University of Central Florida
CGS 2545
Database Concepts

SQL Overview

- SQL is a programming language for Relational Databases.
- It is designed over relational algebra and tuple relational calculus.
- SQL comes as a package with all major distributions of RDBMS.
- SQL comprises
  - data definition language
  - data manipulation languages
- Using the data definition properties of SQL, one can design and modify database schema
- Using data manipulation properties allows SQL to store and retrieve data from database

SQL Overview

- Data Definition Language
  - SQL uses the following set of commands to define database schema
    - CREATE
      - Creates new databases, tables and views from RDBMS.
    - DROP
      - Drops commands, views, tables, and databases from RDBMS.
    - ALTER
      - Modifies database schema.

SQL Overview

- Data Manipulation Language
  - DML modifies the database instance by inserting, updating and deleting its data.
  - DML is responsible for all forms data modification in a database.
  - SQL contains the following set of commands in its DML section
    - SELECT/FROM/WHERE
    - INSERT INTO/VALUES
    - UPDATE/SET/WHERE
    - DELETE FROM/WHERE
  - These basic constructs allow database programmers and users to enter data and information into the database and retrieve efficiently using a number of filter options.

SQL Overview

- Data Manipulation Language
  - SELECT/FROM/WHERE
    - **SELECT**
      - This is one of the fundamental query command of SQL.
      - It is similar to the projection operation of relational algebra.
      - It selects the attributes based on the condition described by WHERE clause.

SQL Overview

- Data Manipulation Language
  - SELECT/FROM/WHERE
    - **FROM**
      - This clause takes a relation name as an argument from which attributes are to be selected/projected.
      - In case more than one relation names are given, this clause corresponds to Cartesian product.

SQL Overview

- Data Manipulation Language
  - SELECT/FROM/WHERE
    - **WHERE**
      - This clause defines predicate or conditions, which must match in order to qualify the attributes to be projected.

SQL Overview

- ## Data Manipulation Language
  - INSERT INTO/VALUES
    - This command is used for inserting values into the rows of a table (relation).
  - UPDATE/SET/WHERE
    - This command is used for updating or modifying the values of columns in a table (relation).
  - DELETE/FROM/WHERE
    - This command is used for removing one or more rows from a table (relation).