**Program 14(e)**

**Write a program to implement 2-D shearing.**

#include<stdio.h>

#include<graphics.h>

#define ROUND(a) ((int)(a+0.5))

void ddaline(int x1, int y1, int x2, int y2)

{

float xsteps, ysteps, x=x1, y=y1;

int dx = x2-x1;

int dy = y2-y1;

int steps,k=1;

if(abs(dx)>=abs(dy))

steps=abs(dx);

else steps=abs(dy);

xsteps= dx/(float)steps;

ysteps= dy/(float)steps;

putpixel(ROUND(x),ROUND(y),15);

while(k<=steps)

{

x+=xsteps;

y+=ysteps;

putpixel(ROUND(x), ROUND(y),15);

k++;

}

}

void quadilateral(int x[4], int y[4])

{

int i=0;

while(i<4)

{

if(i==3)

{

ddaline(x[i],y[i],x[0],y[0]);

return;

}

ddaline (x[i],y[i],x[i+1],y[i+1]);

i++;

}

}

void shear(int x[4], int y[4], float sh, int Y)

{

int shx[4],i=0;

while(i<4)

{

shx[i]=x[i] + ROUND(sh\*(y[i]-Y));

i++;

}

quadilateral(x,y);

ddaline(0,Y,400,Y);

quadilateral(shx,y);

}

int main()

{

int x[4],y[4],i=0, Y;

float sh;

int gdriver = DETECT, gmode, errorcode;

initgraph(&gdriver, &gmode, "..\\");

errorcode = graphresult();

if (errorcode != grOk)

{

printf("Graphics error: %s\n", grapherrormsg(errorcode));

printf("Press any key to halt:");

getch();

exit(1);

}

printf("Enter quadilateral points in sequence\n");

while(i<4)

{

scanf("%d %d", &x[i], &y[i]);

i++;

}

printf("Enter value for shear factor and \'y\' reference\n");

scanf("%f %d", &sh, &Y);

shear(x,y,sh,Y);

getch();

closegraph();

return 0;

}



