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CSC 468 - GUI Programming

Programming Assignment #1 – Weather Station

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**User Guide**

**Compile Instructions: Use NetBeans IDE to compile and run program.**

Weather Station is a GUI application made to provide weather data and statistical information in visual form. Sample data stored in XML files can be read into this program. These files contain readings for various types of weather measurements. These measurements are: temperature, humidity, barometric pressure, wind speed, UV index, and rainfall. In the sample XML files, readings for each of these measurements were recorded approximately every 15 minutes. Samples were given to us containing each of these reading from 2010-2015. Due to a bug in our code, one year of data can be loaded and viewed at a time (directory selected can only contain 12 months of data from a single year).

When the application is started, a default set of data will be loaded in to the program from the Weather Station directory. A user can select a new directory of XML files to load into the program through the file tab in the top left of the screen. A user can select the file menu option and click “Open Directory”. This will bring up a new window where a user can choose a file containing XML data files to be loaded. Again, only one year of data can be loaded in at a time due to the massive amounts of samples. Once a valid directory is chosen, the new XML files will be loaded into the program, and the user can then interact with and view this data. The user will be prompted to choose one of the six data measurements on the left side of the screen. When selected, that data measurement will be represented on the graph in the middle of the window. Each data point represents a single sample reading.

By default, the first day from the sample data will be displayed. The user can switch between days by using the slider and buttons on the top of the window. Clicking on the right or left button will cycle through the data, displaying the previous or last day depending on the button click. Clicking on the right or left side of the slider pointer will also increment or decrement the day displayed by one. The user can also click the slider pointer and drag it across to quickly cycle through the data.

To view a larger portion of data at a time, the user can cycle through the four tabs on the top of the graph. Here a user can choose to view every data point in a whole day, week, month, or year. Just as described above for the days, a user can cycle through each week or month of the year with the slider.

Tooltips are enabled on the graphs and are useful to view exact values for a certain point on the graph. A user can simply hover the mouse over a data point on the graph. Doing so will bring up a tooltip showing the exact reading value along with its sample number.

Statistical information can be viewed by selecting the “Statistics” menu option in the top left corner of the window. This will bring up a dropdown menu where the user can choose to view statistics about temperature, wind, or rainfall.

When the temperature option is selected, a window will be brought up displaying the average, high, and low temperatures over the set of data being viewed. For example, if the user has the day tab selected, the daily average temperature, as well as the daily high and low temperatures will be displayed in the new window. If the user is on the weekly tab, the weekly average, high, and low will be displayed. To view information over a new data set, the user can close the statistics window, choose a tab and move the slider to get the needed set of data, and go to the statistics window.

As well as temperature, the average and high wind speed over a data set can be viewed. And finally, the total rainfall over the current dataset can be viewed.

Note, yearly statistics are not currently calculated correctly and will display zeros in all fields.