Informatique

Data bases and data mining - Part1

IDENTIFICATION

CODE : IST-4-DBM1
ECTS : 3.0

HOURS

Lectures :	0.0 h
Seminars :	20.0 h
Laboratory :	0.0 h
Project :	0.0 h
Teacher-student contact :	20.0 h
Personal work :	20.0 h
Total :	40.0 h

ASSESSMENT METHOD

- Small project (with 4 hours of assistance) on computers
- 2 hours of presentation of the project by the students

TEACHING AIDS

TEACHING LANGUAGE

English

CONTACT

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AIMS

This course introduces the most important concepts concerning the design and the use of databases. It covers the main issues in data modeling when considering the relational data model (structure, languages like relational algebra and relational calculus) and the key features of attribute-oriented models with respect to constructor-oriented models (like, for instance, Extended Entity-Relationship models). The fundamental concepts like the constraints and the normal forms will be explained and their impact on the quality of designed databases will be discussed. Finally, practical aspects of relational database design and use will be discussed. It includes a presentation of the SQL query language but also a short introduction to data warehousing and On Line Analytical Processing queries (OLAP). To be concrete, the students will have to understand the design of a real relational database and to practice database querying with a professional DataBase Management System (DBMS).

CONTENT

Introduction to data models and application to databases
Studying the relational data model
Structure
Languages
Constraints
Introducing database design
Using the Extended Entity-Relationship Model
Normals forms and data dependencies
Practical issues
Using SQL
Introducting Data Warehousing

BIBLIOGRAPHY

Heikki Mannila and Kari-Jouko Raiha. The Design of Relational Databases, 2nd Edition, 1994, Addison-Wesley.
Serge Abiteboul, Rick Hull, Victor Vianu, Foundations of databases, 685 pages, 1995, Addison-Wesley
Carlo Batani, Stefano Ceri, Shamkant B. Navathe. Conceptual Database Design: An Entity-Relationship Approach. 455 pages. Benjamin/Cummings.

PRE-REQUISITE

Set theory, basic notions in disccrete mathematics and algorithms.