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Program 4 Efficiency

Unlike previous programs, program 4 was built in Java rather than C++, and there were many differences. First of all, the biggest difference is that there is no destructor. One of the most difficult parts when programming in C++ was memory management. Because Java has a garbage collector, it makes programming easier because there is no need to manage memory. However, when building the data structure, it was more difficult than building it in C++. Because there is no pass by reference in Java, there was a lot of difficulty because recursive functions had to be built using pass by value. However, with a lot of trial and effort, it was possible to find a way and recursive functions could be built using pass by value.

The main feature of program 4 is that when media is uploaded, it is saved in the playlist, and the user can access the media that the user wants and perform various actions. If the user is a professor (administrator), media can be uploaded, modified, and deleted, and functions such as adding a quiz, deleting a quiz, adding a comment, deleting a comment, etc. can be performed by moving to the desired media. And if the user is a student, the user can go to the desired media and perform functions such as adding a comment, deleting a comment, and taking a quiz. There are 8 classes in program 4. The eight classes are Node class, Playlist class, Media class, General class, CS162 class, CS163 class, CS202 class, and Main class. The media class is an abstract base class because no media reference is created and pure virtual functions exist. And General, CS162, CS163, CS202 classes are inherited from the Media class. Each derived class is a different media type and is saved in a different playlist according to the media type. The playlist class is a data structure class. The data structure is an array of linear linked lists. There are four linear linked lists, each storing General, CS162, CS163, and CS202 media. The node class is a class consisting only of setters and getters that have media data and next pointers. The playlist class uses a node class and the node class has a media class. When the functions built in the playlist class are executed, the functions suitable for the media type are executed according to the media type (dynamic binding). Finally, the main class is a user interface-based class that creates a playlist reference and uses the playlist.

In conclusion, Java programming and C++ programming are similar but different. While programming, I could feel the strengths and weaknesses of each. Program 5 is an extension of Program 4. I hope that program 5 is also well finished.