COSC 416
NoSQL Databases

Course Introduction

Dr. Ramon Lawrence
University of British Columbia Okanagan
ramon.lawrence@ubc.ca

My Course Goals

My goals in teaching this course:

- Summarize and document the information in a simple, concise, and effective way for learning.
- Present the information in an interesting manner to encourage learning.
- Strive for ***all*** students to understand the material and pass the course.
- Be available for questions during class time, office hours, and at other times as needed.
- Provide the opportunity to learn about different NoSQL databases and their strengths/weaknesses.
- Allow students to practice their development skills.
- Encourage students to continue studying databases including graduate level research.

Course Objectives

1) To learn various NoSQL systems and their features

2) To build projects that use NoSQL databases

3) To compare NoSQL databases with each other and relational systems

4) To practice development skills critical for employers

5) To have fun experimenting and learning

Academic Dishonesty

Cheating in all its forms is strictly prohibited and will be taken very seriously by the instructor.

A guideline to what constitutes cheating:

- Assignments
  - Working in groups to solve questions and/or comparing answers to questions once they have been solved.
  - Discussing HOW to solve a particular question instead of WHAT the question involves relative to the notes.
  - Copying code, even small code fragments, from other students.
  - You may discuss general ideas and syntax, but never share code!
- Exams
  - All exams are closed book, so no course materials should be present.

Cheating may result in a "F" for the assignment or course.

How to Pass This Course

The most important things to do to pass this course:

- **Attend class - Attendance will affect your assignment mark.**
- Do the assignments
- Graduate students: Develop a good project
  - Spend time on selecting a good project that you will find interesting.
  - Make sure to get started on the project early and budget sufficient time.

To get an “A” in this course do all the above plus:

- Do the bonus parts of assignments.
- Put in extra effort to improve your skills.

Systems and Tools

Connect is used for a discussion board, for posting marks, and for anonymous feedback.

- Please use the discussion board and feedback survey.

All software is available in the laboratory at SCI 234.

Access to database systems will be provided as needed.

NoSQL Databases Motivation

In the last 5 years, many databases not based on the relational model have been developed. It is now a more challenging task to determine the "right" data system for your project.

NoSQL database system advantages:

- Flexibility, simplicity, low or no cost (open source)
- Variable, schema-less data
- Higher performance and parallelism

NoSQL database system disadvantages:

- Less mature and powerful query languages
- More "do-it-yourself" for developers

This course will allow you to experiment with various NoSQL databases and compare them to each other and relational systems to help you make good design decisions.

Why this Course is Important

There are more options that ever when building database applications. Good designers will select the right system for the project. ***This course will improve your development skills and provide experience with many different data systems.***

Database systems management is a major research and commercial field. Understanding how they work and *building systems with them* will re-enforce concepts in operating systems, networks, and databases and make you a better developer and computer scientist.

The potential to produce new and exciting applications or research contributions is high. The group assignments will make you a *better team member and communicator.*

The Essence of the Course

If you walk out of this course with nothing else you should:

Be able to make good data design decisions by understanding the differences between relational and NoSQL systems, and be able to develop data applications using a variety of systems.

Unlike COSC 304/404, ***this is not a pre-packaged course***. The course material may evolve as the course proceeds. The goal is not the material itself, but the experience in developing and experimenting with real systems in a realistic environment.