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CSE 310
October 2020

Project State

While working on this project I was faced with a few minor challenges, most were syntax errors. The very first issue I had was figuring out if it was better to use a linux machine or an IDE and what both of those routes provide and what needed to be done on both sides to meet the requirements of the project scope. I ended up using Visual Studio Community since I'm already familiar with it and CLion kept handing me weird errors. As far as the code, the first few issues I was experiencing had to do with the declaration of the 2D array and whether to use pointers. I then struggled with learning how to pass an array from function to function and returning an array from the insertionSort() class. Another issue I had was creating the right makefile for the project. When moving into the decode portion of the project I was faced with 2 problems. Firstly, I had issues finding the **last** column string from the input cluster. I had to use a few loops to iterate through the different sections and noting when it was an integer, space, or a character. Another problem that came up in this portion was when I had a cluster that ended with a number, my **getLast()** method was expecting a character following it and would iterate past the end of the array. My second big issue was when I would call quicksort in ./encode **quick** <file.txt. In my source code I used a char array and had memory leaks and couldn't figure out where/how to delete the storage from the declared char array. In my milestone 1 I had an issue with calling quicksort and insertion-sort which was caused by using the **isFound** function. At the time I was compiling my code from direct run/compile where I would type in the input manually as opposed to running on the general server. I solved this by using **strcmp()** to pull "insertion" or "quick" and assigned a sorting method that I called later when I needed to sort.

Currently, my encode is not running with any known bugs and seems to be working great! However, my decode seems to have a memory leak somewhere, due to an array I did not free up (I think.) I tried a few several different approaches but couldn't locate the exact array. When I run ./decode insertion the compiler does not output any errors. The memory error mentioned earlier only shows up when running quicksort which makes me think it's the char array. I'm also currently facing an issue with cluster inputs that have multiple spaces. For some reason my **getNext()** method seems to sort fine except when it's comparing spaces.

Though an individual project there were a few interactions I had with peers to help guide me the right way. First and the most helpful has been the tutoring center. I've spent countless hours for this project alone and got help from various CSE tutors on topics like array declaration and passing pointers/arrays from function to function. Another way of interaction that has been immensely helpful has been the class discord chat. Here in the project chatroom peers help each other figure out strategies on fixing bugs and ways to test new inputs/outputs.

Listed below are a few sites I cited that helped me correct syntax errors. Another very helpful source I did not cite is Prof. Syrotiuk's video on breaking down the decoder. This set the framework for how I tackled that portion of the code. This project was definitely not easy, but was worth the struggle to put my coding skills to the test.

Works Cited

"6.5 - Multidimensional Arrays." *Learn C++*, June 2020, www.learncpp.com/cpp-tutorial/65-multidimensional-arrays/.

J.SotoJ.Soto 1111 bronze badge, and ChadChad 16.6k22 gold badges3838 silver badges5858 bronze badges. "How to Check for Keywords in a String c++." *Stack Overflow*, 1 June 1967, stackoverflow.com/questions/48847920/how-to-check-for-keywords-in-a-string-c.