CIS 761 – Database Management Systems

Logistics

Instructor

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Office hours: W2:30-3:30am or by appointment

Meeting Time and Location

Lec: MWF 2:30am-3:45pm in Nichols 236.

Prerequisites

CIS 560, CIS 604.

Targeted audience

Graduate students from Computer Science and related areas.

Course description

The purpose of this course is to introduce concepts, approaches, and techniques in database management. This includes exploring the representation of information as data, data storage techniques, foundations of logical data models, data retrieval, database design, transaction management, integrity and security.

Course objectives

Discuss relational algebra as applied to DBMS to include algebraic query language and relational operations.

Introduce SQL to include queries, relations, database modifications, constraints, triggers, transactions and views.

Explore DBMS Design Theory to include entity relationship model, functional dependencies and normalization.

Study SQL in a programming environment and the approaches of using SQL to access a database through this environment.

Provide an overview of the architecture of a database system, and discuss efficient storage of data, execution of queries and query optimization.

Explore content-based and collaborative-filtering recommender systems in the context of advanced database applications.

Introduce several advanced topics in database systems, including NoSQL databases, Parallel and Distributed
Databases, MapReduce/Hadoop/HBase/PigLatin, Data warehousing and data mining, Information retrieval from unstructured text data.

Examine relational databases in a research environment through practical database applications.

**Required Textbook**


**Topics Covered**

Concepts, approaches, and techniques in database management. Representation of information as data, data storage techniques, foundations of logical data models, data retrieval, database design, transaction management, integrity and security, NoSQL, MapReduce framework, Hive/HiveQL, Pig/Pig Latin.

**Grading Policy**


**Honor System**

Kansas State University has an Honor System [http://www.k-state.edu/honor/](http://www.k-state.edu/honor/) based on personal integrity, which is presumed to be a sufficient assurance that, in academic matters, one's work is performed honestly and without unauthorized assistance.

Undergraduate and graduate students, when they register, acknowledge the jurisdiction of the K-State Honor System. The policies and procedures of the Honor System apply to all full and part-time students enrolled in undergraduate and graduate courses on-campus, off-campus, as well as on-line. A component vital to the Honor System is the inclusion of the Honor Pledge, which applies to all assignments, examinations, and other course work undertaken by students:

“On my honor, as a student, I have neither given nor received unauthorized aid on this academic work.”