

## ***Homework 5***

*100 Points*

### ***Binary Search Trees and Queues***

PROJECT: A variation of Project 9, page 202 - Write a program which generates a cross-reference listing of the identifiers in an input C program. This problem will be like problem #9 in Chapter 7 of the text except:

- It will NOT have an interactive part.
- Because it will not have an interactive part, it will NOT have an offsets array as mentioned under "d" of problem 9.
- The input and output files will be specified on the command line. Make sure the input file is a C program i.e., name ends with ".c". Note that you assume a correct C program!

Your cross-reference listing will consist of an ASCII-ordered listing of identifiers in the input program plus the line numbers where those identifiers occur. Make sure your cross-reference listing is NICELY FORMATTED. Make line numbers line up under one another! See sample\_output.txt.

Notice that the cross-reference listing is TIMESTAMPED!!

In all other respects, it is like Ch. 7, Problem 9 -- you will put the identifiers in a tree and the line numbers for a given identifier in a queue which hangs off of that identifier's tree node. No duplicate line numbers!!

To test the program use at least two input files: **input\_test.c** and **input.c**. However, since you already have the output for **input\_test.c**, you only have to submit the output for **input.c**.

### **Grading**

- |  |      |                   |
|--|------|-------------------|
| 1. Command line arguments                      | – 10 |                   |
| 2. Timestamp                                   | – 10 |                   |
| 3. Process input file                          | – 20 |                   |
| 4. BST   | – 30 |                   |
| 5. Queue                                       | – 15 |                   |
| 6. 2 or 3 source files,<br>1 or 2 header files | – 10 |                   |
| 7. Memory Management                           | – 5  | // No memory leak |