POLITECNICO
MILANO 1863

Distributed Systems

+

Middleware Technologies for Dist. Sys.

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Teaching staff

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General organization

- Two different courses (first semester)
  - 090950 Distributed Systems (5 cr – G. Cugola)
    - More theoretical course
    - Formally: 30 hours of lessons (3.75 cr) + 20 hours of "practice" (1.25 cr)
    - Actually: no clear distinction between the two kind of teaching
  - 090931 Middleware Tec. for Dist. Sys. (5 cr – L. Mottola)
    - More practical course
    - Several technologies described with a lot of "hands on" work
    - Formally: 30 hours of lessons (3.75 cr) + 20 hours of "practice" (1.25 cr)
    - Actually: no clear distinction between lesson and practice

Schedule

- The two courses will be taught in sequence (emisemestri)
- Theory first…. then practice
  - Distributed Systems first… then Middleware
  - We expect to finish Distributed Systems by end of October but...
    ... check the course site (**beep**)
- Schedule:
  - Monday: 08.15-10.15 online
  - Monday: 13.15-16.15 room 2.1.2 (ex N.1.2) – Team 1 – odd Person code
  - Wednesday: 10.15-13.15 room 3.1.2 (ex S.1.2) – Team 2 – even Person code
  - Friday: 08.15-11.15 online
- Periodically check the course sites (available under the Beep platform) for announcements, changes, …

Prerequisites

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

Exams

Distributed Systems

- Evaluation
  - Written exam
    - Questions about the theory + exercises
    - You will not be asked to write complex programs at the exam
  - Project (**optional**), increases the written mark (max 4 points)
- Rules
  - Written exams at fixed dates, project can be presented at any time
    - Both remain valid for the entire academic year
    - The final grade will be registered at the first possible "official" date

Middleware

- Evaluation
  - No written exam, you will be asked to develop design & implementation projects in groups of exactly 3 students
- Rules
  - Project discussions will be scheduled on-demand
  - Setup appointments with Prof. Mottola
  - Projects remain valid until the next edition of the course

Projects

- Rules
  - Projects must be developed in groups (2-3 students for DS, exactly 3 students for MW)
  - Students are expected to demonstrate the systems using their own machines
    - At least two, 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
  - Every group member must demonstrate knowledge of every part of the projects
- Alternatives:
  - Other projects can be proposed by the students
  - **Students interested in doing a thesis or more advanced research projects may contact the teaching staff, and have the course projects (partly) waived**

Bibliography

- Web site: one for each course, available in the Beep platform
  - Includes copy of this slides and other material (exercises, past exams, …)

- Books (main):
  - Distributed systems
    - 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
  - Middleware Technologies for Distributed Systems
    - A.S. Tanenbaum, M. van Steen. *Distributed Systems: Principles & Paradigms, 2nd ed.* Prentice Hall, 2006 (disponibile anche in italiano)
- Books (other):
  - M. Kleppmann. Designing Data-Intensive Applications: The Big Ideas Behind Reliable, Scalable, and Maintainable Systems. O'Really Media, 2017
  - 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