CIS 505: Software Systems

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CIS 505, Spring 2007

CIS 505: Software Systems

- Instructor
  - Insup Lee, lee@cis.upenn.edu
- TA's
  - Dave Arney, arney@seas.upenn.edu
- Office Hours
  - TBD
- Grading (50/50)
  - Homework Assignments, Programming Assignments, Group Project
  - Midterm, Final
- Course web page: www.cis.upenn.edu/~lee/07cis505/

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Course in a nutshell

- Prerequisites/background
- Software systems
  - Brief Overview of Operating Systems
  - Communication, Concurrency, Modeling
  - Distributed and Concurrent Programming Paradigms
  - Concepts, Principles and Algorithms for (Distributed) Systems
  - Applications
- Textbook
  - *Distributed Systems: Principles and Paradigms*, Second Edition, Andrew S. Tanenbaum and Maarten van Steen, Prentice Hall, 2007
  - *Communicating Sequential Processes*, Tony Hoare, free online copy at www.usingcsp.com/
  - Selected Papers

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Tentative Syllabus

- OS Overview/Review (4 lectures)
  - System calls
  - Processes and Threads [Ch 3]
  - CPU & Real-Time Scheduling
- Communication & Concurrency Models (4 lectures) [CSP, Ch 4]
- Concurrent and Distributed Programming Paradigms (4 lectures) [Ch 1-4]
- Naming (2 lectures) [Ch 5]
- Synchronization: Clock synchronization, ordering of events, mutual exclusion (3 lectures) [Ch 6]
- Consistency and Replication: Caching, Distributed File Systems (4 lectures) [Ch 7]
- Fault Tolerance: Reaching agreement, Commitment (3 lectures) [Ch 8]
- Security (2 lectures) [Ch 9]
- Middleware, Distribution, and Coordination
- Applications: WWW, P2P Computing, Distributed Wed-Bases Systems, Real-Time Embedded Systems, Sensor Networks

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Homework 1

- Read 3 papers
- For each paper, write one page summary:
  - What is the problem
  - What is the proposed approach/solution
  - Your evaluation of the paper/approach
- Due: 3 pm, Wednesday, Jan 17.

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