

CS 1044 Summer II, 2000
Homework #4 (Extra)
Due: Thursday, August 10 (by midnight)

This assignment is an "extra" homework - it will replace your lowest homework grade (or be dropped if it itself is the lowest grade). Because this is in some ways extra credit, it may require a little more work than other homework assignments. Additionally, there will be very little help offered by the instructor/TA's. If you decide to work on this, you will have to think through it (for the most part) by yourself. This assignment will require you to write code, so the project should be submitted as a *.cpp file that is ready to be compiled (the EAGS will not compile and grade it, that will be done by hand). If the program does not compile, it will not be graded. The assignment must be submitted to the EAGS by midnight on Thursday, August 10. There will be no late extensions for this assignment; answers will not be accepted by methods other than the EAGS (such as e-mail).

The Honor Code is in effect for this assignment. You may consult your book, notes, or the instructor, but NOT other students (regardless of if they are in the class or not) or the TA's. Any questions regarding the project should be taken to the instructor. By submitting this assignment you are pledging: "I have neither given nor received unauthorized help on this assignment."

Problem:

We have talked about the different string functions, such as `strlen`, `strcmp`, and `strcat`. These functions are included in the file `<cstring>`, and the code is part of the standard C library. However, for this assignment, you will actually write the implementation (function prototypes and definition) for these functions, instead of using the versions provided with C++. You will be given the `main()` function for a program, which you are to incorporate into your assignment (by that I mean copy directly). The program will contain calls to the string functions, which you will then have to write. Needless to say, you are not allowed to use `<cstring>` or `<string>` or any other header file that may contain string functions - the only header file that you will need is `<iostream>`.

Grading will be fairly stringent - each function works or it doesn't work (though you can get credit for 1, 2, or 3 working). Functions are expected to include appropriate comments. The `main()` function should be copied as written, and not altered in any way. During testing, we may alter `main()` by changing such things as the contents of strings, in order to verify that your functions work correctly.

Information on the workings of the string functions can be found in the course notes on slides 8.20 - 8.24. Use these descriptions to determine how the functions "interface" with the rest of the program - what parameters they take and the values that they return. Do not deviate from this - no credit will be given if your function does an operation correctly but in a different format. Put simply, I should be able to seamlessly interchange the library string functions and your functions.

The main() code:

```
#include <iostream>

using namespace std;

const int MAX_SIZE = 80;

int main()
{
    char String1[MAX_SIZE] = "Hello";
    char String2[MAX_SIZE] = "World";

    int Compare;

    // Get the length of the two strings
    cout << strlen(String1) << endl << strlen(String2) << endl;

    // Which string is first?
    Compare = strcmp(String1, String2);

    if (Compare < 0)
    {
        cout << String1 << endl;
    }
    else if (Compare > 0)
    {
        cout << String2 << endl;
    }
    else
    {
        cout << String1 << " == " << String2 << endl;
    }

    // Concatenate the strings
    strcat(String1, String2);

    cout << String1 << endl;

    return (0);
}
```