

# NoSQL databases

2017/18, 1<sup>st</sup> semester

**Code:** INMPA9926L

**Type:** Optional, lab.

**Weekly hours:** 0+2

**Credits:** 3

**Instructor:** Dr. László SZATHMÁRY

**Instructor's homepage:** <https://arato.inf.unideb.hu/szathmary.laszlo>

## Course Mark

At the end of the semester you will get a practical course mark. For this, you will have to attend the labs. Max. 3 absences are tolerated. If you are absent more than 3 times, you will automatically fail the course.

About being late: if you are a few minutes late, I can tolerate that. If you are late more than 10 minutes, then it'll be considered as a "half absence". If you do this twice, that will be registered as 1 absence.

There will be two classroom tests. Your mark will be the average of the marks you get on the tests. You will also have to write a project that must be presented at the end of the semester. The project must use a NoSQL database (e.g. MongoDB). You can work on the project in pairs.

## Competence

Students get to know various NoSQL database management systems, that they can use from applications too. Beside the previously known RDBMS systems, students get to know some other database management systems.

Knowing the pros and cons of these systems, the student will be able to decide which system to use in an application. The student can use and manage the selected system. The student follows the development of NoSQL systems, gets open to database management systems that differ from the traditional relational model. The student can decide what database management system to use in a software product.

## Topics

NoSQL data models; NoSQL database management systems. Features of the MongoDB document-oriented system; JSON format. Installing MongoDB; command-line interface; CRUD operations. Using the CRUD operations from applications. Schema design in MongoDB. Performance; indexes; administrative tools. Aggregation framework. The Redis key/value store; installation; command-line interface. Using Redis from applications. The Neo4j graph-based system; components of Neo4j. Installing Neo4j; command-line interface; web interface. The Cypher query language. Using Neo4j from applications. Summary, outlook.

## **Bibliography**

- Kristina Chodorow: MongoDB: The Definitive Guide. O'Reilly, 2013.
- Josiah L. Carlson: Redis in Action. Manning, 2013.
- Gregory Jordan: Practical Neo4j. Apress, 2014.