Distributed Systems Project

Jussi Kangasharju
Course Outline

3 exercises to look at distributed systems in practice

Exercises mostly programming

1 individual exercise, 2 group exercises

Groups of up to 3 people allowed

Group work not mandatory, but recommended
Course Schedule

17.1. Start of first exercise
19.1., 24.1., and 26.1. Q&A for first exercise
26.1. Start of second exercise
31.1. Deadline for first exercise
2.2. and 7.2. Q&A for second exercise
14.2. Deadline for second exercise, start of third
(21.2. Demo session for second exercise)
21.2. and 23.2. Q&A for third exercise
11.3. Deadline for third exercise
People

Jussi Kangasharju
  Office hour: Thu 13-14 or ask for appointment by email

Liang Wang
  Office hour: During meetings or ask appointment by email

Additional Q&A sessions can be arranged on if needed (Tue or Thu 10-12)
Assignments

Distributed algorithms
Individual assignments about algorithms

Distributed Hash Tables
Implement a simple distributed hash table

Multitier architectures
Use Ajax to program a web application

Details for assignments 2 and 3 presented later
Grading

Each assignment graded on scale 1-5
Must get at least 1 in every assignment
Possible to re-take failed individual assignment in 7.-18.5.
  Must return something now to be eligible!

Same grade for all members of group

Overall grade is weighted average of assignment grades
  Assignments 1 and 2: Weight 1
  Assignment 3: Weight 2
Assignment 1: Algorithms

Link to assignment will be posted to course website
Individual Assignments on Distributed Algorithms

1. Lamport clocks
2. Vector clocks
3. Bully election algorithm
4. Gossiping
5. Token passing in ring

Simple programs communicating over the network
Select assignment: (student ID % 5) + 1
General Idea

Multiple programs on different machines

Everybody knows everybody

Programs communicate to implement a given algorithm

Key points: Network communication, correct algorithm
House Rules

Configuration file for nodes and ports
Format:

<ID> <IP/HOST> <PORT>
Command line argument indicates what is client’s ID
File has an arbitrary number of lines

Must conform to specified output format
Deviation results in a reduced grade
Programs must be runnable on Ukko cluster
Next steps

Q&A session on 19.1., 24.1., and 26.1.

Deadline for returning January 31st at 10:00

Return to Liang.Wang@cs.helsinki.fi

See assignment sheet for instructions