

Practical No:-4

Roll No:-65

INPUT:

```
#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]);
}
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 Coordinate: ";
    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 and 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;
            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:

```
jaihind@jaihind-ThinkCentre-E73:~$ g++ samikshacg4.cpp -lgraph  
jaihind@jaihind-ThinkCentre-E73:~$ ./a.out
```

Enter the number of Edges: 3

Enter the Coordinate:

50
50
150
50
60
150

Enter your choice:

1.Translation
2.Scaling
3.Rotation
1

TRANSLATION OPERATION

Enter value for tx and ty:

30
50

