

SQL. English. structured. Query Language.

SE-QUEL.  $\rightarrow$  SQL

Insert into table (col<sub>1</sub>, col<sub>2</sub>, col<sub>3</sub>) Values (v<sub>1</sub>, v<sub>2</sub>, v<sub>3</sub>)  $\leftarrow$  Primary key  
Delete from table where condition.  $\uparrow$  For all h.c. null & no default

Update table SET col<sub>1</sub> = Value<sub>1</sub>  
where condition

Select. t.col<sub>1</sub>, col<sub>2</sub>, col<sub>3</sub>  $\leftarrow$  need to specify table name when there is ambiguity  
from t<sub>1</sub>, t<sub>2</sub>  
where t<sub>1</sub>.col<sub>1</sub> = t<sub>2</sub>.col<sub>1</sub>  
or.  
Select. t.col<sub>1</sub>, col<sub>2</sub>, col<sub>3</sub>  
from t<sub>1</sub> NATURAL JOIN t<sub>2</sub>.  
 $\uparrow$  need to specify, otherwise it will be Cartesian product  
If there are no same name column, it defaults to Cartesian product

SELECT col<sub>1</sub>, t.col<sub>2</sub>, col<sub>3</sub> FROM t<sub>1</sub> LEFT OUTER JOIN t<sub>2</sub>.

String Matching

LIKE "San%" % matches any string even empty string

LIKE "A-----" - matches single char

Sorting

ORDER BY ... ASC  
DESC.

Union. (SELECT ---) ← Not duplicates Duplicates ✓  
UNION  
(SELECT ---) Set Union Union ALL

Intersect (ALL)  
include duplicates

Except. (ALL)  
if a value shows 2 times in table 1 but only  
1 times in table 2 still keep a copy

Built-in:  
count, sum, avg, min, max

Having: condition on the group.

Some, All:

where  $C_1 > \text{All}$  (SELECT ---)

NOT EXIST.

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From table1, table2 ← contains product.

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Attr: data type.

- Numeric: Numeric (i,j) i: precision, # of decimal digits  
j: scale: # digits after decimal point

· char-string: || concatenation operator.

· Bit-string:

· Boolean → Unknown & false = false  
Unknown || True = True.

· Date.

check clause, check whether new roles fit in condition.