Aggregate Functions

* Count – count. Self-explanatory lol
  + SELECT COUNT(title) FROM books;
    - Outputs number of title in books
  + SELECT COUNT(DISTINCT author\_fname) FROM books;
    - Outputs number of distinct first names in books
  + Can be used among other functions
* Group by – aggregates identical data into single rows
  + - Different than things we have seen thus far. Must use it amongst other functions. Core of aggregating our data.
  + SELECT title, author\_lname FROM books GROUP BY author\_lname;
    - Doesn’t show the 2nd+ rows from the authors, but they’re there, just not printed. “Super Row”.
  + Multiple arguments to “Group By” = multiple selectors. Both must be the same to be grouped.
  + **Can you use like and where in the group by section? I bet you can.**
* Min, max – identify min/max values in a table
  + Without GROUP BY
    - SELECT MIN(released\_year) FROM books
      * Gets the lowest year from books
  + With Group By
    - SELECT author\_fname, author\_lname, MIN(released\_year) FROM books GROUP BY author\_lname, author\_fname;
      * Selects min release year for each author.
* Subqueries (re: min/max w/o GROUP BY) – lets your run one query inside of another
  + When you use SELECT with multiple arguments, those arguments are unrelated
  + Innermost parentheses get executed first.
    - Multiple ‘from’ statements could be used to access multiple tables in a database.
  + Get row of longest book
    - SELECT \* FROM books WHERE pages = (SELECT MIN(pages) FROM books);
      * Slower because multiple queries
      * The primary assertion here is that it’s easier to order the whole table than it is to do two select statements. Weird.
      * There’s a SQL Server optimizer
      * Select is O(N).
      * Haven’t been able to find big-O of Order By.
    - SELECT \* FROM books ORDER BY pages DESC LIMIT 1;
      * Only one query but bypassing min/max.
* Sum/Avg (work same way).
  + Without group by
    - SELECT SUM(pages) FROM books;
      * Gets sum of all pages from books
  + With group by
    - SELECT author\_fname, author\_lname, SUM(pages) FROM books GROUP BY author\_lname, author\_fname;
      * Gets sum of all pages written by each author