# **SQL Commands Reference Guide**

**SELECT**

* **Purpose**: Retrieves data from one or more tables.
* **Example**:

SELECT name

FROM customers;

**SELECT \***

* **Purpose**: Retrieves all columns from a table.
* **Example**:

SELECT \*

FROM customers;

**SELECT DISTINCT**

* **Purpose**: Retrieves unique values from a column.
* **Example**:

SELECT DISTINCT name

FROM customers;

**SELECT INTO**

* **Purpose**: Copies data from one table to another.
* **Example**:

SELECT \*

INTO customers

FROM customers\_backup;

**SELECT TOP**

* **Purpose**: Retrieves the top x number or percent of rows from a table.
* **Examples**:

SELECT TOP 50 \*

FROM customers;

SELECT TOP 50 PERCENT \*

FROM customers;

**AS**

* **Purpose**: Renames a column or table using an alias.
* **Example**:

SELECT name AS first\_name

FROM customers;

**FROM**

* **Purpose**: Specifies the table to pull data from.
* **Example**:

SELECT name

FROM customers;

**Filtering Data**

**WHERE**

* **Purpose**: Filters results based on a condition.
* **Example**:

SELECT name

FROM customers

WHERE name = 'Bob';

**AND**

* **Purpose**: Combines multiple conditions; all must be met.
* **Example**:

SELECT name

FROM customers

WHERE name = 'Bob' AND age = 55;

**OR**

* **Purpose**: Combines multiple conditions; any can be met.
* **Example**:

SELECT name

FROM customers

WHERE name = 'Bob' OR age = 55;

**BETWEEN**

* **Purpose**: Filters results within a specified range.
* **Example**:

SELECT name

FROM customers

WHERE age BETWEEN 45 AND 55;

**LIKE**

* **Purpose**: Searches for a specified pattern.
* **Example**:

SELECT name

FROM customers

WHERE name LIKE '%Bob%';

**IN**

* **Purpose**: Specifies multiple values in a WHERE clause.
* **Example**:

SELECT name

FROM customers

WHERE name IN ('Bob', 'Fred', 'Harry');

**IS NULL / IS NOT NULL**

* **Purpose**: Checks for NULL values.
* **Examples**:

SELECT name

FROM customers

WHERE name IS NULL;

SELECT name

FROM customers

WHERE name IS NOT NULL;

**Creating and Modifying Objects**

**CREATE DATABASE**

* **Purpose**: Creates a new database.
* **Example**:

CREATE DATABASE dataquestDB;

**CREATE TABLE**

* **Purpose**: Creates a new table.
* **Example**:

CREATE TABLE customers (

customer\_id int,

name varchar(255),

age int

);

**CREATE INDEX**

* **Purpose**: Creates an index for a table.
* **Example**:

CREATE INDEX idx\_name

ON customers (name);

**CREATE VIEW**

* **Purpose**: Creates a virtual table.
* **Example**:

CREATE VIEW [Bob Customers] AS

SELECT name, age

FROM customers

WHERE name = 'Bob';

**DROP DATABASE**

* **Purpose**: Deletes a database.
* **Example**:

DROP DATABASE dataquestDB;

**DROP TABLE**

* **Purpose**: Deletes a table.
* **Example**:

DROP TABLE customers;

**DROP INDEX**

* **Purpose**: Deletes an index.
* **Example**:

DROP INDEX idx\_name;

**Modifying Data**

**UPDATE**

* **Purpose**: Updates existing data in a table.
* **Example**:

UPDATE customers

SET age = 56

WHERE name = 'Bob';

**DELETE**

* **Purpose**: Deletes rows from a table.
* **Example**:

DELETE FROM customers

WHERE name = 'Bob';

**ALTER TABLE**

* **Purpose**: Adds or removes columns from a table.
* **Examples**:

ALTER TABLE customers

ADD surname varchar(255);

ALTER TABLE customers

DROP COLUMN surname;

**Aggregate Functions**

**COUNT**

* **Purpose**: Returns the number of rows that match a condition.
* **Example**:

SELECT COUNT(\*)

FROM customers;

**SUM**

* **Purpose**: Returns the sum of a numeric column.
* **Example**:

SELECT SUM(age)

FROM customers;

**AVG**

* **Purpose**: Returns the average value of a numeric column.
* **Example**:

SELECT AVG(age)

FROM customers;

**MIN**

* **Purpose**: Returns the minimum value of a numeric column.
* **Example**:

SELECT MIN(age)

FROM customers;

**MAX**

* **Purpose**: Returns the maximum value of a numeric column.
* **Example**:

SELECT MAX(age)

FROM customers;

**Grouping and Sorting**

**GROUP BY**

* **Purpose**: Groups rows with the same values.
* **Example**:

SELECT name, AVG(age)

FROM customers

GROUP BY name;

**HAVING**

* **Purpose**: Filters groups based on a condition.
* **Example**:

SELECT COUNT(customer\_id), name

FROM customers

GROUP BY name

HAVING COUNT(customer\_id) > 2;

**ORDER BY**

* **Purpose**: Sorts the result set.
* **Example**:

SELECT name

FROM customers

ORDER BY age;

**DESC**

* **Purpose**: Sorts the result set in descending order.
* **Example**:

SELECT name

FROM customers

ORDER BY age DESC;

**OFFSET**

* **Purpose**: Skips a specified number of rows.
* **Example**:

SELECT name

FROM customers

ORDER BY age

OFFSET 10 ROWS;

**FETCH**

* **Purpose**: Limits the number of rows returned.
* **Example**:

SELECT name

FROM customers

ORDER BY age

OFFSET 10 ROWS

FETCH NEXT 10 ROWS ONLY;

**Joins**

**INNER JOIN**

* **Purpose**: Selects records with matching values in both tables.
* **Example**:

SELECT name

FROM customers

INNER JOIN orders

ON customers.customer\_id = orders.customer\_id;

**LEFT JOIN**

* **Purpose**: Selects records from the left table and matching records from the right table.
* **Example**:

SELECT name

FROM customers

LEFT JOIN orders

ON customers.customer\_id = orders.customer\_id;

**RIGHT JOIN**

* **Purpose**: Selects records from the right table and matching records from the left table.
* **Example**:

SELECT name

FROM customers

RIGHT JOIN orders

ON customers.customer\_id = orders.customer\_id;

**FULL JOIN**

* **Purpose**: Selects records with a match in either the left or right table.
* **Example**:

SELECT name

FROM customers

FULL OUTER JOIN orders

ON customers.customer\_id = orders.customer\_id;

**Advanced SQL Commands**

**EXISTS**

* **Purpose**: Tests for the existence of any record in a subquery.
* **Example**:

SELECT name

FROM customers

WHERE EXISTS

(SELECT order

FROM ORDERS

WHERE customer\_id = 1);

**GRANT**

* **Purpose**: Gives a user access to database objects.
* **Example**:

GRANT SELECT, UPDATE ON customers TO usr\_bob;

**REVOKE**

* **Purpose**: Removes a user's permissions.
* **Example**:

REVOKE SELECT, UPDATE ON customers FROM usr\_bob;

**SAVEPOINT**

* **Purpose**: Sets a savepoint within a transaction.
* **Example**:

SAVEPOINT SAVEPOINT\_NAME;

**COMMIT**

* **Purpose**: Saves the current transaction.
* **Example**:

DELETE FROM customers

WHERE name = 'Bob';

COMMIT;

**ROLLBACK**

* **Purpose**: Undoes transactions not yet saved to the database.
* **Example**:

ROLLBACK TO SAVEPOINT\_NAME;

**TRUNCATE**

* **Purpose**: Removes all rows from a table.
* **Example**:

TRUNCATE TABLE customers;

**UNION**

* **Purpose**: Combines multiple result sets and eliminates duplicates.
* **Example**:

SELECT name

FROM customers

UNION

SELECT name

FROM orders;

**UNION ALL**

* **Purpose**: Combines multiple result sets and keeps duplicates.
* **Example**:

SELECT name

FROM customers

UNION ALL

SELECT name

FROM orders;

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