COSCI 21a, Programming Assignment P0

Purpose:

Prepare for Assignment P1 by learning how to use pointers.

You are required to write your program in C. The syntax for basic programming (***if***, ***for***, ***while***, etc.) is the same for JAVA, C, and C++, and it is assumed that in the past you have used at least one language from this family.

Before starting, look at the *course handouts*; begin by compiling and running *Hello.c*., and do this assignment only once you understand *List.c*.

Assignment: Write a small C program that runs in a simple terminal window (taking plain text as input and producing plain text output) and works as follows to perform an insertion sort:

Print "Hello".

L = an empty singly linked list (with no header)

while (user enters an integer *n*) **begin**
Insert a new vertex containing *n* into *L* in its proper position in increasing sorted order.
end

Print *L* to the standard output, one integer per line.

Ask the user if he or she wants to do it again.

Print "Goodbye".

What to pass in:

Submit a file named *LastnameFirstname.c* (e.g., if your name is *John Smith*, the file is *SmithJohn.c*).

It will be run in a Unix terminal window on a machine in the *COSCI Vertica Lounge* by doing:

```
gcc -std=c99 -Wall LastnameFirstname.c; ./a.out
```

To receive full credit, the code you submit:

Must compile as above *without any errors or warnings*.; be sure to check this in the COSCI Vertica lounge before submitting your work.

Must implement a singly linked list with pointers (not insertion into an array).

Must be single file that is completely self contained.

May not read or write to any files.

May not include any external libraries, templates, or #include statements, except for:

```
#include <stdio.h>
#include <stdlib.h>
```

Grading:

Your program will be compiled and run on some test inputs; see the example on the following page.

Within reasonable limits, the programming style / length of your program is not a consideration, and the grade will be based only on it working correctly and complying with the guidelines above.

NOTE: All code you submit should be yours, and yours alone; ***you may not collaborate with others to write it.*** General high level discussions with others (and the TA's) for the purpose of learning is fine, but you must independently author every line of your code. Be sure to read the handout on academic honesty. The one exception is that you may, if you like, use or modify portions of code from handouts on the COSCI 21a web page, so long as you clearly cite this with comments in your code.

Example

If your program was tested on these three lists

1, 0, 0, 3, -100, 2

empty list

0

then your input / output should look something like this:

```
Hello.

INPUT LIST (one integer per line followed by an empty line):
1
0
0
3
-100
2

SORTED LIST:
-100
0
0
1
2
3

Do it again (y/n)? y

INPUT LIST (one integer per line followed by an empty line):

SORTED LIST:
List is empty.

Do it again (y/n)? y

INPUT LIST (one integer per line followed by an empty line):
0

SORTED LIST:
0

Do it again (y/n)? n

Goodbye.
```