CMP2204 Introduction to Computer Networks

Spring 2021, Term Project

Goal: The goal is to apply the concepts learned in class, through programming and hands-on practice. At the end of this project, you will have a better understanding of how a networked application operates and what are the technologies behind it.

Task: Design and implement a peer-to-peer file sharing application. The shared design document specifies the necessary protocols that you need to implement. Please follow the design doc closely (in fact, verbatim) in your implementation.

Requirements: The application should;

1. Have 4 processes: Chunk_Announcer, Chunk_Discovery, Chunk_Downloader, Chunk_Uploader. These processes should work as outlined in their respective specifications.
2. Successfully detect the available content in the peers in the Local Area Network.
3. Successfully download a content from other peers in the Local Area Network.
4. Display an error dialog if a download is in error.
5. Output a download/upload log, containing timestamps, names and chunk index of all downloaded files.

Important Notes: Deadline for the project is 23:59 on **Friday, May 21**. (Late submissions will lose 15% for each day.) Please commit all material under the "Term Project" assignment under Resources on itslearning. Your commits should include:

- All pieces of codes that you wrote.
- A README file describing how your program works, and known limitations of your program (so that I run your code correctly).
- A 1-page document describing which platform (Windows/Linux) you've used to develop your code, faced challenges, group members' names and division of workload within the group.

Please name all your files as [XXX]_[filename] where XXX is your team members' initials.

You may work in groups of size **2 or 3**. You should determine a partitioning of responsibilities so that group members can work effectively in parallel.

Grading: Your commit is complete (includes 4 processes (Chunk_Announcer, Chunk_Discovery, Chunk_Downloader, Chunk_Uploader), 1 README, 1 report) **(20 pts)**. Your code can discover available users and note their chunks **(15 pts)**, can periodically and correctly announce its local files **(15 pts)**, can download chunks of a content from the network **(15 pts)**, can display an error message if a particular chunk cannot be downloaded from target node **(5 pts)**, can serve chunks of other users' content **(10 pts)**, can correctly output a download/upload log under the same directory **(10 pts)**, seamless user interactions (*e.g.,* displaying the available chunks, displaying the successfully downloaded chunk info, etc.) **(10 pts)**. Anything else is a bonus (*e.g.,* displaying available users, displaying the available chunks in the network, etc.).

Please note that only the students who present their work in the demo session on Week 14 will get a grade out of their term project.