

CS 112 Lab Assignment

Instructor: Dan Fleck

Lab: Graphics

Due Date: SPECIAL ALERT: This lab (and ONLY this lab) will be due on April 14th at midnight for EVERYONE. Just this once we'll have a longer due date for people because of the midterm the week before. We want you to study for the midterm! NOTE: This does NOT change the due dates for any other labs, so lab 9 for people with lab on Tuesday will be due April 15th. Plan ahead!

Overview

This lab will familiarize you with some graphical user interface concepts including:

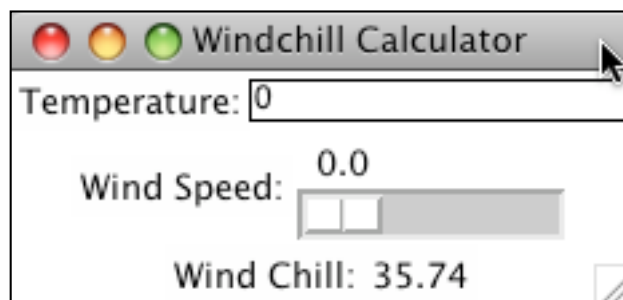
Scales, Entry boxes and events

Assignment

In this assignment you will be creating an event driven wind chill factor calculator. In order to calculate the wind-chill (how cold or hot it really feels outside) the National Weather Service uses this function:

$$35.74 + 0.6215T - 35.75(V^{0.16}) + 0.4275T(V^{0.16})$$

Where T is the temperature in Fahrenheit and V is the wind velocity in miles per hour. You will be creating a GUI that looks like this:



I have posted my solution here (as before, you shouldn't try to read the solution, but you can run it to clarify any unclear parts).

MY SOLUTION:

http://cs.gmu.edu/~dfleck/classes/cs112/spring08/labs/graphics_windchill/windchillO.pyc

By typing in a temperature number or by sliding the Wind Speed scale you the Wind Chill number should automatically update.

Requirements

1. The wind chill should automatically update if the user slides the scale (check out the motion type events)
2. The wind chill should automatically update if the mouse leaves the temperature text box
3. The wind speed scale should go from 0 to 50 in 0.1 increments
4. The wind chill should be displayed with 2 decimal points (remember string formatting?)
5. If there is no value inside the entry box and the user tries to calculate the wind chill, the entry box should automatically be filled with the value 0... this should NOT generate an error... test for this condition!
6. Your window must have the title "Windchill Calculator"

Grading (max points: 100)

1. 55 pts - GUI displays and looks correct
 - a. 5 - title of window
 - b. 30 - correct widgets and widget placement
 - c. 10 - decimal points show up correctly on Scale
 - d. 10 - decimal points correctly on wind chill value
2. 30 pts - events are properly handled
3. 10 pt - entry box correctly handles no value
4. 5 pts - code has correct header and appropriate comments

* Note: Individual GTAs may modify/amend this as desired for their sections

Helpful Hints

- The GUI is 3 frames top to bottom -- each frame has a label and a widget inside. (For example, a label with text "Temperature" and a Entry widget are in the top frame.)
- One easy way to set a value in an Entry box programmatically is to use the insert function.
- There is a configuration item to set the resolution of the Scale... you'll need to use it!
- You'll need information from the class notes and this page:
<http://effbot.org/tkinterbook/tkinter-index.htm#class-reference>
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What to turn in:

1. windchill_calculator.py source code (don't forget the header in the file!)