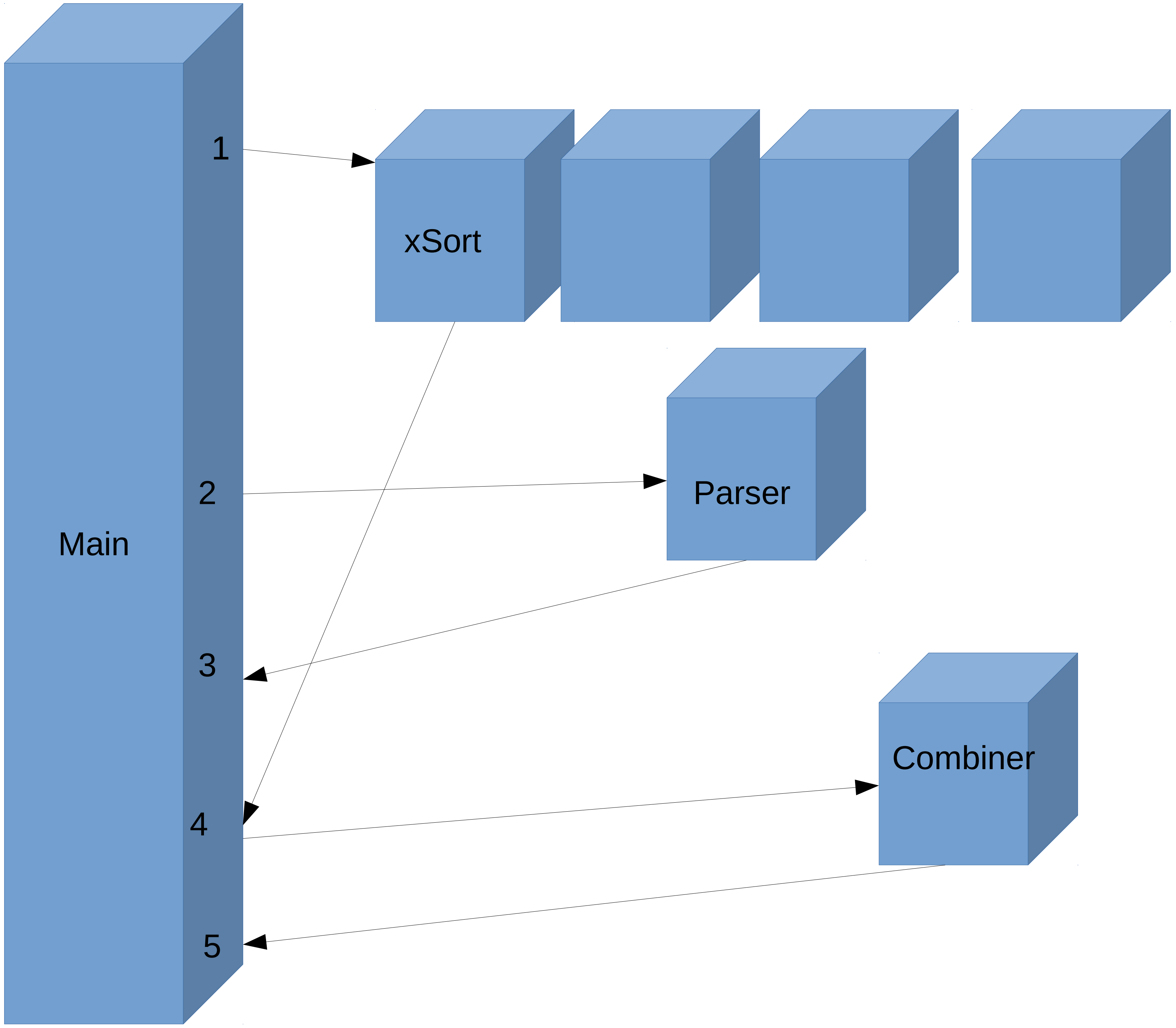
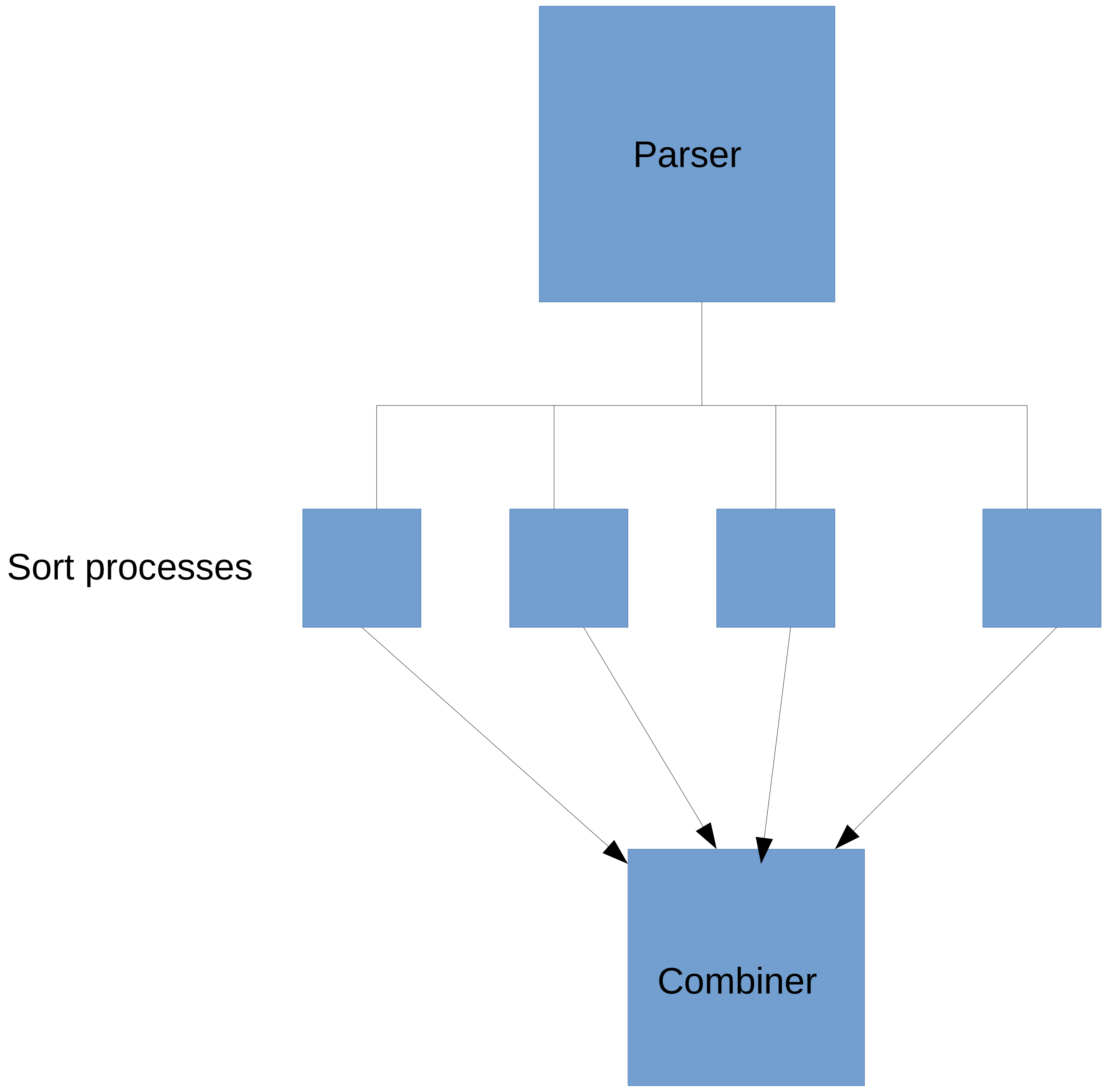
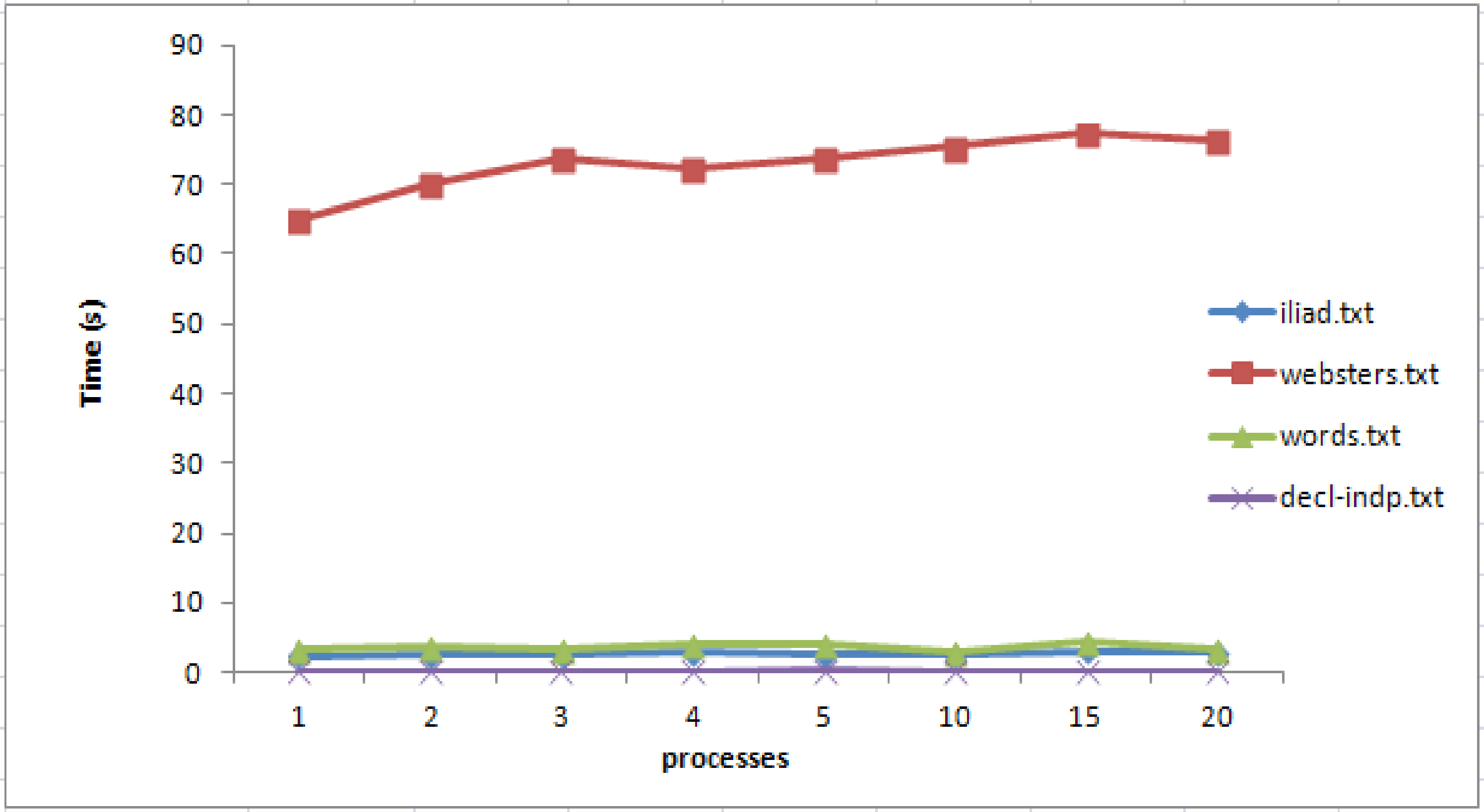

Main
1
2
3
4
5
xSort
Parser
Combiner

- The chart in slide 1 shows how the different processes are created off of main.
- 1. Create -n sort precesses.  These are created first so that they are ready when the parser starts sending them messages.
- 2. Create the parser process.  This process reads from stdin and tokenizes the input.  After splitting the words up it does a rough presort by calculating which binary tree the word should go into based on its ascii value.  For example if there are 26 sort processes (26 binary trees) then binary tree #1 will contain all 'a' words.  Binary tree #2 will contain all 'b' words.  The binary tree it goes into is indicated by the message mtype.
- The sort process reads in the messages that are addressed to it (mtype) and places them into its binary tree.  Duplicate words are discarded and the occurrence of that word is increased.  The node struct for the binary tree contains a variable for the number of occurrences
- The parser finishes its job and send “Parser_Finished” message to each sort process.
- 3. The parser process exits
- 4. Create the combiner and connect to all of the sort message queues.
- When the parser gets this message it start the postorder traversal.  It sends each node of the traversal to the combiner process which prints out the results based on message type.


Parser
Sort processes
Combiner

- Slide 3 show the message passing used in the program.
- The parser sends messages to all the sort processes over a common message queue.  It changes the mtype number for the message depending on which sort process its wants it to go to
- The sort processes each have their own message queue
- The combiner is connected to all of the sort processes message queues.

| | processes | Time (s) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| File Name | 1 | 2 | 3 | 4 | 5 | 10 | 15 | 20 |
| iliad.txt | 2.4 | 2.5 | 2.6 | 2.8 | 2.7 | 2.5 | 3.1 | 3 |
| websters.txt | 65.01 | 70.14 | 73.73 | 72.32 | 73.8 | 75.43 | 77.34 | 76.25 |
| words.txt | 3.2 | 3.8 | 3.3 | 4.2 | 4.2 | 3 | 4.3 | 3.5 |
| decl-indp.txt | 0.19 | 0.2 | 0.19 | 0.2 | 0.22 | 0.21 | 0.2 | 0.17 |


Time (s)
processes
iliad.txt
websters.txt
words.txt
decl-indp.txt