Day 3

RDBMS - Relational Database Management System
- A type of DBMS that stores data in related tables

Table - A table is a collection of rows and columns.
- Columns have names
- Columns have types
- SQL does not guarantee any order or rows

Constraints - allow you to put restrictions on what data can be stored
- primary key - unique identifier for a table
  - Serogate key - artificially generated key to identify the table (not actually a key word)
  - Composite key - primary key made up of more than one column
- Foreign key
  - References a primary key
  - Must always reference a valid entry from the table it references
- Unique
- Not null
- Check - allows you to create custom checks on how the data is stored
- Default - default value if none is entered

Referential Integrity - All foreign keys have valid primary keys
Orphan - a record who's foreign key doesn't have a valid referene

Types of Data (I'm only listing a few and these are based on postgresql)
- Numeric types
  - Integer - 4 bytes
  - Bigint - 8 bytes
  - Numeric - variable size
  - Double precision 8 bytes, 15 decimal places
  - Serial - 4 bytes - auto incrementing
- Character types
  - Character varying/varchar - variable length string
  - Character/char - fixed-length, blank padded
  - Text - variable unlimited length
- Date/time types
  - Timestamp
  - Date
  - Time

SQL - Structured Query Language
- A language for the definition, manipulation, and control of relational databases

Postgres architecture :
- Server has databases
- Users are shared across all databases on the server
- Databases can have multiple schemas
- A clients connection can only access data in one database but can potentially access any schema in

a single database with a single connection.

DML - Data Manipulation Language - defines how to manipulate stored data
- Insert
- Update
- Delete
- Select
    - Some say it is here others say it is part of DQL - Data Query Language

DDL - Data Definition Language - defines how the data is stored
- Create
- Alter
- Truncate - removes all entries in a table, the table structure still remains
- Drop - removes the table entirely, no structure remains

DCL - Data Control Language - controls access of data - these are often considered part of DDL
- Grant - Define access privileges
- Revoke - remove access privileges

TCL - Transaction Control Language - also can be considered part of DDL
- Savepoint
- Rollback
- Commit

Multiplicity - Defines how tables relate to eachother
- One-to-one
- One-to-many (many-to-one)
- Many-to-many

View - A virtual table based on the result set of a query

Scalar function - Takes in a single value and returns a single value
- Upper
- Lower
- Round
- Len

Aggregate functions - computes a single result from multiple input rows.
- Count
- Sum
- Avg
- Max
- Min

Where vs having - where comes before the group by, having comes after

Order by