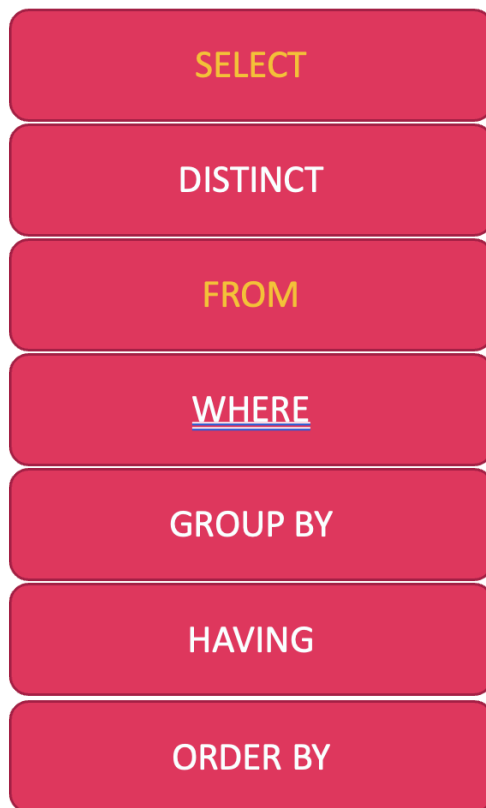
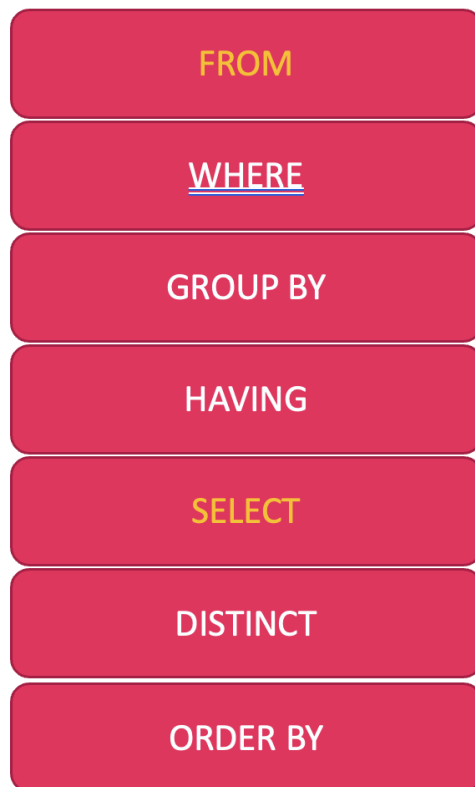


## W3 - SQL Operations

### SQL SELECT Statement – Logical (Syntax) Sequence



# SQL SELECT Statement – Processing Sequence



## Arithmetic Operators

The following arithmetic operators can be used to perform calculations in the SELECT clause:

+	Add (can be used on DATETIME columns)
-	Subtract (can be used on DATETIME columns)
*	Multiply
/	Divide
%	Percentage (Modulo) Returns the integer remainder of a division. For example, 12 % 5 = 2 because the remainder of 12 divided by 5 is 2.

# String Functions

The following string functions can be used to manipulate text in various ways in the SELECT clause:

SUBSTRING	SUBSTRING(expression, start, length) SUBSTRING(name,1,1) for the initial
CHARINDEX	CHARINDEX('a', 'text') to search for a string e.g. find 'a' in a column called 'text'
LEFT or RIGHT	LEFT(name,5) for the first (or last) 5 characters
LTRIM or RTRIM	Used to remove spaces at the beginning or end of a string.
LEN	LEN(name) for the length of the name
REPLACE	REPLACE(name, ' ', '_') to replace spaces with underscores
UPPER or LOWER	UPPER(name) to convert to all upper (or lower) case.



# Date Functions

The following date functions can be used to manipulate dates in various ways in the SELECT clause:

GETDATE	SELECT GETDATE() to return the current date and time
SYSDATETIME	SELECT SYSDATETIME() to return the date and time of the computer being used
DATEADD	DATEADD(d,5,OrderDate) AS "Due Date" to add 5 days
DATEDIFF	DATEDIFF(d,OrderDate,ShippedDate) AS "Ship Time" to calculate difference between dates
YEAR	SELECT YEAR(OrderDate) AS "Order Year" to extract the year from a date.
MONTH	SELECT MONTH(OrderDate) AS "Order Month" to extract the year from a date.
DAY	SELECT DAY(OrderDate) AS "Order Day" to extract the day from a date.



# Aggregate Functions

The following aggregate functions can be used to calculate totals usually in conjunction with the GROUP BY clause:

SUM	SUM( <u>OrderTotal</u> ) for the grand total of a column for all rows selected
AVG	AVG( <u>UnitPrice</u> ) for the average of a column for all rows selected
MIN	MIN( <u>UnitPrice</u> ) for the smallest value in a column for all rows selected
MAX	MAX( <u>UnitPrice</u> ) for the largest value in a column for all rows selected
COUNT	COUNT(*) for the number of NOT NULL rows selected. If * is used then all rows are counted.