| First name (color-in initial) | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | section (9,10,11, 12,1 or 2) | first name initial | last name initial |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Last name (color-in initial) | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | | | |

# H01: Due Monday, 01.12 in Lecture

**C++ Basics (Ch 2)**
Assigned: Mon 01.05 Total Points: 50

MAY ONLY BE TURNED IN IN THE LECTURE/LAB LISTED ABOVE AS THE DUE DATE,
or offered in person, for in person grading, during instructor or TAs office hours.
See the course syllabus at https://foo.cs.ucsb.edu/16wiki/index.php/W15:Syllabus for more details.

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(1) (10 pts) Fill in the information below. Also, fill in the A-Z header by

- **coloring in** the first letter of your first and last name (as it appears in Gauchospace),
- writing **either 9,10,11,12,1 or 2** to indicate your **discussion section (lab)** meeting time
- writing your **first and last initial** in large capital letters.

All of this helps us to manage the avalanche of paper that results from the daily homework.

| | |
|---|---|
| name: | |
| umail address: | @umail.ucsb.edu |

If you collaborated with AT MOST one other person on this homework, write his/her name below. She/he should also have your name on his/her paper.

***Reading:*** *Read Chapter 2, pp.41-97. (If you don't have a copy of the textbook yet, there is one on reserve at the library.)*

*Then, answer the following questions. Be sure to check both sides.*

2. (4 pts) What is another way to write the line `cout << "Hello\n";` without the use of the `\n`? Your answer should still output `Hello` followed by a newline.

3. (4 pts) What C++ data type does the textbook recommend using for values such as 3.14 and -9.8?

4. Section 1.3 discusses the need to declare variables. If your previous programming experience was with Java, the need to declare variables is nothing new to you, but if your previous experience was in Python, this is a new concept. Every variable must be "declared" on first appearance, and given a fixed type. Sections 2.2 and 2.3 discuss various data types in C++. You can also read about data types in C++ on the course wiki under the topic C++: data types. Write variable declarations for the following, according to the instructions. Remember that variable declarations are statements, and so must end in a semicolon. Comments do not need to end in a semicolon.
   a. (3 pts) A integer variable called "count", followed by a comment indicating that this variable counts the number of lines in the input file.

   b. (3 pts) A variable that can store a hospital patient's temperature in Fahrenheit. You should be able to store numbers such as 98.6

   c. (3 pts) A variable that can store the correct response on a multiple choice test, i.e. either a single letter, such as a, b, c, d or e.

   d. (3 pts) A variable that can store a true/false value that represents whether a student has registered for at least 12 units this quarter. (Note: I'm ONLY asking for the declaration of the variable, not the computation. Be precise in your answer.)

   e. (3 pts) A variable that can the last name of a person, initialized to "Pratchett". Before the variable declaration, write the two lines of code that must appears at the top of the file any time this data type is used.

5. Pages 69 through 72 discuss some of the pitfalls that happen with the division operator in C++, as well as the type of expressions that involve a mix of int and double operands, and the % operator (remainder after division, sometimes called "modulus").
   a. (2 pts) What is the type of this expression: 3 + 4.5

   b. (2 pts) What is the value of this expression: 5/9

   c. (2 pts) What is the value of this expression: 5.0 / 10.0

   d. (2 pts) What is the value of this expression: 50 % 2

   e. (2 pts) What is the value of this expression: 25 % 4

6. Pages 74 through 83 discuss the if/else statement, and the C++ symbols used for the boolean operations "and" and "or".
   a. (3 pts) If there is more than one statement under either the "if" part or the "else" part of an if/else in C++, what symbols do you put around the statements to group them?

   b. (4 pts) Write code that will print "Bad" (followed by a newline) if the value of the variable temp is less than 50, or it is greater than 80; otherwise, it will print "Good" (followed by a newline.)