15-440, Spring 2014
P3 Proposal
Connor Brem (cbrem), Billy Wood (wtwood)
April 15, 2014

Description

- bittorrent-like client and tracker

Structure

- client
  - go or python
  - can:
    - create new .torrent files
    - given a .torrent file, contact other clients identified in the .torrent file and request parts of a file
    - serve parts of a file to other clients on request
    - inform tracker when it has a piece
    - report themselves when they do NOT have a piece that other clients think they do
- tracker server
  - go
  - can
    - serve .torrent files to frontend
    - keep .torrent files updated
      - add/remove clients from list of clients with torrent pieces
      - get new .torrent files from frontend
- tracker frontend
  - javascript/html
  - can
    - search for torrents by name
    - fetch .torrent file from backend for user to download
    - send new .torrent file to backend from user

Distributed Systems Concepts

- paxos for replicated tracker
- clients backoff exponentially from other clients which appear to be unresponsive
- TODO: more

Test Plan

Conditions to test:

- kill a tracker, then try to do anything
- kill a client after it has informed the tracker that it has a piece, then try to get that piece

Development Tiers

- Minimum Testable Product:
  - Client:
    - create .torrent files and send them directly to one tracker
    - get pieces from other clients, given a .torrent
    - serve pieces to other clients
    - can fail without disrupting things
  - Tracker Server:
    - single tracker (no paxos)
    - record when there are new files
    - record when new clients get pieces of files
- Target:
  - Client:
    - self-report to tracker when client does not have a piece that other clients expect it to
    - compute/create checksums on torrents to ensure security
  - Tracker Server:
    - replicated via paxos
- Fluff:
  - Client:
    - UI: show currently downloading/seeding files
  - Tracker Server:
    - maintain users/manage logins
  - Tracker Frontend

Development Schedule

TODO