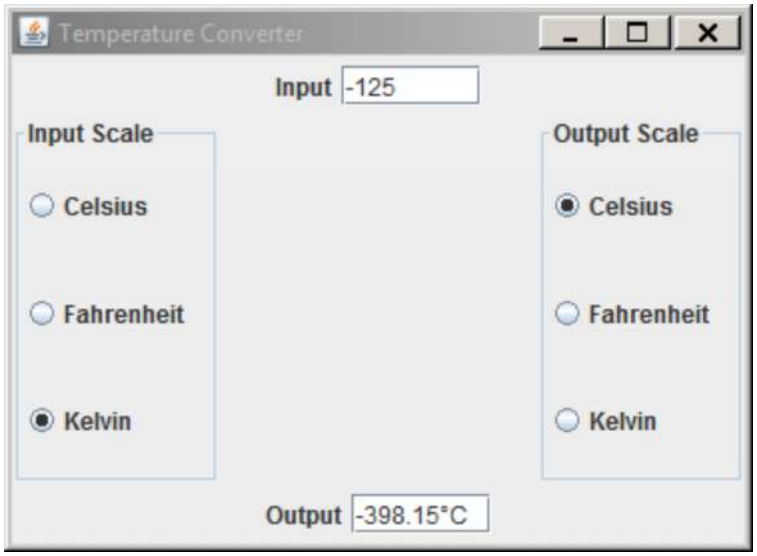
CSC 7200
Week 3 Programming Assignment

Java GUI Development

In this programming assignmnent, you'll write a Java GUI application that will do temperature conversions between the Celsius, Fahrenheit, and Kelvin temperature scales. The GUI display should look something like the following:



Your program must meet the following requirements:

1. **Do not use any of the GUI editing capabilities of NetBeans or Eclipse for this assignment.** Do all the GUI layout work based on what you have learned in class in the last 2 weeks.
2. The GUI and event handling setup should be done in the constructor of your GUI class or in private methods called from the constructor.
3. The display must have a label and JTextField where the user inputs a value which must appear in the upper part of the frame as shown above.
4. There should be a set of 3 radio buttons which indicate the input scale of the value to be converted. The 3 input scale buttons must be vertically aligned on the left side of the display as shown above.
5. There should be a set of 3 radio buttons which indicate the output scale to be converted to. The 3 output scale buttons must be vertically aligned and appear on the right side of the display as shown above.
6. Event handling must be setup so that selection of any input or output button causes an event which triggers the event handling code to determine which of 9 possible conversions is needed.

7. Event handling must also respond to the user hitting the enter key in the input textfield! For this event, the event handling code must also determine which conversion is needed based on which buttons are selected.
8. Display the conversion result in an output text field or in a JLabel which appears in the bottom part of the display as shown above. Output the degree symbol and output scale information as shown above. You can output a degree symbol by putting the character value 176 into a formatted string.
9. If a radio button is clicked when there is nothing in the input textfield, the event handler must display the string "**No Input**" in the output textfield.
10. Your program must accurately convert **from** Fahrenheit, Celcius, Kelvin **to** Fahrenheit, Celcius, Kelvin. Only the selected conversion is displayed in the output textfield.
11. You must create a **separate class** which does all the temperature conversion calculations. It should have 6 static methods, one for each possible conversion. Each of the 6 methods takes an input temperature and returns the appropriate converted temperature. This class could be used in any other application where temperature conversion is needed. You can find conversion formulas at the following website:
    http://en.wikipedia.org/wiki/Temperature_conversion
12. When the conversion selection changes due to clicking either an input or output scale button, the output area must change to show only the new result.
    a. HINT: For radio button events, use the **ItemListener** interface and use the **isSelected** method on the radio buttons to find out which buttons are turned on!
13. The output must display 2 digits after the decimal point.

Notes

- Ensure you test your conversion formulae and the error case handling

Deliverables

- Screenshots of the running program
  - Ensure the screenshots show at least 2 different conversions and 1 error case being handled
- Source Code for all classes
- Paste Screenshots + Source Code into a single DOC/DOCX file

Lab Grading Criteria

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Program 1                  120 pts.
Screenshots + Source Code  30 pts.
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Total 150 pts.

*** Program1:
- Doesn't inherit from JFrame class: -15
- GUI/event handling not done in constructor (directly or via private methods): -15
- Don't use inner class for event handling: -15

- Input JTextField not used: -9
- Input JTextField not in upper part of GUI: -3

- Output JLabel/JTextField not used: -9
- Output JLabel/JTextField not in bottom part of GUI: -3
- Output not formatted to 2 digits after decimal: -6
- Output doesn't show new result only: -6

- Event-handling not setup for selection of any input or output button: -9
- Event-handling not setup for hitting enter in input JTextField: -9

- Separate class not used for temperature conversions: -9
- Doesn't have 6 static methods, 1/possible conversion: -6/each

- Radio buttons not vertically aligned: -9
- Things don't work in general: -6/instance
- No screenshots: -30