

For an honors option in CMPSC 221, I along with my teammate, Grace Lin, developed an application and webserver that allows for playback of media from both local and remote storage. The project involved Java development as covered in the class as well as PHP development, Multi-Threading, and SSL. The client application in this project was developed in Java using the JavaFX GUI library. The client application uses JavaFX to provide full media control to the user while playing MP3 files from the system's primary audio channel. The client application also has the ability to recursively search through a directory on the computer and find all MP3 files in that directory and all of its sub-directories. The most interesting function of the client is that it can connect to a server, which will allow it to playback media from a remote server. For this, a website was created (<https://projectstream.tk>), and it was used to handle some user interface as well as provide song and SQL interfaces to the Java client. The webserver is written in PHP, which provides easy access to SSL encryption, the MySQL database, and the blowfish hashing algorithm, which is used to store user's passwords. This webserver is hosted by Google on an Ubuntu VM, which as an Apache webserver, a LetsEncrypt SSL certificate for SHA256RSA encryption, PHP, and MySQL database. Setting all of this up proved to be rather challenging, as with a Linux VM, there is no GUI, so all file downloads had to be handled over the console and SSL certificates are not easy to download over the console. The Java client can fetch a song from the webserver by opening an HTTPS Connection which is a secured connection to the webserver that allows for the client to request a page with get data. These get requests are then passed through SQL prepared statements and are returned as processed plaintext from the results of the SQL queries. The Java client can then download songs or pieces of songs through a similar method of opening the HTTPS connection and then requesting an octet-stream of a file. Overall, the project was a success, a working media player was created and we learned quite a bit.