

Terminology - Basic Manipulation

SQL	A programming language designed to manipulate & manage data stored in relational databases
relational database	A database that organizes information into one or more tables.
table	A collection of data organized into rows & columns.
statement	A string of characters that the database recognizes as a valid command.
primary key	Column in table that is unique to each row w/ no NULL values.
foreign key	Primary key of table1 that appears in table2.

Commands - Basic Manipulation

<code>SHOW DATABASES</code>	list all available databases
<code>USE database</code>	use specified database
<code>SHOW TABLES [FROM database]</code>	list tables in database
<code>DESCRIBE table</code>	list column headers in table
<code>SHOW FIELDS FROM table</code>	list all fields
<code>SHOW COLUMNS FROM table</code>	list all columns (fields) + column type etc
<code>SHOW COLUMNS FROM table</code>	list all columns (fields) + column type etc
<code>SHOW INDEX FROM table</code>	list all indexes from table

Terminology - queries

opera-tors	Operators create a condition that can be evaluated as either <i>true</i> or <i>false</i> .
-------------------	--

Commands - operators

<code>=</code>	equal to
<code>!=</code>	not equal to
<code>></code>	greater than
<code><</code>	less than
<code>>=</code>	greater than or equal to
<code><=</code>	less than or equal to
<code>IS NULL</code>	is null
<code>IS NOT NULL</code>	is not null

Wildcards

<code>*</code>	Matches any number or type of character(s).
<code>_</code>	Matches any individual character.
<code>%</code>	Matches zero or more missing letters in the pattern.

Commands - queries

<code>SELECT</code>	Identify columns to return in query.	<code>SELECT column FROM table;</code>
<code>AS</code>	Renames a column or table using an alias.	<code>SELECT column AS 'alias' FROM table;</code>
<code>DISTINCT</code>	Used to return unique values in the output. Filters out all duplicate values in the specified column(s).	<code>SELECT DISTINCT column FROM table;</code>
<code>LIKE</code>	Operator used with WHERE clause to search for a specific pattern in a column.	<code>WHERE column LIKE 'text';</code> (or <code>NOT LIKE</code>)
<code>AND</code>	Operator used to combine multiple conditions in a WHERE clause; ALL must be true.	<code>WHERE column condition1 AND column condition2;</code>
<code>OR</code>	Operator used to combine multiple conditions in a WHERE clause; ANY must be true.	<code>WHERE column condition1 OR column condition2;</code>
<code>BETWEEN</code>	Operator used in a WHERE clause to filter the result set within a certain range (numbers, text, or dates).	<code>WHERE column BETWEEN 'A' AND 'B';</code>

BETWEEN two letters is not* inclusive of the 2nd letter.

BETWEEN two numbers is* inclusive of the 2nd number.



Terminology - Aggregate Functions

aggregates Calculations performed on multiple rows of a table.

aggregate functions Combine multiple rows together to form a single value of more meaningful information.

clause A clause is used with aggregate functions; used in collaboration with the SELECT statement.

Commands - Aggregate Functions

COUNT() Count the number of rows `SELECT COUNT (column)
FROM table ;`

SUM() The sum of the values in a column `SELECT SUM (column)
FROM table ;`

MAX() / MIN() The largest/smallest value in a column `SELECT MAX (column)
FROM table ;`

AVG() The average (mean) of the values in a column `SELECT AVG (column)
FROM table ;`

ROUND() Round the values in a column `SELECT ROUND (column,
integer) FROM table ;`

Clauses

1. **WHERE** Restrict the results of a query based on values of individual rows within a column.

2. **GROUP BY** A clause used with aggregate functions to combine data from one or more columns. Arrange identical data into groups.

3. **HAVING** Limit the results of a query based on an aggregate property.

4. **ORDER BY** Sort results by column. `ORDER BY column
ASC/DESC`

Clauses (cont)

5. **LIMIT** Maximum number of rows to return.

ie.

`SELECT column, AGG(column)`

`FROM table`

CLAUSE column;

Clauses can refer to a column name, or to a column reference number (assigned by order column referred to in statement).

If-then - CASE

SELECT columns,

CASE

WHEN column condition1 **THEN** action1

WHEN column condition2 **THEN** action2

ELSE action3

END AS 'renamed_column'

FROM table;

Combining tables - JOIN

JOIN (inner join) combine rows from different tables if the join condition is true; drops unmatched rows

LEFT JOIN / RIGHT JOIN return every row in the *left/right* table; if join condition not met, **NULL** values used to fill in columns from the *right/left* table

OUTER JOIN return unmatched rows from *both* tables; unmatched fields filled with **NULL**

CROSS JOIN combine all rows of 1 table with all rows of another table; does **NOT** require joining on a specific column



By **sjm**

cheatography.com/sjm/

Published 24th July, 2019.

Last updated 24th July, 2019.

Page 2 of 3.

Sponsored by **CrosswordCheats.com**

Learn to solve cryptic crosswords!

<http://crosswordcheats.com>

Combining tables - JOIN (cont)

UNION stacks 1 dataset on top of another; tables must have same # columns & same data types/order columns

```
SELECT * FROM
table1 UNION
SELECT * FROM
table2;
```

```
SELECT *
FROM table1
JOIN table2
ON table1.id = table2.id;
```

ie.

```
SELECT table1.column1,
COUNT(*) AS renamed_output
FROM table1
CROSS JOIN table2
WHERE table2.column1 <= table1.column1
AND table2.column2 >= table1.column1
GROUP BY table1.column1;
```

Combining tables - WITH statements

FY!! MySQL prior to version 8.0 doesn't support the WITH clause.

```
WITH previousQueryAlias AS (
SELECT column1,
COUNT(column2) AS renamedOutputColumn
FROM table1
GROUP BY column1
)
SELECT table2.column1,
previousQueryAlias.renamedOutputColumn
FROM previousQueryAlias
JOIN table2
ON table2.column1 = previousQueryAlias.column1;
```

Commands - String Functions

STRCMP("string1","string2")	compare strings
LOWER("string")	convert to lower case
UPPER("string")	convert to upper case
LTRIM/RTRIM("string")	left or right trim
SUBSTRING("string","inx1","inx2")	substring of a string
CONCAT("string1","string2")	concatenate



By **sjm**
cheatography.com/sjm/

Published 24th July, 2019.
 Last updated 24th July, 2019.
 Page 3 of 3.

Sponsored by **CrosswordCheats.com**
 Learn to solve cryptic crosswords!
<http://crosswordcheats.com>