

Juhwan Lee  
Professor Karla Fant  
CS202  
November 3rd 2020

### Program 2 Efficiency Write-up

The second programming assignment was about making a program that manages three different communication softwares with the ability of management of all the different types of communication software accounts. There are three communication softwares in this program: discord, slack, and zoom. Communication class is a base class and discord, slack, and zoom are derived classes. With this program, the user can send a message to the main channel, to specific users, display the main channel, and display personal inbox. First, it asks the user which communication software to start and once the user starts one of the three communication softwares, then it moves on to the login process. If the account list is empty, which it is at first, the user has to create an account. If the account list is not empty, then the user can login by typing a matching account. After the login process, the user can now perform send a message to the main channel, to specific users, display the main channel, and display personal inbox. All the different types of communication software accounts are stored in one linear linked list and all the messages are stored in an array of linear linked lists. Depending on the communication software and message type, it all goes to a different index. Discord has one more function which is to display all discord users. This function is a unique function that only discord class has and this function can be executed by using RTTI(run time type identification). RTTI is required when performing a unique derived class function when there is no virtual function in the base class. Another technique that was required in order to build the second program is dynamic binding. Dynamic binding is a late binding or run time binding. With dynamic binding, the compiler waits and sees what the base class pointer is actually pointing at and depending on the class object that the base class pointer is pointing, it calls the appropriate function not the base class function. With dynamic binding, I was able to store all the different types of communication software accounts in one linear linked list and I was able to call the right functions without micromanaging the different data types. Two data structures, which are a linear linked list and an array of linear linked lists, were implemented recursively and it supports insert, display, search, remove, and remove all.