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			

H10: Due Wednesday, 02.04 in Lecture

C-Strings and C++ std::strings (8.1, 8.2)
Assigned: Wed 01.28 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.

---

(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 8, Sections 8.1,8.2 about C strings and C++ strings. (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. Suppose I have `#include <cstring>` at the top of my program, and have the variables:

```
// set up two cities as C-Strings
char thisCity[20] = "Santa Barbara";
char thatCity[20] = "Los Angeles";

// now we muck about a bit
thisCity[5]='\0'; // backslash zero
thatCity[3]='0'; // just plain old zero
```

After executing these lines of code:

a. (2 pts) What would be the output of `cout << thisCity << endl;`

b. (2 pts) What would be the output of `cout << thatCity << endl;`

c. (2 pts) What would be the output of `cout << strlen(thisCity) << endl;`

d. (2 pts) What would be the output of `cout << strlen(thatCity) << endl;`

3. The questions below ask for a C++ boolean expresssion. WRITE ONLY THE BOOLEAN EXPRESSION, i.e. the thing that would go inside the parens of an if statement. DO NOT WRITE ANYTHING ELSE; in particular, do not write a complete if/else statement. Suppose that as before, I have `#include <cstring>` in my code, and I have declared these two C-strings:

```
char thisCity[20];
char thatCity[20];
```

Assuming that I have in some way initialized these strings with proper null-terminated C-string values that are completely within the 20 characters of memory occupied by thisCity and thatCity, what is the proper way to write:

a. (4 pts) A boolean expression that is true when thisCity comes before thatCity when the cities are sorted in alphabetical order (technically, "lexicographic" order? e.g. Bakersfield should come "before" Fresno, and Fresno should come "before" Oxnard.

b. (4 pts) A boolean expression that is true when thisCity comes after thatCity when the cities are sorted in alphabetical order (technically, "lexicographic" order? e.g. San Mateo should come "after" San Dimas.

c. (4 pts) A boolean expression that is true when thisCity and thatCity are both exactly equal.

4. On p. 479-480, the textbook author discusses a pitfall that, over the 18 years that Conrad has been teaching C++ to students (since 1996), has been one of the most COMMON sources of programmer frustration. He's frequently seen students write code for projects in advanced courses (such as the equivalent of UCSB's CS24, 32, 48, 130A, or 130B) and the code breaks down, NOT over the advanced data structures concept, but over this detail of reading input. So, please read this section carefully, then answer this question:
   a. (5 pts) Why is it a bad idea to mix `cin >> variable` and `getline` styles of input in the same program on the same input stream?

   b. (5 pts) Conrad's advice for avoiding this problem is: always use getline to read in a complete line of input as a either a C string or a C++ string, and then , and if what you want isn't a string, use built-in functions, or if needed, write your own to convert the string input to an integer, double, float or whatever you need. What function can you use to convert a C-string to an int value? (This is covered in Section 8.1)

   c. (5 pts) What function can you use to convert a C-string to a double value? (This is also covered in Section 8.1)

   d. (5 pts) The textbook author suggests a different way to avoid the problem. What method does the author suggest?