CECS 327 Term Assignment 1 - Peer to Peer Networking

February 15, 2021

Assignment Description. The goal of this assignment is to become familiar with peer to peer (P2P) networks and having a client act as a server. You may work on this project in pairs.

Design a program which allows two or more computers to synchronize files across a local area network (LAN). Each computer should run its own local instance of the client software, and the files which will be synchronized should be able to be synchronized multi-directionally.

Example: Nodes $P_1, P_2, \ldots P_n$ have clients $C_1, C_2, \ldots C_n$ installed on each node respectively. $F_1, F_2, \ldots F_n$ are sets of files where F_1 is the set of files on node P_1, F_2 is the set of files on node P_2, and so forth.

The goal of your program should be the unification of all sets of files, F, so that $P_i, C_i \cup \{F_j\}$ on *each* client.

Tips.

- You will most likely need a distributed hash table (DHT) implementation in order to complete this assignment.
- Public WiFi networks often block port access amongst peers on the network, so you will not likely be able to test this on the campus's WiFi network or any other public network.
- Before diving in to the project, there are a few things that I recommend you consider:
  - How does the client discover other clients on the network?
  - How does the client deal with files of the same name but different contents? Different timestamps?
  - How does the client determine the order of syncing with regards to the files of other clients?

Deliverables. Demonstrate your working code on a unique set of files for each client (minimum of two) for the instructor. Submit your source code to **Beachboard Dropbox** along with a short write-up of your experiences with the assignment. Be sure to submit a copy of your source code files, makefile (if used), and the write-up in a separate .txt, .md, .doc, .odt, or .rtf file only. Please do not compress your files for submission. Make sure that all code is **commented with your own explanations or it will not be graded**.