**Assignment no: 08**

**//Write a C/C++ program to draw a convex polygons (Square, Rectangle, Triangle).**

#include<iostream>

#include<graphics.h>

using namespace std;

class dline

{

protected: int x1,y1,x2,y2;

public:

dline()

{

x1=0,y1=0,x2=0,y2=0;

}

void step1()

{

cout<<"\n Enter x1: ";cin>>x1;

cout<<"\n Enter y1: ";cin>>y1;

}

void step2()

{

cout<<"\n Enter x2: ";cin>>x2;

cout<<"\n Enter y2: ";cin>>y2;

}

void drawl()

{

float x,y,dx,dy,len;

int i;

dx=abs(x2-x1);

dy=abs(y2-y1);

if(dx >= dy)

{

len=dx;

}

else

{

len=dy;

}

dx=(x2-x1)/len;

dy=(y2-y1)/len;

x = x1 + 0.5;

y = y1 + 0.5;

i=1;

while(i<=len)

{

putpixel(x,y,15);

x = x + dx;

y = y + dy;

i = i + 1;

}

putpixel(x,y,15);

}

};

class rect: public dline //Rectangle

{

private: int w,l;

public:

void setrect()

{

dline::step1();

cout<<"\n Enter width: ";cin>>w;

cout<<"\n Enter length: ";cin>>l;

}

void drawrect()

{

x2=x1;

y2=y1+w;

dline::drawl(); //left

x2=x1+l;

y2=y1;

dline::drawl(); //top

x1=x1;

y1=y1+w;

x2=x1+l;

y2=y1;

dline::drawl(); //bottom

x1=x1+l;

y1=y1-w;

x2=x1;

y2=y1+w;

dline::drawl(); //right

}

};

class square: public dline //Square

{

private: int l;

public:

void setsquare()

{

dline::step1();

cout<<"\n Enter length: ";cin>>l;

}

void drawsquare()

{

x2=x1;

y2=y1+l;

dline::drawl(); //left

x2=x1+l;

y2=y1;

dline::drawl(); //top

x1=x1;

y1=y1+l;

x2=x1+l;

y2=y1;

dline::drawl(); //bottom

x1=x1+l;

y1=y1-l;

x2=x1;

y2=y1+l;

dline::drawl(); //right

}

};

class triangle: public dline //Triangle

{

private: int x3,y3;

public:

void settri()

{

dline::step1();

dline::step2();

cout<<"\n Enter x3: ";cin>>x3;

cout<<"\n Enter y3: ";cin>>y3;

}

void drawtri()

{

int tempx,tempy;

dline::drawl();

tempx=x2;

x2=y2;

x2=x3;

y2=y3;

dline::drawl();

x1=tempx;

y1=tempy;

dline::drawl();

}

};

int main()

{

int gd=DETECT,gm=VGAMAX;

int i, x, y, r,ch, xmax,ymax,xmid,ymid;

char a;

initgraph(&gd,&gm,NULL);

rect r1;

square s;

triangle t;

do

{

cout<<"\nChoose polygon to draw";

cout<<"\n1.Rectangle..";

cout<<"\n2.Square..";

cout<<"\n3.Triangle..";

cout<<"\n4.EXIT..";

cout<<"\nEnter your choice: ";

cin>>ch;

switch(ch)

{

case 1:

{

r1.setrect();

r1.drawrect();

break;

}

case 2:

{

s.setsquare();

s.drawsquare();

break;

}

case 3:

{

t.settri();

t.drawtri();

delay(3000);

break;

}

case 4:

exit;

break;

}

cout<<"\nDO U Want To Continue y OR n: ";

cin>>a;

}while(a!='n');

delay(3000);

getch();

closegraph();

return 0;

}