

Assignment 6 Writeup

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March 13, 2023

1 What I Learned

1.1 Trie

This is one of the files that got me a lot more comfortable using structures with different types of variables within. When coding this file, I struggled a little with `trie_reset` and `trie_delete`. It was interesting figuring out how to navigate the children arrays to access the correct information to delete. When creating `trie_reset`, I used the tip to just call `trie_delete` on node in the children array.

1.2 Word

The function `word_append_sym` specifically was very difficult for me. I was trying to just call the create function instead of separately allocating and setting variables for a new Word. I was using the array pointers for syms incorrectly at first too. I had to make sure to go in and actually copy over each value instead of just setting the arrays themselves to be equal. This would not have served the correct purpose if I had done it incorrectly.

1.3 I/O

One of the first things I learned about with this file was external and global variables. I also had to remember how exactly static works when put in front of a variable. The external variables for total symbols and total bits were declared in the `io.h` file but had to be defined in the `io.c` file in order to be initialized correctly for use. I had to make global buffers and buffer position variables to be accessed by multiple functions in this file. This assignment really helped me understand buffers better. They are used because of the limits of the `read()` and `write()` functions. I made sure to refresh my memory on the `read()` and `write()` functions and what parameters they take in. This was the file that I really had to understand Little and Big Endian as well. Most systems use Big Endian, but this assignment called for Little Endian. If the bits read in as Big Endian, I had to use the swap functions defined in the given `endian.h` file. In the `read_header` function, I used `assert()` for the first time. If the value passed does not come out as true, the program errors and quits. Bit shifting was also a big part of this file. Even after looking at my past notes on it, this was definitely the hardest part of this whole assignment.

1.4 Encode and Decode

One of the newer concepts from these files for me was reading in a FileHeader and using the information from that to open another file with those set permissions. We were given pseudocode for this, but navigating previous, current, and next variables in the main was a bit confusing at first. I had to go through line by line and really understand what was happening at each step. Verbose for encode and decode was also different. Instead of using `fstat()` I had to use the extern variables from `io.h` to calculate file sizes.