CMPT 354 - D100 Database Systems I

Calendar Objective/Description:
Logical representations of data records. Data models. Studies of some popular file and database systems. Document retrieval. Other related issues such as database administration, data dictionary and security.

Instructor's Objectives:
Almost all organizations maintain their data using a database management system (DBMS). This course provides an introduction to DBMS. We focus on the most widely used model: the relational data model. Students will become familiar with the design of database applications and use of databases. We study design tools, database modeling and query languages, including the Structured Query Language (SQL).

Prerequisites:
CMPT 225, and (MACM 101 or (ENSC 251 and ENSC 252)).

Topics:
- Introduction to Data Modelling and database management systems.
- Relational data model, relational algebra.
- Query language: SQL.
- Relational calculus.
- Constraints, triggers.
- Functional dependencies. Normal forms.
- Design theory. The entity-relationship model, E-R diagrams.
- Transaction processing and concurrency control.
- Deductive databases: Datalog and recursive queries.
- Database access from applications: embedded SQL.
- Storage and indexing: B-trees, hashing.
- Query evaluation and optimization: join strategies, query plans.
- Incomplete data: null values and certain answers.
- Other topics may include some recent developments in databases, semistructured data.

Grading:
To be announced in the first week of classes. Students must attain an overall passing grade on the weighted average of exams in the course in order to obtain a clear pass (C- or better).

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Recommended Books:
Academic Honesty Statement:

Academic honesty plays a key role in our efforts to maintain a high standard of academic excellence and integrity. Students are advised that ALL acts of intellectual dishonesty will be handled in accordance with the SFU Academic Honesty and Student Conduct Policies (http://www.sfu.ca/policies/gazette/student.html).