Министерство науки и высшего образования Российской Федерации

Пензенский государственный университет

Кафедра «Вычислительная техника»

**ОТЧЕТ**

по лабораторной работе №1

по курсу «Разработка кроссплатформенных приложений»

на тему «графический интерфейсы»

**Выполнили студенты группы 21ввв1:**

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### Цель работы

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

### Лабораторное задание

Вычислить определенный интеграл функции в соответствии с вариантом задания.

### Варианты лабораторных заданий

4. f(x) = sqrt(x)

**Листинг:**

import javax.swing.table.DefaultTableModel;

import java.lang.Math;

/\*\*

\*

\* @author RBDstudio

\*/

public class JFrame extends javax.swing.JFrame {

public JFrame() {

initComponents();

}

@SuppressWarnings("unchecked")

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

private void initComponents() {

jScrollPane1 = new javax.swing.JScrollPane();

jTable1 = new javax.swing.JTable();

lower\_bound\_ent = new javax.swing.JTextField();

step\_ent = new javax.swing.JTextField();

upper\_bound\_ent = new javax.swing.JTextField();

Add\_button = new javax.swing.JButton();

jLabel1 = new javax.swing.JLabel();

jLabel2 = new javax.swing.JLabel();

jLabel3 = new javax.swing.JLabel();

Calcul\_button = new javax.swing.JButton();

Delete\_button = new javax.swing.JButton();

Logo = new javax.swing.JLabel();

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

setAutoRequestFocus(false);

setBackground(new java.awt.Color(51, 51, 51));

setResizable(false);

jTable1.setModel(new javax.swing.table.DefaultTableModel(

new Object [][] {

},

new String [] {

"нижняя гр.", "верхняя гр.", "шаг", "результат"

}

) {

boolean[] canEdit = new boolean [] {

true, true, true, false

};

public boolean isCellEditable(int rowIndex, int columnIndex) {

return canEdit [columnIndex];

}

});

jScrollPane1.setViewportView(jTable1);

if (jTable1.getColumnModel().getColumnCount() > 0) {

jTable1.getColumnModel().getColumn(0).setResizable(false);

jTable1.getColumnModel().getColumn(1).setResizable(false);

jTable1.getColumnModel().getColumn(2).setResizable(false);

jTable1.getColumnModel().getColumn(3).setResizable(false);

}

lower\_bound\_ent.setToolTipText("введите нижнюю границу");

lower\_bound\_ent.addActionListener(new java.awt.event.ActionListener() {

public void actionPerformed(java.awt.event.ActionEvent evt) {

lower\_bound\_entActionPerformed(evt);

}

});

step\_ent.setToolTipText("введите шаг");

upper\_bound\_ent.setToolTipText("введите верхнюю границу");

upper\_bound\_ent.addActionListener(new java.awt.event.ActionListener() {

public void actionPerformed(java.awt.event.ActionEvent evt) {

upper\_bound\_entActionPerformed(evt);

}

});

Add\_button.setText("добавить");

Add\_button.setToolTipText("добавляет введёные значения в таблицу");

Add\_button.addActionListener(new java.awt.event.ActionListener() {

public void actionPerformed(java.awt.event.ActionEvent evt) {

Add\_buttonActionPerformed(evt);

}

});

jLabel1.setText("верхняя граница");

jLabel2.setText("нижняя граница");

jLabel3.setText(" шаг");

jLabel3.setVerticalTextPosition(javax.swing.SwingConstants.TOP);

Calcul\_button.setText("вычислить");

Calcul\_button.setToolTipText("вычисляет значение выбранной строки");

Calcul\_button.addActionListener(new java.awt.event.ActionListener() {

public void actionPerformed(java.awt.event.ActionEvent evt) {

Calcul\_buttonActionPerformed(evt);

}

});

Delete\_button.setText("удалить");

Delete\_button.setToolTipText("удаляет выбранную строку");

Delete\_button.addActionListener(new java.awt.event.ActionListener() {

public void actionPerformed(java.awt.event.ActionEvent evt) {

Delete\_buttonActionPerformed(evt);

}

});

Logo.setIcon(new javax.swing.ImageIcon(getClass().getResource("/logo.jpg"))); // NOI18N

Logo.setText("jLabel4");

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

getContentPane().setLayout(layout);

layout.setHorizontalGroup(

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

.addGroup(layout.createSequentialGroup()

.addGap(25, 25, 25)

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

.addComponent(Delete\_button, javax.swing.GroupLayout.Alignment.TRAILING, javax.swing.GroupLayout.PREFERRED\_SIZE, 150, javax.swing.GroupLayout.PREFERRED\_SIZE)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.TRAILING)

.addComponent(Calcul\_button, javax.swing.GroupLayout.PREFERRED\_SIZE, 150, javax.swing.GroupLayout.PREFERRED\_SIZE)

.addComponent(Logo, javax.swing.GroupLayout.PREFERRED\_SIZE, 150, javax.swing.GroupLayout.PREFERRED\_SIZE)))

.addGap(26, 26, 26)

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

.addComponent(jScrollPane1, javax.swing.GroupLayout.PREFERRED\_SIZE, javax.swing.GroupLayout.DEFAULT\_SIZE, javax.swing.GroupLayout.PREFERRED\_SIZE)

.addGroup(layout.createSequentialGroup()

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.TRAILING)

.addGroup(layout.createSequentialGroup()

.addComponent(jLabel2, javax.swing.GroupLayout.PREFERRED\_SIZE, 100, javax.swing.GroupLayout.PREFERRED\_SIZE)

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

.addComponent(jLabel1, javax.swing.GroupLayout.PREFERRED\_SIZE, 100, javax.swing.GroupLayout.PREFERRED\_SIZE))

.addGroup(layout.createSequentialGroup()

.addComponent(lower\_bound\_ent, javax.swing.GroupLayout.PREFERRED\_SIZE, 100, javax.swing.GroupLayout.PREFERRED\_SIZE)

.addGap(12, 12, 12)

.addComponent(upper\_bound\_ent, javax.swing.GroupLayout.PREFERRED\_SIZE, 100, javax.swing.GroupLayout.PREFERRED\_SIZE)))

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

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

.addGroup(layout.createSequentialGroup()

.addComponent(step\_ent, javax.swing.GroupLayout.PREFERRED\_SIZE, 100, javax.swing.GroupLayout.PREFERRED\_SIZE)

.addGap(24, 24, 24)

.addComponent(Add\_button, javax.swing.GroupLayout.PREFERRED\_SIZE, 98, javax.swing.GroupLayout.PREFERRED\_SIZE))

.addGroup(layout.createSequentialGroup()

.addGap(33, 33, 33)

.addComponent(jLabel3, javax.swing.GroupLayout.PREFERRED\_SIZE, 67, javax.swing.GroupLayout.PREFERRED\_SIZE)))))

.addContainerGap(20, Short.MAX\_VALUE))

);

layout.setVerticalGroup(

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

.addGroup(layout.createSequentialGroup()

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.TRAILING)

.addGroup(layout.createSequentialGroup()

.addGap(6, 6, 6)

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

.addComponent(jLabel1, javax.swing.GroupLayout.PREFERRED\_SIZE, 30, javax.swing.GroupLayout.PREFERRED\_SIZE)

.addComponent(jLabel3, javax.swing.GroupLayout.PREFERRED\_SIZE, 30, javax.swing.GroupLayout.PREFERRED\_SIZE)

.addComponent(jLabel2, javax.swing.GroupLayout.PREFERRED\_SIZE, 30, javax.swing.GroupLayout.PREFERRED\_SIZE))

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

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

.addComponent(step\_ent, javax.swing.GroupLayout.PREFERRED\_SIZE, 31, javax.swing.GroupLayout.PREFERRED\_SIZE)

.addComponent(lower\_bound\_ent, javax.swing.GroupLayout.PREFERRED\_SIZE, 31, javax.swing.GroupLayout.PREFERRED\_SIZE)

.addComponent(upper\_bound\_ent, javax.swing.GroupLayout.PREFERRED\_SIZE, 31, javax.swing.GroupLayout.PREFERRED\_SIZE)

.addComponent(Add\_button, javax.swing.GroupLayout.PREFERRED\_SIZE, 31, javax.swing.GroupLayout.PREFERRED\_SIZE))

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

.addComponent(jScrollPane1, javax.swing.GroupLayout.PREFERRED\_SIZE, 216, javax.swing.GroupLayout.PREFERRED\_SIZE))

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

.addGap(17, 17, 17)

.addComponent(Logo, javax.swing.GroupLayout.PREFERRED\_SIZE, 150, javax.swing.GroupLayout.PREFERRED\_SIZE)

.addGap(18, 18, 18)

.addComponent(Calcul\_button, javax.swing.GroupLayout.PREFERRED\_SIZE, 49, javax.swing.GroupLayout.PREFERRED\_SIZE)

.addGap(18, 18, 18)

.addComponent(Delete\_button, javax.swing.GroupLayout.PREFERRED\_SIZE, 49, javax.swing.GroupLayout.PREFERRED\_SIZE)))

.addContainerGap(21, Short.MAX\_VALUE))

);

pack();

}// </editor-fold>

private void lower\_bound\_entActionPerformed(java.awt.event.ActionEvent evt) {

}

////////////////////////////////////////////////////////////////////////////////////////////////////

//ВЫЧИСЛЕНИЕ

private void Calcul\_buttonActionPerformed(java.awt.event.ActionEvent evt) {

DefaultTableModel myTable=(DefaultTableModel)jTable1.getModel();

int selectedRow = jTable1.getSelectedRow();

double Lower\_bound = 0, Upper\_bound = 0,Step = 0, Res = 0;

if(selectedRow!=-1)

{

Lower\_bound = Double.parseDouble(myTable.getValueAt(selectedRow, 0).toString());

Upper\_bound = Double.parseDouble(myTable.getValueAt(selectedRow, 1).toString());

Step = Double.parseDouble(myTable.getValueAt(selectedRow, 2).toString());

}

for (double i = Lower\_bound; i < Upper\_bound; i=i+Step)

{

if(i+Step > Upper\_bound)

{

Step = Upper\_bound-i;

}

Res += Step \* (Math.tan(i) + Math.tan(i+Step)) / 2;

}

myTable.setValueAt(Res, selectedRow, 3);

}

//ДОБАВЛЕНИЕ

private void Add\_buttonActionPerformed(java.awt.event.ActionEvent evt) {

DefaultTableModel myTable=(DefaultTableModel)jTable1.getModel();

myTable.insertRow(0, new Object[]{

lower\_bound\_ent.getText(),

upper\_bound\_ent.getText(),

step\_ent.getText(),

});

}

//УДАЛЕНИЕ

private void Delete\_buttonActionPerformed(java.awt.event.ActionEvent evt) {

DefaultTableModel myTable=(DefaultTableModel)jTable1.getModel();

int selectedRow = jTable1.getSelectedRow();

if(selectedRow!=-1)

{

myTable.removeRow(selectedRow);

}

}

////////////////////////////////////////////////////////////////////////////////////////////////////

private void upper\_bound\_entActionPerformed(java.awt.event.ActionEvent evt) {

// TODO add your handling code here:

}

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(JFrame.class.getName()).log(java.util.logging.Level.SEVERE, null, ex);

} catch (InstantiationException ex) {

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

} catch (IllegalAccessException ex) {

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

} catch (javax.swing.UnsupportedLookAndFeelException ex) {

java.util.logging.Logger.getLogger(JFrame.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() {

new JFrame().setVisible(true);

}

});

}

// Variables declaration - do not modify

private javax.swing.JButton Add\_button;

private javax.swing.JButton Calcul\_button;

private javax.swing.JButton Delete\_button;

private javax.swing.JLabel Logo;

private javax.swing.JLabel jLabel1;

private javax.swing.JLabel jLabel2;

private javax.swing.JLabel jLabel3;

private javax.swing.JScrollPane jScrollPane1;

private javax.swing.JTable jTable1;

private javax.swing.JTextField lower\_bound\_ent;

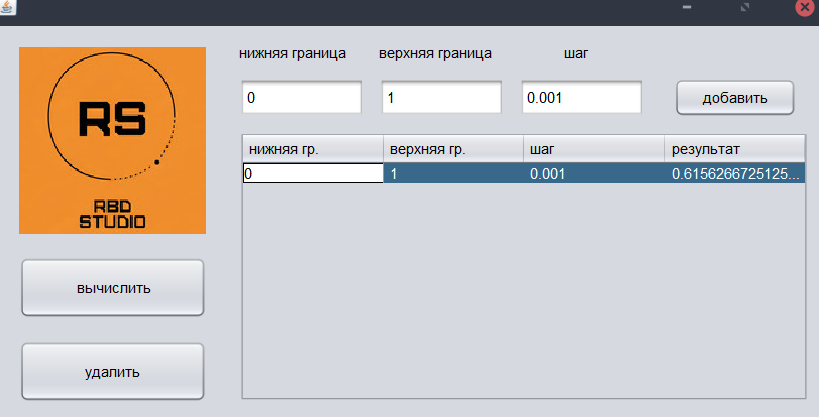
private javax.swing.JTextField step\_ent;

private javax.swing.JTextField upper\_bound\_ent;

// End of variables declaration

}

**Результаты работы программы:**

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**Вывод:** в ходе выполнения лабораторной работы мы научились работать с классом. Результаты работы программ совпали с результатами трассировки, следовательно программы работают без ошибок.