Alex Childers

CS 212: Algorithms

PA #1

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If I were to rate my work on this assignment, I’d give it a 6.8ish out of 10. I’m satisfied with the work that I did put in, and I’m glad that I got the assignment done. However, I wish I had approached the obstacles that I encountered more intelligently.

I found that the most difficult function for me to complete was easily huffmanTreeFromMap(). I had spent some time beforehand typing an outline of all the classes and their methods so that I was more familiar with the pre-written code already available to me, thinking that this would help me know how to approach the problem. However, trying to figure out how to create HuffmanNodes without initializing them with values, creating all the nodes of the tree at once, or attaching them to a tree was oddly mind-boggling for me. I regret that I spent several hours trying to get past this problem-- I was sick at the time that I was trying to write this function, so I attribute some of my inability to realize that I could work on the other functions of the assignment to my stuffy head and post-NyQuil wooziness. I felt a little silly when I realized in class that I could simply initialize a HuffmanInternalNode\* as such:

HuffmanInternalNode<char>\* root = new HuffmanInternalNode<char>{nullptr, nullptr};

On the bright side, I’ll be sure to remember that next time I’m working with a similar tree structure. In the end, I got past this obstacle by skipping over it, completing the rest of the functions in the assignment, and returning to it after we discussed this function in lecture. I also realized during this assignment that I have a hard time programming when I’m around other people talking, so I’ll try working on my ability to focus on my own code.

With that being said, the rest of the assignment went relatively smoothly. I was really excited to do this assignment because when we wrote a program to perform compression in CS 211, I didn’t complete the extra credit task of decompressing files after they were compressed. I felt like this assignment gave me a chance to do that task, as well as improving on the compression algorithm we used last semester. I also appreciate that this assignment allowed me to program something genuinely useful—when I was testing my solution, I attempted to compress a .pdf file and .png image. The PDF took too long to compress, so I got impatient and gave that up, but I was able to successfully compress a PNG file. I couldn’t figure out how to decompress it without encountering a particular error, but I was able to locate where in the code the error occurred. Perhaps that’s a project for future me (although I realize now that PNG images use lossless compression themselves—maybe I should have tried different file formats).

If I had more time, I think I would have debugged my code more rigorously, performed more exception checking, and attempted to fully implement ZIP compression for any file type, according to the full ZIP file specification.