CS16, 10W, H10 (More on File input) Total Points: 50

Available online at: http://www.cs.ucsb.edu/~pconrad/cs16/10W/homework/H10 (printable PDF)

Accepted: **on paper, in LECTURE (Tuesday morning Feb 9)**

Late Policy: No email submission allowed—and don't "slip it under my door". If you need to make it up, you must do so during office hours, or make an appointment to see me, and you must request this appointment within 48 hours of when the assignment was originally due.

Personal Day/Sick Day policy: Everyone is permitted one "personal day/sick day" when you get to make up a missed homework assignment for free during office hours or via appointment. After that, you may not make up the homework assignment—you can only earn back the points through extra credit opportunities.

(For more details, see the syllabus and the homework policy)

Name: (2 pts)_____ UMail address (3 pts) _____@umail.ucsb.edu

Lab Section (5 pts) Circle one: 3pm 4pm 5pm unknown

(Note: For now, circle the lab section you are registered for on GOLD. If you need to request attendance at a different lab section because of an ACTUAL SCHEDULE CONFLICT, please email pconrad@cs.ucsb.edu with details)

This assignment is due **IN LECTURE on Tuesday 02/09**
It may ONLY be turned in during Lecture on Tuesday 02/09
Do NOT turn it in early in lab or lecture on Thursday 02/04

Name of your homework partner if you work with another person:

Homework H09 asked you to read Section 3.6 in your Etter textbook—but only asked questions about the material on pages 116-118. This homework is also about section 3.6, but asks questions about the material on pages 119-126.

1. On p. 119, Etter (the author) introduces three different ways that a data file can be structured, and then describes each of these three ways in detail on the pages that follow (119-126.)

   Briefly describe each of the three ways:

   - (4 pts)

   - (4 pts)

   - (4 pts)

2. One of these three techniques uses a "do/while" loop. This is a kind of loop that we have not yet discussed in lecture, so take a moment to review it by reading pages 102-104 that contrast the while loop and the do/while loop. You may want to review the material on for loops on page 104-107 too.

   a. (2 pts) Is a while loop always executed at least once? Circle one: YES NO

   b. (2 pts) Is a do/while loop always executed at least once? Circle one: YES NO

   c. (2 pts) Is a for loop always executed at least once? Circle one: YES NO

Please turn over for questions to answer

Continued from other side

3. These questions pertain to the program on p. 120-121 (Program chapter3_5)

   a. (3 pts) Why is a for loop more appropriate for this program than a while loop or a do/while loop?

   b. (3 pts) There are two fscanf function calls in this program. The first call uses "%d" as the second parameter and is outside the for loop.

      Why is this call outside the for loop?

   c. (3 pts) The next call uses "%lf %lf" as its format string, and is inside the for loop.

      Why is this call inside the for loop?

   d. (3 pts) In both cases, the first parameter to the function fscanf is the variable `sensor`. What is the type of sensor?

      (By type, I mean something like `int` or `char *`. Here's a hint: neither of those is the correct answer.)

4. (10 pts) Look at the program on p. 125, chapter3_7

   Half way down in this program are two lines of code:

```
if (num_data_pts == 1)
   max = min = motion;
```

   Explain the purpose of these two lines of code.

   Note that I'm not looking for an answer that shows a "shallow" understanding of these two lines of code—I'm looking for a deep understanding.

   - A answer reflecting shallow understanding is: "these two lines of code check whether num_data_pts is 1, and if so, they set max and min equal to the value of the variable motion". That kind of answer is what I do NOT want, and it will get zero credit.
   - A answer reflecting deep understanding will tell me:
     - what the variable num_data_pts represents,
     - what the variable motion represents
     - what the variables min and max represent
     - what is special about the situation when num_data_pts is equal to 1, and most importantly
     - WHY in that situation, we should set the values of min and max equal to the current value of motion.

End of H10