Syllabus

Department of Economics and Business
CENTRAL EUROPEAN UNIVERSITY

Data Engineering 1: SQL for Analysts

- **Instructor:** László Salló (sallol@ceu.edu office hours: on demand)
- **Credits:** 1 (2 ECTS)
- **Term:** Fall 2020-2021
- **Course level:** [MS]
- **Prerequisites:** Mathematics and Informatics Pre-session for Business Analytics
- **Course drop:** Course can be dropped free of charge 24 hours after the first session. After this date drop is possible until the course is halfway over (late drop fee applies). No changes are allowed past that date.

1. COURSE DESCRIPTION

As of August 2020, SQL based data stores are still dominating the landscape data persistency. Their market share, based on popularity index, is nearly 75% (dbengines.com).

From analyst perspective, SQL language enables data professionals to efficiently extract, wrangle, transfer data from the most popular data sources. This said, the importance of having knowledge in SQL language and Relational Database Management Systems (RDBMS) is mandatory for every analyst working with data. Regarding the level of the course, knowledge beyond intermediate is usually required for DB Admins and DB Engineers, so this course is targeting to level up students from completely newbie to intermediate level.

The material presented is also a bootcamp for using MySQL. Being the most popular opensource Database Management System and the second one after Oracle DB on the overall charts, MySQL is a natural choice to introduce students into the world of Databases.

2. LEARNING OUTCOMES

By end of the course, students should be able to:

- do exploratory analysis on SQL database by learning the main SQL commands
- install and configure MySQL on basic level
- learn the usage of MySQL Workbench
- build simple data structures including techniques such as replication, dumping or loading from external sources
- create an analytical data layer using data warehouse architecture
- create simple ETL jobs

3. TEACHING METHODS AND LEARNING ACTIVITIES

The course will involve a mix of theoretical presentations and practice. The accent is on practice. Though SQL is not a hard language to learn, it takes a bit of practice to be a solid practitioner. Given the time limitation of a course, we will not go into deep details of SQL commands. For that reason, home assignments are required, to widen the material learnt in the seminars.

Az a final act, a term project executed in group is scheduled. The aim of the project is the summarize the learnings of the course and produce scenario based practical outcome.

4. ASSESSMENT (including minimum pass requirement and grading

Grading will be based on the total score out of 100, in line with CEU's standard grading guidelines.

Questionnaire as Exam (40%)
Project (60%).

5. TECHNICAL/LAPTOP REQUIREMENT

- Latest community edition of MySQL and MySQL Workbench preinstalled (https://dev.mysql.com/downloads/)
- Make sure you remember the root password you set

7. TOPIC OUTLINE AND SCHEDULE

Chapter	Topics
1	INTRO. LOCAL ENVIRONMENT. BASIC SQL. YOUR FIRST DATABASE. DUMPS.
2	ALTERING DB. SECURITY. DATA TYPES. LOGICAL OPERATORS. FILTERING.
3	CONDITIONAL LOGIC. AGGREGATING. GROUPING.
4	RELATIONAL DATASETS. JOINS.
5	STORED PROCEDURES
6	DATA WAREHOUSE ARCHITECTURE. VIEWS. TRIGGERS. ETL. DATA MARTS.

8. SHORT BIO OF THE INSTRUCTOR

Laszlo Sallo is an IT Manager with Software Engineering background. Over the past 20+ years, he participated in more than 150 international projects. Currently he is serving as Delivery Manager for EPAM Systems, leading a data related project portfolio, combining his skills in Agile Project Management and Data Engineering. Laszlo holds an M.S. in Business Analytics from Central European University (2016). He is instructor of CEU since 2016.