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**SCD Assignment 1**

**PaintModel.java**

**package** com.fast;

**import** java.awt.Color;

**public** **class** PaintModel {

**private** **int** pos\_x, pos\_y, brush\_width, brush\_height;

**private** Color color;

**public** PaintModel() {

// **TODO** Auto-generated constructor stub

pos\_x = 0;

pos\_y = 0;

brush\_height = 4;

brush\_width = 4;

}

**public** **int** getPos\_x() {

**return** pos\_x;

}

**public** **void** setPos\_x(**int** pos\_x) {

**this**.pos\_x = pos\_x;

}

**public** **int** getPos\_y() {

**return** pos\_y;

}

**public** **void** setPos\_y(**int** pos\_y) {

**this**.pos\_y = pos\_y;

}

**public** **int** getBrush\_width() {

**return** brush\_width;

}

**public** **void** setBrush\_width(**int** brush\_width) {

**this**.brush\_width = brush\_width;

}

**public** **int** getBrush\_height() {

**return** brush\_height;

}

**public** **void** setBrush\_height(**int** brush\_height) {

**this**.brush\_height = brush\_height;

}

**public** Color getColor() {

**return** color;

}

**public** **void** setColor(Color color) {

**this**.color = color;

}

}

**PaintView.java**

**package** com.fast;

**import** java.awt.Color;

**import** java.awt.Graphics;

**public** **class** PaintView {

// Paint in the Canvas

**public** **void** Paint(Graphics g, **int** x, **int** y, **int** bw, **int** bh, Color color) {

g.setColor(color);

g.fillOval(x, y, bw, bh);

}

// Erase the Canvas

**public** **void** Erase(Graphics g, **int** x, **int** y, **int** bw, **int** bh) {

g.setColor(Color.***WHITE***);

g.fillOval(x, y, bw, bh);

}

}

**PaintController.java**

**package** com.fast;

**import** java.awt.Color;

**import** java.awt.Graphics;

**public** **class** PaintController {

**private** PaintModel PModel;

**private** PaintView PView;

**public** PaintController() {

// **TODO** Auto-generated constructor stub

PModel = **new** PaintModel();

PView = **new** PaintView();

}

**public** **void** SetPosition\_X(**int** x) {

PModel.setPos\_x(x);

}

**public** **int** GetPosition\_X() {

**return** PModel.getPos\_x();

}

**public** **void** SetPosition\_Y(**int** y) {

PModel.setPos\_y(y);

}

**public** **int** GetPosition\_Y() {

**return** PModel.getPos\_y();

}

**public** **void** SetBrush\_Width(**int** bw) {

PModel.setBrush\_width(bw);

}

**public** **int** GetBrush\_Width() {

**return** PModel.getBrush\_width();

}

**public** **void** SetBrush\_Height(**int** bh) {

PModel.setBrush\_height(bh);

}

**public** **int** GetBrush\_Height() {

**return** PModel.getBrush\_height();

}

**public** **void** SetColor(Color c) {

PModel.setColor(c);

}

**public** Color GetColor() {

**return** PModel.getColor();

}

**public** **void** PaintOnCanvas(Graphics g) {

PView.Paint(g, GetPosition\_X(), GetPosition\_Y(), GetBrush\_Width(), GetBrush\_Height(), GetColor());

}

**public** **void** EraseCanvas(Graphics g) {

PView.Erase(g, GetPosition\_X(), GetPosition\_Y(), GetBrush\_Width(), GetBrush\_Height());

}

}

**Main.java**

**package** com.fast;

**import** java.awt.event.ActionEvent;

**import** java.awt.event.ActionListener;

**import** java.awt.event.MouseEvent;

**import** java.awt.event.MouseMotionListener;

**import** javax.swing.JButton;

**import** javax.swing.JColorChooser;

**import** javax.swing.JFrame;

**import** javax.swing.JLabel;

**import** javax.swing.JPanel;

**import** java.awt.BorderLayout;

**import** java.awt.Color;

**import** java.awt.Container;

**import** java.awt.Graphics;

**import** java.awt.GridLayout;

**class** PaintApplication **extends** JFrame **implements** MouseMotionListener, ActionListener {

**private** PaintController PController;

**private** JButton colorBtn, eraseBtn, increaseBrushSize, decreaseBrushSize;

**private** String status;

**public** PaintApplication() {

// **TODO** Auto-generated constructor stub

// Frame Setup

PController = **new** PaintController();

setTitle("JPaint");

setSize(800, 600);

setDefaultCloseOperation(JFrame.***EXIT\_ON\_CLOSE***);

// Panel Setup

JPanel panel = **new** JPanel();

panel.setLayout(**new** GridLayout(1, 4));

// Buttons Setup

colorBtn = **new** JButton("Select Color");

eraseBtn = **new** JButton("Erase");

increaseBrushSize = **new** JButton("Brush++");

decreaseBrushSize = **new** JButton("Brush--");

colorBtn.setBackground(Color.***BLACK***);

// Attach Buttons on Panel

panel.add(colorBtn);

panel.add(eraseBtn);

panel.add(increaseBrushSize);

panel.add(decreaseBrushSize);

colorBtn.addActionListener(**this**);

eraseBtn.addActionListener(**this**);

increaseBrushSize.addActionListener(**this**);

decreaseBrushSize.addActionListener(**this**);

// Container Panel

Container cpane = **this**.getContentPane();

cpane.setLayout(**new** BorderLayout());

JLabel msg = **new** JLabel("Start Paint",JLabel.***RIGHT***);

cpane.add(msg, BorderLayout.***NORTH***);

cpane.add(panel, BorderLayout.***SOUTH***);

cpane.addMouseMotionListener(**this**);

setVisible(**true**);

}

**public** Graphics provideGraphics() {

**return** **this**.getGraphics();

}

**public** **void** Paint(Graphics g) {

PController.PaintOnCanvas(g);

}

**public** **void** ErasePaint(Graphics g) {

PController.EraseCanvas(g);

}

@Override

**public** **void** actionPerformed(ActionEvent e) {

// **TODO** Auto-generated method stub

String action = e.getActionCommand();

increaseBrushSize.setBackground(Color.***GREEN***);

decreaseBrushSize.setBackground(Color.***GREEN***);

**if**(action.equals("Brush++")) {

status = "";

PController.SetBrush\_Height(PController.GetBrush\_Height() + 1);

PController.SetBrush\_Width(PController.GetBrush\_Width() + 1);

}

**else** **if**(action.equals("Brush--")) {

status = "";

**if**(PController.GetBrush\_Height() == 1 && PController.GetBrush\_Width() == 1) {

increaseBrushSize.setBackground(Color.***RED***);

decreaseBrushSize.setBackground(Color.***RED***);

}

**else** {

PController.SetBrush\_Height(PController.GetBrush\_Height() - 1);

PController.SetBrush\_Width(PController.GetBrush\_Width() - 1);

}

}

**else** **if**(action.equals("Erase")) {

status = "Erase";

eraseBtn.setBackground(Color.***WHITE***);

colorBtn.setBackground(Color.***WHITE***);

}

**else** **if**(action.equals("Select Color")) {

status = "";

Color c = JColorChooser.*showDialog*(**null**, "Pick Brush Color", PController.GetColor());

PController.SetColor(c);

colorBtn.setBackground(c);

}

}

@Override

**public** **void** mouseDragged(MouseEvent e) {

// **TODO** Auto-generated method stub

PController.SetPosition\_X(e.getX());

PController.SetPosition\_Y(e.getY());

Graphics g = provideGraphics();

**if** (status == "") {

Paint(g);

}

**else** **if**(status == "Erase") {

System.***out***.println("Eraseee");

ErasePaint(g);

}

}

@Override

**public** **void** mouseMoved(MouseEvent e) {

// **TODO** Auto-generated method stub

}

}

**public** **class** SCD\_Assignment {

**public** **static** **void** main(String[] args) {

// **TODO** Auto-generated method stub

PaintApplication app = **new** PaintApplication();

}

}