Programming Assignment #5

Compute Summer Temperature Statistics

CS 1428.254, Spring 2012 Instructor: Jill Seaman

Due: in class Tuesday, 3/27/2011 (upload electronic copy by 9:00am)

Problem:

A local amateur meteorologist has been recording daily high temperatures throughout the three summer months (June, July, and August). He would like you to write a program to compute some statistics based on the data he has collected.

He has placed each daily high temperature on a separate line in a file named "hightemps.dat". The high temperatures are in order, so that the first one is for June 1, the second is for June 2, and so on through July and August. To keep things simple, we will assume each month has exactly 30 days (so there are 90 values in the file).

The statistics that the meteorologist would like for you to compute in your program are:

- The average daily high temperature for the entire summer
- The number of days over 100 for each month.
- The number of days over 100 for the entire summer.
- The maximum temperature for each month and on what day it occurred.

Input:

All of the input will come from the file "hightemps.dat". You may assume that there will be 90 values in the file, and that they will each be greater than 0. They may have fractional parts, like 99.87. I will place a sample file for you to use for testing on the web page. Your program should test for file open errors.

You should input the temperatures into three arrays, one for June, one for July, and one for August.

Processing: Compute the statistics requested above.

Output: Display the statistics, labelled, and with the temperatures formatted to 1 decimal place.

Sample output is shown on the next page.

High temperature statistics for the summer: Average daily high temperature: 98.9 Number of days over 100 in June: 13 Number of days over 100 in July: 15 Number of days over 100 in August: 14 Total number of days over 100 for the summer: 42 Maximum temperature for June: 109.0 occurred on June 29 Maximum temperature for July: 108.2 occurred on July 23 Maximum temperature for August: 112.1 occurred on August 5

Style:

See the Style Guidelines document on the course website. The grader will deduct points if your program violates the style guidelines.

Logistics:

Your program must be free of compiler errors.

Include the file documentation header at the top of your source file (as described in the Style Guidelines document).

Do you not use any features of C++ that we have not yet covered in class (use features from Chapters 1-5 and 7 only).

Name your file **assign5_xxxx.cpp** where xxxxx is your TX State NetID (your txstate.edu email id). The file name should look something like this: assign5_js236.cpp

There are two steps to the turn-in process:

- Submit an electronic copy using the upload link on the course webpage (or go directly to <u>https://hwupload.cs.txstate.edu</u>) by 9:00am, Tuesday 3/27/2012
- 2. Submit a printout of the file at the **beginning of class on Tues 3/27/2012**. Please print your name on the front page, staple if there is more than one page.

See the following for details about turning in homework late: <u>http://www.cs.txstate.edu/~js236/cs1428/assignmentpolicy.txt</u>