Project definition - CSC 164 - Spring 2007

You are expected to do a project in groups of two, unless other arrangements have been made. Topic: we propose the following topics, but you are free to suggest topics of your interest. However, we will entertain other topics only up until May 16th. To clarify, each team needs only do one of the topics.

You can use any language of your choice, but you need to be clear on what packages, libraries and resources you will use. Clearly, using the library that does everything with 10 lines needs to be discussed up front with the TAs and instructor. On the other hand, you can use existing tools and build on top of them (again with our approval).

Project 1: Instant messaging tool.
The requirement is to develop a working IM tool. Users should be able to exchange messages with other users. The fundamental operation we have covered in the lab, thus we expect something more here.

Basic scenario: assume that users know each others IP addresses and they want to.
Some fundamental functions:
- "meeting place" capability (a web page where users can access the service)
- facilitate user hook-up

Additional ideas (you may want to choose some of them):
- You can provide the ability for 3-way chats
- You can provide ability for smileys
- You can implement voice (like Skype)
- You can implement video

Project 2: Peer-to-peer streaming of data to a group of users.
You will implement a new cool protocol for streaming data:
explanations will be given in class, but you can see the specifications here:
http://www.cs.ucr.edu/~michalis/PAPERS/adhocj-alma-FINAL.pdf (see sec. 3)
The protocol was proposed for ad hoc networks but we will use it for wired networks.

Functionality:
- given a source of data
- users can contact the source
- users identify a place to join the distribution tree by attaching to a node receiving the information already
- users will monitor the quality of the connection and switch to a new "parent" node when the quality drops

(This project is a bit more involved and thus it will be graded more liberally)

Project 3: Real-time streaming capabilities in BitTorrent.
You will implement the following approach:
http://www.cs.ucr.edu/~aggelos/papers/BiToS.pdf
The expectation here is that you will do this on an actual BitTorrent client (typically written in Python).
Additional resources for programming a BitTorrent client:
http://www.cs.ucr.edu/~anirban/Anir-networking07bt.pdf

This is a challenging topic that is recommended for groups that have a programming experience. A group of three could be allowed for this topic.