COMPUTER GRAPHICS

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PROBLEM STATEMENT :

Write a java program to implement line patterns using DDA and Bresenhams algorithm such as dashed, solid, dotted, etc.

CODE :

package cgg;

import java.awt.Graphics;

import javax.swing.JFrame;

public class Assignment5LinePatterns extends JFrame{

public void ddaLineThick(Graphics g, int x1, int y1, int x2, int y2){

double length;

double x, y;

double dx = x2 -x1;

double dy = y2 - y1;

if(Double.compare(dx, dy) == 1)

length = dx;

else

length = dy;

dx = (x2 - x1)/length;

dy = (y2 - y1)/length;

/\*System.out.println("length = " +length);

System.out.println("dx = " +dx);

System.out.println("dy = " +dy);\*/

x = x1 + (0.5 \* Integer.signum((int)dx));

y = y1 + (0.5 \* Integer.signum((int)dy));

//g.fillOval((int)x, (int)y, 2, 2);

int i = 1;

while(i <= length){

g.fillOval((int)x, (int)y, 2, 2);

x = x + dx;

y = y + dy;

i++;

}

}

public void ddaLineDash(Graphics g, int x1, int y1, int x2, int y2){

double length;

double x, y;

double dx = x2 -x1;

double dy = y2 - y1;

if(Double.compare(dx, dy) == 1)

length = dx;

else

length = dy;

dx = (x2 - x1)/length;

dy = (y2 - y1)/length;

/\*System.out.println("length = " +length);

System.out.println("dx = " +dx);

System.out.println("dy = " +dy);\*/

x = x1 + (0.5 \* Integer.signum((int)dx));

y = y1 + (0.5 \* Integer.signum((int)dy));

g.fillOval((int)x, (int)y, 2, 2);

int i = 1;

while(i <= length && x <= x2){

x = x + dx;

y = y + dy;

if(i % 20 == 0)

x = x + 10;

else

g.fillOval((int)x, (int)y, 2, 2);

i++;

}

}

public void ddaLineDashDot(Graphics g, int x1, int y1, int x2, int y2){

double length;

double x, y;

double dx = x2 -x1;

double dy = y2 - y1;

if(Double.compare(dx, dy) == 1)

length = dx;

else

length = dy;

dx = (x2 - x1)/length;

dy = (y2 - y1)/length;

/\*System.out.println("length = " +length);

System.out.println("dx = " +dx);

System.out.println("dy = " +dy);\*/

x = x1 + (0.5 \* Integer.signum((int)dx));

y = y1 + (0.5 \* Integer.signum((int)dy));

g.fillOval((int)x, (int)y, 2, 2);

int i = 1;

while(i <= length && x <= x2){

x = x + dx;

y = y + dy;

if(i % 22 == 0){

x = x + 16;

g.fillOval((int)x, (int)y, 2, 2);

}

else

g.fillOval((int)x - 8, (int)y, 2, 2);

i++;

}

}

public void ddaLineDotted(Graphics g, int x1, int y1, int x2, int y2){

double length;

double x, y;

double dx = x2 -x1;

double dy = y2 - y1;

if(Double.compare(dx, dy) == 1)

length = dx;

else

length = dy;

dx = (x2 - x1)/length;

dy = (y2 - y1)/length;

/\*System.out.println("length = " +length);

System.out.println("dx = " +dx);

System.out.println("dy = " +dy);\*/

x = x1 + (0.5 \* Integer.signum((int)dx));

y = y1 + (0.5 \* Integer.signum((int)dy));

g.fillOval((int)x, (int)y, 2, 2);

int i = 1;

while(i <= length && x <= x2){

x = x + dx;

y = y + dy;

if(i % 8 == 0)

g.fillOval((int)x, (int)y, 2, 2);

i++;

}

}

public static void main(String[] args) {

Assignment5LinePatterns obj = new Assignment5LinePatterns();

obj.setSize(1024, 768);

obj.setVisible(true);

obj.setDefaultCloseOperation(EXIT\_ON\_CLOSE);

}

public void paint(Graphics g) {

ddaLineThick(g, 150, 150, 450, 150);

ddaLineThick(g, 150, 152, 450, 152);

ddaLineThick(g, 150, 154, 450, 154);

ddaLineDash(g, 150, 170, 450, 170);

ddaLineDotted(g, 150, 190, 450, 190);

ddaLineDashDot(g, 150, 210, 450, 210);

}

}

OUTPUT :

