Oppgave 1: Grid med tall- og smileknapper

```
import java.awt.*;
import java.awt.event.*;
import javax.swing.*;

class GridMedKnapper {
    public static void main(String[] args) {
        try {
            UIManager.setLookAndFeel(UIManager.getCrossPlatformLookAndFeelClassName());
        } catch (Exception e) { System.exit(1); }

        JFrame vindu = new JFrame("Grid med knapper");
        vindu.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        vindu.setPreferredSize(new Dimension(300, 200));

        JPanel panel = new JPanel();
        vindu.add(panel);
        lagGridKnaper(panel);

        vindu.pack();
        vindu.setLocationRelativeTo(null);
        vindu.setVisible(true);
    }

    public static void lagGridKnaper(JPanel panel) {
        panel.setLayout(new GridLayout(2,3));
        int teller = 1;
        for(int i = 0; i < 2; i++){
            for(int j = 0; j < 3; j++){
                panel.add(new GridKnapp(""+teller++));
            }
        }
    }

    private static class GridKnapp extends JButton {
        private String tall;

        public GridKnapp(String tall){
            super(tall);
            this.tall = tall;
            addActionListener(new EndreKnappTekst());
        }

        class EndreKnappTekst implements ActionListener {
            @Override
            public void actionPerformed(ActionEvent e) {
```

```
                if(getText().equals(tall)){
                    setText(":)");
                } else {
                    setText(tall);
                }
            }
        }
    }
}
```

Oppgave 2: Kalkulator (Løsningsforslag)

```
import javax.swing.*;
import java.awt.*; import java.awt.event.*;

class Kalkulator {
    private static JLabel tekst = new JLabel("0");
    private static String forrigeTall = "";
    private static int knappStorrelse = 140;
    private static String operasjon = "+";

    public static void main(String[] args) {
        try {
            UIManager.setLookAndFeel(UIManager.getCrossPlatformLookAndFeelClassName());
        } catch (Exception e) { System.exit(1); }

        JFrame vindu = new JFrame("Kalkulator");
        vindu.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);

        JPanel panel = new JPanel();
        panel.setLayout(new BoxLayout(panel, BoxLayout.Y_AXIS));
        vindu.add(panel);

        lagTekstStil();
        panel.add(tekst);

        JPanel knapper = new JPanel();
        panel.add(knapper);

        knapper.setLayout(new GridLayout(4,3));
        knapper.setBackground(Color.BLACK);
        leggTilTallKnapper(knapper);
        leggTilOperasjonsKnapper(knapper);

        panel.setBackground(Color.BLACK); vindu.pack(); vindu.setVisible(true);
    }
```

```
private static void lagTekstStil(){
    tekst.setBackground(Color.BLACK); tekst.setForeground(Color.WHITE);
    tekst.setOpaque(true);
    tekst.setFont(new Font("times new roman", Font.BOLD, 40));
    tekst.setAlignmentX(Component.CENTER_ALIGNMENT);
    tekst.setPreferredSize(new Dimension(knappStorrelse * 4, knappStorrelse));
}

static class TallKnapp extends JButton {
    public TallKnapp(String tall){
        super(tall);
        setForeground(Color.WHITE);
        setBackground(Color.BLACK);
        setPreferredSize(new Dimension(knappStorrelse, knappStorrelse));
        setFont(new Font("times new roman", Font.CENTER_BASELINE, 40));
        addActionListener(new TallAction());
    }

    class TallAction implements ActionListener{
        @Override
        public void actionPerformed(ActionEvent e){
            String nyTekst = tekst.getText();
            if(!getText().equals(".")){
                if(nyTekst.equals("0")){
                    nyTekst = "";
                }
            } else {
                if(nyTekst.contains(".")) return;
            }
            nyTekst += getText();
            tekst.setText(nyTekst);
        }
    }
}

private static void leggTilTallKnapper(JPanel panel) {
    int teller = 9;
    for(int i = 0; i < 3; i++){
        for(int j = 2; j >= 0; j--){
            String tall = Integer.toString(teller - j);
            TallKnapp knapp = new TallKnapp(tall);
            panel.add(knapp);
        }
        teller -= 3;
    }
    panel.add(new TallKnapp("0"));
    panel.add(new TallKnapp("."));
}
```

```
static class OperasjonsKnapp extends JButton {
    public OperasjonsKnapp(String operasjon){
        super(operasjon);
        setBackground(Color.ORANGE);
        setForeground(Color.BLACK);
        setPreferredSize(new Dimension(knappStorrelse, knappStorrelse));
        setFont(new Font("times new roman", Font.BOLD, 40));
        addActionListener(new OperasjonAction());
    }

    class OperasjonAction implements ActionListener {
        @Override
        public void actionPerformed(ActionEvent e){
            if(getText().equals("=")){
                if(forrigeTall.equals("")) return;

                Double tall1 = 0.0, tall2 = 0.0;

                try{
                    tall1 = Double.parseDouble(forrigeTall);
                    tall2 = Double.parseDouble(tekst.getText());
                }catch (Exception exception){
                    return;
                }

                Double resultat = 0.0;
                if(operasjon.equals("+")){
                    resultat = tall1 + tall2;
                } else if(operasjon.equals("-")){
                    resultat = tall1 - tall2;
                } else if(operasjon.equals("/")){
                    resultat = tall1 / tall2;
                } else if(operasjon.equals("*")){
                    resultat = tall1 * tall2;
                }
                forrigeTall = "";
                tekst.setText(Double.toString(resultat));
            } else {
                operasjon = getText();
                forrigeTall = tekst.getText();
                tekst.setText("0");
            }
        }
    }
}

private static void leggTilOperasjonsKnapper(JPanel panel) {
    panel.add(new OperasjonsKnapp("+"), 3);
```

```
        panel.add(new OperasjonsKnapp("-"), 7);
        panel.add(new OperasjonsKnapp("*"), 11);
        panel.add(new OperasjonsKnapp("="), 12);
        panel.add(new OperasjonsKnapp("/"), 15);
    }
}
```