**LAPORAN TUGAS**

**ASISTENSI ALGORITMA PEMROGRAMAN**

***“Aproksimasi nilai f(x) dengan n angka penting”***



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**SURABAYA**

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1. **SOAL**

Input : a, n, x

Output :

Nilai f(x)

1. **SOURCE CODE**

@@ -0,0 +1,273 @@

/\*

\* 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.

\*/

/\*\*

\*

\* @author ASUS

\*/

public class guii extends javax.swing.JFrame {

/\*\*

\* Creates new form guii

\*/

public guii() {

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">//GEN-BEGIN:initComponents

private void initComponents() {

boxsoal = new javax.swing.JComboBox<>();

jLabel1 = new javax.swing.JLabel();

inputx = new javax.swing.JTextField();

jLabel2 = new javax.swing.JLabel();

inputa = new javax.swing.JTextField();

jLabel3 = new javax.swing.JLabel();

inputn = new javax.swing.JTextField();

jLabel4 = new javax.swing.JLabel();

nilaifx = new javax.swing.JTextField();

tombolhitung = new javax.swing.JButton();

tombolreset = new javax.swing.JButton();

jScrollPane1 = new javax.swing.JScrollPane();

jTextArea1 = new javax.swing.JTextArea();

labelsoal = new javax.swing.JLabel();

labelsyarat = new javax.swing.JLabel();

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

boxsoal.setModel(new javax.swing.DefaultComboBoxModel<>(new String[] { "Pilih Soal", "Soal 1", "Soal 2", "Soal 3" }));

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

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

pilihsoal(evt);

}

});

jLabel1.setText("Masukkan nilai x");

jLabel2.setText("Masukkan nilai a");

jLabel3.setText("Masukkan nilai n");

jLabel4.setText("Nilai f(x)");

tombolhitung.setText("Hitung");

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

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

hitung(evt);

}

});

tombolreset.setText("Reset");

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

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

reset(evt);

}

});

jTextArea1.setColumns(20);

jTextArea1.setRows(5);

jTextArea1.setText("Keterangan:\n- Nilai f(x) adalah aproksimasi dengan menggunakan deret Taylor dengan n angka penting.\n- Nilai a, n, x yang dimasukkan harus berupa angka. \n Jika menyatakan angka desimal, gunakan tanda \".\" bukan \",\".");

jScrollPane1.setViewportView(jTextArea1);

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()

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

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

.addContainerGap()

.addComponent(jScrollPane1))

.addGroup(layout.createSequentialGroup()

.addGap(34, 34, 34)

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

.addComponent(boxsoal, 0, javax.swing.GroupLayout.DEFAULT\_SIZE, Short.MAX\_VALUE)

.addGroup(layout.createSequentialGroup()

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

.addComponent(jLabel1, javax.swing.GroupLayout.DEFAULT\_SIZE, 118, Short.MAX\_VALUE)

.addComponent(jLabel2, javax.swing.GroupLayout.DEFAULT\_SIZE, javax.swing.GroupLayout.DEFAULT\_SIZE, Short.MAX\_VALUE)

.addComponent(jLabel3, javax.swing.GroupLayout.DEFAULT\_SIZE, javax.swing.GroupLayout.DEFAULT\_SIZE, Short.MAX\_VALUE)

.addComponent(jLabel4, javax.swing.GroupLayout.DEFAULT\_SIZE, javax.swing.GroupLayout.DEFAULT\_SIZE, Short.MAX\_VALUE))

.addGap(36, 36, 36)

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

.addComponent(inputx)

.addComponent(inputa)

.addComponent(inputn)

.addComponent(nilaifx, javax.swing.GroupLayout.DEFAULT\_SIZE, 136, Short.MAX\_VALUE))))

.addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED, javax.swing.GroupLayout.DEFAULT\_SIZE, Short.MAX\_VALUE)

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

.addComponent(labelsyarat, javax.swing.GroupLayout.DEFAULT\_SIZE, 196, Short.MAX\_VALUE)

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

.addGroup(layout.createSequentialGroup()

.addComponent(tombolhitung)

.addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED, 72, Short.MAX\_VALUE)

.addComponent(tombolreset))

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

.addContainerGap())

);

layout.setVerticalGroup(

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

.addGroup(layout.createSequentialGroup()

.addGap(30, 30, 30)

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

.addGap(18, 18, 18)

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

.addGroup(layout.createSequentialGroup()

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

.addComponent(inputx)

.addComponent(jLabel1, javax.swing.GroupLayout.DEFAULT\_SIZE, javax.swing.GroupLayout.DEFAULT\_SIZE, Short.MAX\_VALUE))

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

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

.addComponent(inputa)

.addComponent(jLabel2, javax.swing.GroupLayout.DEFAULT\_SIZE, javax.swing.GroupLayout.DEFAULT\_SIZE, Short.MAX\_VALUE))

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

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

.addComponent(inputn)

.addComponent(jLabel3, javax.swing.GroupLayout.DEFAULT\_SIZE, javax.swing.GroupLayout.DEFAULT\_SIZE, Short.MAX\_VALUE)))

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

.addGap(18, 18, 18)

.addComponent(labelsyarat, javax.swing.GroupLayout.PREFERRED\_SIZE, 26, javax.swing.GroupLayout.PREFERRED\_SIZE)

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

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

.addComponent(jLabel4)

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

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

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

.addComponent(tombolhitung)

.addComponent(tombolreset))

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

.addComponent(jScrollPane1, javax.swing.GroupLayout.DEFAULT\_SIZE, 148, Short.MAX\_VALUE)

.addContainerGap())

);

boxsoal.getAccessibleContext().setAccessibleName("");

pack();

}// </editor-fold>//GEN-END:initComponents

private void pilihsoal(java.awt.event.ActionEvent evt) {//GEN-FIRST:event\_pilihsoal

// TODO add your handling code here:

switch(boxsoal.getSelectedIndex())

{

case 1:

labelsoal.setText("ln(-x)");

labelsyarat.setText("Syarat: a <0, n bilangan bulat positif, x <0");

inputa.setText("");

inputx.setText("");

inputn.setText("");

nilaifx.setText("");

break;

}

}//GEN-LAST:event\_pilihsoal

private void hitung(java.awt.event.ActionEvent evt) {//GEN-FIRST:event\_hitung

// TODO add your handling code here:

double a = Double.parseDouble(inputa.getText());

double n = Double.parseDouble(inputn.getText());

double x = Double.parseDouble(inputx.getText());

switch(boxsoal.getSelectedIndex())

{

case 1:

nilaifx.setText(String.valueOf(HasilSoal1(a, n, x)));

break;

}

}//GEN-LAST:event\_hitung

private void reset(java.awt.event.ActionEvent evt) {//GEN-FIRST:event\_reset

// TODO add your handling code here:

inputa.setText("");

inputx.setText("");

inputn.setText("");

nilaifx.setText("");

}//GEN-LAST:event\_reset

public static double HasilSoal1(double a, double n, double x){

double[] f = new double[10001];

f[0] = Math.log(-a);

double Fungsi=0;

double es = 0.5 \* Math.pow(10, 2-n);

for(int i=1; i<=10000; i++){

f[i]=f[i-1] + (Math.pow(-1,i+1)\*Math.pow(x-a, i))/(i\*Math.pow(a,i));

double ea = ((f[i]-f[i-1])/f[i])\*100;

if(Math.abs(ea)<es){

Fungsi += f[i];

System.out.println(i);

break;

}

}

double Output = Math.floor(Fungsi\*10000)/10000;

return Output;

}

//buatan Cindy

public static double Hasil1(double a, double n, double x){

double f =(Math.pow(-1,n)\*Math.pow(x-a, n))/(n\*Math.pow(a,n));

return f;

}

/\*\*

\* @param args 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(guii.class.getName()).log(java.util.logging.Level.SEVERE, null, ex);

} catch (InstantiationException ex) {

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

} catch (IllegalAccessException ex) {

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

} catch (javax.swing.UnsupportedLookAndFeelException ex) {

java.util.logging.Logger.getLogger(guii.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 guii().setVisible(true);

}

});

}

// Variables declaration - do not modify//GEN-BEGIN:variables

private javax.swing.JComboBox<String> boxsoal;

private javax.swing.JTextField inputa;

private javax.swing.JTextField inputn;

private javax.swing.JTextField inputx;

private javax.swing.JLabel jLabel1;

private javax.swing.JLabel jLabel2;

private javax.swing.JLabel jLabel3;

private javax.swing.JLabel jLabel4;

private javax.swing.JScrollPane jScrollPane1;

private javax.swing.JTextArea jTextArea1;

private javax.swing.JLabel labelsoal;

private javax.swing.JLabel labelsyarat;

private javax.swing.JTextField nilaifx;

private javax.swing.JButton tombolhitung;

private javax.swing.JButton tombolreset;

// End of variables declaration//GEN-END:variables

}

1. **RUNNING PROGRAM**

**[LAMPIRKAN GAMBAR HASIL SCREENSHOT DI DALAM SINI]**

