**Assignment number: 7**

**Subject: COMPUTER GRAPHICS LAB**

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Class: ***SECOND YEAR ENGINEERING***

Division: ***B***

Roll no: ***222008***

Batch: ***B1***

**PROBLEM STATEMENT:**

Write a Java program to draw 2-D object and perform following basic transformations, a) Scaling b) Translation c) Rotation.

**Code:**

package transform;

import java.awt.\*;

import javax.swing.\*;

public class Transform extends JFrame

{

double mat[][]={{100,100,500},{100,200,300},{1, 1, 1}};

double transl[][]={{1,0,500},{0,1,100},{0,0,1}};

double scale[][]={{2.5,0,0},{0,2.5,0},{0,0,1}};

double rotate[][]={{0.9397,0.342,0},{-0.342,0.9397,0},{0,0,1}};

double resultt[][]=new double[3][3];

double results[][]=new double[3][3];

double resultr[][]=new double[3][3];

void translate(Graphics g)

{

int i,j,k;

k=0;

for(i=0;i<3;i++)

{

for(j=0;j<3;j++)

{

resultt[i][j]=0;

for(k=0;k<3;k++)

{

resultt[i][j]=resultt[i][j]+transl[i][k]\*mat[k][j];

}

}

}

g.drawLine((int)resultt[0][0],(int) resultt[1][0], (int)resultt[0][1],(int) resultt[1][1]);

g.drawLine((int)resultt[0][1],(int) resultt[1][1],(int) resultt[0][2],(int) resultt[1][2]);

g.drawLine((int)resultt[0][2],(int) resultt[1][2],(int) resultt[0][0],(int) resultt[1][0]);

}

void rotate1(Graphics g)

{

int i,j,k;

k=0;

for(i=0;i<3;i++)

{

for(j=0;j<3;j++)

{

resultr[i][j]=0;

for(k=0;k<3;k++)

{

resultr[i][j]=resultr[i][j]+(rotate[i][k]\*mat[k][j]);

}

}

}

g.drawLine((int)resultr[0][0],(int) resultr[1][0], (int)resultr[0][1],(int) resultr[1][1]);

g.drawLine((int)resultr[0][1],(int) resultr[1][1],(int) resultr[0][2],(int) resultr[1][2]);

g.drawLine((int)resultr[0][2],(int) resultr[1][2],(int) resultr[0][0],(int) resultr[1][0]);

}

void scale1(Graphics g)

{

int i,j,k;

k=0;

for(i=0;i<3;i++)

{

for(j=0;j<3;j++)

{

results[i][j]=0;

for(k=0;k<3;k++)

{

results[i][j]=results[i][j]+scale[i][k]\*mat[k][j];

}

}

}

g.drawLine((int)results[0][0],(int) results[1][0], (int)results[0][1],(int) results[1][1]);

g.drawLine((int)results[0][1],(int) results[1][1],(int) results[0][2],(int) results[1][2]);

g.drawLine((int)results[0][2],(int) results[1][2],(int) results[0][0],(int) results[1][0]);

}

public void paint(Graphics g)

{

g.drawLine(100, 100, 100, 200);

g.drawLine(100, 100, 500, 300);

g.drawLine(500, 300, 100, 200);

translate(g);

rotate1(g);

scale1(g);

}

public static void main(String[] args) {

// TODO code application logic here

Transform a=new Transform();

a.setSize(1500,1500);

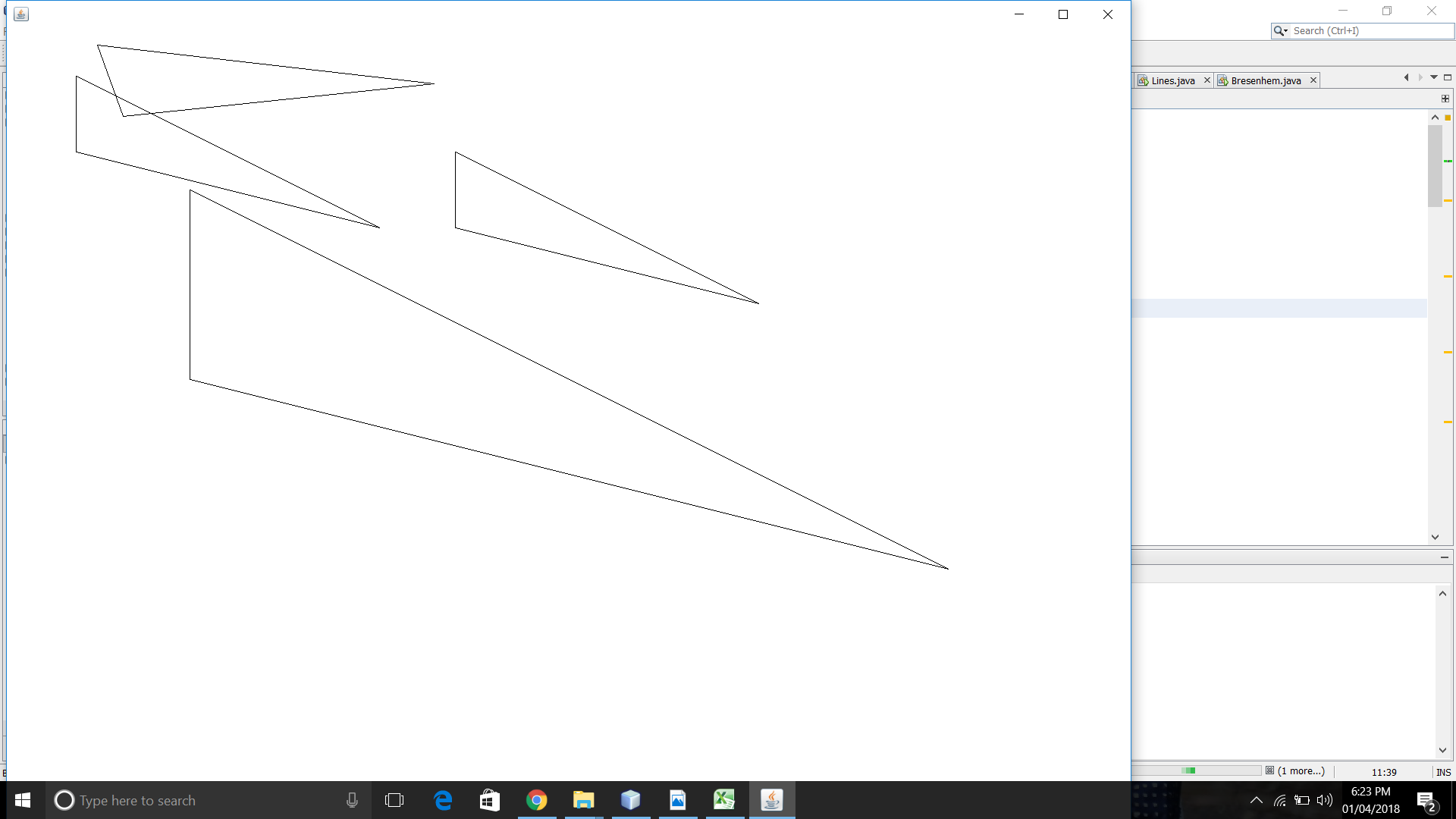
a.setVisible(true);

a.setDefaultCloseOperation(EXIT\_ON\_CLOSE);

}

}

**Output:**

****