

Parallel and Distributed Systems Group (PDS)
Department Software and Computer Technology
Faculty EEMCS
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LAB EXERCISES

DISTRIBUTED ALGORITHMS (IN4150)

Exercise 2a

Implementation of election in a completely connected
synchronous network according to Afek and Gafni in Java/RMI

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Assignment

Implement Afek's and Gafni's algorithm for election in a completely connected synchronous distributed system with Java/RMI. The implemented program should be **truly distributed** in that it can be demonstrated to run across multiple physical machines. The assignment can be split up into the following three parts.

First day

Write the remote interface and the global framework of the `Component` class implementing the components of the distributed algorithm. In addition, create the framework for the `Main` class that will create the `Component` objects and their threads on a single host. It must be possible to specify the number of these components and the ids with which they start. Include into `Main` and `Component` the functionality of registering and looking up components.

Second day

Include into `Component` the functionality for a single round of the algorithm.

Third day

Include into `Component` the complete algorithm that performs as many rounds as needed for election. Make sure that the output of the algorithm makes it possible to check its correct operation.