**2학년 C반 202044086 이설희**

**[결과화면 1 : 기본창]**

텍스트, 전자기기, 계산기이(가) 표시된 사진

자동 생성된 설명

**[결과화면 2 : Sta 버튼 실행해서 통계상자 열기]**

텍스트, 스크린샷, 실내, 전자이(가) 표시된 사진

자동 생성된 설명

**[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();

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;

}

}