

Final Review

PROBLEM SOLVING IN C
(CSCE 105, SPRING 2006)

URL: <http://www.cse.unl.edu/~cstrobe/csce105s06/>

1:00 – 3:00, 2nd May, 2006

26th April, 2006

KNOW:

1. Writing functions that use output parameters to send more than one value back.
2. Scope of variables.
3. Different types of numerical inaccuracies.
4. Casting variables, both implicitly and explicitly.
5. Creating and using enumerated types.
6. Declaring, initializing, and modifying single- and multi-dimensional arrays.
7. Passing arrays to functions and having functions modify the arrays.
8. Declaring and initializing strings.
9. Different functions for strings.
10. Passing strings to functions and having the functions modify the strings and passing the values back.
11. Tracing through programs/functions.
12. Using different loops.

SAMPLE PROBLEMS:

- Write a function `Sort_3_Numbers` that takes 3 integer output parameters and returns them in order, from low to high.
- Declare an enumerated list with the values `charlie_sheen`, `jon_travolta` and `tom_cruise`, called `scientologist.t`. Declare a variable `weirdo` of this type, and set it equal to `tom_cruise`. What does the following code print?

```
printf("%d is creepy!\n", weirdo);
```

- Write functions `string_length(...)`, `string_compare(...)`, `string_concatenation(...)`, and `string_copy(...)` that operate exactly as those found in the `string.h` library.

- Given the following code:

```
#include <stdio.h>
int main() {
    int array[5] = { 3, 7, 2, 4, 1 };
    int j, sorted, tmp;

    while(!sorted) {
        sorted = 1;
        for(j = 0; j < 9; j++) {
            if(array[j] > array[j+1]) {
                tmp = array[j];
                array[j] = array[j+1];
                array[j+1] = tmp;
                sorted = 0;
            }
        }
    }
    return 0;
}
```

Trace this code, and rewrite the array each time positions any of the positions are switched. Thus, at first the array is:

3	7	2	4	1
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- Declare a 2-dimensional, 5×5 integer array. Write for loops to initialize the array to the following values:

1	2	3	4	5
2	4	6	8	10
3	6	9	12	15
4	8	12	16	20
5	10	15	20	25