

BLM 107: DISTRIBUTED SYSTEMS

Fall 2011

Instructor: Yrd. Doc. Dr. Ahmet Sayar

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Office hours: By appointment or after the classes

Class web page: <http://www.ahmetsayar.com/lecturenotes/>

Students should normally contact me via email. Be sure to include the name of the course in the subject. Every effort will be made to respond to email within 24 hours except for weekends and holidays. Please use your university email account.

Day & Time: Tuesday & 14:00 – 16:50

Aim: This course aims to provide students with a deeper understanding of distributed systems by particularly focusing on the principles, techniques, and practices relevant to the design and implementation of such systems.

Course Description: This course studies the key design principles of distributed systems, which are collections of independent networked computers that function as single coherent systems. Covered topics include communication protocols, processes and threads, naming, synchronization, consistency and replication, fault tolerance, and security. This course also examine some specific real-world distributed systems case studies, distributed file systems can be given as an example. Class discussion is based on readings from the textbook and research papers.

Textbooks:

- Andrew S. Tanenbaum & Maarten van Steen: Distributed Systems: Principles and Paradigms, 2nd ed, 2007, Pearson Prentice Hall
- Not all the material we cover will be from the book, nor will the order in which we cover this material be the same as in the book. You will have to refer to copies of the slides (which I will distribute in class and on the course web page) and your own notes.

Resources:

- George Coulouris, Jean Dollimore & Tim Kindberg: Distributed Systems: Concepts and Design, 4th ed, 2005, Addison-Wesley.

Grading: (tentative)

Midterm (%14)

Project (%42)

Presentation/Seminar (%14)

Final exam (%30)

Course Learning Objectives/Outcomes:

1. Present the principles underlying the functioning of distributed systems.
2. Create an awareness of the major technical challenges in distributed systems design and implementation.
3. Expose students to modern and classic technology used in distributed systems and their software.
4. Expose students to past and current research issues in the field of distributed systems.
5. Explain what a distributed system is, why you would design a system as a distributed system, and what the desired properties of such systems are.
6. Recognise how the principles are applied in contemporary distributed systems, explain how they affect the software design, and be able to identify features and design decisions that may cause problems.
7. Build distributed system software using both basic OS mechanisms as well as higher-level middleware and languages.

Class Schedule (tentative):

1.week: Introduction to Distributed Systems	9.week: Midterm
2.week: Architectural styles	10.week: Communication: Multicast
3.week: Processes and threads	11.week: Naming: Structured naming
4.week: Processes and threads	12.week: Naming:Attribute based naming
5.week: Virtualizations	13.week: Synchronization
6.week: Communication: RPC	14.week: Consistency
7.week: Communication: Message oriented	15.week: Replica management
8.week: Communication: Stream oriented	16.week: Fault tolerans

Attendance

- Regular attendance is the university requirement. Attendance will be taken in every class.
- As soon as the number of absences goes beyond 50% of the held classes a warning will be given by the instructor.
- Late arrivals are disruptive --- plan to arrive five minutes before the start of class

Academic Dishonesty:

Cheating will not be tolerated and may result in serious sanctions, including immediate failure in the course. Serious incidents of academic dishonesty will also for brought to the attention of the university and may result in expulsion. All work in this class is meant to be an individual effort by the person receiving the grade. Any variation from this is considered cheating and all parties involved (giving or receiving) will be sanctioned.