Distributed Systems

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http://www.inf.ed.ac.uk/teaching/courses/ds
Autumn Term 2012

Organisational Matters

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Website `www.inf.ed.ac.uk/teaching/courses/ds`

Lectures Monday/Thursday 15:10-16:00, Hugh Robson Building Lecture Theatre.

Coursework Coursework will be assigned October the 8th

- **Level 10** Due 4pm Thursday November 8th
- **Level 11** Due 4pm Thursday November 22nd

Grading

- Assignment (and project at level 11) — 25%
- Final Examination — 75%

Organisational Matters — Bonus Holiday

Bonus Holiday: There will be no lectures on Thursday 11th October and Monday the 15th of October.

Literature

No Required Textbook

- Course Textbook George Coulouris, Jean Dollimore and Tim Kindberg, Distributed Systems: Concepts and Design
  - 4th Edition: `http://www.cdk4.net/`
  - 5th Edition: `http://www.cdk5.net/`
- Andrew S. Tanenbaum and Maarten Van Steen, Distributed Systems: Principles and Paradigms, Prentice Hall, September 2001 web site: http://www.cs.vu.nl/ ast/books/ds1/
- Nancy A. Lynch, Distributed Algorithms, Morgan Kaufmann, 1996
- Andrew S. Tanenbaum, Computer Networks, 3rd ed., Prentice- Hall, 1996.
- R. Chow and T. Johnson, Distributed Operating systems and Algorithms, Addison-Wesley, 1997.

Course Overview

1. Introduction

Discuss high-level concepts such as reasons, advantages, disadvantages and give some example distributed systems

Course Overview

2. Fundamental Concepts of Distributed Systems

Architecture models; network architectures: Internet and LANs; interprocess communication

Course Overview

3. Time and Global States

Clocks and concepts of time; Event ordering; Synchronization; Global states

Course Overview

4. Coordination

Distributed mutual exclusion; Multicast; Group communication, Byzantine problems (consensus and arbitrary failures)

Course Overview

5. Distribution and Operating Systems

Protection mechanisms; Processes and threads; Networked OS; Distributed and Network File Systems (NFSs)

Course Overview

6. Peer to peer systems

- Routing in P2P
- Examples; Bittorrent, OneSwarm, Freenet, Ants P2P
- Domains of acceptance and reasons?

Course Overview

7. Security
Security Concepts

- Last Year
  - Cryptographic algorithms
  - Digital signatures
  - Authentication
  - Secure Sockets
- This Year I hope to include
  - Security with particular respect to distributed systems
  - Are such systems inherently more insecure?
  - Is there additional security to be found in distribution

CourseWork

- Last year the course work for level 10 students was very exam-like
- Level 11 students had the choice between an exam-like topic and a more practical programming based assignment
- Last year there was some ungraded course work (that was actually discussed in class
- (un)graded || (un)credited || optional
- My experience is that uncredited course work is the same as unassigned course work

Some Feedback/Advice from Last Year's Students

- "The course topic is very interesting but the lectures are not engaging"
- "Work hard on the course work" both credited and uncredited?
- "Not a lot of practical knowledge"
- "A lot of interesting material .. but you may end up learning everything by yourselves" it's my job to make sure this is not the case

Any Questions

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