**Title: Peer-to-Peer File Sharing**

**Team Members:**

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**Project Description:**

The project will be a simple (and hopefully efficient) P2P file sharing program. The goal is to allow users to find, share, and download files amongst peers without relying on a centralized server.

**Minimum Viable Product (MVP):**

* Share files between two or more users
* File Chunking / Parallel Downloads
* Implement a file sharing protocol
* Bandwidth Throttling
* Download percentage / progress bar

**Stretch Goals:**

* File Size Limit
* File Integrity Checking
* Peer Discovery Mechanism
* File Discovery Mechanism
* Fractional Bandwidth Splitting
* Folder / directory sharing
* File Encryption
* Anonymity

**Network Architecture and Specifications:**

* Architecture: P2P
* Protocol(s) Used: TCP
* Data Protection Measures: End-to-End encryption
* Multi-threading

**User Stories:**

1. As a file sharer, I want to be able to go online such that other users can download the files I select.
2. As a file sharer, I want to allow people to download my files while also being able to use my network for other purposes.
3. As a file downloader, I want to be able to access files on users' systems that they have made available.

**Deliverables:**

* Source code for send-receive architecture
* Documentation for all methods, classes, etc
* Documentation of sender and receiver instructions and sender receiver guidelines
* Working demo of P2P file sharing in action
* If a central searching server is made, a working demo of such a server.

**Final Notes:**

As a user of P2P file sharing when I was a teen, I have always wondered how it worked. How can multiple people “seed” while I download one file from multiple sources? I’m finally going to find out with this project! I believe the challenge in this project will be handling users’ data safely. Installing some form of encryption, let alone End-to-end encryption should be a challenge. This will be my first foray into networking and multi-threading, so that should be exciting.