GRADE 12 Data Validation 2020

Figure 1 (School, 2017)



Figure 2 (Coetzee, 2018)

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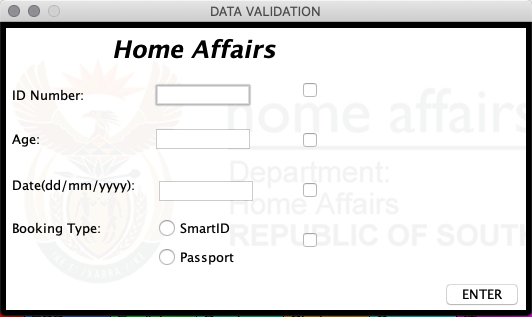
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# GUI



Radio Button

Radio Button

Radio Button

Radio Button

Radio Button

Text Field

Text Field

Text Field

Radio Button

# Test Data

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Field | Type of Check | Standard Data | Extreme Data | Abnormal Data |
| ID Number | Presence Check  Data Type Check  Length Check | 0201125085088 | 0000000000000 | \_  Dddddddddddddddd  32894759872384789 |
| Age | Presence Check  Data Type Check | 18 | 200 | \_  Hhhhhhhhhhhh  02010def |
| Date | Presence Check  Length Check  Range Check | 12/01/2002 | 12/02/1700 | 317649187  \_  12/25/1900 |
| Booking Type | Presence `Check | Passport | SmartID | \_ |

# Standard Data

**Before Submitting:**

A screenshot of a cell phone

Description automatically generated

**After Submitting:**

A screenshot of a cell phone

Description automatically generated

# Extreme Data

**Before Submitting:**

A screenshot of a cell phone

Description automatically generated

A screenshot of a cell phone

Description automatically generated**After Submitting:**

# Abnormal Data

**Before Submitting:**

A screenshot of a cell phone

Description automatically generated

A screenshot of a cell phone

Description automatically generated**After Submitting:**

**Before Submitting:**

A screenshot of a cell phone

Description automatically generated

A screenshot of a cell phone

Description automatically generated**After Submitting:**

**Before Submitting:**

A screenshot of a cell phone

Description automatically generated

**After Submitting:**

A screenshot of a cell phone

Description automatically generated

# Explanation of Fields, Types and Components

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Name of Field | Data Type | Input Component | Reason for Input Component | Data Validation Type | Reason for Data Validation Type |
| IDNumber Field | String | Text Field | Any ID Number can be entered | Presence Check  Data Type Check  Length Check | The ID cannot be blank  The ID should be an integer  The ID should be 13 characters long |
| Age Field | Int | Text Field | Any number can be entered | Presence Check  Data Type Check | The Age may not be blank  The Age should be an Integer |
| Date Field | Date | Text Field | Any date can be entered | Presence Check  Length Check  Range Check | The Date cannot be blank  The date should be 8 characters long  The months cannot be more then 12 months or less than 1 |
| SmartID Button | Boolean | Radio Button | There are only two possible options to choose from | Presence Check | A Booking type has to be chosen |
| Passport Button | Boolean | Radio Button | There are only two possible options to choose from | Presence Check | A Booking type has to be chosen |

# Code

/\*

\* 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.

\*/

package DataValidation;

import java.awt.Color;

import javax.swing.border.LineBorder;

/\*\*

\*

\* @author byronkraus

\*/

public class DataValidation extends javax.swing.JFrame {

/\*\*

\* Creates new form DataValidation

\*/

public DataValidation() {

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() {

buttonGroup1 = new javax.swing.ButtonGroup();

jPanel1 = new javax.swing.JPanel();

jPanel2 = new javax.swing.JPanel();

jLabel1 = new javax.swing.JLabel();

jLabel2 = new javax.swing.JLabel();

jLabel3 = new javax.swing.JLabel();

jLabel4 = new javax.swing.JLabel();

jLabel5 = new javax.swing.JLabel();

SmartIDButton = new javax.swing.JRadioButton();

PassportButton = new javax.swing.JRadioButton();

IDNumberField = new javax.swing.JTextField();

AgeField = new javax.swing.JTextField();

DateField = new javax.swing.JTextField();

EnterButton = new javax.swing.JButton();

IDNumberCheck = new javax.swing.JCheckBox();

AgeCheck = new javax.swing.JCheckBox();

DateCheck = new javax.swing.JCheckBox();

BookingCheck = new javax.swing.JCheckBox();

IDNumberExplanation = new javax.swing.JLabel();

AgeExplanation = new javax.swing.JLabel();

DateExplanation = new javax.swing.JLabel();

BookingExplanation = new javax.swing.JLabel();

jLabel6 = new javax.swing.JLabel();

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

setTitle("DATA VALIDATION");

setCursor(new java.awt.Cursor(java.awt.Cursor.DEFAULT\_CURSOR));

setResizable(false);

getContentPane().setLayout(new org.netbeans.lib.awtextra.AbsoluteLayout());

jPanel1.setBackground(new java.awt.Color(0, 0, 0));

jPanel2.setBackground(new java.awt.Color(255, 255, 255));

jPanel2.setForeground(new java.awt.Color(255, 255, 255));

jPanel2.setLayout(new org.netbeans.lib.awtextra.AbsoluteLayout());

jLabel1.setFont(new java.awt.Font("Lucida Grande", 3, 24)); // NOI18N

jLabel1.setText("Home Affairs");

jPanel2.add(jLabel1, new org.netbeans.lib.awtextra.AbsoluteConstraints(106, 6, -1, -1));

jLabel2.setText("ID Number:");

jPanel2.add(jLabel2, new org.netbeans.lib.awtextra.AbsoluteConstraints(6, 59, -1, -1));

jLabel3.setText("Age:");

jPanel2.add(jLabel3, new org.netbeans.lib.awtextra.AbsoluteConstraints(6, 103, -1, -1));

jLabel4.setText("Date(dd/mm/yyyy):");

jPanel2.add(jLabel4, new org.netbeans.lib.awtextra.AbsoluteConstraints(6, 149, -1, -1));

jLabel5.setText("Booking Type:");

jPanel2.add(jLabel5, new org.netbeans.lib.awtextra.AbsoluteConstraints(6, 192, -1, -1));

buttonGroup1.add(SmartIDButton);

SmartIDButton.setText("SmartID");

jPanel2.add(SmartIDButton, new org.netbeans.lib.awtextra.AbsoluteConstraints(147, 188, -1, -1));

buttonGroup1.add(PassportButton);

PassportButton.setText("Passport");

jPanel2.add(PassportButton, new org.netbeans.lib.awtextra.AbsoluteConstraints(147, 217, -1, -1));

jPanel2.add(IDNumberField, new org.netbeans.lib.awtextra.AbsoluteConstraints(147, 54, 140, -1));

jPanel2.add(AgeField, new org.netbeans.lib.awtextra.AbsoluteConstraints(147, 98, 140, -1));

jPanel2.add(DateField, new org.netbeans.lib.awtextra.AbsoluteConstraints(150, 150, 140, -1));

EnterButton.setText("ENTER");

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

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

EnterButtonActionPerformed(evt);

}

});

jPanel2.add(EnterButton, new org.netbeans.lib.awtextra.AbsoluteConstraints(434, 253, -1, -1));

jPanel2.add(IDNumberCheck, new org.netbeans.lib.awtextra.AbsoluteConstraints(290, 50, -1, -1));

jPanel2.add(AgeCheck, new org.netbeans.lib.awtextra.AbsoluteConstraints(290, 100, -1, -1));

jPanel2.add(DateCheck, new org.netbeans.lib.awtextra.AbsoluteConstraints(290, 150, -1, -1));

jPanel2.add(BookingCheck, new org.netbeans.lib.awtextra.AbsoluteConstraints(290, 200, -1, -1));

jPanel2.add(IDNumberExplanation, new org.netbeans.lib.awtextra.AbsoluteConstraints(300, 80, -1, -1));

jPanel2.add(AgeExplanation, new org.netbeans.lib.awtextra.AbsoluteConstraints(300, 130, -1, -1));

jPanel2.add(DateExplanation, new org.netbeans.lib.awtextra.AbsoluteConstraints(300, 180, -1, -1));

jPanel2.add(BookingExplanation, new org.netbeans.lib.awtextra.AbsoluteConstraints(300, 230, -1, -1));

jLabel6.setIcon(new javax.swing.ImageIcon(getClass().getResource("/com/mycompany/view/images/Picture 2.png"))); // NOI18N

jPanel2.add(jLabel6, new org.netbeans.lib.awtextra.AbsoluteConstraints(0, 0, 520, 280));

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

jPanel1.setLayout(jPanel1Layout);

jPanel1Layout.setHorizontalGroup(

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

.addGroup(javax.swing.GroupLayout.Alignment.TRAILING, jPanel1Layout.createSequentialGroup()

.addContainerGap()

.addComponent(jPanel2, javax.swing.GroupLayout.DEFAULT\_SIZE, javax.swing.GroupLayout.DEFAULT\_SIZE, Short.MAX\_VALUE)

.addContainerGap())

);

jPanel1Layout.setVerticalGroup(

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

.addGroup(jPanel1Layout.createSequentialGroup()

.addContainerGap()

.addComponent(jPanel2, javax.swing.GroupLayout.DEFAULT\_SIZE, javax.swing.GroupLayout.DEFAULT\_SIZE, Short.MAX\_VALUE)

.addContainerGap())

);

getContentPane().add(jPanel1, new org.netbeans.lib.awtextra.AbsoluteConstraints(0, 0, -1, -1));

pack();

setLocationRelativeTo(null);

}// </editor-fold>

private void EnterButtonActionPerformed(java.awt.event.ActionEvent evt) {

*//Data Type Check*

if (IDNumberField.getText().matches("\\d+") && IDNumberField.getText().length() == 13)

{

IDNumberField.setBorder(new LineBorder(Color.GREEN));

IDNumberCheck.setSelected(true);

IDNumberCheck.setText("Valid");

IDNumberExplanation.setText("");

}

else

{

IDNumberField.setBorder(new LineBorder(Color.RED));

IDNumberCheck.setSelected(false);

IDNumberCheck.setText("Invalid");

*//Length Check*

if(IDNumberField.getText().matches("\\d+") && IDNumberField.getText().length() > 13)

{

IDNumberExplanation.setText("Over 13 numbers");

}

else

{

*//Presence Check*

if(IDNumberField.getText().isEmpty())

{

IDNumberExplanation.setText("enter your ID");

}

else

{

*//Length Check*

if(IDNumberField.getText().matches("\\d+") && IDNumberField.getText().length() < 13)

{

IDNumberExplanation.setText("Under 13 numbers");

}

else

{

IDNumberExplanation.setText("Only numbers are valid");

}

}

}

}

*//Data Type Check*

if (AgeField.getText().matches("\\d+"))

{

AgeField.setBorder(new LineBorder(Color.GREEN));

AgeCheck.setSelected(true);

AgeCheck.setText("Valid");

AgeExplanation.setText("");

}

else

{

AgeField.setBorder(new LineBorder(Color.RED));

AgeCheck.setSelected(false);

AgeCheck.setText("Invalid");

*//Presence Check*

if(AgeField.getText().isEmpty())

{

AgeExplanation.setText("enter your Age");

}

else

{

if(!(AgeField.getText().matches("\\d+")))

{

AgeExplanation.setText("Only numbers are valid");

}

}

}

*//Presence Check*

if (DateField.getText().isEmpty())

{

DateField.setBorder(new LineBorder(Color.RED));

DateCheck.setSelected(false);

DateCheck.setText("Invalid");

DateExplanation.setText("No Date has been entered");

}

else

{

*//Length Check*

if (!(DateField.getText().length()==10))

{

DateField.setBorder(new LineBorder(Color.RED));

DateCheck.setSelected(false);

DateCheck.setText("Invalid");

DateExplanation.setText("Incorrect format for date");

}

else

{

*//Range Check*

if(!(Integer.parseInt("" + DateField.getText().charAt(3) + DateField.getText().charAt(4))<= 12 && Integer.parseInt("" + DateField.getText().charAt(3) + DateField.getText().charAt(4))>= 1))

{

DateField.setBorder(new LineBorder(Color.RED));

DateCheck.setSelected(false);

DateCheck.setText("Invalid");

DateExplanation.setText("Invalid Month");

}

else

{

DateField.setBorder(new LineBorder(Color.GREEN));

DateCheck.setSelected(true);

DateCheck.setText("Valid");

DateExplanation.setText("");

}

}

}

if (SmartIDButton.isSelected() || PassportButton.isSelected())

{

if(SmartIDButton.isSelected())

{

SmartIDButton.setBorder(new LineBorder(Color.GREEN));

BookingCheck.setSelected(true);

BookingCheck.setText("Valid");

BookingExplanation.setText("");

}

else

{

PassportButton.setBorder(new LineBorder(Color.GREEN));

BookingCheck.setSelected(true);

BookingCheck.setText("Valid");

BookingExplanation.setText("");

}

}

else

*//Presence Check*

{

SmartIDButton.setBorder(new LineBorder(Color.RED));

PassportButton.setBorder(new LineBorder(Color.RED));

BookingCheck.setSelected(false);

BookingCheck.setText("Invalid");

BookingExplanation.setText("Select either Passport or Smart ID");

}

// TODO add your handling code here:

}

/\*\*

\* @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 ("Windows".equals(info.getName())) {

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

break;

}

}

} catch (ClassNotFoundException ex) {

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

} catch (InstantiationException ex) {

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

} catch (IllegalAccessException ex) {

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

} catch (javax.swing.UnsupportedLookAndFeelException ex) {

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

}

});

}

// Variables declaration - do not modify

private javax.swing.JCheckBox AgeCheck;

private javax.swing.JLabel AgeExplanation;

private javax.swing.JTextField AgeField;

private javax.swing.JCheckBox BookingCheck;

private javax.swing.JLabel BookingExplanation;

private javax.swing.JCheckBox DateCheck;

private javax.swing.JLabel DateExplanation;

private javax.swing.JTextField DateField;

private javax.swing.JButton EnterButton;

private javax.swing.JCheckBox IDNumberCheck;

private javax.swing.JLabel IDNumberExplanation;

private javax.swing.JTextField IDNumberField;

private javax.swing.JRadioButton PassportButton;

private javax.swing.JRadioButton SmartIDButton;

private javax.swing.ButtonGroup buttonGroup1;

private javax.swing.JLabel jLabel1;

private javax.swing.JLabel jLabel2;

private javax.swing.JLabel jLabel3;

private javax.swing.JLabel jLabel4;

private javax.swing.JLabel jLabel5;

private javax.swing.JLabel jLabel6;

private javax.swing.JPanel jPanel1;

private javax.swing.JPanel jPanel2;

// End of variables declaration

}