Lab 3 – Felt Temperature Calculator

CS235IM, Intermediate Mobile Application Development: iOS

Introduction

The purpose of this lab is to give you practice using the following new UI Controls

- ImageView
- Slider
- AlertController
- Switch

Apparent Temperature Calculator (Group B assignment)

The "Apparent Temperature" is how hot or cold the air feels. There are two ways to calculate it:

In cold weather, wind speed is a major factor determining how cold it feels, but not humidity. The formula for calculating apparent temperature (aka wind chill temperature) is:

Wind Chill Temperature = 35.74 + 0.6215T - 35.75(V^0.16) + 0.4275T(V^0.16)
where: T is the air temperature in degrees Fahrenheit, and V is the wind speed in mph.
Reference: https://en.wikipedia.org/wiki/Wind_chill (January 20, 2016)

In warm weather, humidity is a greater factor. Apparent temperature in hot weather is calle d the "Heat Index" The formula for calculating the heat index is:

Heat Index = -42.379 + 2.04901523T + 10.14333127R - 0.22475541TR - 6.83783 x $10^{-3}T^2$ - 5.481717 x $10^{-2}R^2$ + 1.22874 x $10^{-3}T^2R$ + 8.5282 x $10^{-4}TR^2$ - 1.99 x $10^{-6}T^2R^2$
where: T is air temperature Fahrenheit, and R is the relative humidity (percentage)
Reference: *http://www.weather.gov/ama/heatindex* (February 1, 2017)

Create a calculator that has:

- An image of clouds, or ice (or whatever) at the top
- A TextField for entering the current temperature (indicate whether you're using degrees C or F)
- A slider with a minimum of 0 and a max of 100 to determine the wind speed (indicate whether you're using kph or mph)
  - The wind speed will be shown in the appropriate label
- A TextField for entering the percent humidity
  - The humidity amount will be shown in a label
  - There will be a switch for turning humidity on or off
- A label that displays the total
- An Action Sheet that is triggered when you turn on or off the humidity calculation. The Action sheet will ask if they really want to turn this calculation on or off (two separate messages).

The Actions that should be handled are shown below. Actions from the same kind of UI control should be handled by the same action method. The calculations should be updated when any of these actions are invoked.

- Slider values changing (wind speed)
- Temperature value change
- Humidity percentage value change
- Humidity switch value change (on or off)

Written by Brian Bird, Lane Community College, winter 2016, updated spring 2018

Alternative lab assignment

Create an app that uses all the UI elements listed below, that has a total of at least 15 UI element, and does some kind of computation :

- ImageView
- Slider
- AlertController
- Switch
- Button
- Label
- Text Field

Submission

Beta Version

- Zip the solution folder. (Remove the *bin* and *obj* folders before zipping.)
- Put the screen shots in a document, label each screen shot, and upload the document.
- Post both files in the Beta + Code Review forum

Release Version

Revise your code and upload it to the Moodle Lab Release assignment along with the code review your lab partner gave you. Complete the "Release' column of the review to show what you revised.

Important notes:

- Delete the *obj* and *bin* folders out of your solution before you zip it. Otherwise it will be too large to upload.
- If your solution is still too big to upload you can put it in an online git repository using a service like GitHub and put a link to the repository in a document and upload it (don't use the assignment comments)
- If you are not familiar with Git, you can share your work with me using an online cloud storage service like Dropbox, GDrive, OneDrive, or iCloud. Put the link in a document and submit it in place of the zip file. Please don't put the link in the assignment comments.