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SQL Coding Series

WEBINAR SERIES

SESSION 2

Basics - Part II

| FRIDAY, JAN 20

| 10 PM ET

Lindsey Robertson

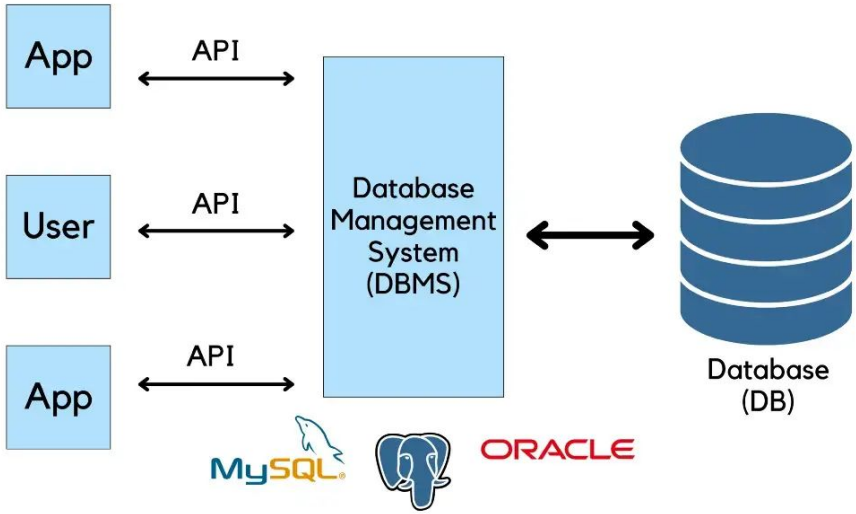
Analyst @ iKadre

womenwhocode.com/datascience/events

Session 1 Review

Types of Databases

- Relational database
- Object-oriented database
- Hierarchical database
- Network database



RDBMS

Structured data is organized neatly into tables with attributes and records that can have relations to each other using keys within a relational database. It is controlled by a DBMS.

Top DBMS db-engines.com/en/ranking

- **Oracle**
- **MySQL**
- **SQL Server**
- **Postgresql**
- **Snowflake**
- **SQLite**
- **Microsoft Access**
- **IBM DB2**

Oracle Server Data Types

Data Type	Description
varchar2(size)	Where ***size*** is the number of characters to store. Variable-length string.
number(p,s)	Where ***p*** is the precision and ***s*** is the scale. For example, number(7,2) is a number that has 5 digits before the decimal and 2 digits after the decimal.
date	Where ***p*** is the precision and ***s*** is the scale. For example, number(7,2) is a number that has 5 digits before the decimal and 2 digits after the decimal
timestamp	Includes year, month, day, hour, minute, and seconds.

MySQL Data Types

Data Type	Description
CHAR(size)	Holds a fixed length string (can contain letters, numbers, and special characters).
VARCHAR(size)	Holds a variable length string (can contain letters, numbers, and special characters).
INT(size)	-2147483648 to 2147483647 normal. 0 to 4294967295 UNSIGNED*. The maximum number of digits may be specified in parenthesis
DATE()	A date. Format: YYYY-MM-DD

SQL Server Data Types

Data Type	Description
char(n)	Fixed width character string
Varchar(n)	Variable width character string
int	Allows whole numbers between -2,147,483,648 and 2,147,483,647
date	Store a date only. From January 1, 0001 to December 31, 9999

SQL Operators

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C.R.U.D. - Persistent Storage Operators

CREATE (INSERT)

- Adds one or more new records with distinct field values in a table.
- **INSERT INTO** statement is used for **CREATE**:
  - `INSERT INTO <table name> VALUES (field value 1, field value, 2…)`
  - `CREATE TABLE …`

READ (SELECT)

- Returns records (or documents or items) from a database table based on criteria.
- The **SELECT** statement is used for **READ**:
  - `SELECT field 1, field 2, …FROM <table name> [WHERE <condition>]`

C.R.U.D. - Persistent Storage Operators

UPDATE

- Modify and persist changes to single or multiple fields of a record.
- The **UPDATE** statement is used for **UPDATE**:
  - `UPDATE <table name> SET field1=value1, field2=value2,… [WHERE <condition>]`

DELETE

- a hard delete that removes the record altogether.
- The **DELETE** statement is used for **DELETE**:
  - `DELETE FROM <table name> [WHERE <condition>]`

Conditional Logic in SQL

Conditional Operators

Operator	Meaning
=	Equal to
!= OR <>	Not equal to
>	Greater than
>=	Greater than and Equal to
<	Less than
<=	Less than and Equal to
BETWEEN..AND	Allows to define range *BETWEEN 100 AND 500*
IN(value1, value2,..)	Match to any of the items in list
IS NULL	Return
LIKE	Match given pattern

Logical Conditional Operators

Operator	Meaning
AND	Return TRUE if all conditions are TRUE
OR	Return TRUE if any one of the conditions is TRUE
NOT	Returns TRUE if condition is FALSE

IF *condition* **THEN**

- - statements to execute if condition is true - -

ELSE

- - statements to execute if condition is false- -

END IF;

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Comparison Operators

Operator	Meaning
=	Equal
<>	Not equal to
>	Greater than
>=	Greater than or equal to
<	Less than
<=	Less than or equal to

Complete Tutorial

Logic Operators

Complete Tutorial

Operator	Meaning
ALL	Return true if all comparisons are true
AND	Return true if both expressions are true
ANY	Return true if any one of the comparisons is true.
BETWEEN	Return true if the operand is within a range
EXISTS	Return true if a subquery contains any rows
IN	Return true if the operand is equal to one of the value in a list
LIKE	Return true if the operand matches a pattern
NOT	Reverse the result of any other Boolean operator.
OR	Return true if either expression is true
SOME	Return true if some of the expressions are true

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DISTINCT

The SELECT DISTINCT statement is used to return only distinct (different) values.

Inside a table, a column often contains many duplicate values; and sometimes you only want to list the different (distinct) values.

```
SELECT DISTINCT column1, column2, ...

FROM table_name;
```

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Top Basic SQL Commands

SELECT - extracts data from a database

WHERE – apply conditions with the select statement

ORDER BY – sort results in asc/desc order

JOIN - join related data stored in one or more tables

ALIAS- temporarily rename a table

UNION – append unrelated rows together provided they have the same number and name of columns.

INSERT – add new data into an existing database

LIMIT – specify the number of records to return.

Top Basic SQL Commands Cont'd

UPDATE - updates data in a database

DELETE - deletes data from a database

INSERT INTO - inserts new data into a database

CREATE TABLE - creates a new table

ALTER TABLE - modifies a table

DROP TABLE - deletes a table

CREATE INDEX - creates an index (search key)

DROP INDEX - deletes an index

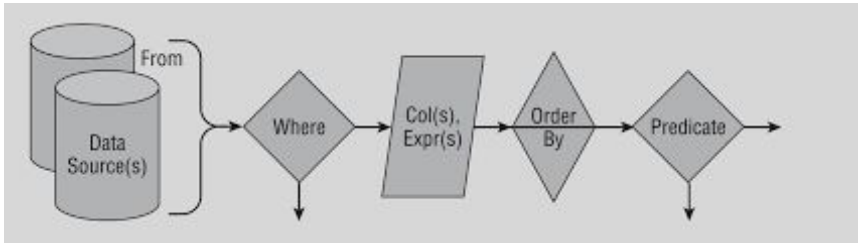
DISTINCT- eliminate duplicate rows & display a unique list of values

SET – used with UPDATE to specify which columns and values should be updated in a table

Basic SQL Query Structure

SELECT *something* **FROM** *some table*

WHERE *some conditions are satisfied;*



SELECT column_name **FROM** table_name

LIMIT number_to_limit**;**

Conditional Logic in SQL

```
SELECT column1,
       column2,
       IF(column3 > 10, 'High', 'Low') AS column3_category,
       column4
FROM table_name
WHERE column5 = 'some value'
  AND (column6 = 'other value'
       OR (column7 < 5 AND column8 IS NOT NULL))
  AND (column3_category = 'High' OR column4 > 20);
```

Join us on Slack to ask questions and keep the discussion going!

Use the channel:

#sql-coding-series

Code with SQL

https://www.sql-practice.com/

Thank you!

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