COMP 3380 – Databases: Concepts and Usage

Calendar Description: An introduction to database systems including the relational, hierarchical, network and entity-relationship models with emphasis on the relational model and SQL.
Prerequisite: COMP 2140.
This is a prerequisite for: COMP 4380, COMP 4710, and COMP 4740.

Outline

1) Basic database system and architecture concepts (1 week)
2) Entity-relationship model (2 weeks)
    Conceptual database design; data modeling using the entity-relationship (ER) model; enhanced entity-relationships (EER) and object modeling
3) Relational model (3 weeks)
    Logical database design; relational data model, relational and integrity constraints; functional dependencies and normal forms; ER- and EER-to-relational mapping
4) Other database models (1 week)
    Hierarchical model; network model
5) Relational query languages (5 weeks)
    Relational algebra; relational calculus; SQL
6) Introduction to file structures (1 week)
    Basic file organizations; files indexes and hashing
7) Other topics (if time permits)

Text: Elmasri & Navathe, *Fundamentals of Database Systems*, Addison-Wesley, 2011
Optional References: Garcia-Molina et al., *Database Systems: The Complete Book*, Prentice Hall, 2009
Ramakrishnan & Gehrke, *Database Management Systems*, McGraw-Hill, 2003
Silberschatz et al., *Database System Concepts*, McGraw-Hill, 2011