

Database systems

Subject topics and semester requirements

Subject: BPI1210_

Course: _00(lecture), _01(labor); The requirements are here in a combined document.

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Contact hours number (e.g. + freq.): 2+2 per week,

Semester requirement: exam and the mid-year requirements

A prerequisite (subject code) : ---

Subject manager name and position : the instructor

Google classroom course signing up URL:

XXX

Semester requirement: exam

Mid-year requirements:

- A. In each weekly labor, you can collect 10 mid-year points by solution of exercises in the google classroom. You have to collect the 50% of all the possible points. [12x10 points]
- B. Successful writing of two paper-based test in practice. You have to have a minimum of 60% on the first paper, 50% on the second paper. [100 points for the first, 60 points for the second]

It is a condition for admission to the exam

obtaining the minimum percentage of points in the mid-year reqs.

Possibility of offering tickets during the practical period

Those who have 150 points of the mid-year requirements will receive a sufficient offered grade. 180 points - medium, 200 points - good, 240 points - excellent. If the offer is not accepted, you have to take an exam, which will be an oral exam. There, mid-year points are no longer counted, it is possible to get any exam grade there, from insufficient to excellent.

The possibility of replacing the mid-year requirements

On the other hand, those who do not fulfill the mid-year requirements A and/or B, he/she can retry these requirements one more time during the exam period, presumably at the beginning of June 2023, while the 3 announced exams can only be taken orally. The grade offer is no longer valid in the case of oral exams.

Teaching materials:

The presentations and practical exercises presented at the lecture can be found at [XXX](#).

Mandatory and recommended literature:

Ullman, JD, Widom, J. Database Systems - Fundamentals. 2nd, revised edition (translation of the 2008 English 3rd edition), 2009, Panem Publishing

E. Garcia - JD Ulmann - J. Widom: *Database Systems (Implementation)* , Panem, Budapest, 2000.

MySQL documentation, <http://www.mysql.com>

Julia C. Meloni: *Let's learn how to use MySQL in 24 hours* , Kiskapu Kadó, Budapest, 2003.

Jenei Imre: *Using triggers, stored procedures and functions in MySQL*, Ad Librum Kiadó , 2008.

Interactive tutorial in English: <http://www.w3schools.com/sql>, <http://www.w3schools.com/xml/>

Free online course in English:

<https://lagunita.stanford.edu/courses/DB/2014/SelfPaced/about>

The lesson program (plan), also known as the semester theme:

Seven	LECTURE	EXERCISE
Week 1 / February 24	Course description. The history of databases and managers, the structure of database managers, an overview of database management knowledge. Relational data modeling, data description language, data types in SQL. Elements of a relational data model: individual, property, relationship, key, foreign key. DDL: CREATE TABLE and ALTER TABLE statements.	Installation and use of database managers (MariaDB+PHPMyAdmin bundled into a XAMPP package, MySQL Workbench, can also be based on MariaDB), options for using Oracle Express. Rewriting database schema and CREATE TABLE statement back and forth, table change statement in SQL (ALTER TABLE).
Week 2 March.03	Relation as a mathematical concept. Operations with relations. Relational algebra. Data queries in the language of relational algebra and in SQL, the SELECT::FROM::WHERE:: structure. Use of complex conditions (AND, OR, NOT), operators and functions.	SELECT-FROM-WHERE queries, AND, OR, NOT), using operators and functions. Sorting, TOP n queries.
Week 3/March 10	Multi-table queries, join tables INNER JOIN, OUTER JOIN, LEFT and RIGHT JOIN.	Multi-table queries.
4th week March 17	Grouping queries	Grouping queries
Week 5/March 24	Nested query (subquery). Use of EXISTS, ALL, ANY in subqueries. Linked subquery. Viewing boards.	Nested Queries. Linked Queries. Viewing boards.
Week 6/March 31	DML\DDL = data modification queries: INSERT, UPDATE, DELETE	INSERT, UPDATE, DELETE. A set of practical tasks for preparing for the zh.
Week 8/ 14 April	Time required for query execution, its optimization, indexing. Indexing methods: B-tree, hashing (splitting tables).	thesis I. complex SQL task set of queries, CREATE TABLE statement, test questions.
Week 9/ 21 April	Constraint conditions, triggers. Metadata about our database. Relational logical calculus and writing constraint conditions with relational logical calculus.	How the database manager behaves as a result of constraint conditions. Writing constraint conditions in the language of relational calculus. Extracting metadata from the database. Creating triggers.
Week 10/ 29 April	Transactions.	Behavior of transactions.
Week 11 / .05 May	Stored Procedures.	Creating a stored procedure in MySQL PSM.
Week 12 / 12 May	Database design I: E/Rmodel. Forming textual requirements into a database schema.	Writing an E/R model into a relational database schema. Forming textual requirements into E/R model and database schema.
Week 13 / 19 May	Database design II: functional dependencies, anomalies in the case of redundant data storage in the database, normal forms, 1NF, 2NF, 3NF, BCNF. The concept of 4NF.	Functional dependence, normalization.
Week 14/ 26 May	Hierarchical data model, XML, XML descriptive language, Non-relational databases	paper 2. constraints, triggers, transactions, stored procedures, E/K model, normalization