**Spring 2015 SQL Class**

Week 3 – Class Notes

* The Functions I asked you to look at last week (String, Numerical, and Date) were all **Scalar Functions** or single row functions. This week we look at **Aggregate Functions** that work on groups of rows.
* **Aggregate Functions** allow you to generate summary data for a group of rows to obtain totals, averages, counts, minimum and maximum values.
  + **Functions include: Count, Sum, Avg, Max, Min**
  + You simply include them in your select statement wrapped around a column name like : SELECT COUNT(student\_id), you can have multiple aggregates in the same select statement
  + You can also put Scalar Functions inside of Aggregate Functions like: SELECT COUNT(DISTINCT student\_id)
  + You can also add 2 additional clauses when using Aggregates
    - **GROUP BY** which gives you levels of summary such as

SELECT COUNT(student\_id)

FROM student

GROUP BY course

* + - **HAVING** which is a WHERE statement that applies to the already grouped values
  + The ORDER BY clause goes after the two new ones
  + You can also nest aggregate functions like

SELECT MAX(COUNT(\*))

FROM enrollment

GROUP BY section\_id

* + Watch out for NULLS when you are grouping, test and see the effects that they have on your answers.

* **Simple Join Types : Equijoin and Inner Join**
  + Joins are typically used to join between the primary key of one file and a foreign key of another
  + **Equijoin:** SELECT course\_no, instructor\_id

FROM course, section

WHERE course.course\_no = section.course\_no

* You can add a table alias to shorten your coding

FROM course a, section b

WHERE a.course\_no = b.course\_no

* + **Watch out for ‘ambigious’ column names when joining tables**
  + **Inner Join:** FROM course a JOIN section b

ON (a.course\_no = b.course\_no)

* + Both the Equijoin and the Inner Join produce a result set comprised of matched rows.
  + Both can be used with 2 or more tables (add instructor)

* + **Beware of Cartesian Products**
* Review chapters 12-14 for more information on Aggregates and

Chapters 7-10 for more information on Joins.

* Next Weeks Topics will include: Complex Joins, Set Operations, and Subqueries.
* Watch your email for Week 3 Homework.