Goal
Understand how to build simple C language functions and use them to process null-terminated text strings.

Strings
- Strings are arrays of `char` variables.
- They are used in a C language program to store words or sentences in the English (or some other) language.
- Some programming languages have an actual variable type called `string`, but C does not.
- The logical end of a C language string is denoted by the presence of a byte with value 0 which is sometimes called a `NULL byte`.
- The program must explicitly provide storage for the NULL byte.
- Thus, a character array that can hold the string "Hello" must be at least 6 bytes in size:

  ```c
  char hello[6];
  ```

String functions
The C standard library contains a collection of functions that can be used to manipulate NULL-terminated strings.

- to use them, include the string.h library:  
  ```c
  #include <string.h>
  ```
- `strlen(char str[])` returns the length of a string (not counting the null character)
- `strcat(char str1[], char str2[])` concatenates `str2` onto the end of `str1`
- `strcpy(char str1[], char str2[])` copies `str2` over the top of `str1`
- `strcmp(char str1[], char str2[])` compares `str1` and `str2` and returns 0 if they are the same length and identical in all character positions
Assignment:
Write a program called lab10.c that contains three functions as follows:

1. Create a function int my_strlen (char s1[]) that will compute and return the length of a string s1. A single while loop should be used to count the characters one at a time. Processing should terminate when the NULL terminator is encountered (s1[ndx] == 0)

2. Create a main() function to test my_strlen().
   a. Define two character arrays v1 and v2 of length 16 and two integer variables i1 and i2.
   b. Read in two strings (maximum length 7) into v1 and v2 from the standard input. Invoke my_strlen() to set i1 and i2 to the lengths of v1 and v2 respectively. Use the format string "len: %3d - string: %s \n" to print i1, v1 and then i2, v2 to the standard output.

3. Create a function void my_strcat (char s1[], char s2[]) that will concatenate s2 onto the end of s1. Two while loops are required here. The first should identify the end of s1. The second should be used to copy the characters of s2 one at a time. Copying should end when s2[ndx] == 0, but care should be taken to ensure that the concatenated string is properly terminated with a NULL.

4. Augment your main() function so that it will concatenate string v2 onto v1, and print v1 using the format string "%s".

Turn In Work
Show your TA that you completed the assignment. Then turn in your lab10.c program using the handin page at http://handin.cs.clemson.edu