CSC-240 Lesson 8: Introduction to GUI Concepts

Assignment Instructions

Please do the exercise described below.

This is a program that needs to implement event handlers. You should implement the application so that it provides the required interface and functionality. You have flexibility in the choice of components and in the presentation.

Submit at least one file using the file name:

- `TemperatureConversion.java`, as the name of the main application. The main application should start the application, leading to the showing of a window.
- Submit any other classes (and/or source files) needed and written to support the application (see the Postscript).
- The program is to be a temperature scale converter. It should show a GUI with controls to be able to convert from at least the three temperature scales Fahrenheit, Celsius, and Kelvin to any other of the same set of scales (see the *About the Assignment* topic for some more information on this).

  Please be careful about the correct spelling of the names of temperature scales. They are all named after real people, so care should be taken to honor those people with the correct use of their names.
- The presentation to the user of all fields on the GUI should update whenever any selection is made of "from" or a "to" a temperature scale, or when any entry of a temperature is made to the converter.

The Conversion Rules

Celsius = (5/9) × (*Fahrenheit* − 32) (or equivalently, *Fahrenheit* = *Celsius* * (9/5) + 32)

Kelvin = *Celsius* + 273.15 (or equivalently, *Celsius* = *Kelvin* − 273.15)

Other relationships may be derived from these equations. (Remember, these are mathematical formulæ, ***not*** programming statements.)

Postscript

One semester, a student asked the question:

> The assignment instructions stated to hand in a `TemperatureConversion.java` file as the main application and any other classes that are needed. I am just curious as to how many other classes? I am able to get everything to work with just two, which includes the main application.

The answer to this question is discussed at length in the article "FAQ How many other classes are needed" in the *Informational Resources* module.

[This is not a hint, nor even a recommendation: there will be several versions shown for the Demonstration solution, showing different ways of approaching a solution for this assignment (mainly in the area of listing the temperature scales to be supported). Each of the versions has at least five source code class files *in addition* to the class file containing the *main* method. In the plain version two of those five classes contain inner classes for a total of 9 `.class` files produced by the compiler. In the first alternative version, two of those classes contain inner classes for a total of 13 `.class` files produced by the compiler. In the second alternative version, only one of those classes contains inner classes, but there is also a class (with inner classes) for reading data from a file, for a total of 11 `.class` files produced by the compiler. The final (alternative) version uses Java 8 constructs, so in addition to the main class, there are also 9 other `.class` files.]

> The following *About the Assignment* topic contains further explanation, directions, and hints about this assignment. Please read that topic before starting this assignment.

Important

Please follow the directions of Programming Assignment Identification in submitting your programming solutions.

If you have any questions or concerns about the Assignment or the *About the Assignment* topic, please use the Lesson Question discussion topic, or send a message by the D2L Internal Messaging system if you prefer.

Note: you may submit to the Assignment Submission Folders as many times and as often as you wish, up to the deadline time. Each submission is tagged with the date/time, and so each submission remains separate and distinct. Unless you leave instructions to the contrary, only the most recent of each file with the same name will be viewed for the purposes of grading. Details may be found in the topic *How To Submit and Get Feedback on Assignments* in the *How To* module.

Messages that accompany Assignment Submissions are read, and responded to, ***only*** when assignment submissions are graded (which is after the Assignment Submission Folder closing date/time). If you have a comment or question about an assignment, or a request for assistance, that needs an earlier response, then that comment, question or request should be made or asked *via* an Internal Message or the Discussion board, as these are usually read and answered every day.