


Faculty of Information Technology									
<p>I declare that I am familiar with, and will abide to the Examination rules of CTU</p>  <p>Signature</p>	<p>SUBJECT NAME: Advanced Java SUBJECT CODE: JD522</p>								
	<p>Formative Assessment 1 Duration: Date: Total Marks: 90 Total pages: 24</p>					<p>Examiner: Junior Manganyi Moderator:</p>			
	<p>Student number</p>								
	2	0	2	3	1	7	3	3	
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Formative Question(s)

Question 1:

Project Description: Registration and login feature

In this project, you will use GUI to create a registration and login feature. This feature needs to allow users to (Read through the entire task before you start any work): Failure to GUI will result in zero.

1. Create an account by entering a username, password, first name, and last name. (15 Marks)

a. The system needs to check that the following conditions are met and reply with the appropriate output message

Criteria	Boolean Output	
	If Criteria is True	If Criteria is False
The username contains a pound(#) and is no more than 8 characters long	"Username Accepted, Proceed"	"Username does not meet the criteria, please ensure that your username contains an pound sign and is no more than 8 characters in length ."
Password meets the following password complexity rules, the password must be: <ul style="list-style-type: none"> • At least 8 characters long • Contain at least one capital letter • Contain a number • Contain a special character 	"Password Accepted"	"Password not Accepted, please check that you have met all the criteria required"

2. Once Username and password are successfully created, Login to the account using the same username and password.

(15 Marks)

a. The system should provide the following messages to verify the user's authentication state:

- If the username, and password entered to log in are correct, the system must output the following message:

"Congratulations <your name, surname>, You have made it to the second year. Wishing you all the best"

- Please note <your name, surname> must be pulled by the system automatically, DON'T write it yourself

- If the username, and password entered to log is not correct, Display to the user "Incorrect credentials have been supplied, try again"

To assist you in completing this project ensure you have the following in place:

- Create a class called **formativeLogin** and it must contain the following methods:

Method Name: correctUserName(): This method checks whether any given username contains a pound (#) and is not longer than a specified limit. (10 Marks)

Method Name: meetPasswordComplexity(): This method ensures that passwords meet the specified password complexity rules, which include: (15 Marks)

- o The password must be at least eight characters long.

- o The password must contain at least one capital letter.

- o The password must contain at least one number.

- o The password must contain at least one special character.

Method Name: regUser(): This method handles user registration and returns the necessary messaging indicating if: (15 Marks)

- o The provided username is incorrectly formatted.

- o The password does not meet the complexity requirements.

- o Both conditions above have been met, and the user has been successfully

registered.

Method Name: login(): This method verifies whether the login details entered by the user match the login details stored when the user registered. (10 Marks)

Method Name: returnLogin(): This method returns the necessary messaging for a successful login or a failed login attempt. (10 Marks)

JD522FA1.java Code:

```
/*
 * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt
to change this license
 * Click nbfs://nbhost/SystemFileSystem/Templates/GUIForms/JFrame.java to
edit this template
 */
package org.mondemkhize.jd522fa1;

import javax.swing.*;
import java.awt.*;
import java.util.regex.*;

/**
 *
 * @author Monde
 */
public class JD522FA1 extends javax.swing.JFrame {

    /**
     * Creates new form RegisterForm
     */
    public JD522FA1() {
        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() {

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();

jTextField1 = new javax.swing.JTextField();

jTextField2 = new javax.swing.JTextField();

jTextField3 = new javax.swing.JTextField();

jTextField4 = new javax.swing.JTextField();

jButton1 = new javax.swing.JButton();

setDefaultCloseOperation(javax.swing.WindowConstants.EXIT_ON_CLOSE);

jLabel1.setText("Please Register!");

jLabel2.setLabelFor(jTextField1);

jLabel2.setText("First name:");

jLabel3.setLabelFor(jTextField2);

jLabel3.setText("Last name:");

jLabel4.setLabelFor(jTextField3);

jLabel4.setText("Username:");

```
jLabel5.setLabelFor(jTextField4);
jLabel5.setText("Password:");

jTextField2.setPreferredSize(new java.awt.Dimension(65, 22));

jButton1.setText("Register!");
jButton1.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
        jButton1ActionPerformed(evt);
    }
});

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

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

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.TRAILING)
    .addComponent(jButton1)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.TRAILING, false)
    .addGroup(javax.swing.GroupLayout.Alignment.LEADING,
layout.createSequentialGroup()
        .addGap(147, 147, 147)
        .addComponent(jLabel1))
    .addGroup(layout.createSequentialGroup()
        .addGap(41, 41, 41)
```

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

```
    .addComponent(jLabel3)
```

```
    .addComponent(jLabel2)
```

```
    .addComponent(jLabel4)
```

```
    .addComponent(jLabel5))
```

```
.addGap(18, 18, 18)
```

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

```
    .addComponent(jTextField3)
```

```
    .addComponent(jTextField4)
```

```
    .addComponent(jTextField1)
```

```
    .addComponent(jTextField2,  
javax.swing.GroupLayout.DEFAULT_SIZE,  
javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE))))
```

```
    .addContainerGap(172, Short.MAX_VALUE))
```

```
);
```

```
layout.setVerticalGroup(
```

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

```
    .addGroup(layout.createSequentialGroup()
```

```
        .addGap(41, 41, 41)
```

```
        .addComponent(jLabel1)
```

```
        .addGap(37, 37, 37)
```

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

```
    .addComponent(jTextField1,  
javax.swing.GroupLayout.PREFERRED_SIZE,  
javax.swing.GroupLayout.DEFAULT_SIZE,  
javax.swing.GroupLayout.PREFERRED_SIZE)
```

```
    .addComponent(jLabel2))
```

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



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

```
    .addComponent(jTextField2,  
        javax.swing.GroupLayout.PREFERRED_SIZE,  
        javax.swing.GroupLayout.DEFAULT_SIZE,  
        javax.swing.GroupLayout.PREFERRED_SIZE)
```

```
    .addComponent(jLabel3))
```

```
    .addGap(9, 9, 9)
```

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

```
    .addComponent(jTextField3,  
        javax.swing.GroupLayout.PREFERRED_SIZE,  
        javax.swing.GroupLayout.DEFAULT_SIZE,  
        javax.swing.GroupLayout.PREFERRED_SIZE)
```

```
    .addComponent(jLabel4))
```

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

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

```
    .addComponent(jTextField4,  
        javax.swing.GroupLayout.PREFERRED_SIZE,  
        javax.swing.GroupLayout.DEFAULT_SIZE,  
        javax.swing.GroupLayout.PREFERRED_SIZE)
```

```
    .addComponent(jLabel5))
```

```
    .addGap(18, 18, 18)
```

```
    .addComponent(jButton1)
```

```
    .addContainerGap(56, Short.MAX_VALUE))
```

```
);
```

```
pack();
```

```
// </editor-fold>
```

```
private void jButton1ActionPerformed(java.awt.event.ActionEvent evt) {
```

```
    String username = this(jTextField3.getText());
```

```
String password = this.jTextField4.getText();
formativeLogin.regUser(this,username,password);

}

/**
 * @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(JD522FA1.class.getName()).log(java.util.loggi
ng.Level.SEVERE, null, ex);

    } catch (InstantiationException ex) {

java.util.logging.Logger.getLogger(JD522FA1.class.getName()).log(java.util.loggi
ng.Level.SEVERE, null, ex);

    } catch (IllegalAccessException ex) {
```

```
java.util.logging.Logger.getLogger(JD522FA1.class.getName()).log(java.util.loggi  
ng.Level.SEVERE, null, ex);
```

```
    } catch (javax.swing.UnsupportedLookAndFeelException ex) {
```

```
java.util.logging.Logger.getLogger(JD522FA1.class.getName()).log(java.util.loggi  
ng.Level.SEVERE, null, ex);
```

```
    }
```

```
//</editor-fold>
```

```
//</editor-fold>
```

```
/* Create and display the form */
```

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

```
    public void run() {
```

```
        new JD522FA1().setVisible(true);
```

```
    }
```

```
});
```

```
}
```

```
// Variables declaration - do not modify
```

```
private javax.swing.JButton jButton1;
```

```
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.JTextField jTextField1;
```

```
private javax.swing.JTextField jTextField2;
```

```
private javax.swing.JTextField jTextField3;
```

```
private javax.swing.JTextField jTextField4;
```

```
// End of variables declaration  
}
```

LoginForm.java Code:

```
/*  
 * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt  
to change this license  
 * Click nbfs://nbhost/SystemFileSystem/Templates/GUIForms/JFrame.java to  
edit this template  
 */  
package org.mondemkhize.jd522fa1;
```

```
import java.util.Arrays;
```

```
/**  
 *  
 * @author Monde  
 */  
public class LoginForm extends javax.swing.JFrame {
```

```
    /**  
     * Creates new form loginForm  
     */  
    public LoginForm() {  
        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() {

    jButton1 = new javax.swing.JButton();
    jLabel1 = new javax.swing.JLabel();
    jLabel2 = new javax.swing.JLabel();
    jLabel3 = new javax.swing.JLabel();
    jLabel4 = new javax.swing.JLabel();
    jTextField1 = new javax.swing.JTextField();
    jPasswordField1 = new javax.swing.JPasswordField();

    setDefaultCloseOperation(javax.swing.WindowConstants.EXIT_ON_CLOSE);

    jButton1.setText("Login !");
    jButton1.addActionListener(new java.awt.event.ActionListener() {
        public void actionPerformed(java.awt.event.ActionEvent evt) {
            jButton1ActionPerformed(evt);
        }
    });

    jLabel1.setLabelFor(jTextField1);
    jLabel1.setText("Username:");

    jLabel2.setLabelFor(jPasswordField1);
    jLabel2.setText("Password:");

    jLabel3.setText("Welcome!");

    jLabel4.setText("Please login!");
```

```
        javax.swing.GroupLayout layout = new
javax.swing.GroupLayout(getContentPane());
        getContentPane().setLayout(layout);
        layout.setHorizontalGroup(

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

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEAD
ING)

        .addGroup(layout.createSequentialGroup()
            .addGap(157, 157, 157)
            .addComponent(jButton1))
        .addGroup(layout.createSequentialGroup()
            .addGap(120, 120, 120)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEAD
ING)

            .addGroup(javax.swing.GroupLayout.Alignment.TRAILING,
layout.createSequentialGroup()
                .addComponent(jLabel2)
                .addGap(18, 18, 18))
            .addGroup(layout.createSequentialGroup()
                .addComponent(jLabel1)
                .addGap(15, 15, 15)))

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

            .addComponent(jTextField1,
javax.swing.GroupLayout.DEFAULT_SIZE, 90, Short.MAX_VALUE)
            .addComponent(jPasswordField1))))
        .addContainerGap(119, Short.MAX_VALUE))
        .addGroup(javax.swing.GroupLayout.Alignment.TRAILING,
layout.createSequentialGroup()
```

```
.addGap(0, 164, Short.MAX_VALUE)

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

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

        .addComponent(jLabel3)

        .addGap(13, 13, 13))

    .addComponent(jLabel4,
javax.swing.GroupLayout.Alignment.TRAILING,
javax.swing.GroupLayout.PREFERRED_SIZE, 78,
javax.swing.GroupLayout.PREFERRED_SIZE))

    .addGap(158, 158, 158))

);
layout.setVerticalGroup(

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

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

        .addGap(26, 26, 26)

        .addComponent(jLabel3)

.addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED,
javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)

        .addComponent(jLabel4)

        .addGap(26, 26, 26)

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

    .addComponent(jLabel1)

    .addComponent(jTextField1,
javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.PREFERRED_SIZE))

    .addGap(12, 12, 12)
```

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

```
    .addComponent(jLabel2)
    .addComponent(jPasswordField1,
javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.PREFERRED_SIZE))
    .addGap(27, 27, 27)
    .addComponent(jButton1)
    .addGap(109, 109, 109))
);
```

```
pack();
} // </editor-fold>
```

```
private void jButton1ActionPerformed(java.awt.event.ActionEvent evt) {
```

```
    String username = this.jTextField1.getText();
    String passwordField =
Arrays.toString(this.jPasswordField1.getPassword()).replace(",", "");
    String replaced1 = passwordField.replace("]", "");
    String password = replaced1.replace("[", "");
    formativeLogin.login(this, username, password.replace(" ", ""));
}
```

```
/**
 * @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(LoginForm.class.getName()).log(java.util.logging.Level.SEVERE, null, ex);
```

} catch (InstantiationException ex) {

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

} catch (IllegalAccessException ex) {

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

} catch (javax.swing.UnsupportedLookAndFeelException ex) {

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

}

//</editor-fold>

//</editor-fold>

/* Create and display the form */

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

```
        public void run() {  
            new LoginForm().setVisible(true);  
        }  
    });  
}
```

```
// Variables declaration - do not modify  
private javax.swing.JButton jButton1;  
private javax.swing.JLabel jLabel1;  
private javax.swing.JLabel jLabel2;  
private javax.swing.JLabel jLabel3;  
private javax.swing.JLabel jLabel4;  
private javax.swing.JPasswordField jPasswordField1;  
private javax.swing.JTextField jTextField1;  
// End of variables declaration  
}
```

formativeLogin.java Code:

```
package org.mondemkhize.jd522fa1;
```

```
import javax.swing.*;  
import java.awt.*;  
import java.util.regex.Matcher;  
import java.util.regex.Pattern;
```

```
public class formativeLogin {  
    //Hard-coded accounts  
    private final static String studentName1 = "John Cena";  
    private final static String uName1 = "jjcena#";  
    private final static String pWord1 = "IamnotJohnCena23477!";  
    private final static String studentName2 = "Peter Parker";  
    private final static String uName2 = "spider#";
```

```
private final static String pWord2 = "IamnotSp1der-Man!";

private static boolean correctUserName(String username) {
    // Regex to check valid username.
    String regex = "^(?=.*#)"
        + "(?=.*\\S+$).{1,8}$";
    // Compile the ReGex
    Pattern p = Pattern.compile(regex);
    // If the username is empty,
    // return false
    if (username == null) {
        return false;
    }
    // Pattern class contains matcher() method
    // to find matching between given username
    // and regular expression.
    Matcher m = p.matcher(username);
    // Return if the username
    // matched the ReGex
    return m.matches();
}

private static boolean meetPasswordComplexity(String password) {
    // Regex to check valid password.
    String regex = "^(?=.*[0-9])"
        + "(?=.*[a-z])(?=.*[A-Z])"
        + "(?=.*[~`!@#$%^&*()-_+=])"
        + "(?=.*\\S+$).{8,}$";
    // Compile the ReGex
    Pattern p = Pattern.compile(regex);
    // If the password is empty,
    // return false
```

```
        if (password == null) {
            return false;
        }
        // Pattern class contains matcher() method
        // to find matching between given password
        // and regular expression.
        Matcher m = p.matcher(password);
        // Return if the password
        // matched the ReGex
        return m.matches();
    }

    public static void regUser(Window component, String username, String
password){
        if(correctUserName(username) && meetPasswordComplexity(password)){
            JOptionPane.showMessageDialog(
                component,
                "Username Accepted, Proceed\n " +
                "Password Accepted",
                "Everything all good",
                JOptionPane.INFORMATION_MESSAGE);
            LoginForm loginForm = new LoginForm();
            loginForm.setVisible(true);
            component.dispose();
        }
        else if(!correctUserName(username)) {
            JOptionPane.showMessageDialog(
                component,
                "Username does not meet the criteria, please ensure that " +
                "your username contains an pound sign and is no more than
8 " +
                "characters in length .",
                "Username bad",
```

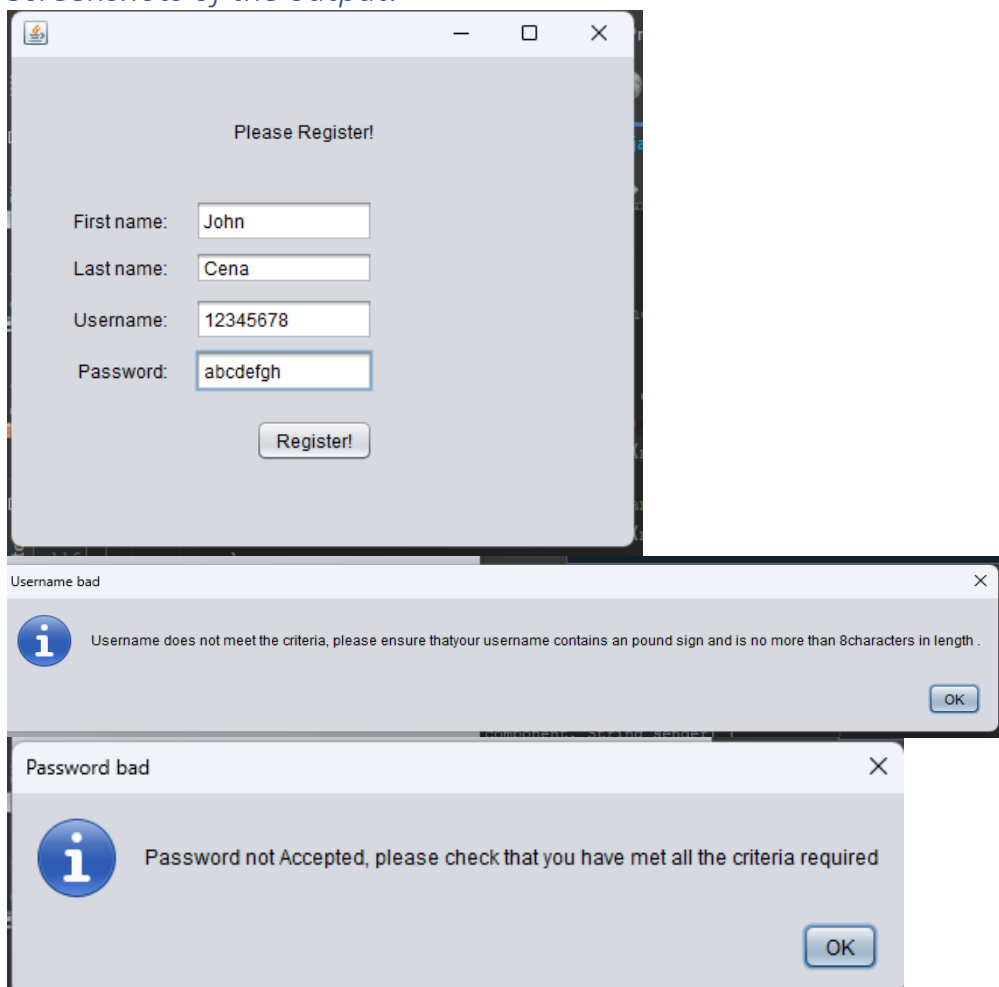
```
        JOptionPane.INFORMATION_MESSAGE
    );
}
else if(!meetPasswordComplexity(password)) {
    JOptionPane.showMessageDialog(
        component,
        "Password not Accepted, please check that you have met all the
criteria required",
        "Password bad",
        JOptionPane.INFORMATION_MESSAGE
    );
}
}

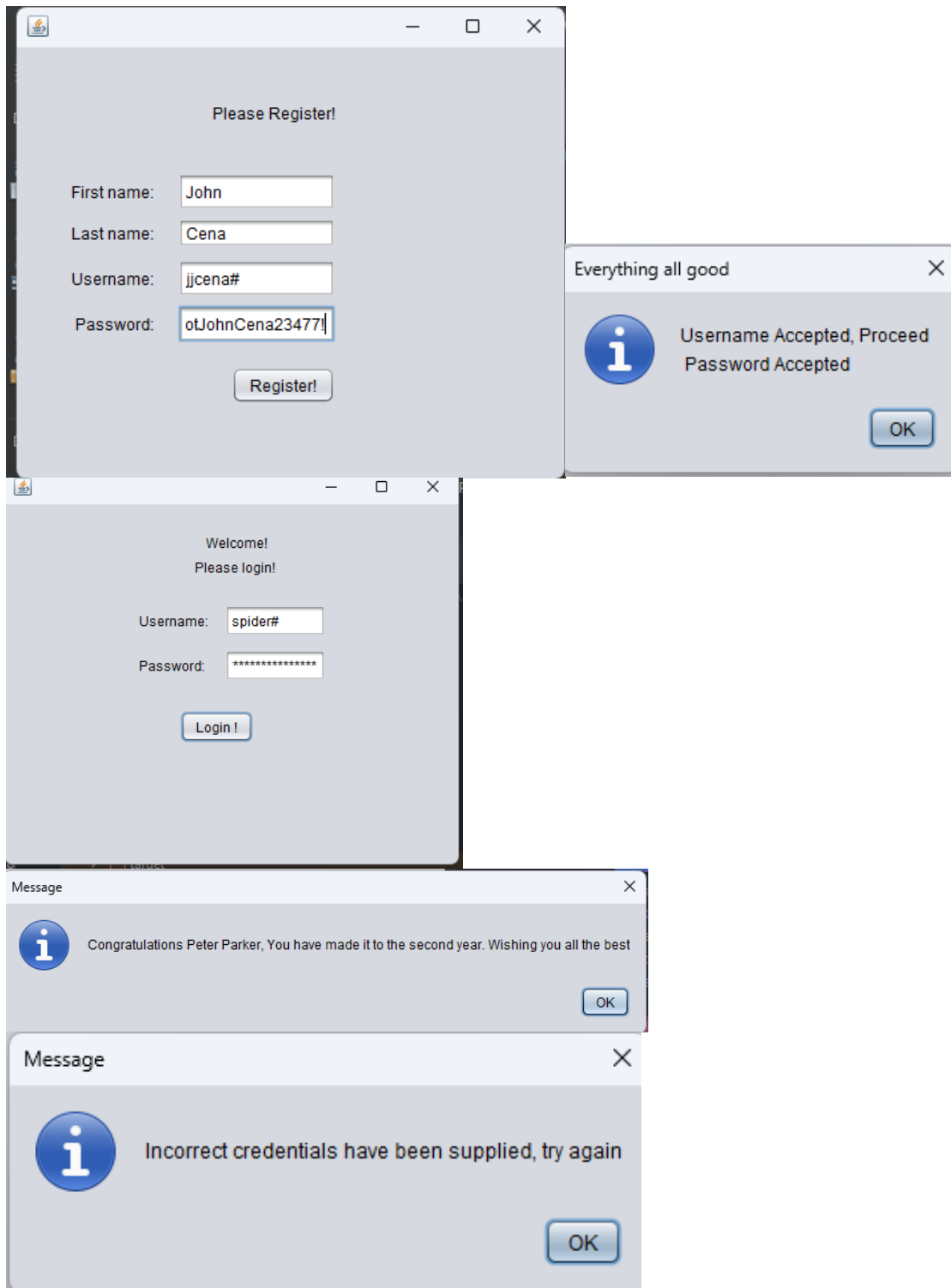
public static void login(Window component,String username, String
password){
    if(username.equals(uName1) && password.equals(pWord1)){
        returnLogin(component, "uname1");
    }
    else if(username.equals(uName2) && password.equals(pWord2)){
        returnLogin(component,"uname2");
    }
    else {
        returnLogin(component,"none");
    }
}

public static void returnLogin(Window component, String sender) {
    if (sender.equals("uname1")){
        JOptionPane.showMessageDialog(component, "Congratulations "+
studentName1 +", You have made it to the second year. Wishing you all the
best");
    }
    else if (sender.equals("uname2")) {
```

```
JOptionPane.showMessageDialog(component, "Congratulations "+
studentName2 +", You have made it to the second year. Wishing you all the
best");
}
else {
    JOptionPane.showMessageDialog(component, "Incorrect credentials
have been supplied, try again");
}
}
}
```

Screenshots of the output:





Completed Declaration of Authenticity

I, Monde Mkhize, solemnly declare that the work presented in this formative is entirely my own. I have not plagiarized or copied the work of others without proper acknowledgment. I affirm that the content, ideas, and arguments presented herein are the result of my independent effort and intellectual contribution. I understand the significance of academic integrity and the detrimental consequences of engaging in plagiarism or other forms of dishonesty. Therefore, I assure you the following:

1. All sources used in this work, including but not limited to books, articles, websites, and personal communications, have been appropriately cited and referenced according to the specified guidelines or referencing style.
2. Any direct quotations or paraphrased information from external sources have been identified by using quotation marks or proper citation methods.
3. I have not received any unauthorized assistance or collaboration from others in completing this work, except for instances explicitly permitted by the instructor or clearly stated in the assignment guidelines.
4. The ideas, arguments, and interpretations expressed in this work are my own and have not been submitted for assessment in any other academic setting unless explicitly mentioned and properly acknowledged.
5. I acknowledge that failure to adhere to these principles of academic honesty and integrity may result in severe penalties, including but not limited to the rejection of this work, loss of marks, academic probation, or disciplinary action as deemed appropriate by the educational institution.

Signature: Monde Date: 31 July 2023