**Title of the course:** Multidimensional Databases

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**Aims of the course:** students will learn core concepts related to multidimensional data bases and Online Analytical Processing (OLAP).

**Learning objectives:** after completing this course, students should be able to analyse, design, implement and explore data schemas to support business intelligence in a relational database.

1. Data Processing: distinguish between different database technologies and their applicability regarding Online Transactional Processing (OLTP) and Online Analytical Processing (OLAP).
2. Data Modelling: analyse a domain and identify the concepts that are required to organize operational data to support business intelligence applications.
3. Data Modelling: design data schemas following a systematic process to emulate Multidimensional Databases on a Relational Database. Star model, snowflake model.

**Structure:** the course is organized in three sessions. The first session, lasting two hours, is devoted to present and discuss the core concepts based on a case study. In the second session, students are grouped in teams of 2 or 3 members (from different universities) to analyse, design and implement a multidimensional database for a particular domain. Some of the solutions delivered by the students will be discussed in plenary, highlighting aspects of relevance (two hours and a half). The third session is held in cooperation with the other topics addressed at the summer school; at this last session, students, organized in teams, are required to solve a challenge, and propose a solution involving all the topics discussed. This last session lasts four hours.

**Topics:** OLTP, OLAP, multidimensional databases, star model, snowflake model, business intelligence.

**Assignments:** assignments based on case studies and practical exercises to be solved in international teams of 2 to 3 students.

**Technical Prerequisites:** computer with access to internet.