

## ICS 365. Organization of Programming Languages. Programming Assignment 1

**Due:** 05/30/2017

**Points:** 50

### Problem Description:

Write a C program that sorts a sequence of positive numbers using the *bubble sort* algorithm in an ascending or descending order based on the user's input. The pseudo code for the bubble sort algorithm is below.

```
function bubblesort( N : list of numbers )
  for each i=length(N)-1 to 0
    for each j=1 to i
      if N[j-1] > N[j]
        swap( N[j-1], N[j] )
      end if
    end for
  end for
end function
```

The program prompts the user for the sequence of numbers to be sorted followed by the sort order. You can assume a maximum of 50 numbers will be entered. You can also assume the user will enter 0 to mark the end of the input.

### Program Specification:

- Have three functions besides main:
  - one that accepts the sequence of numbers
  - one that sorts the sequence of numbers; this function should take three parameters: the sequence of numbers as an array, size of the sequence, and the sorting order
  - a swap function to be called from the sorting function
- The main function prints the sorted sequence of numbers
- The program ignores inputs that are negative numbers.

### Sample output of the Program:

```
C:\> sort <enter>
Enter sort order: ascending
Enter a sequence of numbers: 10 2 1 3 40 20 0
1 2 3 10 20 40
```

### Grading:

Correctness: 20 (includes tests as well as code examination)

Proper use of C features,

Following specs: 15

Readability and documentation: 15(split up as below)

Criteria	Points
Program function at the top	2
Meaningful documentation before each function	5
Proper use of space to separate tokens	2
Indentation and alignment	3
Naming of variables	3

**Submission:** Submit the C program source code via D2L.

**Grading:** I will post back results via D2L within a week after the last date of submission.