**Database GROUP BY and AGGREGATE FUNCTIONS**

**GROUP BY**

Proper order:

SELECT list of fields name

FROM table name

WHERE conditional checks and filters

GROUP BY field names or expression

ORDER BY list of fields

LIMIT amount of records

GROUP BY is a way to organize based on a type of condition

Example using Northwinds Database

SELECT SupplierID, COUNT(SupplierID) AS NumProductSupplied

FROM product

GROUP BY SupplierID;

If a table has the same name as a keyword, use the tick mark to use it, ex: `order`

**HAVING Clause**

Proper order:

SELECT list of fields name

FROM table name

WHERE conditional checks and filters

GROUP BY field names or expression

ORDER BY list of fields

HAVING conditional checks and filters

LIMIT amount of records

HAVING allows the query to filter the final records after the initial results are calculated

Example: HAVING AvgPrice > 125

**Aggregate Function Errors**

Two errors can happen with GROUP BY

1. Aggregate Function Error
   1. Will post error in output and not show results
   2. The problem in most cases
      1. A field was specified in the GROUP BY but SELECT was not told to handle it
2. No Error but random data
   1. Random data may just be used to give an answer.
   2. When tried with the example, just received an error result

**Aggregate Functions**

GROUP BY FUNCTIONS:

* AVG()
  + Calculates average with each group of data sets given
* SUM()
  + Totals all the values in given group
* MIN()
  + Gives lowest numerical value
* MAX()
  + Largest numerical value
* COUNT()
  + Gives total for each grouping
* COUNT(DISTINCT field)
  + Similar to count but more restrictive

Calculating Time

* DateDiff()
  + Will find the number of days between two dates
* TimeDiff()
  + Will find difference in time between two dateTime fields or two time fields
* TimeStampDiff()
  + Returns a single number related to the time unit specified to retrieve
  + Combines the two options above
  + Format: TIMESTAMPDIFF(TimeUnit, firstDate, secondDate)
    - Unit Examples: YEAR, MONTH, DAY, HOUR, MINUTE, SECOND