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CS 499

Artifact Two: Algorithms and Data Structures

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The artifact that I have chosen to enhance for the algorithm and data structure category is a project from my previous class, CS 300. Previously this assignment used a quick sort and I have chosen to add a merge sort. A merge sort is a good choice because it is just as quick as a quick sort but it is considered more stable. The results are more consistent when using a merge sort. A quick sort sorts information going one by one, whereas a merge sort sorts a dataset by splitting it in half and sorting each half.

This project takes a list of courses that have been imported from a flat CSV file and sorts them alphabetically. A screen is displayed where the user can choose what they would like to do such as: load courses, display courses, quick sort, merge sort, and search for a course. The point of this is to organize the information and make it more accessible to both students and faculty. Using a merge sort makes this artifact faster and more efficient and prepares it well for the database that I plan to implement.

By incorporating a merge sort, it shows my proficiency in using different sort algorithms. I chose this item because I did not feel confident in my knowledge of how sorting algorithms worked and I wanted to expand my skills in this area. I did meet the course objectives that I planned to meet with this enhancement which is using a complicated sort algorithm to sort courses alphabetically.

I learned a lot by enhancing and modifying this artifact. I was able to research and understand many different algorithms that are used to sort, in this case, alphabetically. A merge sort was a great option because of the efficiency and ability to maintain the stability of my data. Merge sort works well with a large amount of data which will be perfect for my next enhancement to this project which will be incorporating a database rather than a csv file. A challenge that I came across was getting the merge sort to work to sort the actual courses. I had to figure out what code had to be taken out and what needed to be changed.

Attached I have put screenshots to show how I have applied my sort algorithm. I start by loading the list of courses. I then will display them, as you can see they are not in alphabetical order. I then sort them which takes 0 seconds. This shows how fast a merge sort is. I then display them again and it shows that they are now in alphabetical order.

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