1 Description

There are two default projects:

- Implement a BitTorrent client.
- Implement a BitCoin client.

Students may work in a group of two.

2 BitTorrent

For this project you need to implement a BitTorrent client. Successful implementations need to interoperate with commercial/open-source BitTorrent clients. You need to demonstrate that your implementation downloads files within 10% of the speed of the official client using the same number of connections (Faster is OK). You need to devise an experiment to demonstrate that your client’s performance is ‘fast enough’ and ‘stable’ in comparison to the official BitTorrent client.

Extra credit, given that you have implemented the core part of this project. You can choose one or many from the options below:

- Implement a DHT tracker.
- Implement PropShare, compare performance to official client.
- Implement under-reporting, compare performance to official client.
- Implement a protocol to detect under-reporting.

For this project:

- You may use a third-party bencode library, but must otherwise implement the entire protocol without using any other third party library.
- We will run a tracker for you in order to test your implementations. The TA will post more information on the forum.

3 BitCoin

1. Crawl Network - develop a client to ‘crawl’ the Bitcoin network. The client should connect to Bitcoin nodes and query addresses. The client should provide useful statistics about the network. Examples include number of active nodes and number of nodes entering and leaving the network in a given amount of time.
2. Verify Signature - develop a Bitcoin client to receive and verify Bitcoin transaction messages, by examining the block chain, and the transaction’s place in the block chain.

3. Coin Transaction - develop a functional Bitcoin client to participate in a Bitcoin transaction. The client should generate a public/private key pair to be used in the transaction. You will provide us with your public address, and we will attempt to spend a Bitcoin to your address. The client will then relay this transaction to the Bitcoin network, for it to be accepted into the block chain. The client should then verify that the coin has been accepted by examining the block chain.