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Пенза 2022

**ОТЧЁТ**

по лабораторной работе №1

по курсу «Программирование на языке Java»

на тему «Графические интерфейсы»

Министерство образования Российской Федерации

Пензенский государственный университет

Кафедра «Вычислительная техника»

**Цель работы**:

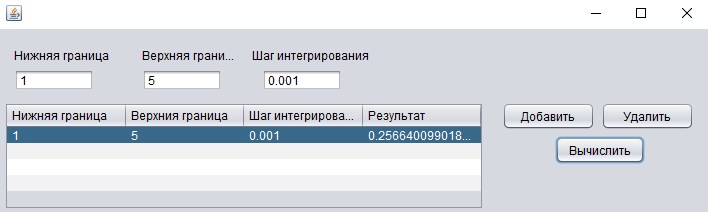
Научиться разрабатывать приложения, обладающие графическим интерфейсом пользователя, с использованием библиотеки Swing.

**Задание на лабораторную работу**:

Разработать приложение, обладающее графическим интерфейсом с использованием языка Java и библиотеки Swing. Приложение должно содержать 3 поля ввода (JTextField) доступных для редактирования и соответственно таблицу (JTable) с тремя колонками: нижняя граница интегрирования, верхняя граница интегрирования и шаг интегрирования. Кроме того, должны присутствовать 3 конопки (JButton): добавить, удалить, вычислить. Для добавления/удаления строки и вычисления значения определенного интеграла для функции в соответствии с вариантом задания (Приложение 1) и параметров выделенной строки таблицы. Результат должен выводиться в четвертое поле, которое не доступно на редактирование.



Результатработы:



Проверка:



**Вывод:**

С уменьшением шага интегрирования увеличивается точность вычислений программы. Научился разрабатывать приложения, обладающие графическим интерфейсом пользователя, с использованием библиотеки Swing.

**ПриложениеА**

**Листинг**

/\*

\* To change this license header, choose License Headers in Project Properties.

\* To change this template file, choose Tools | Templates

\* and open the template in the editor.

\*/

packagemy.numberaddition;

/\*\*

\*

\* @author student

\*/

public class ContactEditorUI extends javax.swing.JFrame {

/\*\*

\* Creates new form ContactEditorUI

\*/

publicContactEditorUI() {

initComponents();

}

/\*\*

\* This method is called from within the constructor to initialize the form.

\* WARNING: Do NOT modify this code. The content of this method is always

\* regenerated by the Form Editor.

\*/

@SuppressWarnings("unchecked")

// <editor-fold defaultstate="collapsed" desc="Generated Code">

private void initComponents() {

jPanel1 = new javax.swing.JPanel();

jTextField1 = new javax.swing.JTextField();

jTextField2 = new javax.swing.JTextField();

jTextField3 = new javax.swing.JTextField();

jLabel1 = new javax.swing.JLabel();

jLabel2 = new javax.swing.JLabel();

jLabel3 = new javax.swing.JLabel();

jScrollPane2 = new javax.swing.JScrollPane();

jTable2 = new javax.swing.JTable();

jButton1 = new javax.swing.JButton();

jButton2 = new javax.swing.JButton();

jButton3 = new javax.swing.JButton();

setDefaultCloseOperation(javax.swing.WindowConstants.EXIT\_ON\_CLOSE);

jTextField1.addActionListener(new java.awt.event.ActionListener() {

public void actionPerformed(java.awt.event.ActionEventevt) {

jTextField1ActionPerformed(evt);

}

});

jLabel1.setText("Нижняяграница");

jLabel2.setText("Верхняяграница");

jLabel3.setText("Шагинтегрирования");

jTable2.setModel(new javax.swing.table.DefaultTableModel(

new Object [][] {

{null, null, null, null},

{null, null, null, null},

{null, null, null, null},

{null, null, null, null}

},

new String [] {

"Нижняяграница", "Верхнияграница", "Шагинтегрироваиня", "Результат"

}

) {

boolean[] canEdit = new boolean [] {

true, true, true, false

};

publicbooleanisCellEditable(introwIndex, intcolumnIndex) {

returncanEdit [columnIndex];

}

});

jScrollPane2.setViewportView(jTable2);

jButton1.setText("Добавить");

jButton1.setActionCommand("jButton");

jButton1.addMouseListener(new java.awt.event.MouseAdapter() {

public void mouseClicked(java.awt.event.MouseEventevt) {

jButton1MouseClicked(evt);

}

});

jButton1.addActionListener(new java.awt.event.ActionListener() {

public void actionPerformed(java.awt.event.ActionEventevt) {

jButton1ActionPerformed(evt);

}

});

jButton2.setText("Удалить");

jButton2.addMouseListener(new java.awt.event.MouseAdapter() {

public void mouseClicked(java.awt.event.MouseEventevt) {

jButton2MouseClicked(evt);

}

});

jButton2.addActionListener(new java.awt.event.ActionListener() {

public void actionPerformed(java.awt.event.ActionEventevt) {

jButton2ActionPerformed(evt);

}

});

jButton3.setText("Вычислить");

jButton3.addMouseListener(new java.awt.event.MouseAdapter() {

public void mouseClicked(java.awt.event.MouseEventevt) {

jButton3MouseClicked(evt);

}

});

javax.swing.GroupLayout jPanel1Layout = new javax.swing.GroupLayout(jPanel1);

jPanel1.setLayout(jPanel1Layout);

jPanel1Layout.setHorizontalGroup(

jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

.addGroup(jPanel1Layout.createSequentialGroup()

.addContainerGap()

.addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

.addGroup(jPanel1Layout.createSequentialGroup()

.addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

.addComponent(jLabel1)

.addComponent(jTextField1, javax.swing.GroupLayout.PREFERRED\_SIZE, 80, javax.swing.GroupLayout.PREFERRED\_SIZE))

.addGap(33, 33, 33)

.addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

.addComponent(jLabel2, javax.swing.GroupLayout.PREFERRED\_SIZE, 92, javax.swing.GroupLayout.PREFERRED\_SIZE)

.addComponent(jTextField2, javax.swing.GroupLayout.PREFERRED\_SIZE, 80, javax.swing.GroupLayout.PREFERRED\_SIZE))

.addGap(18, 18, 18)

.addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

.addComponent(jLabel3)

.addComponent(jTextField3, javax.swing.GroupLayout.PREFERRED\_SIZE, 80, javax.swing.GroupLayout.PREFERRED\_SIZE)))

.addGroup(jPanel1Layout.createSequentialGroup()

.addComponent(jScrollPane2, javax.swing.GroupLayout.PREFERRED\_SIZE, 480, javax.swing.GroupLayout.PREFERRED\_SIZE)

.addGap(74, 74, 74)

.addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING, false)

.addComponent(jButton3, javax.swing.GroupLayout.DEFAULT\_SIZE, javax.swing.GroupLayout.DEFAULT\_SIZE, Short.MAX\_VALUE)

.addComponent(jButton2, javax.swing.GroupLayout.DEFAULT\_SIZE, javax.swing.GroupLayout.DEFAULT\_SIZE, Short.MAX\_VALUE)

.addComponent(jButton1, javax.swing.GroupLayout.DEFAULT\_SIZE, javax.swing.GroupLayout.DEFAULT\_SIZE, Short.MAX\_VALUE))))

.addContainerGap(60, Short.MAX\_VALUE))

);

jPanel1Layout.setVerticalGroup(

jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

.addGroup(jPanel1Layout.createSequentialGroup()

.addGap(12, 12, 12)

.addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)

.addComponent(jLabel2)

.addComponent(jLabel3)

.addComponent(jLabel1, javax.swing.GroupLayout.PREFERRED\_SIZE, 15, javax.swing.GroupLayout.PREFERRED\_SIZE))

.addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)

.addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

.addComponent(jTextField2, javax.swing.GroupLayout.PREFERRED\_SIZE, 22, javax.swing.GroupLayout.PREFERRED\_SIZE)

.addComponent(jTextField3, javax.swing.GroupLayout.Alignment.TRAILING, javax.swing.GroupLayout.PREFERRED\_SIZE, 22, javax.swing.GroupLayout.PREFERRED\_SIZE)

.addComponent(jTextField1, javax.swing.GroupLayout.Alignment.TRAILING, javax.swing.GroupLayout.PREFERRED\_SIZE, 22, javax.swing.GroupLayout.PREFERRED\_SIZE))

.addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED, 11, Short.MAX\_VALUE)

.addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

.addGroup(jPanel1Layout.createSequentialGroup()

.addComponent(jButton1)

.addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)

.addComponent(jButton2)

.addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)

.addComponent(jButton3))

.addComponent(jScrollPane2, javax.swing.GroupLayout.PREFERRED\_SIZE, 108, javax.swing.GroupLayout.PREFERRED\_SIZE)))

);

javax.swing.GroupLayout layout = new javax.swing.GroupLayout(getContentPane());

getContentPane().setLayout(layout);

layout.setHorizontalGroup(

layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

.addGroup(javax.swing.GroupLayout.Alignment.TRAILING, layout.createSequentialGroup()

.addComponent(jPanel1, javax.swing.GroupLayout.PREFERRED\_SIZE, javax.swing.GroupLayout.DEFAULT\_SIZE, javax.swing.GroupLayout.PREFERRED\_SIZE)

.addGap(0, 0, Short.MAX\_VALUE))

);

layout.setVerticalGroup(

layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

.addGroup(layout.createSequentialGroup()

.addContainerGap()

.addComponent(jPanel1, javax.swing.GroupLayout.DEFAULT\_SIZE, javax.swing.GroupLayout.DEFAULT\_SIZE, Short.MAX\_VALUE)

.addContainerGap())

);

pack();

}// </editor-fold>

private void jButton2ActionPerformed(java.awt.event.ActionEventevt) {

// TODO add your handling code here:

}

private void jButton1ActionPerformed(java.awt.event.ActionEventevt) {

// TODO add your handling code here:

}

private void jTextField1ActionPerformed(java.awt.event.ActionEventevt) {

// TODO add your handling code here:

}

private void jButton1MouseClicked(java.awt.event.MouseEventevt) {

bottom = (String)jTextField1.getText();

high= jTextField2.getText();

step= jTextField3.getText();

for(inti = 0; ; i++)

{

if (jTable2.getValueAt(i, 1)==null){

jTable2.setValueAt(bottom, i, 0);

jTable2.setValueAt(high,i, 1);

jTable2.setValueAt(step,i, 2);

break;

}

if(i == 3)

{

break;

}

}

}

private void jButton2MouseClicked(java.awt.event.MouseEventevt) {

jTable2.setValueAt(null, jTable2.getSelectedRow(), 0);

jTable2.setValueAt(null,jTable2.getSelectedRow(), 1);

jTable2.setValueAt(null,jTable2.getSelectedRow(), 2);

jTable2.setValueAt(null,jTable2.getSelectedRow(), 3);

}

private void jButton3MouseClicked(java.awt.event.MouseEventevt) {

for(inti = 0; ; i++)

{

if (jTable2.getValueAt(i, 1)!=null)

{

dwBottom = Double.parseDouble((String)jTable2.getValueAt(i, 0));

dwHigh = Double.parseDouble((String)jTable2.getValueAt(i, 1));

dwStep = Double.parseDouble((String)jTable2.getValueAt(i, 2));

while (dwBottom<dwHigh)

{

double temp = 0.0;

temp = Math.sin(dwBottom)/2;

dwBottom += dwStep;

temp += Math.sin(dwBottom)/2;

dwResult += temp \* dwStep;

}

jTable2.setValueAt(dwResult,i, 3);

dwResult = 0.0;

continue;

}

if(i == 3)

{

break;

}

}

}

String bottom = "";

Double dwBottom = 0.0;

String high = "";

Double dwHigh = 0.0;

String step = "";

Double dwStep = 0.0;

String result = "";

Double dwResult = 0.0;

/\*\*

\* @paramargs the command line arguments

\*/

public static void main(String args[]) {

/\* Set the Nimbus look and feel \*/

//<editor-fold defaultstate="collapsed" desc=" Look and feel setting code (optional) ">

/\* If Nimbus (introduced in Java SE 6) is not available, stay with the default look and feel.

\* For details see http://download.oracle.com/javase/tutorial/uiswing/lookandfeel/plaf.html

\*/

try {

for (javax.swing.UIManager.LookAndFeelInfo info : javax.swing.UIManager.getInstalledLookAndFeels()) {

if ("Nimbus".equals(info.getName())) {

javax.swing.UIManager.setLookAndFeel(info.getClassName());

break;

}

}

} catch (ClassNotFoundException ex) {

java.util.logging.Logger.getLogger(ContactEditorUI.class.getName()).log(java.util.logging.Level.SEVERE, null, ex);

} catch (InstantiationException ex) {

java.util.logging.Logger.getLogger(ContactEditorUI.class.getName()).log(java.util.logging.Level.SEVERE, null, ex);

} catch (IllegalAccessException ex) {

java.util.logging.Logger.getLogger(ContactEditorUI.class.getName()).log(java.util.logging.Level.SEVERE, null, ex);

} catch (javax.swing.UnsupportedLookAndFeelException ex) {

java.util.logging.Logger.getLogger(ContactEditorUI.class.getName()).log(java.util.logging.Level.SEVERE, null, ex);

}

//</editor-fold>

/\* Create and display the form \*/

java.awt.EventQueue.invokeLater(new Runnable() {

public void run() {

newContactEditorUI().setVisible(true);

}

});

}

// Variables declaration - do not modify

privatejavax.swing.JButton jButton1;

privatejavax.swing.JButton jButton2;

privatejavax.swing.JButton jButton3;

privatejavax.swing.JLabel jLabel1;

privatejavax.swing.JLabel jLabel2;

privatejavax.swing.JLabel jLabel3;

privatejavax.swing.JPanel jPanel1;

privatejavax.swing.JScrollPane jScrollPane2;

privatejavax.swing.JTable jTable2;

privatejavax.swing.JTextField jTextField1;

privatejavax.swing.JTextField jTextField2;

privatejavax.swing.JTextField jTextField3;

// End of variables declaration

}