# CS143 Fall 2017

## Instructor: Carlo Zaniolo
## Haines  118
## MW 4-5:0pm

### Syllabus

# Main Goals

- The goal of CS143 is to introduce students to relational database management systems  and teach them how to use them for applications.

- Students are expected to become proficient in SQL  which is the standard language for the creation, query and modification of relational databases.

- Students are also expected to master the theory of RDBMS including relational algebra, relational design principles (functional dependency and normal forms), and the entity-relationship database design.

- Finally, students will learn the performance and design aspects of RDB, including disk and file systems, indexes, transactions, and integrity constraints.

# Infobox

**Instructor**
- **Name** **Carlo Zaniolo**
- **E-mail** zaniolo at cs.ucla.edu
- **Office** 3532G Boelter Hall
- **Office hours** Tuesday: 3-5 PM

**TAs**
- TBA
- **Jiaqi Gu, fudanvictor@gmail.com**
- TBA

**FINAL:** Monday, December 8am—11am (Location TBA)

# Prerequisites

- CS111  is required and this prerequisite is strictly enforced.
- CS143  is intended for students with a robust CS background. That means proficiency in programming and working knowledge of basic Computer Science theory.
- you should feel comfortable with the basic data structures and algorithms in Computer Science (e.g., hash table, graphs, trees, sorting algorithms, set theory) ,
- CS180 (Algorithms), and CS131 (Programming Languages) are expected but not absolutely required.

# Programming for the two Projects

**The First programming project will use**

1.  MYSQL DBMS
2.  Simple Java and in particular JDBC. We will assume students know Java or are able to learn it during the quarter(easy to learn for the students familiar with C++).
3.  We assume that students are familiar with the UNIX command line interface.
4.  No any prior experience with DBs is required

**The second project extends Apache Spark with External Hashing.**

➢ Apache Spark is a cluster-computing platform with implicit data-parallelism and fault tolerance

➢ For that you will use Scala: a general purpose programming language that compiles to Java bytecode, so that runs on a Java virtual machine.

# Textbooks

Required for the course:

- **Database System Concepts** (6th Ed.),Abraham Silberschatz, Henry F. Korth, and S. Sudarshan, McGraw-Hill Science/Engineering/Math.

*The following books are useful for consultation ---however they are not required for the course:*

- A Complete Guide to DB2 Universal Database,by Don D. Chamberlain,
- Morgan Kaufmann Publishers
- Database Systems: The Complete Book,by Hector Garcia-Molina, Jeffrey D. Ullman, Jennifer D. Widom Publisher: Prentice Hall
- A Guide to SQL Standard,by Chris J. Date, with Hugh Darwin, Publisher: Addison-Wesley

# Grading

The final grade will be assigned on the curve on the basis of a total score computed as follows:

- **Homework: 6%**
- **Project-1: 18%**
- **Midterm exam: 24%**
- **Project-2: 18%**
- **Final exam: 34%**