Exercise 4

Peer-to-Peer Networks, Spring 2008

Guidelines

- Group work allowed, groups of up to 3 people allowed

- Due date: 28.3. at 12:00

- Exercise is worth 12 points

- What to return: Send answer as text file or PDF to Jussi by the deadline

- Don't forget to write all the names and student numbers on the answer!

Question 1

Your task is to design a peer-to-peer discussion forum (or newsgroup system) which is based on a DHT. **No code** is needed, all you have to provide is the design. The system should have all the functionality described below. Additional functionality is not required.

DHT

Your will design your discussion forum on top of a DHT. There is no need to specify the details of the DHT. We assume that the DHT provides a *key-to-value* mapping and your task is imply to specify what are the keys and values that you use for the DHT.

Functionality

Your discussion forum must have the following functionality. This is similar to the functionality offered by a traditional newsreader and newsgroups.

- User Alice can get a list of all forums.

- Alice can select a forum to read and she will get a list of all articles in that forum.

- Alice can read individual articles from the selected forum.

- Alice can post a reply to any of the messages. The reply can be sent to the forum where the original message was, or it can be sent to any other forum (if Alice decides it is better to follow-up the message there).

You need to specify how you design the above functionality in a DHT-based discussion forum. In particular, specify which entities need DHT-keys, how do you get the keys, and what values are stored under the keys in the DHT.

In addition, you will need to answer the following questions.

- How robust is your system against nodes joining and leaving the network? What could you do to improve this?

- Where do you plan to store the information about which messages the user has read?

- What advantages does a P2P newsgroup system have over the traditional server-based newsgroups?

- What are the disadvantages of a P2P newsgroup system?