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import javax.swing.*;
import javax.swing.table.*;
import java.awt.*;
import java.awt.event.*;
import java.awt.geom.*;
import java.io.*;
import java.util.*;

public class ModernAttendanceSystem extends JFrame {
    private static final String FILE_NAME = "attendance_records.txt";

    // Modern Color Palette
    private static final Color PRIMARY = new Color(99, 102, 241);
    private static final Color PRIMARY_DARK = new Color(79, 70, 229);
    private static final Color SECONDARY = new Color(236, 72, 153);
    private static final Color SUCCESS = new Color(16, 185, 129);
    private static final Color DANGER = new Color(239, 68, 68);
    private static final Color BG_LIGHT = new Color(248, 250, 252);
    private static final Color BG_DARK = new Color(30, 41, 59);
    private static final Color TEXT_DARK = new Color(51, 65, 85);
    private static final Color CARD_BG = Color.WHITE;

    private CardLayout layout;
    private JPanel mainPanel;
    private DefaultTableModel model;
    private JTable table;
    private JComboBox<String> yearBox, deptBox, sectionBox;
    private JLabel lblStatusInfo;

    private final Map<String, Map<String, Map<String, String[][]>>> data = new HashMap<>();

    public static void main(String[] args) {
        try {
            UIManager.setLookAndFeel(UIManager.getSystemLookAndFeelClassName());
        } catch (Exception e) {
            e.printStackTrace();
        }
        SwingUtilities.invokeLater(() -> new ModernAttendanceSystem().setVisible(true));
    }

    public ModernAttendanceSystem() {
        setTitle("College Attendance Management System");
        setSize(1200, 700);
        setDefaultCloseOperation(EXIT_ON_CLOSE);
        setLocationRelativeTo(null);

        layout = new CardLayout();
        mainPanel = new JPanel(layout);

        initializeStudentData();
        mainPanel.add(createLoginPanel(), "login");
        mainPanel.add(createSelectionPanel(), "selection");
        mainPanel.add(createAttendancePanel(), "attendance");

        add(mainPanel);
    }

    // Custom Gradient Panel
    class GradientPanel extends JPanel {
        private Color color1, color2;

        public GradientPanel(Color c1, Color c2) {
            this.color1 = c1;
            this.color2 = c2;
        }

        @Override
        protected void paintComponent(Graphics g) {
            super.paintComponent(g);
            Graphics2D g2d = (Graphics2D) g;
            g2d.setRenderingHint(RenderingHints.KEY_RENDERING, RenderingHints.VALUE_RENDER_QUALITY);
            int w = getWidth(), h = getHeight();

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        GradientPaint gp = new GradientPaint(0, 0, color1, w, h, color2);
        g2d.setPaint(gp);
        g2d.fillRect(0, 0, w, h);
    }
}

// Modern Rounded Button
class ModernButton extends JButton {
    private Color bgColor, hoverColor;

    public ModernButton(String text, Color bg, Color hover) {
        super(text);
        this.bgColor = bg;
        this.hoverColor = hover;
        setForeground(Color.WHITE);
       setFont(new Font("Segoe UI", Font.BOLD, 14));
        setFocusPainted(false);
        setBorderPainted(false);
        setContentAreaFilled(false);
        setCursor(new Cursor(Cursor.HAND_CURSOR));

        addMouseListener(new MouseAdapter() {
            public void mouseEntered(MouseEvent e) {
                bgColor = hoverColor;
                repaint();
            }
            public void mouseExited(MouseEvent e) {
                bgColor = bg;
                repaint();
            }
        });
    }

    @Override
    protected void paintComponent(Graphics g) {
        Graphics2D g2 = (Graphics2D) g;
        g2.setRenderingHint(RenderingHints.KEY_ANTIALIASING, RenderingHints.VALUE_ANTIALIAS_ON);
        g2.setColor(bgColor);
        g2.fillRoundRect(0, 0, getWidth(), getHeight(), 15, 15);
        super.paintComponent(g);
    }
}

// Modern Rounded Text Field
class ModernTextField extends JTextField {
    public ModernTextField(int columns) {
        super(columns);
        setFont(new Font("Segoe UI", Font.PLAIN, 14));
        setBorder(BorderFactory.createCompoundBorder(
            BorderFactory.createLineBorder(new Color(203, 213, 225), 2),
            BorderFactory.createEmptyBorder(8, 12, 8, 12)
        ));
    }

    @Override
    protected void paintComponent(Graphics g) {
        Graphics2D g2 = (Graphics2D) g;
        g2.setRenderingHint(RenderingHints.KEY_ANTIALIASING, RenderingHints.VALUE_ANTIALIAS_ON);
        g2.setColor(getBackground());
        g2.fillRoundRect(0, 0, getWidth(), getHeight(), 10, 10);
        super.paintComponent(g);
    }

    @Override
    protected void paintBorder(Graphics g) {
        Graphics2D g2 = (Graphics2D) g;
        g2.setRenderingHint(RenderingHints.KEY_ANTIALIASING, RenderingHints.VALUE_ANTIALIAS_ON);
        g2.setColor(new Color(203, 213, 225));
        g2.drawRoundRect(0, 0, getWidth() - 1, getHeight() - 1, 10, 10);
    }
}
// ----- LOGIN PANEL -----

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private JPanel createLoginPanel() {
    GradientPanel panel = new GradientPanel(PRIMARY, PRIMARY_DARK);
    panel.setLayout(null);

    // Card Container
    JPanel card = new JPanel();
    card.setLayout(null);
    card.setBackground(CARD_BG);
    card.setBounds(400, 150, 400, 400);
    card.setBorder(BorderFactory.createCompoundBorder(
        BorderFactory.createLineBorder(new Color(226, 232, 240), 1),
        BorderFactory.createEmptyBorder(20, 20, 20, 20)
    ));

    // Icon/Logo
    JLabel icon = new JLabel("■", SwingConstants.CENTER);
    icon.setFont(new Font("Segoe UI Emoji", Font.PLAIN, 60));
    icon.setBounds(150, 30, 100, 80);
    card.add(icon);

    // Title
    JLabel title = new JLabel("Admin Login", SwingConstants.CENTER);
    title.setFont(new Font("Segoe UI", Font.BOLD, 28));
    title.setForeground(TEXT_DARK);
    title.setBounds(50, 120, 300, 40);
    card.add(title);

    JLabel subtitle = new JLabel("Access your dashboard", SwingConstants.CENTER);
    subtitle.setFont(new Font("Segoe UI", Font.PLAIN, 14));
    subtitle.setForeground(new Color(148, 163, 184));
    subtitle.setBounds(50, 155, 300, 25);
    card.add(subtitle);

    // Username
    JLabel lblUser = new JLabel("Username");
    lblUser.setFont(new Font("Segoe UI", Font.BOLD, 12));
    lblUser.setForeground(TEXT_DARK);
    lblUser.setBounds(50, 200, 300, 20);
    card.add(lblUser);

    ModernTextField txtUser = new ModernTextField(20);
    txtUser.setBounds(50, 225, 300, 40);
    txtUser.setBackground(BG_LIGHT);
    card.add(txtUser);

    # Truncated for brevity in PDF generation - this code section will include full file in actual
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