Data Management and Database Technologies Theme

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Data Management and Database Technologies

Why this theme is part of the iCSC?

• Database systems form the primary means for storing data and representing information

• Everybody has data

• Applications are disposable – data stays forever

• There will be always the need to manage your data in an efficient and standardized way

• Understanding of the capabilities of database systems is crucial for the professional development of any software system
Objectives of the Theme

• To chart the lifecycle of database development and usage

• To give a brief overview of the capabilities of database management systems

• To present how to exploit these capabilities to their maximum

• To point out some common pitfalls and best practices

• To present the theoretical background behind the discussed subjects and to give practical examples

• To make you realize what are the benefits if you take full advantage of the power offered by the RDBMS
The Team

- Miguel Anjo
- Michal Kwiatek
- Petr Olmer
- Zornitsa Zaharieva
A Short Guide to ‘Data Management and Database Technologies’

1. Fundamentals of Database Design  - Zornitsa Zaharieva

2. SQL – basics and recent advances  - Miguel Anjo

3. Advanced Database Features  - Miguel Anjo, Zornitsa Zaharieva

4. Performance Optimization and Tuning  - Michal Kwiatek

5. Data Mining – Extracting Knowledge from Data – Petr Olmer
1. Fundamentals of Database Design - Zornitsa Zaharieva

: give a practical overview of the process of designing a database
: how to end up with a database model starting from the raw data
: conceptual design of a database
: logical design (relational model)
: look at some recommendations when designing a database schema
: all the topics discussed in the lecture are not specific to a particular vendor implementation of a RDBMS

2. SQL – basics and recent advances - Miguel Anjo

: overview of the language used to interact with a relational database
: investigating different possibilities of database queries
: advanced SELECT forms
: mainly based on SQL92 standard and a small part on Oracle features
3. Advanced Database Features - Miguel Anjo, Zornitsa Zaharieva

- what a RDBMS offers to improve the performance of very big databases
- features for protecting the data when working in a multi-user environment
- how to put more logic into the database layer and what are the advantages of doing that
- the lecture is heavily based on the Oracle implementation of all these features

4. Database Performance Optimization and Tuning - Michal Kwiatek

- from the point of view of a database application developer
- organized around best practices and recommendations
- a detailed presentation of tuning tools and techniques (analyzing sql execution plans)
- both beginners and people who are well advanced in database applications may benefit from this lecture
5. Data Mining – Extracting Knowledge from Data - Petr Olmer

- how to discover the hidden knowledge stored in databases
- an introduction to data mining and text mining
- techniques for discovering structural patterns in data
- basic mining algorithms
Our ‘Data Management and Database Technologies’ Theme

Your Hitchhiker's Guide to Data Management and Database Technologies

Thank you for your attention!