**Task 1:**

import com.jogamp.opengl.GL2;

import com.jogamp.opengl.GLAutoDrawable;

import com.jogamp.opengl.GLCapabilities;

import com.jogamp.opengl.GLEventListener;

import com.jogamp.opengl.GLProfile;

import com.jogamp.opengl.awt.GLCanvas;

import com.jogamp.opengl.glu.GLU;

import java.lang.Math;

import javax.swing.JFrame;

class ThirdGLEventListener implements GLEventListener {

/\*\*

\* Interface to the GLU library.

\*/

private GLU glu;

/\*\*

\* Take care of initialization here.

\*/

public void init(GLAutoDrawable gld) {

GL2 gl = gld.getGL().getGL2();

glu = new GLU();

gl.glClearColor(0.0f, 0.0f, 0.0f, 1.0f);

gl.glViewport(-250, -150, 250, 150);

gl.glMatrixMode(GL2.GL\_PROJECTION);

gl.glLoadIdentity();

glu.gluOrtho2D(-250.0, 250.0, -150.0, 150.0);

}

/\*\*

\* Take care of drawing here.

\*/

public void display(GLAutoDrawable drawable) {

GL2 gl = drawable.getGL().getGL2();

gl.glClear(GL2.GL\_COLOR\_BUFFER\_BIT);

gl.glBegin(GL2.GL\_LINES);

gl.glVertex2d(-100,-100);

gl.glVertex2d(0,0);

gl.glVertex2d(100,-100);

gl.glVertex2d(0,0);

gl.glVertex2d(-100,-100);

gl.glVertex2d(100,-100);

gl.glVertex2d(-100,-40);

gl.glVertex2d(0,-120);

gl.glVertex2d(0,-120);

gl.glVertex2d(100,-40);

gl.glVertex2d(-100,-40);

gl.glVertex2d(100,-40);

gl.glEnd();

/\*

\* put your code here

\*/

}

public void reshape(GLAutoDrawable drawable, int x, int y, int width,

int height) {

}

public void displayChanged(GLAutoDrawable drawable,

boolean modeChanged, boolean deviceChanged) {

}

public void dispose(GLAutoDrawable arg0)

{

}

}

public class Task1\_18301193

{

public static void main(String args[])

{

//getting the capabilities object of GL2 profile

final GLProfile profile=GLProfile.get(GLProfile.GL2);

GLCapabilities capabilities=new GLCapabilities(profile);

// The canvas

final GLCanvas glcanvas=new GLCanvas(capabilities);

ThirdGLEventListener b=new ThirdGLEventListener();

glcanvas.addGLEventListener(b);

glcanvas.setSize(400, 400);

//creating frame

final JFrame frame=new JFrame("18301193");

//adding canvas to frame

frame.add(glcanvas);

frame.setSize(640,480);

frame.setVisible(true);

}

}

**Task 2:**

import com.jogamp.opengl.GL2;

import com.jogamp.opengl.GLAutoDrawable;

import com.jogamp.opengl.GLCapabilities;

import com.jogamp.opengl.GLEventListener;

import com.jogamp.opengl.GLProfile;

import com.jogamp.opengl.awt.GLCanvas;

import com.jogamp.opengl.glu.GLU;

import java.lang.Math;

import javax.swing.JFrame;

class ThirdGLEventListener implements GLEventListener {

/\*\*

\* Interface to the GLU library.

\*/

private GLU glu;

/\*\*

\* Take care of initialization here.

\*/

public void init(GLAutoDrawable gld) {

GL2 gl = gld.getGL().getGL2();

glu = new GLU();

gl.glClearColor(0.0f, 0.0f, 0.0f, 1.0f);

gl.glViewport(-250, -150, 250, 150);

gl.glMatrixMode(GL2.GL\_PROJECTION);

gl.glLoadIdentity();

glu.gluOrtho2D(-250.0, 250.0, -150.0, 150.0);

}

/\*\*

\* Take care of drawing here.

\*/

public void display(GLAutoDrawable drawable) {

GL2 gl = drawable.getGL().getGL2();

gl.glClear(GL2.GL\_COLOR\_BUFFER\_BIT);

/\*

\* put your code here

\*/

DDA(gl,-50,50,50,50);

DDA(gl,-50,-50,-50,50);

DDA(gl,-50,50,0,0);

}

private void DDA(GL2 gl, float x1, float x2, float y1, float y2) {

gl.glColor3d(0, 4, 0);

gl.glPointSize(5.0f);

float x = x1;

float y = y1;

gl.glBegin(GL2.GL\_POINTS);

float m = (y2 - y1)/(x2 - x1);

if(m>=-1 && m<=1) {

while(x<=x2) {

x = x +1;

y = y+m;

gl.glVertex2d(x, y);

}

}

else {

while(y<=y2) {

y=y+1;

x=x+(1/m);

gl.glVertex2d(x,y);

}

}

gl.glEnd();

}

public void reshape(GLAutoDrawable drawable, int x, int y, int width,

int height) {

}

public void displayChanged(GLAutoDrawable drawable,

boolean modeChanged, boolean deviceChanged) {

}

public void dispose(GLAutoDrawable arg0)

{

}

}

public class Task2\_18301193

{

public static void main(String args[])

{

//getting the capabilities object of GL2 profile

final GLProfile profile=GLProfile.get(GLProfile.GL2);

GLCapabilities capabilities=new GLCapabilities(profile);

// The canvas

final GLCanvas glcanvas=new GLCanvas(capabilities);

ThirdGLEventListener b=new ThirdGLEventListener();

glcanvas.addGLEventListener(b);

glcanvas.setSize(400, 400);

//creating frame

final JFrame frame=new JFrame("18301193");

//adding canvas to frame

frame.add(glcanvas);

frame.setSize(640,480);

frame.setVisible(true);

}

}