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CS 202 - 1101

Project 2 Documentation

**Purpose:** The purpose of this project is to design a program that can be able to take information from a file and manipulate it. The program is supposed to have aspects of multiple files, a functional menu, and array manipulation. The program uses structures and pointers to get information from the file and be able to sort it. The project requires the use of functions to sort exactly five cars by ascending price while also assigning them an index number.

**Design:** My design of the project uses 2 header files and 3 source files to function. The menu header file holds 7 function prototypes and creates a structure for my rental car information. The menu source file holds the implementation of the functions. The menu function creates a menu that can allow the user to select which function or option they want to use. Pointers to the struct array were used as parameters of the function and pointer arithmetic was used to access the information. The first case in the menu uses the readCars function which reads the information of the cars from the input file into the struct array. The second case in the menu uses the printNamesToTerminal function which prints out the information from the struct array in a clear way to the terminal. The third case in the menu uses the printNamesToFile function which prints out the information from the struct array in a clear way to the output file in the original format of the input file. The fourth case uses the sortCarsByPrice function to sort the struct array by ascending price and uses the temporary structure to house information when swapping. The fifth case uses the rentalCarQuery to show only the available cars in the car struct array and print out an estimated price according to the amount of days the user inputted. The sixth case asks the user which car they want to rent and how long. Then it prompts a message according to the availability of the car. When it is successful, the car’s availability is changed to unavailable and a success message shows up with the price. When it is unsuccessful, it would show a warning message. The string header file holds my string function prototypes while my string source file implements my functions. The string functions I created were not really used throughout the rest of my program as the program did not really need it. I created my own string comparison function which looks at each individual letter and returns a value if one value is larger than the other. If the values were equal, it would check the next letter in line. My string concatenate function appends the source string to the destination string. My string copy function copies a string to a destination string. My string length function checks the length of a string. The main file utilizes the functions in the header files to run the program.

**Problems/Challenges:** Some difficulties I had were with how pointers were read and used by the functions. Sometimes the pointer would point to wrong objects and not show the right values. With trial and error, I managed to fix the problems and make the program function the way I wanted it to. I also had some difficulties in setting up the header files and where the scope of some variables were not connected. Watching some videos on how to create header files really helped in figuring out how to use multiple files for a program.

**Possible Changes:** If I had more time, I would clean up the code a little more and adjust it so that it works better. I would also document and add more comments through the code to be more detailed. I would also fiddle around with pointers more so I can understand more about pointer arithmetic and array manipulation.