**DATABASE NOTES:**

* DBMS stands for Database Management System. It is a software system that allows users to define, create, maintain, and control access to a database. **A database is a collection of data that is organized and stored in a structured manner, so that it can be easily accessed, managed, and updated.**
* Arithmetic expressions containing a **null value evaluate to null**
* Eliminate duplicate rows by using the **DISTINCT** keyword in the SELECT clause.
* In DBMS, there are typically three levels of abstraction, each of which represents a different perspective on the database:

**Physical Level**: The physical level is the lowest level of abstraction and describes how the data is actually stored on the physical storage devices such as hard disks or flash drives. It deals with the way data is stored, organized, and accessed at the physical level.

**Logical Level**: The logical level is the middle level of abstraction and describes the structure of the database in terms of entities, attributes, and relationships. It deals with the way data is represented and the relationships between data elements.

**View Level**: The view level is the highest level of abstraction and describes the way in which users see the data. It deals with how the data is presented to different users or applications, based on their specific needs and requirements. This level provides different views of the same data to different users, according to their access privileges and security constraints.

* ER diagram is a E-R data model that is based on a perception of a real world which consists of a collection of basic objects, called entities and of relationships among these objects.
* Data manipulation language and Data Definition Language.  
  DML also known as query language  
  DML OPERATIONS: INSERT, UPDATE, DELETE, MERGE  
  DDL OPERATIONS: CREATE, ALTER, DROP, RENAME, TRUNCATE  
  DDL is for creation and alter of tables, DML is for insertion of data and inside modification.
* Restrict the rows returned by using the WHERE clause.
* Character strings and date values are enclosed in single quotation marks.
* Sort rows with the ORDER BY clause
* SELECT -> FROM -> WHERE -> GROUP BY -> HAVING -> ORDER BY
* There are two types of SQL functions. Single Row and Multiple Row functions.
* LOWER, UPPER, INITCAP are CASE CONVERSION FUNCTIONS

CONCAT, SUBSTR, LENGTH, INSTR, LPAD, RPAD are CHARACTER MANIPULATION FUNCTIONS

* Round, Trunc, Mod are number functions
* The NVL function forces group functions to include null values
* Divide rows in a table into smaller groups by using the GROUP BY clause.
* The subquery (inner query) executes once before the main query.
* A Cartesian product is formed when:

A join condition is omitted

A join condition is invalid

All rows in the first table are joined to all rows in the second table

* Why use Views?   
  To restrict database access

To make complex queries easy

To allow data independence

To present different views of the same data

* Grant create view to username
* Opposite of grant is revoke
* You cannot remove a row if the view contains the following:

Group functions

A GROUP BY clause

The DISTINCT keyword

* A view is derived from data in other tables or other views.
* A view provides the following advantages:

Restricts database access

Simplifies queries

Provides data independence

Allows multiple views of the same data

Can be dropped without removing the underlying data

* system privilege-> access gain in the DB  
  object privilege -> manipulate the contents or objects in the DB  
  scheme: is nothing but collection of objects. These objects can be tables, views etc
* You can change your password by using the ALTER USER statement.