1. Übung, SS 2013
Verteilte Systeme/ Distributed Systems
Ausgegeben am 18.4.2013
Vorstellung 25.4.2013

Katinka Wolter
Inst. für Informatik
Freie Universität Berlin

Assignment 1. Client-Server

Consider a chain of processes $P_1, P_2, \ldots, P_n$ implementing a multi-tiered client-server architecture. Process P_i is client of process P_{i+1} and P_i will return a reply to P_{i-1} only after receiving a reply from P_{i+1}. What are the main problems with this organisation when taking a look at the request-reply performance at process P_1?

Assignment 2. Unstructured Overlay

Consider an unstructured overlay network in which each node randomly chooses c neighbours.

1. If P and Q are both neighbours of R, what is the probability that they are also neighbours of each other?
2. To search for a file, a node floods a request to its neighbours and requests those to flood the request once more. How many nodes will be reached?

Assignment 3. Structured Overlay

In a structured overlay network messages are routed according to the topology of the network. What is an important disadvantage of this approach?

Assignment 4. PeerSim

Download the P2P simulator PeerSim from `http://peersim.sourceforge.net`. Documentation of the simulator can be found at `http://peersim.sourceforge.net/tutorial1/tutorial1.pdf` and `http://peersim.sourceforge.net/tutorial2/tutorial2.pdf`.

1. Install the simulator and run the examples that come with it. Explain what networks are generated and what protocols and observers are used.
2. Download the modules `Chord` and `Aggregate` from *Extras* and create a ring with 5000 nodes. Create and run a model following the documentation.