Key Terms

DML (Data Manipulation Language) -CRUD operations: INSERT,SELECT,UPDATE,DELETE

DDL (Data Definition Language) -Defining DB schema: CREATE,ALTER,DROP,TRUNCATE

SQL (Structured Query Language) -Programming language that allows access and manipulation of a DB

RDBMS (Relational DB Management System) -DB that organizes tables/entities by relationship

Candidate key -A column that can potentially be a primary key (unique & not null)

Primary key -Unique and Not Null column that identifies a record

Natural key -A PK that consists of actual real data (like a SSN or unique email), not generated

Surrogate key -A generated key that uniquely identifies a record (like auto-incremented keys)

Foreign key -A key that indicates a relationship with another table. Usually the PK of another table.

Junction tables -AKA associative table/entity. A table created to manage a many-to-many relationship between two tables. This table contains the PKs of both tables

Composite key -A PK that is comprised of a combination of 2 or more columns

Look up table -AKA reference table. A table that holds static data, used to lookup values.

Constraints -Rules enforced on columns in a table.

SQL Sublanguages -AKA types of commands in SQL (DML, DDL, TCL, etc…)

Multiplicity -AKA cardinality. Describes relationships between tables (one-to-many, Many-to-many, one-to-one)

DB normalization and normal forms -Process of organizing a DB into tables & columns.
   1NF: All attributes are Atomic values (value cannot be divided further).
   2NF: Must be 1NF & no partial dependencies (when a column depends on only part of a PK).
   3NF: Must be 2NF & no transitive dependencies (when a column depends on another column that is not the PK.

ERD (Entity Relationship Diagram) -Used to model tables and their relationships/cardinality

Schema -Logical DB construct. Describes how the DB is organized.

Joins -SQL statement used to combine rows from one or more tables in a relational DB.

View -A virtual table based on a result set of a SQL query. It is a query stored as an object. Similar to a table but NOT STORED IN THE DB.

DUAL -A dummy table in Oracle. Used to maintain proper syntax in some select statements.

Subqueries -Query nested within a query.

Stored procedures -Block of pre-compiled SQL statement(s) stored in a RDBMS to be called and reused whenever necessary.

Functions -Stored function AKA user-defined functions are callable sets of SQL statements used to perform an action like a complex operation. Returns a value or table.

JDBC (Java DataBase Connectivity) -A Java API (application program interface) that allows communication with a DB

Connection -JDBC interface that represents a connection to a database.

Connection pool -JDBC interface that represents a collection of Connection objects that can be reused.

Driver -Main component of JDBC that enables connection to a DB. There are 4 types of JDBC drivers

Statement -JDBC interface used to run general SQL queries. NOT SQL INJECTION SAFE

CallableStatement -JDBC interface used to call SQL stored procedures.

PreparedStatement -JDBC interface used to run precompiled SQL statements.

ResultSet -JDBC interface that represents the results of a SQL query.

PL/SQL -Procedural Language extension of SQL. Supports variables, procedures, triggers, and exceptions.

Index -A data structure in a DB that speeds up query performance/data retrieval of records.

Cursor -A DB object used to manipulate data in a set on a row-by-row basis. A pointer that iterates between rows

Important commands

WHERE -used to filter records

HAVING -used to filter aggregate functions

INSERT -used to add rows/records to a table

LIKE -operator used in a WHERE clause to search for a specified pattern

UPDATE -used to change specific data in a record

TRUNCATE -used to delete all data in a table, but keep the table structure

DROP -used to delete DB objects from the DB

DELETE -used to remove records.

CREATE -used to make and define DB objects

COMMIT -used to finalize changes in a DB

GROUP BY -used to reduce a query result to distinct rows. Must be used with aggregate functions.

ORDER BY -used to sort a query.

ALTER -used to add, delete or modify columns in an existing table

Questions

When would one ever want to denormalize a db -To improve query performance.

Drop vs truncate vs delete -DROP deletes DB entities (entire table), TRUNCATE deletes all of a table's records, DELETE removes specific rows in a table.

Where vs having -WHERE filters records, HAVING filters aggregate functions

How do i handle exceptions/errors in SQL -

```
EXCEPTION
   WHEN no_data_found THEN
      dbms_output.put_line('No such customer!');
   WHEN others THEN
      dbms_output.put_line('Error!');
END;
```