

# Database systems



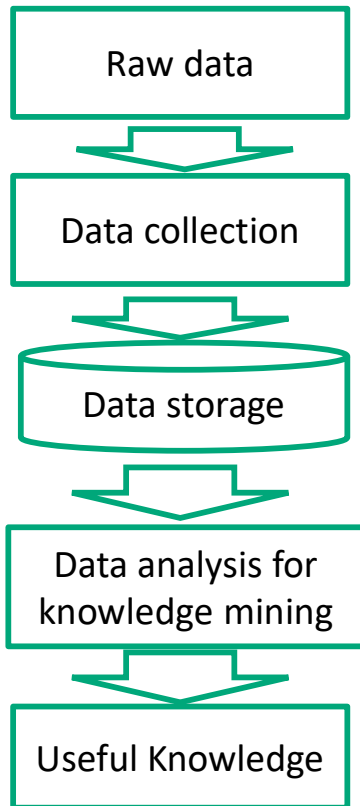
Data Base and Data Mining Group of Politecnico di Torino

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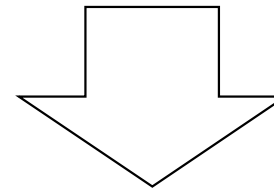
A.Y. 2021-2022



# This course



- How can data be stored and managed?
- How can data can modeled?
- How can data be analysed to extract useful knowledge?



## **Database systems**

- Methodologies for the design, querying, and management of databases
- Introduction to business intelligence and the creation of interactive dashboards for data reporting.



# Course contents at a glance

- Characteristics of a database management system
- Relational data model
- SQL language: statements to query, modify and define the database
- Design of a relational database
  - Conceptual data model (Entity-Relationship), methodology for the conceptual and logical design
- Introduction to development of web-based applications for database querying and management
- Introduction to Business intelligence: data modelling, data preparation, data analyses with an interactive dashboards
- Introduction to spatial databases



# Course structure

- The course includes
  - lessons
  - classroom exercises
  - laboratories
- Laboratory sessions propose experimental activities on the most widespread commercial and open-source products



# Reading material, Announcements, Q&A

- Reading material
  - Slides used in classes
  - Texts and solutions of the proposed exercises
  - Texts and materials useful for laboratory exercises/practices
  - Available on the course website
    - [https://dbdmg.polito.it/dbdmg\\_web/index.php/2022/02/25/database-systems/](https://dbdmg.polito.it/dbdmg_web/index.php/2022/02/25/database-systems/)
- Announcements
  - Course website on the Didactic Portal
- Q&A
  - «Piazza» platform



# Assessment and grading criteria

- Exam
  - Written test (mandatory)
    - A set of design exercises
    - A set of theory questions and exercises
  - Homework (project) on the main topics of the lectures (optional)
- Further details about exam structure and grading criteria are available on the didactic portal



# Homework

- Homework exercises to be delivered during the course
- Points from Homework exercises are added to the grade on the written test (if grade on the written test is  $\geq 18$ )
- Delivery of Homework exercises is optional
- Maximum 2 points
- Points from the Homework exercises will be valid until the exam session of February 2023 (included)



# Reference books

- Database Systems - Concepts, Languages and Architectures Paolo Atzeni, Stefano Ceri, Stefano Paraboschi and Riccardo Torlone McGraw-Hill, ISBN 0-07-709500-6
  - A free PDF file is available here <http://dbbook.dia.uniroma3.it/>
- Matteo Golfarelli, Stefano Rizzi. Data Warehouse Design: Modern Principles and Methodologies, McGraw-Hill Education, 2009