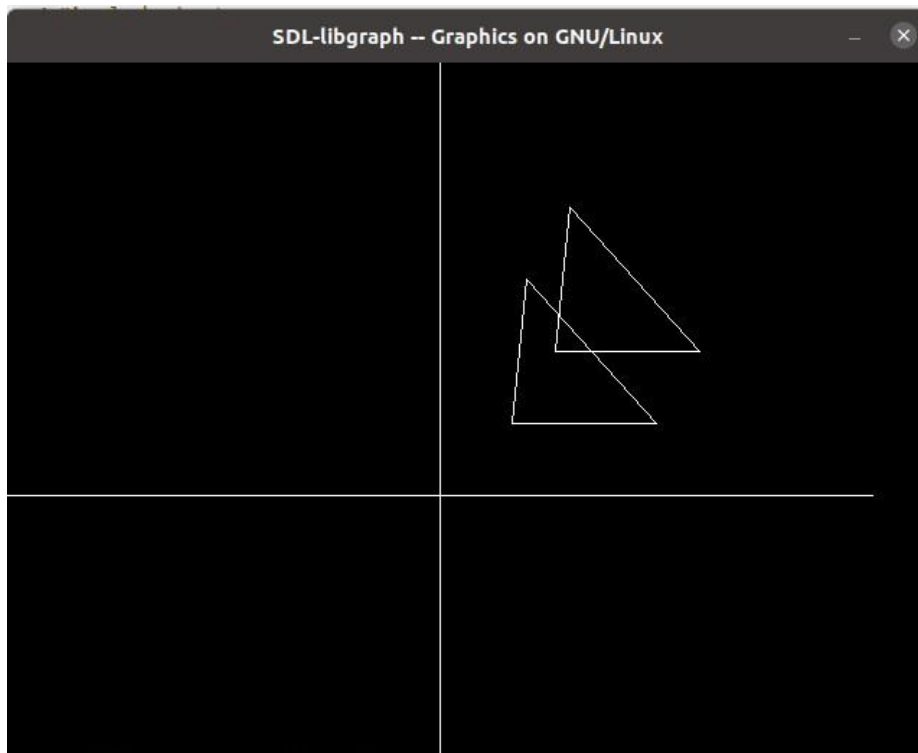
Enter the number of edges3

Enter the co-ordinates:50
50
150
50
60
150

Enter your choice
1.Translation
2.Scaling
3.Rotation1

TRANSLATION OPERATION
Enter value for tx and ty:30
50
Press 1 to continue[xcb] Unknown sequence number while processing queue
[xcb] Most likely this is a multi-threaded client and XInitThreads has
not been called
[xcb] Aborting, sorry about that.
cg.cpp: ../../src/xcb_io.c:260: poll_for_event: Assertion '!xcb_xlib_th
reads_sequence_lost' failed.

```



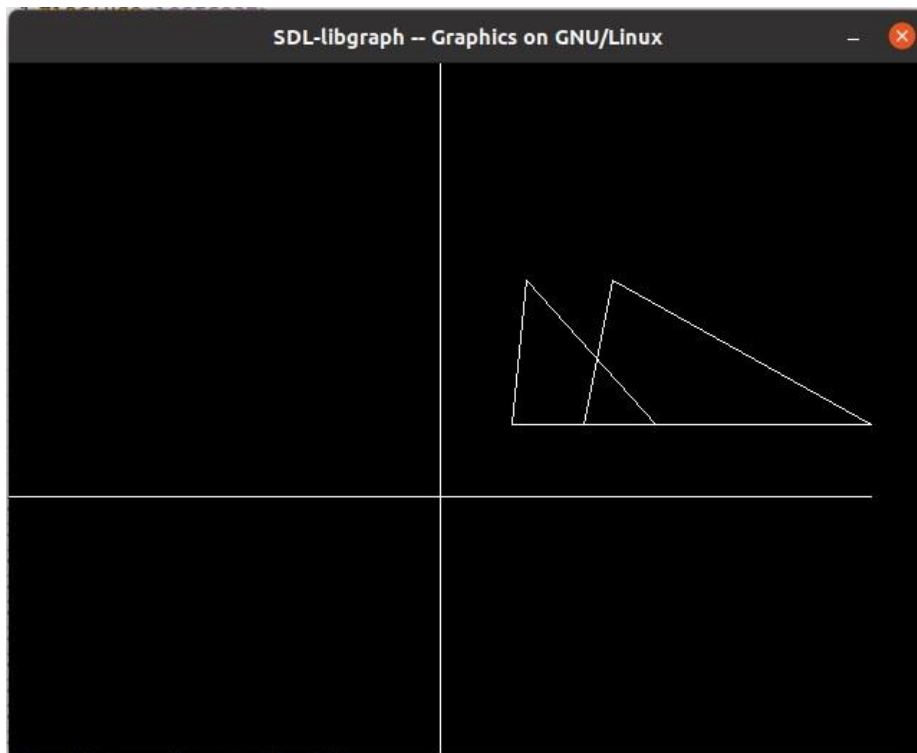
```
student@student: ~/Documents
(base) student@student:~$ cd Documents
(base) student@student:~/Documents$ g++ cg4.cpp -o cg.cpp -lgraph
(base) student@student:~/Documents$ ./cg.cpp

Enter the number of edges3

Enter the co-ordinates:50
50
150
50
60
150

Enter your choice
1.Translation
2.Scaling
3.Rotation2

SCALING OPERATION
Enter value for sx,sy:2
1
Press 1 to continue[xcb] Unknown sequence number while processing queue
[xcb] Most likely this is a multi-threaded client and XInitThreads has
been called
[xcb] Aborting, sorry about that.
cg.cpp: ../../src/xcb_io.c:260: poll_for_event: Assertion '!xcb_xlib_th
s_sequence_lost' failed.
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```



```
student@student: ~/Documents
(base) student@student:~$ cd Documents
(base) student@student:~/Documents$ g++ cg4.cpp -o cg.cpp -lgraph
(base) student@student:~/Documents$ ./cg.cpp

Enter the number of edges3

Enter the co-ordinates:50
50
150
50
60
160

Enter your choice
1.Translation
2.Scaling
3.Rotation3

ROTATION OPERATION
Enter value for angle:30
Press 1 to continue[xcb] Unknown sequence number while processing queue
[xcb] Most likely this is a multi-threaded client and XInitThreads has not
n called
[xcb] Aborting, sorry about that.
cg.cpp: ../../src/xcb_io.c:260: poll_for_event: Assertion '!xcb_xlib_thr
equence_lost' failed.
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```

