Distributed Systems
+
Middleware Technologies for Distributed Systems

Gianpaolo Cugola

Dipartimento di Elettronica e Informazione
Politecnico di Milano, Italy

cugola@elet.polimi.it
http://home.dei.polimi.it/cugola
http://corsi.dei.polimi.it/distsys

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Teaching staff

- **Professor**
  Gianpaolo Cugola (cugola@elet.polimi.it)
  http://home.dei.polimi.it/cugola

  Dipartimento di Elettronica e Informazione (DEI)
  Edificio 22, via Golgi 42
  Ufficio 305 (3° piano), tel. 02 2399 3493

  Ricevimento studenti: per appuntamento via e-mail
- **Assistant**
  Alessandro Sivieri (sivieri@elet.polimi.it)
  DEI (ed. 22), ufficio 301 (3° piano), tel. 02 2399 3707

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General organization

- Two different courses in the new organization of study (Laurea 270):
  - 090950 Distributed Systems (5 cr)
    - More theoretical course
    - Formally: 32 hours of lessons (4 cr) + 16 hours of "practice" (1 cr)
    - Actually: no clear distinction between the two forms
  - 090931 Middleware Technologies for Distributed Systems (5 cr)
    - More practical course
    - Several technologies described with a lot of "hands on" work
    - Formally: 20 hours of lessons (2.5 cr) + 24 hours of "practice" (1.5 cr) + 24 hours of "lab" (1 cr)
    - Actually: no clear distinction between lesson and practice. Lab is "project lab" (students work on their own)

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Schedule

- The two courses will be taught in sequence (*emisemestri*)
- Theory first, then practice
  - Distributed Systems first, then Middleware
- Exception: First 2/3 lessons on "programming concurrent systems" are in common
- Schedule:
  - Tuesday: 08.15-10.15 room D.0.2
  - Wednesday: 14.15-17.15 room D.2.2
  - Friday: 08.15-11.15 room D.0.1
- Periodically check the course site for announcements, changes, …

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Prerequisites

- Basic knowledge of:
  - Operating systems
  - Computer architectures
  - Networking and network protocols
    - Internet protocols
- Knowledge of OO programming in Java and/or C++

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Exams

- Evaluation
  - Written exam
    - Questions about the theory + exercises
    - You will not be asked to write complex programs at the written exam
  - Project
- Rules
  - Written exams at fixed dates, projects can be presented at any time
    - Both remain valid for the entire academic year (in principle)
    - The final grade will be registered at the first possible "official" date
- How the final grade is calculated
  - Distributed systems: 70% written exam, 30% project
  - Middleware technologies: 50% written exam, 50% project

Projects

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- Two kind of projects:
  - **Demo**: put in practice the theory studied during the course to solve a simple problem
  - **Mini**: should demonstrate your ability in using the different technologies described during the course
- How do they apply to the two courses:
  - Distributed systems: 1 demo
  - Middleware technologies : 3 minis
- Rules
  - Projects must be developed in group (min. 2, max. 3 students)
  - Students are expected to demonstrate the applications they developed using their own notebooks
    - At least two, connected in a LAN, to show that everything works in a truly distributed setting
  - To present their work students are expected to produce a few slides focusing on the software and run-time architecture of their solution
  - During the evaluation all the participants of the group should demonstrate they know what the group has done on every part of the projects
- Alternatives:
  - Other projects can be proposed by the students
  - Students developing their thesis in distributed systems do not need to develop the demo (in some cases the minis, also)

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Bibliography

- Web site: http://corsi.dei.polimi.it/distsys
  - Includes copy of this slides and other material (exercises, past exams, …)

- Books (main):
  - A.S. Tanenbaum, M. van Steen. *Distributed Systems: Principles & Paradigms, 2nd ed.* Prentice Hall, 2006 (disponibile anche in italiano)
  - G. Coulouris, J. Dollimore, T. Kindberg. *Distributed Systems: Concepts and Design (4th edition).* Addison-Wesley, 2005
- Books (other):
  - B. Eckel. *Thinking in Java (4th Edition).* Prentice Hall, 2006
  - M. Hughes, M. Shoffner, D. Hammer. *Java Network Programming*, Manning, 1999
  - D. Lea. *Concurrent Programming in Java: Design Principles and Patterns.* Addison-Wesley (Java Series)
- Scientific papers and other material will be listed during the course and will be made available through the site