

Distributed Systems Lecture - Discussion 18.06.2015

Assignment 1. Leader Election

Please read chapter 3 of the book by Nancy Lynch that you will find in the resources section in kvv. Please

- Find and explain the proof of the runtime and communication complexity of the HS-algorithm.

Please look at the time-slice algorithm and at the variable-speeds algorithm

- How do they work? What is the intention behind the algorithms?
- What is their complexity?

Assignment 2: Leader Election in an asynchronous ring

Please read chapter 15 of the book by Nancy Lynch that you will find in the resources section in kvv.

- What is the difference between a synchronous and an asynchronous algorithm?
- How does leader election change in the asynchronous ring as compared to the synchronous one?
- Please specify the differences for the LCR, the HS and the Peterson algorithm.
- If possible name and explain the complexity of the algorithms.

Distributed Systems Seminar - Discussion 25.06.2015

Assignment 1. FUcoin - The Implementation Phase II

1. The new interface (*AbstractWallet.java*) is now online in the repository (<https://git.imp.fu-berlin.de/2015SSDistributedSystems/DS15/tree/master/Interface>).

Please modify your implementations according to the new interface.

2. Implement a statistics-server that collects information from the network.

Each Wallet shall send its own state (name and amount) as well as all known name/amount tuples from participants that synchronize themselves with it to the statistics-server.

Compute the sum of all Wallets and alarm if inconsistent states appear.

3. Extend the server so that it can be used to join the network. You can, e.g., collect Join-requests and answer with 5 random Wallet addresses you just collected. A Wallet shall distribute its state to these given nodes.

Generate 100 Wallets and perform the following actions during a time-step (e.g., a second):

- Each Wallet transmits a random amount x to one randomly chosen peer with probability 0.6.
- A Wallet leaves the network with probability 0.2.
- A Wallet joins the network again after a random time between 2 and 10 time-steps.

Run your program for at least 1000 time-steps.

Is your network balanced? How many Wallets are stored on a node on average/max?

Are the statistics consistent? Why or why not?

Can you join the network of other FuCoin implementations and will the statistics still look the same?