DESIGN OF DATABASES

KNU Global Summer School, 2015

About the Instructor

Marko Bajec is a full professor at Faculty of Computer & Information Science, University of Ljubljana. He is the head of the Laboratory for Data Technologies. He teaches courses on Databases and Information Systems.

www.lpt.fri.uni-lj.si

Contact:
marko.bajec@fri.uni-lj.si

University *of Ljubljana*
Faculty *of Computer and Information Science*

About the Course

Course outline

The amount of data that we produce nowadays is enormous. Just as an example, on *Facebook*, we put more than 500 terra bytes daily. Similarly, in a typical business we keep information about billions of transactions that we had performed in the past. To manage such amounts of data, specific systems are required that help us to deal with data safely and efficiently. These are known as *database management systems*. During the course students will learn what databases and database management systems are, how to design and implement a database, how to query database content, and how to access a database from typical programing languages such as Java, Python or C++.

Course Syllabus

The course will cover the following topics:

- Part 1: Databases and database management systems
- Part 2: Describing, storing and querying data in a database
- Part 3: Database modeling
- Part 4: Accessing databases from program languages

Lectures within Part 2, 3 and 4 will be accompanied with practical work on computers. Students will be divided into groups of two or

Course et a Glance

Period: June 29 - July 23

Course Title: Design of Databases

Time: Monday to Thursday, 9-12 AM

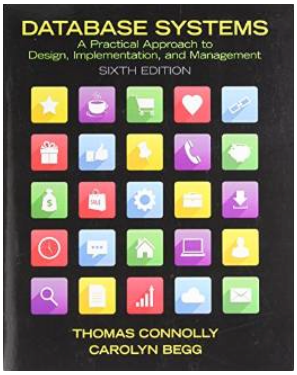
Lecturer: Marko Bajec, University of Ljubljana, Slovenia

Credits: 3

Info: marko.bajec@fri.uni-lj.si

three, depending on the overall number of attendants. In Part 2, we will use the tool MySQL Workbench and learn how to make simple and complex queries on a preset database. In Part 3, we will introduce an open source database management system MySQL. Each group of students will be encouraged to design a database for an imaginary problem. They will first model the database, then take care for referential integrity, views, triggers etc. and finally, create a physical database and validate if everything is ok. In Part 4, they will develop a simple program (in their preferred language) for accessing the data in their database. Advanced students will be encouraged to develop more sophisticated programs.

Suggested Readings



There are many good books on databases. For the purpose of this course students are not required to read any book but if interested, I suggest to check the following one:

Thomas M. Connolly, Carolyn E. Begg (2014). *Database Systems, A Practical Approach to Design, Implementation and Management*, Sixth Edition, Addison-Wesley.

Assessing Methods

Students will be examined through written examination, which will include one or two theoretical questions to check their general understanding of the delivered topics and a practical part. Within the practical part students will be examined for the knowledge they acquired on database design, querying and accessing.