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#include<iostream.h>
#include<conio.h>
#include<graphics.h>
#include<stdlib.h>
#include<math.h>
class trans
{
    public:
        float transco[3][3];
// float orico[3][3];
        float scalco[3][3];
        float rotco[3][3];

        void drawtri(float [3][3]);
        void translation(int,int,float [3][3]);
        void scaling(float,float,float [3][3]);
        void rotation(float,float [3][3]);
};

void trans::drawtri(float co[3][3])
{
    //clrscr();
    line(co[0][0],co[1][0],co[0][1],co[1][1]);
    line(co[0][1],co[1][1],co[0][2],co[1][2]);
    line(co[0][2],co[1][2],co[0][0],co[1][0]);

}

void trans::translation(int tx,int ty,float orico[3][3])

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{

    cout<<"Enter Translation Factor"<<endl;
    cin>>tx>>ty;
    int i,j;

    for(i=0;i<3;i++)
    {
        transco[0][i]=orico[0][i]+tx;
        transco[1][i]=orico[1][i]+ty;
        transco[2][i]=1;
    }
    for(i=0;i<3;i++)
    {
        for(j=0;j<3;j++)
        {
            cout<<transco[i][j]<<"    ";
        }
        cout<<endl;
    }

}

void trans::scaling(float sx,float sy,float orico[3][3])
{

    cout<<"Enter Scaling Factor"<<endl;
    cin>>sx>>sy;
    int i,j;

    for(i=0;i<3;i++)
    {
        scalco[0][i]=orico[0][i]*sx;
        scalco[1][i]=orico[1][i]*sy;
        scalco[2][i]=1;
    }
}

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    for(i=0;i<3;i++)
    {
        for(j=0;j<3;j++)
        {
            cout<<scalco[i][j]<<"    ";
        }
        cout<<endl;
    }
}

void trans::rotation(float theta,float orico[3][3])
{

    cout<<"Enter Rotation Angle"<<endl;
    cin>>theta;
    cout<<theta<<endl;

    theta= theta*(3.14/180);
    cout<<"theta in radious"<<theta<<endl;
    int i,j,refx,refy;
    for(i=0;i<3;i++)
    {
        for(j=0;j<3;j++)
        {

            rotco[i][j]=0;

        }

    }

    for(i=0;i<3;i++)
    {

        rotco[0][i]=orico[0][i]*cos(theta)-
orico[1][i]*sin(theta);

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        rotco[1][i]=orico[0][i]*sin(theta)+orico[1][i]*cos(theta);
    }

}

void main()
{
    clrscr();
    int c;
    int gd= DETECT, gm;
    initgraph(&gd,&gm,"C:\\\\TurboC3\\\\BGI");
    trans t;
    int tx,ty;
    float sx,sy;
    float theta;
    float orico[3][3]={{300,250,350},{200,300,300},{1,1,1}};
    for(int i=0;i<3;i++)
    {
        for(int j=0;j<3;j++)
        {
            cout<<"ori"<<" "<<i<<" "<<j<<"->"<<orico[i][j]<<"
";

        }
        cout<<endl;
    }

    t.drawtri(orico);
    cout<<"Enter your choice"<<endl;
    cout<<"1. Translation"<<endl;
    cout<<"2. Scaling"<<endl;
    cout<<"3. Rotation"<<endl;
    cin>>c;
    switch(c)
    {
        case 1:

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        t.translation(tx,ty,orico);
        t.drawtri(t.transco);
        break;
case 2:
    t.scaling(sx,sy,orico);
    t.drawtri(t.scalco);
    break;
case 3:

    t.rotation(theta,orico);
    t.drawtri(t.rotco);
    break;

default:
    cout<<("You have written wrong Choice");
}
getch();

}

```