

SQL Commands

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1. Finding Data Queries

SELECT: used to select data from a database

```
SELECT * FROM table_name;
```

DISTINCT: filters away duplicate values and returns rows of specified column

```
SELECT DISTINCT column_name;
```

WHERE: used to filter records/rows

```
SELECT column1, column2 FROM table_name WHERE condition;
```

```
SELECT * FROM table_name WHERE condition1 AND condition2;
```

```
SELECT * FROM table_name WHERE condition1 OR condition2;
```

```
SELECT * FROM table_name WHERE NOT condition;
```

```
SELECT * FROM table_name WHERE condition1 AND (condition2 OR condition3);
```

```
SELECT * FROM table_name WHERE EXISTS (SELECT column_name FROM table_name WHERE condition);
```

ORDER BY: used to sort the result-set in ascending or descending order

```
SELECT * FROM table_name ORDER BY column;
```

```
SELECT * FROM table_name ORDER BY column DESC;
```

```
SELECT * FROM table_name ORDER BY column1 ASC, column2 DESC;
```

SELECT TOP: used to specify the number of records to return from top of table

```
SELECT TOP number columns_names FROM table_name WHERE condition;
```

```
SELECT TOP percent columns_names FROM table_name WHERE condition;
```

Not all database systems support SELECT TOP. The MySQL equivalent is the LIMIT clause

```
SELECT column_names FROM table_name LIMIT offset, count;
```

LIKE: operator used in a WHERE clause to search for a specific pattern in a column

% (percent sign) is a wildcard character that represents zero, one, or multiple characters

_ (underscore) is a wildcard character that represents a single character

SELECT column_names FROM table_name WHERE column_name LIKE pattern;

LIKE 'a%' (find any values that start with "a")

LIKE '%a' (find any values that end with "a")

LIKE '%or%' (find any values that have "or" in any position)

LIKE '_r%' (find any values that have "r" in the second position)

LIKE 'a_%%' (find any values that start with "a" and are at least 3 characters in length)

LIKE '[a-c]%' (find any values starting with "a", "b", or "c")

IN: operator that allows you to specify multiple values in a WHERE clause

essentially the IN operator is shorthand for multiple OR conditions

SELECT column_names FROM table_name WHERE column_name IN (value1, value2, ...);

SELECT column_names FROM table_name WHERE column_name IN (SELECT STATEMENT);

BETWEEN: operator selects values within a given range inclusive

SELECT column_names FROM table_name WHERE column_name BETWEEN value1 AND value2;

SELECT * FROM Products WHERE (column_name BETWEEN value1 AND value2) AND NOT
column_name2 IN (value3, value4);

SELECT * FROM Products WHERE column_name BETWEEN #01/07/1999# AND #03/12/1999#;

NULL: values in a field with no value

SELECT * FROM table_name WHERE column_name IS NULL;

SELECT * FROM table_name WHERE column_name IS NOT NULL;

AS: aliases are used to assign a temporary name to a table or column

SELECT column_name AS alias_name FROM table_name;

SELECT column_name FROM table_name AS alias_name;

SELECT column_name AS alias_name1, column_name2 AS alias_name2;

SELECT column_name1, column_name2 + ' ' + column_name3 AS alias_name;

UNION: set operator used to combine the result-set of two or more SELECT statements

Each SELECT statement within UNION must have the same number of columns

The columns must have similar data types

The columns in each SELECT statement must also be in the same order

SELECT columns_names FROM table1 UNION SELECT column_name FROM table2;

UNION operator only selects distinct values, UNION ALL will allow duplicates

INTERSECT: set operator which is used to return the records that two SELECT statements have in common

Generally used the same way as UNION above

SELECT columns_names FROM table1 INTERSECT SELECT column_name FROM table2;

EXCEPT: set operator used to return all the records in the first SELECT statement that are not found in the second SELECT statement

Generally used the same way as UNION above

SELECT columns_names FROM table1 EXCEPT SELECT column_name FROM table2;

ANY|ALL: operator used to check subquery conditions used within a WHERE or HAVING clauses

The ANY operator returns true if any subquery values meet the condition

The ALL operator returns true if all subquery values meet the condition

SELECT columns_names FROM table1 WHERE column_name operator (ANY|ALL) (SELECT column_name FROM table_name WHERE condition);

GROUP BY: statement often used with aggregate functions (COUNT, MAX, MIN, SUM, AVG) to group the result-set by one or more columns

SELECT column_name1, COUNT(column_name2) FROM table_name WHERE condition GROUP BY column_name1 ORDER BY COUNT(column_name2) DESC;

HAVING: this clause was added to SQL because the WHERE keyword could not be used with aggregate functions

SELECT COUNT(column_name1), column_name2 FROM table GROUP BY column_name2 HAVING COUNT(column_name1) > 5;

WITH: often used for retrieving hierarchical data or re-using temp result set several times in a query. Also referred to as "Common Table Expression"

WITH RECURSIVE cte AS (

SELECT c0.* FROM categories AS c0 WHERE id = 1 # Starting point

UNION ALL

SELECT c1.* FROM categories AS c1 JOIN cte ON c1.parent_category_id = cte.id

)

SELECT *

FROM cte

2. Data Modification Queries

INSERT INTO: used to insert new records/rows in a table

INSERT INTO table_name (column1, column2) VALUES (value1, value2);

INSERT INTO table_name VALUES (value1, value2 ...);

UPDATE: used to modify the existing records in a table

UPDATE table_name SET column1 = value1, column2 = value2 WHERE condition;

UPDATE table_name SET column_name = value;

DELETE: used to delete existing records/rows in a table

DELETE FROM table_name WHERE condition;

DELETE * FROM table_name;

3. Reporting Queries

COUNT: returns the # of occurrences

SELECT COUNT (DISTINCT column_name);

MIN() and MAX(): returns the smallest/largest value of the selected column

SELECT MIN (column_names) FROM table_name WHERE condition;

SELECT MAX (column_names) FROM table_name WHERE condition;

AVG(): returns the average value of a numeric column

SELECT AVG (column_name) FROM table_name WHERE condition;

SUM(): returns the total sum of a numeric column

SELECT SUM (column_name) FROM table_name WHERE condition;

4. Join Queries

INNER JOIN: returns records that have matching value in both tables

SELECT column_names FROM table1 INNER JOIN table2 ON
table1.column_name=table2.column_name;

SELECT table1.column_name1, table2.column_name2, table3.column_name3 FROM ((table1 INNER
JOIN table2 ON relationship) INNER JOIN table3 ON relationship);

LEFT (OUTER) JOIN: returns all records from the left table (table1), and the matched records from
the right table (table2)

SELECT column_names FROM table1 LEFT JOIN table2 ON
table1.column_name=table2.column_name;

RIGHT (OUTER) JOIN: returns all records from the right table (table2), and the matched records from the left table (table1)

```
SELECT column_names FROM table1 RIGHT JOIN table2 ON  
table1.column_name=table2.column_name;
```

FULL (OUTER) JOIN: returns all records when there is a match in either left or right table

```
SELECT column_names FROM table1 FULL OUTER JOIN table2 ON  
table1.column_name=table2.column_name;
```

Self JOIN: a regular join, but the table is joined with itself

```
SELECT column_names FROM table1 T1, table1 T2 WHERE condition;
```

5. View Queries

CREATE: create a view

```
CREATE VIEW view_name AS SELECT column1, column2 FROM table_name WHERE condition;
```

SELECT: retrieve a view

```
SELECT * FROM view_name;
```

DROP: drop a view

```
DROP VIEW view_name;
```

6. Altering Table Queries

ADD: add a column

```
ALTER TABLE table_name ADD column_name column_definition;
```

MODIFY: change data type of column

```
ALTER TABLE table_name MODIFY column_name column_type;
```

DROP: delete a column

```
ALTER TABLE table_name DROP COLUMN column_name;
```

7. Creating Table Query

CREATE: create a table

```
CREATE TABLE table_name (  
column1 datatype,  
column2 datatype,  
column3 datatype,
```

```
column4 datatype,  
);
```