CS16, 10S, **H05**, due **Fri Lab 04.09**
Etter 1.3, 2.1-2.3 (Problem Solving, C Program Structure, Constants, Variables, Assignment Statements)
Total Points: 50

Available online as http://www.cs.ucsb.edu/~pconrad/cs16/10S/homework/H05 — printable PDF

Name: (4 pts) _____ Umail Address: (4 pts) _____ @umail.ucsb.edu

Lab Section (2 pts) — circle one: 9am 10am 11am noon 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 Lab on Friday, 04.09.**
**It may ONLY be submitted Lab, in ESB1003 (Cooper Lab) at 9am, 10am, 11am or noon on Friday.**
You must come IN PERSON to turn it in during your assigned Lab section.

**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)

---

Please read sections 1.3, 2.1-2.3 in the Etter textbook (see Homework H04 for information on the copy that is on reserve in the library). Then, answer these questions:

1. Section 1.3 presents a five step problem solving methodology in the context of a program that calculates the distance between two points.

   a. (4 pts) What is the formula that is used to calculate this distance? Describe it in math notation, rather than in C.

   b. (4 pts) How does this formula look after it is converted into C code?

2. Section 2.1 begins with a review of the C program solution to the problem outlined in Section 1.3, including a review of each line of code and its purpose in the program. This description includes many defintions of technical terms.

   These technical terms are helpful to know, because when your program contains syntax errors, the resulting error messages often contain these technical terms.

   a. (4 pts) Which of the lines of code is a *pre-processor directive* that pulls in information related to the square root function?

   b. (4 pts) Section 2.1 describes declarations and statements. Java and C++ also have declarations and statements — in those languages, the two can be interleaved in many different orders. That is not true in C, though.

      Instead, in C, which must come first: declarations, or statements?

## Please turn over for more questions to answer

## Continued from other side

3. (4 pts) In Section 2.2, the author mentions the C is a case-sensitive language. What does this mean?

4. Section 2.2 describes both scientific notaton, and how to use #define to set up the value of a symbolic constant.
   a. (3 pts) Using these two ideas, write the #define that sets up the symbol AVOGADRO to have the value $6.02214179 \times 10^{23}$

   b. (3 pts) A `#define` is an example of a pre-processor directive.
   What is the other pre-processor directive we've already encounted in Chapter 2?

   c. (2 pts) All declarations and statements in C end with a semicolon. Is this true of pre-processor directives?

5. Section 2.2 describes ASCII codes—and also refers you to an appendix where you can look them up for any character.
   a. (2 pts) What is the ASCII code for the capital letter `'A'`?

   b. (2 pts) What is the ASCII code for the lowercase letter `'a'` ?

   c. (2 pts) What is the ASCII code for the digit `'0'` (zero)?

   d. (2 pts) What is the ASCII code for the space character `' '` ?

6. Section 2.3 discusses both unary operators and binary operators.
   a. (2 pts) Give an example of a unary operator

   b. (2 pts) Give an example an a binary operator

---

End of H05