Fayaz Shaikh

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CS 499

**Enhancement Two Narrative**

1. Briefly describe the artifact. What is it? When was it created?
   1. For this project, the initial artifact was called “ProjectTwo”, and was at the tail end of the CS300 Data Structures and Algorithms class. This project focused on creating a C++ program that is able to take an input CSV file from a user, load it into an appropriate data structure handling all of the course data within, and then output that data back to the user in specific ways, such as listing all the prerequisites for one class, or printing a sorted class list.
2. Justify the inclusion of the artifact in your ePortfolio. Why did you select this item? What specific components of the artifact showcase your skills and abilities in software development? How was the artifact improved?
   1. I think this artifact is a great example to include in the ePortfolio, as it showcases the ability to understand user input, ensure input validation and handle edge cases from the file uploads, and solve a real world problem of course planning. I selected this item because it showcases my grasp of data structures that hold the user’s data, as well as algorithms to process them effectively. Specifically, the function that parses through the input file and loads all of the course data including the number, name, and prerequisites recursively showcases my skills and abilities in software development. This artifact was improved by rewriting it in JavaScript to give styling using Tailwind and an easy to use and view GUI. This also makes the file input process much easier and introduces a new export feature.
3. Did you meet the course outcomes you planned to meet with this enhancement in Module One? Do you have any updates to your outcome-coverage plans?
   1. The course outcome I planned to meet with this enhancement had to do with designing and developing an algorithmic solution to address a real-world problem. I think I did meet this outcome, as I was able to implement a working web app that makes it easier for the user to upload a file of comma separated values containing their classes, and both get a tree list to quickly see which classes have prerequisites and of those which ones also have prerequisites, as well as download a sorted version of the file with the classes in chronological order.
4. Reflect on the process of enhancing and modifying the artifact. What did you learn as you were creating it and improving it? What challenges did you face?
   1. While creating this artifact, I actually learned quite a bit about CSV parsing. I was originally manually interpreting it as plain text and stripping the lines into parts by commas, until I found a helpful JavaScript library called “papaparse”, that handles a lot of this for you. I learned how to use it to quickly grab rows from a CSV file, and then grab elements from those rows separated by commas, and assign them to variables. It does this for every line, and is able to load them into the data structure that I had for courses. Some challenges I faced had to do with color and ease of understanding when using the GUI. The tree structure is what I ultimately settled on here. For coloring, I originally had a background but the text changed to white or black based on system theme. As a dark mode user, I had white text on a white background, so ended up removing the background and applied Tailwind styling to make everything still look and feel professional.

Just like last week, I have delivered the enhancement in a folder containing Next.JS files. If you would like to run them locally, all the actual code is in page.js, but the proper node modules are needed (I delete them before uploading as they are hundreds of small files that take a while to compress but also take up almost half a GB). After changing directory into the folder called “enhancement”, simply type “npm install” to install the dependencies, then “npm run dev” to host it on localhost:3000. This week, I did not deploy it to my portfolio yet, but I will when I get the chance.