CECS 327 Term Lab Project - Peer to Peer Networking

100 points

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.
- *beachnet+* blocks port access amongst peers on the network, so you will not likely be able to test this on the campus's WiFi network.
  - I will bring in a router configured for this purpose to lab sessions, or you may use one of your own.
- 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 which files to sync in which order?

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**.