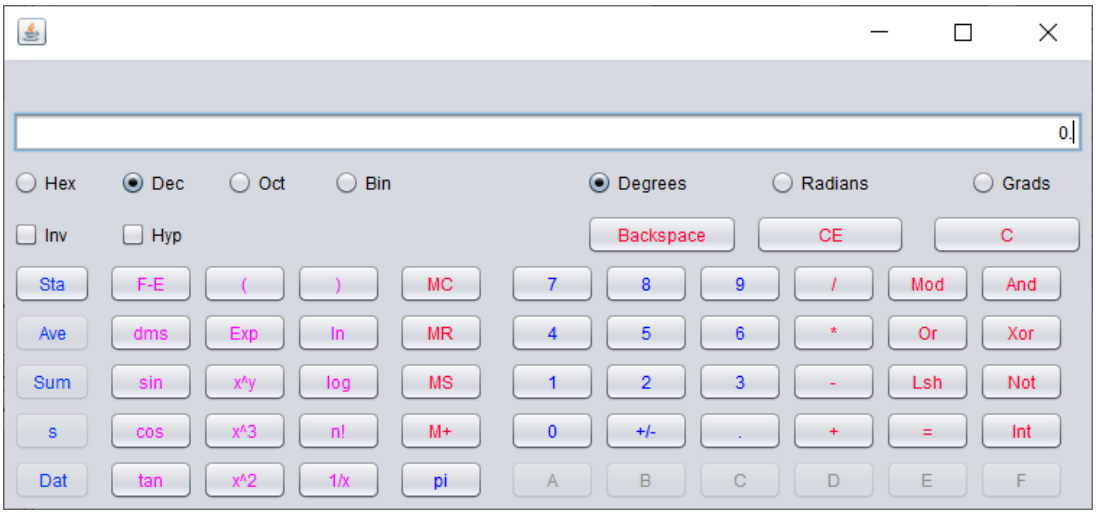
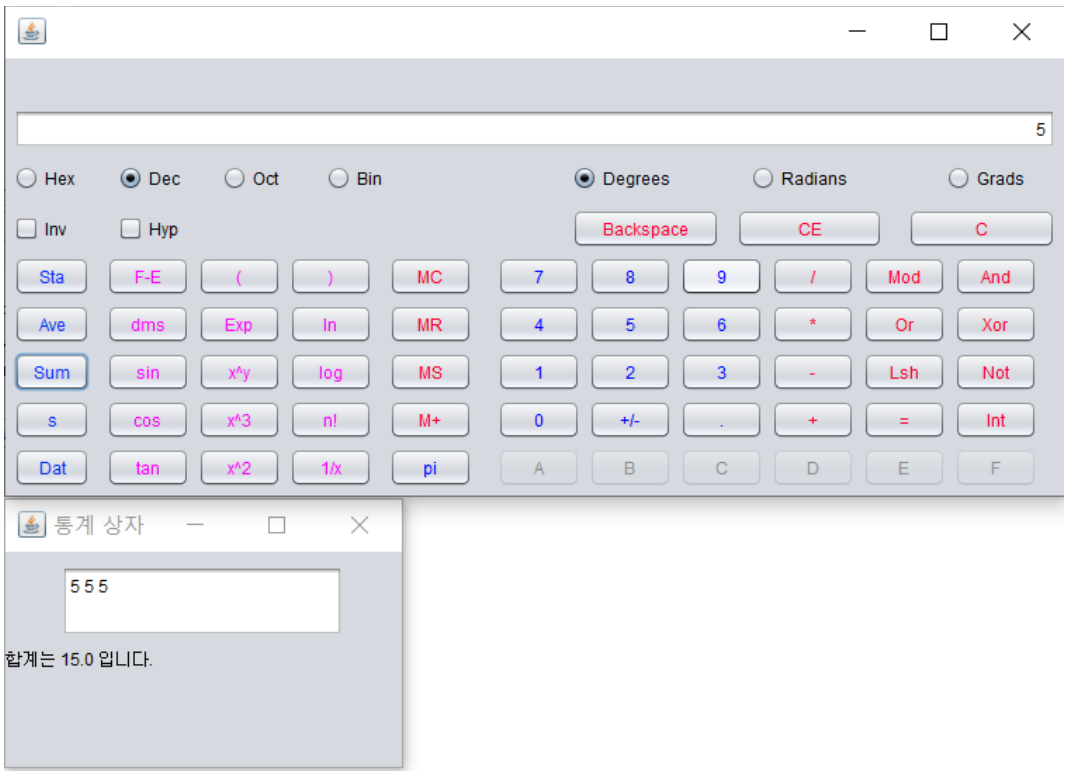
2학년 C반 202044086 이설희

[결과화면 1 : 기본창]



[결과화면 2 : Sta 버튼 실행해서 통계상자 열기]



[코드]

```
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;
import javax.swing.JFrame;
import javax.swing.JLabel;
import javax.swing.JTextArea;

public class MainFrame extends javax.swing.JFrame implements ActionListener {
    double num, ans;
    int calculation;            // 스위치에서 사용되는 변수
    double memory;          // MS, MR, MC, M+  사용되는 변수

    JFrame frm = new JFrame("통계 상자");            // 서브프레임 생성
    JTextArea result = new JTextArea("");            // 서브프레임 안에 넣을 JTextArea
    JLabel lbAvg = new JLabel("결과 :");             // 서브프레임 안에 넣을 JLabel

    public MainFrame() {
        initComponents();
    }
    @Override
    public void actionPerformed(ActionEvent e) {            // ActionEvent 발생
        if(e.getSource() == btnDat) {                       // Dat 버튼 눌렀을 때
            result.append(textFeild.getText() + " ");
        }
        String[] arry = result.getText().split(" ");

        if(e.getSource() == btnAve) {                       // Ave 버튼 눌렀을 때
            for (int i = 0; i < arry.length; i++) {          // 합계
                num += Double.parseDouble(arry[i]);
            }
            double avg = num / arry.length;                  // 평균
            lbAvg.setText("평균은 " + avg   + "  입니다.");
        }
```

```
        if(e.getSource() == btnSum) {                       // Sum 버튼 눌렀을 때
            for (int i = 0; i < arry.length; i++) {         // 합계
                num += Double.parseDouble(arry[i]);
            }
            lbAvg.setText("합계는 " + num   + "  입니다.");
        }
        if(e.getSource() == btns) {                          //s 버튼 눌렀을 때
            double total = 0;
            double[] arry2 = new double[arry.length];
            for (int i = 0; i < arry.length; i++) {         // double로 바꿔서 배열에 넣어주기
                    arry2[i] = Double.parseDouble(arry[i]);
                    num += Double.parseDouble(arry[i]);      // 합계
            }
            double avg = num/arry.length;                    // 평균
            for (int i = 0; i < arry2.length; i++) {         // 분산
                total += (arry2[i] - avg) * (arry2[i] - avg);
            }
            double dev = total / arry2.length;                  // 표준편차
            lbAvg.setText("표준편차는 " + dev   + "  입니다.");
        }
    }

    public void subframe() {                        // 통계 상자 프레임 생성
        frm.setBounds(120, 120, 300, 200);       // 위치(가로, 세로), 크기(가로,세로)
        result.setBounds(40, 10, 200, 50);
        lbAvg.setBounds(40, 80, 200, 30);

        // 초기화
        result.setText("");
        lbAvg.setText("결과 :");
        // 추가
        frm.add(result);
        frm.add(lbAvg);
        frm.setVisible(true);   } //프레임 보여주기
```

```
    private void btn1ActionPerformed(java.awt.event.ActionEvent evt) {
        textFeild.setText(textFeild.getText() + "1");     // 1
    }

    private void btn2ActionPerformed(java.awt.event.ActionEvent evt) {
        textFeild.setText(textFeild.getText() + "2");     // 2
    }

    private void btn3ActionPerformed(java.awt.event.ActionEvent evt) {
        textFeild.setText(textFeild.getText() + "3");     // 3
    }

    private void btn4ActionPerformed(java.awt.event.ActionEvent evt) {
        textFeild.setText(textFeild.getText() + "4");     // 4
    }

    private void btn5ActionPerformed(java.awt.event.ActionEvent evt) {
        textFeild.setText(textFeild.getText() + "5");     // 5
    }

private void btn6ActionPerformed(java.awt.event.ActionEvent evt) {
        textFeild.setText(textFeild.getText() + "6");     // 6
    }

    private void btn7ActionPerformed(java.awt.event.ActionEvent evt) {
        textFeild.setText(textFeild.getText() + "7");     // 7
    }

    private void btn8ActionPerformed(java.awt.event.ActionEvent evt) {
        textFeild.setText(textFeild.getText() + "8");     // 8
    }

    private void btn9ActionPerformed(java.awt.event.ActionEvent evt) {
        textFeild.setText(textFeild.getText() + "9");     // 9
```

```
    }

private void btn0ActionPerformed(java.awt.event.ActionEvent evt) {
        textFeild.setText(textFeild.getText() + "0");     // 0
    }

    private void btnSignChangeActionPerformed(java.awt.event.ActionEvent evt) {
        num = Double.parseDouble(textFeild.getText());    // +/-
        ans = -1 * num;
        textFeild.setText("" + ans);
    }

    private void btnDotActionPerformed(java.awt.event.ActionEvent evt) {
        textFeild.setText(textFeild.getText() + ".");       // .
    }

    private void btnBackspaceActionPerformed(java.awt.event.ActionEvent evt) {
        String str = textFeild.getText();                 // BackSpace
        str = str.substring(0, str.length() - 1);
        textFeild.setText(str);
    }

    private void btnCEActionPerformed(java.awt.event.ActionEvent evt) {
        textFeild.setText("0.");      // CE (초기화)
    }

    private void btnCActionPerformed(java.awt.event.ActionEvent evt) {
        textFeild.setText("0.");      // C (초기화)
        jLabel1.setText("");
    }

    private void btnResultActionPerformed(java.awt.event.ActionEvent evt) {
        operation();                        // 결과 (=)
        jLabel1.setText("");
```

```
    }

    private void SumActionPerformed(java.awt.event.ActionEvent evt) {
        num = Double.parseDouble(textFeild.getText());   // 더하기 (+)
        calculation = 1;
        textFeild.setText("");
        jLabel1.setText(num + "+");
    }

private void SubActionPerformed(java.awt.event.ActionEvent evt) {
        num = Double.parseDouble(textFeild.getText());   // 빼기 (-)
        calculation = 2;
        textFeild.setText("");
        jLabel1.setText(num + "-");
    }

private void AvgActionPerformed(java.awt.event.ActionEvent evt) {
        num = Double.parseDouble(textFeild.getText());   // 곱하기 (*)
        calculation = 3;
        textFeild.setText("");
        jLabel1.setText(num + "*");
    }

private void DivActionPerformed(java.awt.event.ActionEvent evt) {
        num = Double.parseDouble(textFeild.getText());   // 나누기 (/)
        calculation = 4;
        textFeild.setText("");
        jLabel1.setText(num + "/");
    }

    private void btnModActionPerformed(java.awt.event.ActionEvent evt) {
        num = Double.parseDouble(textFeild.getText());   //   Mod (%)
        calculation = 5;
        textFeild.setText("");
```

```
        jLabel1.setText(num + "%");
    }

private void btnAndActionPerformed(java.awt.event.ActionEvent evt) {
        num = Integer.parseInt(textFeild.getText());      // And (&)
        calculation = 6;
        textFeild.setText("");
        jLabel1.setText(num + "&");
    }

    private void btnOrActionPerformed(java.awt.event.ActionEvent evt) {
        num = Integer.parseInt(textFeild.getText());      // Or (|)
        calculation = 7;
        textFeild.setText("");
        jLabel1.setText(num + "|");
    }

private void btnXorActionPerformed(java.awt.event.ActionEvent evt) {
        num = Integer.parseInt(textFeild.getText());      // Xor (^)
        calculation = 8;
        textFeild.setText("");
        jLabel1.setText(num + "^");
    }

    private void btnLshActionPerformed(java.awt.event.ActionEvent evt) {
        num = Integer.parseInt(textFeild.getText());      // Lsh (<)
        calculation = 9;
        textFeild.setText("");
        jLabel1.setText(num + "<");
    }

private void btnYActionPerformed(java.awt.event.ActionEvent evt) {
        num = Double.parseDouble(textFeild.getText());   // x^y
        calculation = 10;
```

```
        textFeild.setText("");
        jLabel1.setText(num + "^");
    }

private void btnTwoActionPerformed(java.awt.event.ActionEvent evt) {
        num = Double.parseDouble(textFeild.getText());   // x^2
        num = num * num;
        textFeild.setText(Double.toString(num));
    }

private void btnThreeActionPerformed(java.awt.event.ActionEvent evt) {
        num = Double.parseDouble(textFeild.getText());   // x^3
        num = num * num * num;
        textFeild.setText(Double.toString(num));
    }

    private void btnNotActionPerformed(java.awt.event.ActionEvent evt) {
        num = Double.parseDouble(textFeild.getText());   // Not
        num = ~(int) num;
        textFeild.setText(Double.toString(num));
    }

    private void btnIntActionPerformed(java.awt.event.ActionEvent evt) {
        num = Double.parseDouble(textFeild.getText());   // Int
        num = (int) num;
        textFeild.setText(Double.toString(num));
    }

    private void btnSinActionPerformed(java.awt.event.ActionEvent evt) {
        num = Double.parseDouble(textFeild.getText());                  // Sin

        if (rdtDegrees.isSelected()) {                                  // Degrees 버튼 선택
            if (chxHyp.isSelected() && chxInv.isSelected()) {           // Inv & Hyp 둘 다 선택
                num = Math.log(Math.toDegrees(num + Math.sqrt(num * num + 1)));
```

```
                textFeild.setText(Double.toString(num));
            } else if (chxHyp.isSelected()) {                    // Hyp 선택
                num = Math.sinh(Math.toDegrees(num));
                textFeild.setText(Double.toString(num));
            } else if (chxInv.isSelected()) {                    // Inv 선택
                num = Math.asin(Math.toDegrees(num));
                textFeild.setText(Double.toString(num));
            } else {                                             // 선택 X
                num = Math.sin(Math.toDegrees(num));
                textFeild.setText(Double.toString(num));
            }
        } else if (rdtRadians.isSelected()) {                    // Radians 버튼 선택
            if (chxHyp.isSelected() && chxInv.isSelected()) {    // Inv & Hyp 둘 다 선택
                num = Math.log(Math.toRadians(num + Math.sqrt(num * num + 1)));
                textFeild.setText(Double.toString(num));
            } else if (chxHyp.isSelected()) {                    // Hyp 선택
                num = Math.sinh(Math.toRadians(num));
                textFeild.setText(Double.toString(num));
            } else if (chxInv.isSelected()) {                    // Inv 선택
                num = Math.asin(Math.toRadians(num));
                textFeild.setText(Double.toString(num));
            } else {                                             // 선택 X
                num = Math.sin(Math.toRadians(num));
                textFeild.setText(Double.toString(num));
            }
        }
    }

    private void btnCosActionPerformed(java.awt.event.ActionEvent evt) {
        num = Double.parseDouble(textFeild.getText());           // Cos

        if (rdtDegrees.isSelected()) {
            if (chxHyp.isSelected() && chxInv.isSelected()) {
                num = Math.log(Math.toDegrees(num + Math.sqrt(num * num - 1)));
```

```
                textFeild.setText(Double.toString(num));
            } else if (chxHyp.isSelected()) {
                num = Math.cosh(Math.toDegrees(num));
                textFeild.setText(Double.toString(num));
            } else if (chxInv.isSelected()) {
                num = Math.acos(Math.toDegrees(num));
                textFeild.setText(Double.toString(num));
            } else {
                num = Math.cos(Math.toDegrees(num));
                textFeild.setText(Double.toString(num));
            }
        } else if (rdtRadians.isSelected()) {
            if (chxHyp.isSelected() && chxInv.isSelected()) {
                num = Math.log(Math.toRadians(num + Math.sqrt(num * num - 1)));
                textFeild.setText(Double.toString(num));
            } else if (chxHyp.isSelected()) {
                num = Math.cosh(Math.toRadians(num));
                textFeild.setText(Double.toString(num));
            } else if (chxInv.isSelected()) {
                num = Math.acos(Math.toRadians(num));
                textFeild.setText(Double.toString(num));
            } else {
                num = Math.cos(Math.toRadians(num));
                textFeild.setText(Double.toString(num));
            }
        }
    }

    private void btnTanActionPerformed(java.awt.event.ActionEvent evt) {
        num = Double.parseDouble(textFeild.getText());          // Tan

        if (rdtDegrees.isSelected()) {
            if (chxHyp.isSelected() && chxInv.isSelected()) {
                num = Math.log(Math.toDegrees(1 / 2 * ((1 + num) / (1 - num))));
```

```
                textFeild.setText(Double.toString(num));
            } else if (chxHyp.isSelected()) {
                num = Math.tanh(Math.toDegrees(num));
                textFeild.setText(Double.toString(num));
            } else if (chxInv.isSelected()) {
                num = Math.atan(Math.toDegrees(num));
                textFeild.setText(Double.toString(num));
            } else {
                num = Math.tan(Math.toDegrees(num));
                textFeild.setText(Double.toString(num));
            }
        } else if (rdtRadians.isSelected()) {
            if (chxHyp.isSelected() && chxInv.isSelected()) {
                num = Math.log(Math.toRadians(1 / 2 * ((1 + num) / (1 - num))));
                textFeild.setText(Double.toString(num));
            } else if (chxHyp.isSelected()) {
                num = Math.tanh(Math.toRadians(num));
                textFeild.setText(Double.toString(num));
            } else if (chxInv.isSelected()) {
                num = Math.atan(Math.toRadians(num));
                textFeild.setText(Double.toString(num));
            } else {
                num = Math.tan(Math.toRadians(num));
                textFeild.setText(Double.toString(num));
            }
        }
    }

    private void btnExpActionPerformed(java.awt.event.ActionEvent evt) {
        num = Double.parseDouble(textFeild.getText());          // Exp
        num = Math.exp(num);
        textFeild.setText(Double.toString(num));
    }
```

```
private void btnInActionPerformed(java.awt.event.ActionEvent evt) {
        num = Double.parseDouble(textFeild.getText());          // In
        num = Math.log(num);
        textFeild.setText(Double.toString(num));
}

private void btnLogActionPerformed(java.awt.event.ActionEvent evt) {
        num = Double.parseDouble(textFeild.getText());          // Log
        num = Math.log10(num);
        textFeild.setText(Double.toString(num));
}

private void btnNActionPerformed(java.awt.event.ActionEvent evt) {
        num = Double.parseDouble(textFeild.getText());          // n!
        double onenum = 1.0;
        while (num > 1.0) {
            onenum = onenum * num;
            num--;
        }
        textFeild.setText(Double.toString(onenum));
}

private void btn1divActionPerformed(java.awt.event.ActionEvent evt) {
        num = Double.parseDouble(textFeild.getText());          // 1/x
        num = 1 / num;
        textFeild.setText(Double.toString(num));
}

private void btnPiActionPerformed(java.awt.event.ActionEvent evt) {
        num = Double.parseDouble(textFeild.getText());          // pi
        num = Math.PI;
        textFeild.setText(Double.toString(num));
}
```

```
private void btnStaActionPerformed(java.awt.event.ActionEvent evt) {
    // Sta 버튼 클릭 시 활성화
      btnAve.setEnabled(true);
      btnSum.setEnabled(true);
      btns.setEnabled(true);
      btnDat.setEnabled(true);

      // 통계 상자 프레임 생성
      subframe();
}

private void chxHypActionPerformed(java.awt.event.ActionEvent evt) {
      boolean a = chxHyp.isSelected();          // Hyp 체크박스

      if (chxInv.isSelected() && a == true) {   // Inv & Hyp 둘 다 선택
            btnSin.setText("sinh-1");
            btnCos.setText("cosh-1");
            btnTan.setText("tanh-1");
      } else if (a == true) {                   // Hyp 선택
            btnSin.setText("sinh");
            btnCos.setText("cosh");
            btnTan.setText("tanh");
      } else if (chxInv.isSelected() && a == false) {   // Inv 선택
            btnSin.setText("sin-1");
            btnCos.setText("cos-1");
            btnTan.setText("tan-1");
      } else {                                  // 선택 X
            btnSin.setText("sin");
            btnCos.setText("cos");
            btnTan.setText("tan");
      }

}
```

```
private void chxInvActionPerformed(java.awt.event.ActionEvent evt) {
    boolean a = chxInv.isSelected();                    // Inv 체크박스

    if (chxHyp.isSelected() && a == true) {        // Inv & Hyp 둘 다 선택
        btnSin.setText("sinh-1");
        btnCos.setText("cosh-1");
        btnTan.setText("tanh-1");
    }
    else if (a == true) {                                  // Inv 선택
        btnSin.setText("sin-1");
        btnCos.setText("cos-1");
        btnTan.setText("tan-1");
    } else if (chxHyp.isSelected() && a == false) { // Hyp 선택
        btnSin.setText("sinh");
        btnCos.setText("cosh");
        btnTan.setText("tanh");
    } else {       // 선택 X
        btnSin.setText("sin");
        btnCos.setText("cos");
        btnTan.setText("tan");
    }
}
private void btnAveActionPerformed(java.awt.event.ActionEvent evt) {
    btnAve.addActionListener(this);          // Ave
}

private void btnDatActionPerformed(java.awt.event.ActionEvent evt) {
    btnDat.addActionListener(this);          // Dat
}

private void btnSumActionPerformed(java.awt.event.ActionEvent evt) {
    btnSum.addActionListener(this);        // Sum
}
```

```
private void btnsActionPerformed(java.awt.event.ActionEvent evt) {
    btns.addActionListener(this);    // s 버튼 누르면 이벤트 발생
}

private void btnFEActionPerformed(java.awt.event.ActionEvent evt) {
    // F-E
    num = Double.parseDouble(textFeild.getText());
    String str = textFeild.getText();
    int idx = str.indexOf(".");   // 소수점 위치 알기
    int count = 0;

    if(idx != -1){          // 소수점 의미 (double 타입)
        for (int i = idx+1; i < str.length(); i++) {   // 소수점 위치부터 0 개수 세기
            if (str.charAt(i) == '0') {
                count++;
            }
        }
        if (num < 0) {     // 음수일 때
            num = -1 * Math.exp(num) + count + 1;
        }else {
            num = Math.exp(num) + count + 1;
        }
    }
    else {          // 정수 의미 (int 타입)
        if (num < 0) {     // 음수일 때
            num = -1 * Math.exp(num) + (str.length() - 1);
        } else {
            num = Math.exp(num) + (str.length() - 1);
        }
    }
    textFeild.setText(Double.toString(num));
}

private void btnOpenActionPerformed(java.awt.event.ActionEvent evt) {
```

```
        textFeild.setText(textFeild.getText() + "(");     // (
    }

    private void btnCloseActionPerformed(java.awt.event.ActionEvent evt) {
        textFeild.setText(textFeild.getText() + ")");     // )
    }

    private void rdtHexActionPerformed(java.awt.event.ActionEvent evt) {
        // Hex 라디오 버튼 (16진수)
        A.setEnabled(true);
        B.setEnabled(true);
        C.setEnabled(true);
        D.setEnabled(true);
        E.setEnabled(true);
        F.setEnabled(true);

        btn9.setEnabled(true);
        btn8.setEnabled(true);
        btn7.setEnabled(true);
        btn6.setEnabled(true);
        btn5.setEnabled(true);
        btn4.setEnabled(true);
        btn3.setEnabled(true);
    }

    private void rdtDecActionPerformed(java.awt.event.ActionEvent evt) {
        // Dec 라디오 버튼 (10진수)
        A.setEnabled(false);
        B.setEnabled(false);
        C.setEnabled(false);
        D.setEnabled(false);
        E.setEnabled(false);
        F.setEnabled(false);
```

```
        btn9.setEnabled(true);
        btn8.setEnabled(true);
        btn7.setEnabled(true);
        btn6.setEnabled(true);
        btn5.setEnabled(true);
        btn4.setEnabled(true);
        btn3.setEnabled(true);
    }

    private void rdtOctActionPerformed(java.awt.event.ActionEvent evt) {
        // Oct 라디오 버튼 (8진수)
        A.setEnabled(false);
        B.setEnabled(false);
        C.setEnabled(false);
        D.setEnabled(false);
        E.setEnabled(false);
        F.setEnabled(false);

        btn9.setEnabled(false);
        btn8.setEnabled(false);
        btn7.setEnabled(true);
        btn6.setEnabled(true);
        btn5.setEnabled(true);
        btn4.setEnabled(true);
        btn3.setEnabled(true);
    }

    private void rdtBinActionPerformed(java.awt.event.ActionEvent evt) {
        // Bin 라디오 버튼 (2진수)
        A.setEnabled(false);
        B.setEnabled(false);
        C.setEnabled(false);
        D.setEnabled(false);
        E.setEnabled(false);
```

```
        F.setEnabled(false);

        btn9.setEnabled(false);
        btn8.setEnabled(false);
        btn7.setEnabled(false);
        btn6.setEnabled(false);
        btn5.setEnabled(false);
        btn4.setEnabled(false);
        btn3.setEnabled(false);
        btn2.setEnabled(false);
    }

    private void btnMSActionPerformed(java.awt.event.ActionEvent evt) {
        memory = Double.parseDouble(textFeild.getText());           // MS (저장)
    }

    private void btnMplusActionPerformed(java.awt.event.ActionEvent evt) {
        memory += Double.parseDouble(textFeild.getText());          // M+ (더하기)
    }

    private void btnMRActionPerformed(java.awt.event.ActionEvent evt) {
        textFeild.setText(Double.toString(memory));        // MR (불러오기)
    }

    private void btnMCActionPerformed(java.awt.event.ActionEvent evt) {
        memory = 0;         // MC (지우기)
    }

public static void main(String args[]) {
        java.awt.EventQueue.invokeLater(new Runnable() {
            public void run() {
                new MainFrame().setVisible(true);
            }
        });
```

```
}

public void operation() {       // 계산
    switch (calculation) {
        case 1:       // 더하기
            ans = num + Double.parseDouble(textFeild.getText());
            textFeild.setText(Double.toString(ans));
            break;
        case 2:       // 빼기
            ans = num - Double.parseDouble(textFeild.getText());
            textFeild.setText(Double.toString(ans));
            break;
        case 3:       // 곱하기
            ans = num * Double.parseDouble(textFeild.getText());
            textFeild.setText(Double.toString(ans));
            break;
        case 4:       // 나누기
            ans = num / Double.parseDouble(textFeild.getText());
            textFeild.setText(Double.toString(ans));
            break;
        case 5:       // 나머지
            ans = num % Double.parseDouble(textFeild.getText());
            textFeild.setText(Double.toString(ans));
            break;
        case 6:       // AND
            ans = (int) num & Integer.parseInt(textFeild.getText());
            textFeild.setText(Double.toString(ans));
            break;
        case 7:       // OR
            ans = (int) num | Integer.parseInt(textFeild.getText());
            textFeild.setText(Double.toString(ans));
            break;
        case 8:       // XOR
            ans = (int) num ^ Integer.parseInt(textFeild.getText());
```

```
                textFeild.setText(Double.toString(ans));
                break;
            case 9:         // LSH
                ans = (int) num << Integer.parseInt(textFeild.getText());
                textFeild.setText(Double.toString(ans));
                break;
            case 10:        // x^y
                ans = Math.pow(num, Double.parseDouble(textFeild.getText()));
                textFeild.setText(Double.toString(ans));
                break;
        }
    }
```