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CS-410-A
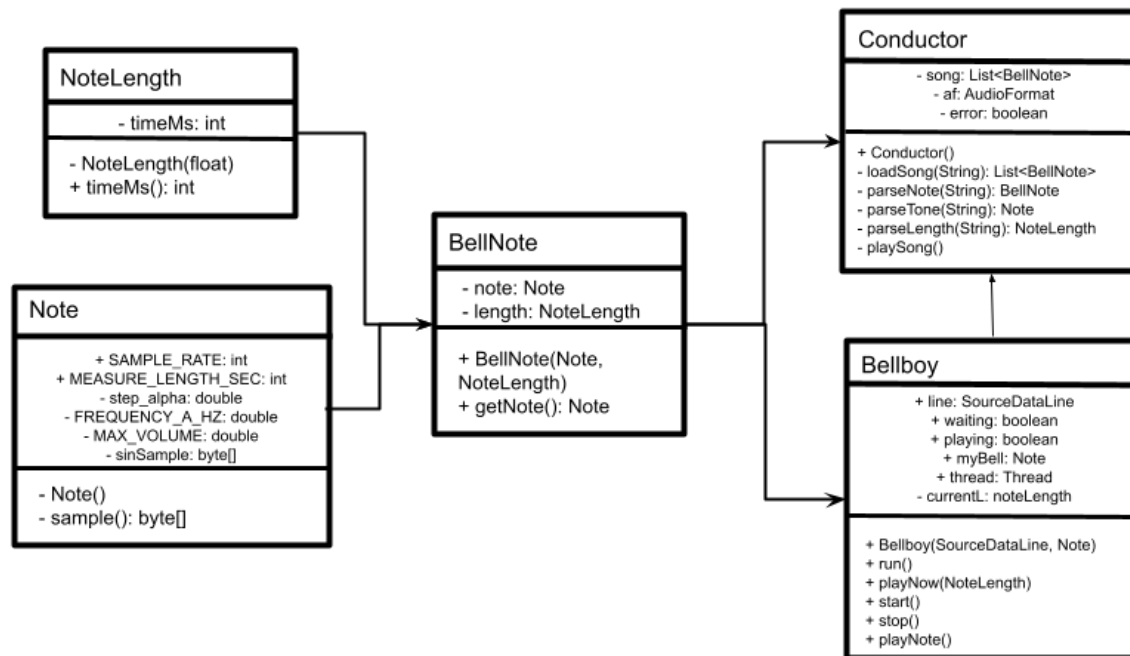12 November 2021
Lab 2 Documentation

UML Diagram and Class Descriptions

The classes in the diagram were used to complete this project. Note, NoteLength, and BellNote were given in class, as was the foundation for Conductor and Bellboy. The remaining two classes were made by myself with ideas and formatting from Matthew Bushnell. The class that is run is the Conductor class. Within it, it will read in a song from a text file, parse it into a list of BellNotes (composed of Note and NoteLength), and will then make a group of Bellboys to play the song. Each Bellboy is a thread, and they can only play one note each. Sometimes, the start of the song is muddled and buggy, but after one run it is alright. I believe that may have to do with the hardware, but I am unsure. Our multithreaded "bell choir" plays any song given, as long as it has eligible notes and is formatted properly, as a choir cannot perform unless they have legible music.

Challenges Faced

Throughout this lab, I faced some of the issues from the previous lab, as well as a few new issues. For starters, working with Threads and runnable objects in Java is a bit tricky still. The AudioStream portion of this assignment tricked me up a few times, as my audio was not coming out properly. The major issue for me came down to small tweaks to the code to ensure that there was no issue with deadlock or insufficient resources. I asked Matt for assistance, as I was encountering a few issues that I did not know how to address. I compared my code with his and made tweaks to it until it stopped throwing errors. Most of my issues came down to the formatting of the choir and the correct method for having a synchronized token. After that, I began to work on making it sound a bit better and adding more notes, as well as a short custom song. As mentioned in the earlier section, I encountered a few issues with how audio was coming through my speakers, but I believe that this is primarily a hardware issue. With all that said, this project was difficult and I ran into a few bumps in the road, but I am learning more about the way Java handles threads and how to code my own thread implementations.