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#include<stdio.h>
#include<conio.h>
#include<graphics.h>
#include<math.h>
int x1,y1,x2,y2,x3,y3;
void draw(int x1,int y1, int x2,int y2,int x3,int y3);
void tri(int x1,int y1, int x2,int y2,int x3,int y3);
void scale(int x1,int y1, int x2,int y2,int x3,int y3);
void roat(int x1,int y1, int x2,int y2,int x3,int y3);
void main()
{
    int x1,y1,x2,y2,x3,y3;
    int gd=DETECT,gm;
    int c;
    initgraph(&gd,&gm,"c:\\tc\\bgi");
    printf("\n enter the first point of the triangle:");
    scanf("%d%d",&x1,&y1);
    printf("\n enter the seceond point of the triangle:");
    scanf("%d%d",&x2,&y2);
    printf("\n enter the third point of the triangle:");
    scanf("%d%d",&x3,&y3);
    cleardevice();
    draw(x1,y1,x2,y2,x3,y3);
    printf("\nPress 1 to Translation, 2 to scaling, 3 to rotation, and 4 to exit.");
    while(1)
    {
        printf("\nEnter your choice:");
        scanf("%d",&c);
        switch(c)
        {
            case 1: tri(x1,y1,x2,y2,x3,y3);break;
            case 2: scale(x1,y1,x2,y2,x3,y3);break;
            case 3: roat(x1,y1,x2,y2,x3,y3); break;
            case 4: exit(0);
            default: printf("Invalid Choice.");
        }
    }
    // draw(x1,y1,x2,y2,x3,y3);
}
void draw(int x1,int y1, int x2,int y2,int x3,int y3)
{
    cleardevice();
    line(x1,y1,x2,y2);
    line(x2,y2,x3,y3);
    line(x3,y3,x1,y1);
}
void tri(int x1,int y1, int x2,int y2,int x3,int y3)
{
    int x,y,a1,a2,a3,b1,b2,b3;
    printf("\n enter the translation co-ordinate: ");
    scanf("%d%d",&x,&y);

    a1=x1+x;
    b1=y1+y;
    a2=x2+x;
    b2=y2+y;
    a3=x3+x;
    b3=y3+y;

    draw(a1,b1,a2,b2,a3,b3);
}
void scale(int x1,int y1, int x2,int y2,int x3,int y3)
{
    int x,y,a1,a2,a3,b1,b2,b3,mx,my;
    printf("\n enter the scaling co-ordinate: ");
    scanf("%d%d",&x,&y);
    mx=(x1+x2+x3)/3;
    my=(y1+y2+y3)/3;
    // cleardevice();
    a1=mx+(x1-mx)*x;
    b1=my+(y1-my)*y;
    a2=mx+(x2-mx)*x;
    b2=my+(y2-my)*y;
    a3=mx+(x3-mx)*x;
    b3=my+(y3-my)*y;
}

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        draw(a1,b1,a2,b2,a3,b3);
    }
    void roat(int x1,int y1, int x2,int y2,int x3,int y3)
    {
        int x,y,a1,a2,a3,b1,b2,b3,p=x2,q=y2;
        float ang;
        printf("\n enter the angle rotation : ");
        scanf("%f",&ang);
        ang=(ang*3.14)/180;

        a1=x1;

        b1=y1;
        a2=p+(x2-p)*cos(ang)-(y2-q)*sin(ang);
        b2=q+(x2-p)*sin(ang)-(y2-q)*cos(ang);
        a3=p+(x3-p)*cos(ang)-(y3-q)*sin(ang);
        b3=q+(x3-p)*sin(ang)-(y3-q)*cos(ang);
        draw(a1,b1,a2,b2,a3,b3);
    }

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