Code:

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#include<bits/stdc++.h>
#include<graphics.h>
#include<math.h>
#include<stdio.h>

void draw(int x[],int [],int n);
void translation(int x[],int y[],int n);
void scale(int x[],int y[],int n);
void shear(int x[],int y[],int n);
void rotation(int x[],int y[],int n);

using namespace std;

int main(){
	int Xmin,Ymin,Xmax,Ymax;
	initwindow(800,800);
	Xmin=20;
	Xmax=800-20;
	Ymin=50;
	Ymax=800-50;
	rectangle(Xmin,Ymin,Xmax,Ymax);
	line(Xmax/2,Ymin,Xmax/2,Ymax);
	line(Xmin,Ymax/2+80,Xmax,Ymax/2+80)
;
	outtextxy(450,20,"ID: 174049");

	int n, x[100], y[100], i;
	cout << "Enter no. of sides in polygon: ";
	cin >> n;
	cout << "Enter coordinates x, y for each
vertex: ";
	for (i = 0; i < n; i++) {
		cin >> x[i] >> y[i];
	}

	n=4;
	x[0]=550;x[1]=650;x[2]=650;x[3]=550;
	y[0]=300;y[1]=300;y[2]=200;y[3]=200;
	draw(x,y,n);
	int choice;
	cout<<"1. Translation"<<endl;
	cout<<"2. Scale"<<endl;
	cout<<"3. Shear"<<endl;
	cout<<"4. Rotation"<<endl;
	cout<<"5. Exit"<<endl;
	while (1){
		cout<<"Enter your choice: ";
		cin>>choice;
		switch(choice){
			case 1:
			translation(x,y,n);
				break;
			case 2:
				scale(x,y,n);
				break;
			case 3:
				shear(x,y,n);
				break;
			case 4:
			rotation(x,y,n);
				break;
			case 5:
				exit(0);

		}
	}


	while (!kbhit()){
		delay(100);
	}
}

void draw(int x[100],int y[100],int n)
{
	for (int i = 0; i < n; i++) {
		setcolor(i+10);
		line(x[i], y[i], x[(i + 1) % n], y[(i +
1) % n]);
	}
}
void initialization(int x[],int xt[],int n){
	for (int i=0;i<n;i++){
		x[i]=xt[i];
	}
}
void translation(int xt[],int yt[],int n){
	int x[100], y[100];
	int tx,ty;
	cout<<"Enter tx,ty for translation: ";
	cin>>tx>>ty;
	for(int i=0;i<n;i++){
		x[i]=x[i]+tx;
		y[i]=y[i]+ty;
```

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        }
        draw(x,y,n);
}
void scale(int xt[],int yt[],int n)
{
        int x[100], y[100];
        float sf;
        cout << "Enter scale factors: sf : ";
        cin >> sf;
        for (int i = 0; i < n; i++) {
                x[i] = x[0] + (int)((float)(x[i] -
x[0]) * sf);
                y[i] = y[0] + (int)((float)(y[i] -
y[0]) * sf);

        }
        setcolor(YELLOW);
        draw(x,y,n);
}
void shear(int xt[],int yt[],int n){
        int x[100], y[100];
        float shx,shy;
        char ch;
        delay(10);
        cout<<"enter the direction of shear : ";
        cin>>ch;
        if(ch=='x')
        {
                cout<<"enter xf-direction of
shear : ";
                cin>>shx;
                y[2]=y[2]+shx*x[2];
                y[1]=y[1]+shx*x[1];
                setcolor(RED);
                draw(x,y,n);
        }
        else
        {

                cout<<"enter y-direction of
shear : ";
                cin>>shy;
                x[2]=x[2]+shy*y[2];
                x[3]=x[3]+shy*y[3];
                setcolor(RED);
                draw(x,y,n);

        }
}
void rotation(int xt[],int yt[],int n){
        int x[100], y[100];
        float theta;
        printf("\nEnter the angle for rotation:
");
        scanf("%f",&theta);
        theta=theta*(3.14/180);

        int nx[100],ny[100];
        for (int i=0;i<n;i++){
                nx[i]=refx+(x[i]-refx)*cos(theta)-
(y[i]-refy)*sin(theta);
                ny[i]=refy+(x[i]-
refx)*sin(theta)+(y[i]-refy)*cos(theta);
        }
        setcolor(RED);
        draw(nx,ny,n);
}
```

Output: