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CS300

4/7/2022

Evaluation

The program uses the fstream to be able to utilize some of the functions that are included with it. By using this it can open and read the data from the file. As for parsing each line of the file, I used a delimiter count to be able store a certain length of the line into certain variables. Once the line reached the end, it moves on to the next line. The count of the comma delimiter allowed me to read in the correct data for each variable. If a course did not have 1 or 2 prerequisites, using the delimiter would help keep those values blank. As for creating a course object. I created a class before the main method with all the needed functions and variables to get and set them. In the main function I created the necessary nodes or vectors in the main function so it could store the newly read in values into the respective data structures. The worse case scenario would be if each course had a prerequisite which would make the code have to go through more iterations of parsing the line. The cost per is either O(1) or O(N). O (1) can be considered when you are looking at the if statement in the code. The O(N) could be considered when you are looping through the data structure when it comes to vectors. When we are looking at the Hash Table and the Tree the cost of the certain line of code could be O(log N) because of recursion on printing out the course information. In my opinion, I would use a vector to store the course information. When it comes to storing the information, it is much simpler to store each value into index. Although, a tree represents a hierarchy, it would be a bit difficult to store and print the courses in order when called. A Hash table is mainly used for storing data along an array or vector, but it would also be a bit difficult to print the information in order. The vector would be more advantageous because storing, searching, and printing the data would be much simpler. Although it probably would be the fastest, the code would be portable to use elsewhere. It also wouldn’t require as much code as the other data structures. When it comes to the cost of printing at an O(N) speed, it is not the fastest, but it is the best data structure for the job.