Distributed Systems

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

Fall term 2011

0. Organisational Matters

- Instructor: Dr. Richard Mayr
  - http://homepages.inf.ed.ac.uk/~rmayr
  - Office: IF 4.11
  - Office hours: Mon 14:00-15:00
- Course Web Site
  - http://www.inf.ed.ac.uk/teaching/courses/ds
- Lectures
  - Mon./Thurs. 15:00-15:50. AT LT3. (Appleton tower, lecture theatre 3).
- Coursework
  - 1 graded assignment + 1 project (for level 11 only)
  - Ungraded exercises (discussed in class).

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- Course Grade
  - Assignments (and project at level 11) 25%
  - Final examination 75%
- Combined level 10/level 11 course
  - Extra project at level 11

0. Organisational Matters

- Literature
  - **Course Textbook (required)**
    - George Coulouris, Jean Dollimore and Tim Kindberg, *Distributed Systems: Concepts and Design*, 4th edition, Addison-Wesley, 2005.
      - web site: http://www.cdk4.net/
  - Reference Texts
    - 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.

0. Course Overview

- I. Introduction
- II. Fundamental Concepts of Distributed Systems
  - Architecture models; network architectures: OSI, Internet and LANs; interprocess communication
- III. Time and Global States
  - Clocks and concepts of time; Event ordering; Synchronization; Global states
- IV. Coordination
  - Distributed mutual exclusion; Multicast; Group communication, Byzantine problems (consensus)
- V. Distribution and Operating Systems
  - Protection mechanisms; Processes and threads; Networked OS; Distributed and Network File Systems (NFSs)

0. Course Overview

- V. Distribution and Operating Systems
  - Protection mechanisms; Processes and threads; Networked OS; Distributed and Network File Systems (NFSs)
- VI. Peer to peer systems
  - Routing in P2P, OceanStore, Bittorrent, OneSwarm, Ants P2P, Tor, Freenet, I2P
- VII. Security
  - Security concepts; Cryptographic algorithms; Digital signatures; Authentication; Secure Sockets