

DTC-MBD-526 NoSQL Storage System

SEMESTER: Spring

CREDITS: 60 hours

LANGUAGE: Spanish/English

DEGREES: Master in Big Data Technologies and Advanced Analytics

Course overview

This course is an introduction to the use of non SQL databases (Hbase as reference) and the utility of this kind of databases in a business intelligence environment. How to design, create, populate, manipulate and administrate them.

Also, an overview of SQL databases will be shown as a starting-point to analyze the differences between these two ways of organizing and accessing the information.

Prerequisites

Basic knowledge of Programming languages is required, ideally in Java or Python.
Basic knowledge in Hadoop architecture and HDFS.

Course contents

Theory:

1. Relational databases
 - 1.1. Basics of Normalization and Design
 - 1.2. Basics of SQL
 - 1.3. Advanced SQL
 - 1.4. Security
2. Non SQL databases introduction
3. HBASE
 - 3.1. Architecture
 - 3.2. Schemas and tables
 - 3.3. Modelling
 - 3.4. How to access/load information (APIs; Hive; Spark; Presto)
 - 3.5. Development best practices
4. Impala
5. Others NoSQL databases: Mongo, Ne04J, Cassandra y Redis
6. Mixed Architectures.

Textbook

While we will not follow a textbook, we find the following books quite remarkable in their central topics

- **Lars George**, (2011). *Hbase: the definitive guide*. 1st Edition. O'Reilly.
- **Jason Price.**, (2009), *SQL in a Nutshell: A Desktop Quick Reference Guide*. 3rd Edition. O'Reilly

Grading

The overall grade is obtained as follows:

The first part of the subject 30%: (Relational Database, SQL)

- Final exam: 60%.
- Laboratory session work (in class and homework): 40%.

The second part of the subject 70%: (NoSQL, HBase, Impala y otros)

- Final exam: 50%.
- Laboratory session work (in class and homework): 30%.
- Final Project: 20%.

In order to pass the course, the mark of the final exam must be greater or equal to 5 out of 10 points

This document is a brief outline of the course and does not replace the official program of study