**Code:**

#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;

}

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);

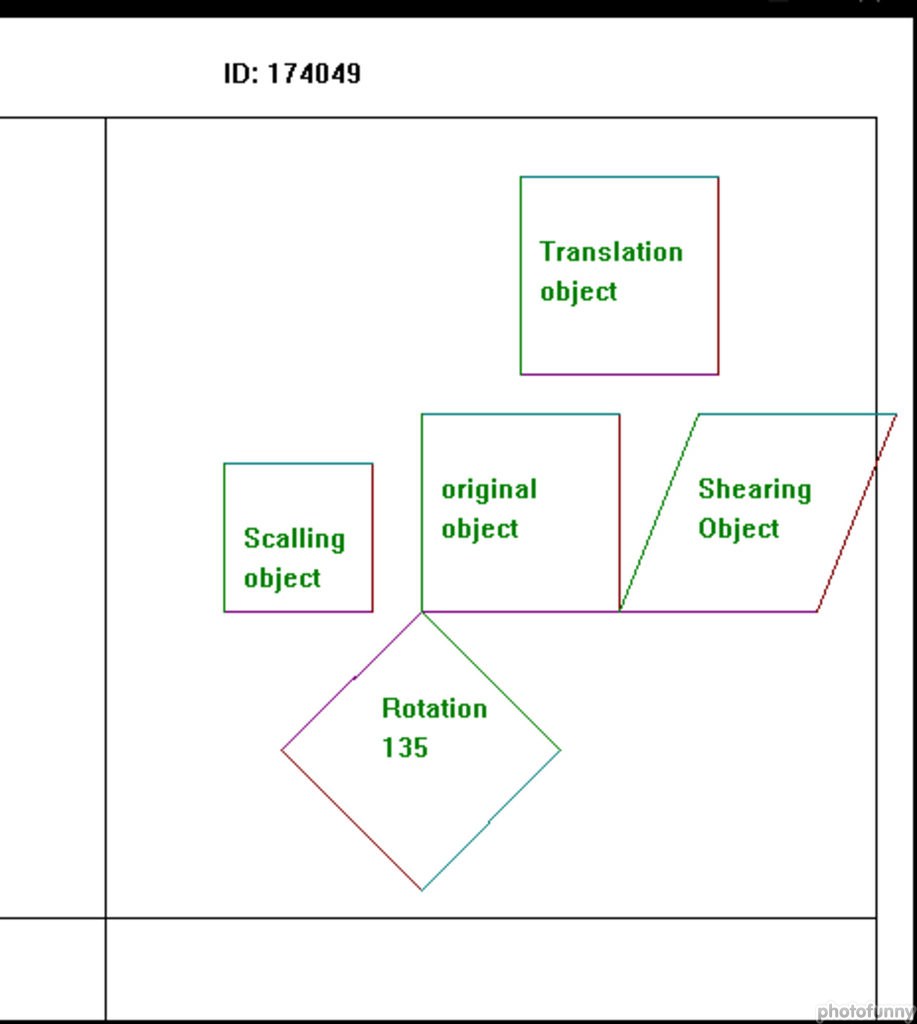
}

setcolor(RED);

draw(nx,ny,n);

}

**Output:**

****