

Exception Handling and File Processing

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CSC310 Module 1 Case

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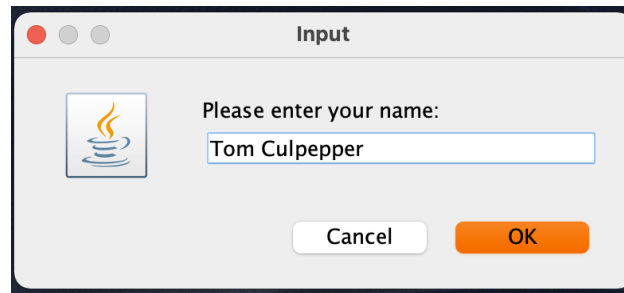
Exception Handling and File Processing

```
100  /**
101  * The CalcTaxes program implements an application that requests tax information
102  * from the user and then calculates taxes due.
103  *
104  * Assignment: CSC310 Mod 1 Case
105  *
106  * @author Thomas Culpepper
107  * @version 1.0
108  * @since 2021-12-28
109  */
110  import javax.swing.JOptionPane;
111  import java.util.regex.*;
112
113  public class CalcTaxes {
114      public static void main(String[] args) {
115          boolean calcAgain = true; //control to run again or exit
116
117          JOptionPane.showMessageDialog(
118              null, "This program will calculate your federal and state taxes");
119
120          while (calcAgain) {
121              String validationPattern = null;
122              String errorMessage = null;
123              String [] userInputs = new String[4]; //array to hold user input strings
124              String [][] inputRequests = { //input requests and expected type (num or st
125                  {"Please enter your name:","str"},
```

```
126         {"Enter your yearly income", "num"},
127         {"Enter your Federal tax rate (%):", "num"},
128         {"Enter your State tax rate (%):", "num"}
129     };
130     for (int i=0; i < inputRequests.length; i++) {
131         userInputs[i] = JOptionPane.showInputDialog(inputRequests[i][0]);
132         if (userInputs[i] == null) { // Exit cleanly if user hits cancel
133             System.exit(0);
134         }
135         else if (inputRequests[i][1].equals("num")){
136             validationPattern = "^\\d+$|^-?\\d*\\.\\d{2}$"; // match integer or
137             errorMessage = "Please enter a number \\n(000 or 00.00)";
138         }
139         else if (inputRequests[i][1].equals("str")) {
140             validationPattern = "^[A-Za-z]+\\s*[A-Za-z]*$"; // match name and o
141             errorMessage = "Try again./\\nNo numbers or symbols please";
142         }
143         else {
144             JOptionPane.showMessageDialog(
145                 null, "Illegal Input type Option. Please contact the developer."
146                 throw new IllegalArgumentException(
147                     "Input type option invalid. Only 'num' or 'str' allowed");
148         }
149
150         Pattern p = Pattern.compile(validationPattern);
151         Matcher m = p.matcher(userInputs[i]);
152         if (!m.find()){
```

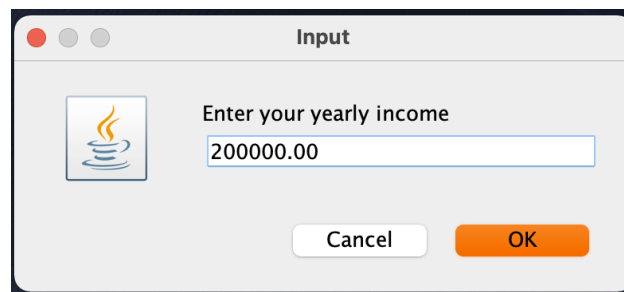
```
153         JOptionPane.showMessageDialog(null, errorMessage);
154         i--;
155     }
156 }
157
158 double yearlyIncome = Double.parseDouble(userInputs[1]);
159 double fedTaxRate = Double.parseDouble(userInputs[2]) / 100;
160 double stateTaxRate = Double.parseDouble(userInputs[3]) / 100;
161 double fedTaxDue = yearlyIncome * fedTaxRate;
162 double stateTaxDue = yearlyIncome * stateTaxRate;
163
164 JOptionPane.showMessageDialog(null, userInputs[0] + "\nYour Federal Taxes are: $" + fedTaxDue
165     + fedTaxDue + "\nYour State taxes are: $" + stateTaxDue);
166
167 int reply = JOptionPane.showConfirmDialog(null, "Would you like to calculate again?",
168     "Run Again?", JOptionPane.YES_NO_OPTION);
169 if (reply == JOptionPane.NO_OPTION) {
170     calcAgain = false;
171 }
172 }
173 }
174 }
```

User Screens



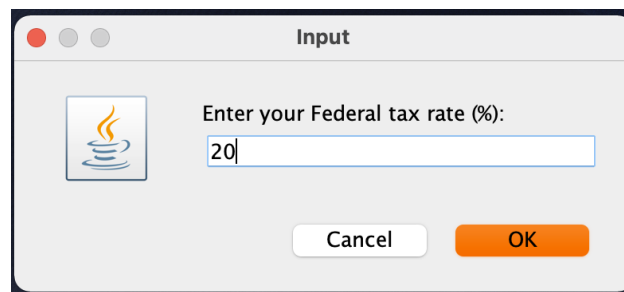
A screenshot of a Java Swing window titled "Input". On the left is a Java logo icon. The text "Please enter your name:" is followed by a text field containing "Tom Culpepper". At the bottom are "Cancel" and "OK" buttons.

Figure 1. CalcTaxes Screen 1



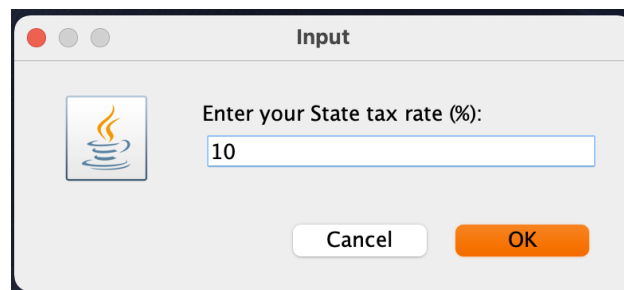
A screenshot of a Java Swing window titled "Input". On the left is a Java logo icon. The text "Enter your yearly income" is followed by a text field containing "200000.00". At the bottom are "Cancel" and "OK" buttons.

Figure 2. CalcTaxes Screen 2



A screenshot of a Java Swing window titled "Input". On the left is a Java logo icon. The text "Enter your Federal tax rate (%):" is followed by a text field containing "20". At the bottom are "Cancel" and "OK" buttons.

Figure 3. CalcTaxes Screen 3



A screenshot of a Java Swing window titled "Input". On the left is a Java logo icon. The text "Enter your State tax rate (%):" is followed by a text field containing "10". At the bottom are "Cancel" and "OK" buttons.

Figure 4. CalcTaxes Screen 4

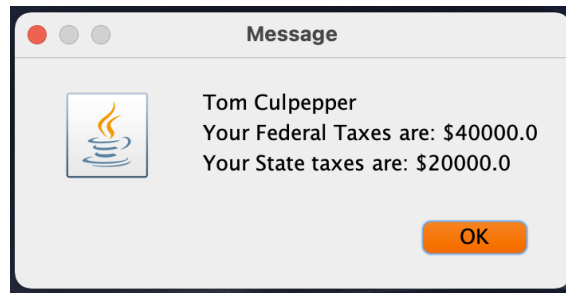


Figure 5. CalcTaxes Screen 5

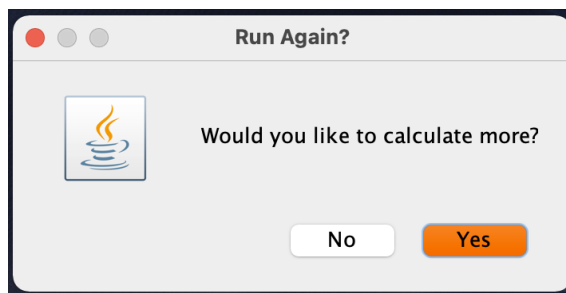


Figure 6. CalcTaxes Screen 6