Amazon Redshift SQL Class Outline

Basic SQL Functions

- Finding the Current Schema on the Leader Node
- Getting Things Setup in Your Search Path
- Five Details You Need To Know About The Search_Path
- Introduction
- SELECT * (All Columns) in a Table
- SELECT Specific Columns in a Table
- Commas in the Front or Back?
- Place your Commas in front for better Debugging Capabilities
- Sort the Data with the ORDER BY Keyword
- ORDER BY Defaults to Ascending
- Use the Name or the Number in your ORDER BY Statement
- Two Examples of ORDER BY using Different Techniques
- Changing the ORDER BY to Descending Order
- NULL Values sort First in Ascending Mode (Default)
- NULL Values sort Last in Descending Mode (DESC)
- Major Sort vs. Minor Sorts
- Multiple Sort Keys using Names vs. Numbers
- Sorts are Alphabetical, NOT Logical
- Using A CASE Statement to Sort Logically

Using Parentheses to change the Order of Precedence
Using an IN List in place of OR
The IN List is an Excellent Technique
IN List vs. OR brings the same Results
Using a NOT IN List
Null Values in a NOT IN List Bring Back No Rows
Another Technique for Handling Nulls with a NOT IN List
BETWEEN is Inclusive
NOT BETWEEN is Also Inclusive
LIKE uses Wildcards Percent '%' and Underscore '_'
LIKE command Underscore is Wildcard for one Character
LIKE Command Works Differently on Char Vs Varchar
The Ilike Command Is NOT Case Sensitive
Troubleshooting LIKE Command on Character Data
Introducing the TRIM Command
Quiz – What Data is Left Justified and What is Right?
Numbers are Right Justified and Character Data is Left
Answer – What Data is Left Justified and What is Right?
An Example of Data with Left and Right Justification
A Visual of CHARACTER Data vs. VARCHAR Data
Use the TRIM command to remove spaces on CHAR Data
Like and Your Escape Character of Choice
Like and the Default Escape Character
Similar To Operators
Similar To Operators
Similar To Example With Lower Case Letters
Similar To Example With Lower and Upper Case Letters
Similar To Example With Multiple Occurrences
Multiple Occurrences Must Be Consecutive

Distinct Vs Group By AND TOP

- The Distinct Command
- Distinct vs. GROUP BY
- Quiz – How many rows come back from the Distinct?
- Answer – How many rows come back from the Distinct?
- TOP Command
- TOP Command is brilliant when ORDER BY is Used!
- What is the Difference Between TOP and LIMIT?

Aggregation

- Quiz – You calculate the Answer Set in your own Mind
- Answer – You calculate the Answer Set in your own Mind
- The Rules of Aggregation
- There are Five Aggregates
- Quiz – How many rows come back?
- Answer – How many rows come back?
- Troubleshooting Aggregates
- GROUP BY when Aggregates and Normal Columns Mix
- GROUP BY Delivers one row per Group
- GROUP BY Dept_No or GROUP BY the same thing
- Limiting Rows and Improving Performance with WHERE
- WHERE Clause in Aggregation limits unneeded Calculations
- Keyword HAVING tests Aggregates after they are Totaled
- Keyword HAVING is like an Extra WHERE Clause for Totals

Join Functions

- A Two-Table Join Using Traditional Syntax
- A two-table join using Non-ANSI Syntax with Table Alias

Date Functions

- Current_Date
- TIMEOFDAY()
- SYSDATE Returns a Timestamp With Microseconds
- GETDATE Returns a Timestamp Without Microseconds
- Add or Subtract Days from a date
- The ADD_MONTHS Command Returns a Timestamp
- The ADD_MONTHS Command With Trunc Removes Time
- ADD_MONTHS Command to Add -Year or -Years
- Dateadd Function And Add_Months Function are Different
- The EXTRACT Command
- EXTRACT from DATES and TIME
- EXTRACT with DATE and TIME Literals
- EXTRACT of the Month on Aggregate Queries
- The Datediff command
- The Datediff Function on Column Data
- The Date_Part Function Using a Date
- The Date_Part Function Using a Time
- Date_Part Abbreviations
- The to_char command
- Conversion Functions
- Conversion Function Templates
- Conversion Function Templates Continued
- Formatting A Date
- A Summary of Math Operations on Dates
- Using a Math Operation to find your Age in Years
- Date Related Functions
- A Side Title example with Reserved Words as an Alias
- Implied Extract of Day, Month and Year

DATE_PART Function
DATE_PART Function using an ALIAS
DATE_TRUNC Function
DATE_TRUNC Function using TIME
MONTHS_BETWEEN Function
MONTHS_BETWEEN Function in Action
ANSI TIME
ANSI TIMESTAMP
Redshift TIMESTAMP Function
Redshift TO_TIMESTAMP Function
Redshift NOW() Function
Redshift TIMEOFDAY Function
Redshift AGE Function
Time Zones
Setting Time Zones
Using Time Zones
Intervals for Date, Time and Timestamp
Using Intervals
Troubleshooting The Basics of a Simple Interval
Interval Arithmetic Results
A Date Interval Example
A Time Interval Example
A DATE Interval Example
A Complex Time Interval Example using CAST
A Complex Time Interval Example using CAST
The OVERLAPS Command
An OVERLAPS Example that Returns No Rows
The OVERLAPS Command using TIME
The OVERLAPS Command using a NULL Value

Window Functions

- Cumulative Sum (CSUM)
- CSUM – The Sort Explained
- CSUM – Rows Unbounded Preceding Explained
- CSUM – Making Sense of the Data
- CSUM – Making Even More Sense of the Data
- CSUM – The Major and Minor Sort Key(s)
- Reset with a PARTITION BY Statement
- PARTITION BY only Resets a Single OLAP not ALL of them
- ANSI Moving Window is Current Row and Preceding n Rows
- How ANSI Moving SUM Handles the Sort
- Quiz – How is that Total Calculated?
- Answer to Quiz – How is that Total Calculated?
- Moving SUM every -rows Vs a Continuous Average
- Partition By Resets an ANSI OLAP
- Moving Average
- The Moving Window is Current Row and Preceding
- How Moving Average Handles the Sort
- Quiz – How is that Total Calculated?
- Answer to Quiz – How is that Total Calculated?
- Quiz – How is that 4th Row Calculated?
- Answer to Quiz – How is that 4th Row Calculated?
- Moving Average every -rows Vs a Continuous Average
- Partition By Resets an ANSI OLAP
- RANK Defaults to Ascending Order
- Getting RANK to Sort in DESC Order
- RANK() OVER and PARTITION BY
- RANK() OVER And LIMIT

Using LAG and LEAD
Using LEAD
Using LEAD with a PARTITION Statement
Using LEAD With an Offset of
Using LEAD With an Offset of and a PARTITION
Using LAG
Using LAG with a PARTITION Statement
Using LAG With an Offset of
Using LAG With an Offset of and a PARTITION
CUME_DIST
CUME_DIST With a Partition
RANK and DENSE RANK
LISTAGG Function
LISTAGG Basic Example
Another Example of LISTAGG
LISTAGG With a Pipe-Separated List
LISTAGG With a Comma-Separated List in Groups
MEDIAN Function
MEDIAN Example
MEDIAN with Partitioning and a WHERE Clause
MEDIAN with Partitioning
NTILE Function
How Ntile Works
Ntile
Ntile Continued
Ntile Percentile
Another Ntile Example
Using Tertiles (Partitions of Four)
NTILE

Visualize This Derived Table
Most Derived Tables Are Used To Join To Other Tables
Multiple Ways to Alias the Columns in a Derived Table
Our Join Example With A Different Column Aliasing Style
Column Aliasing Can Default For Normal Columns
CREATING A Derived Table using the WITH Command
A Join Using the WITH Syntax
WITH
A WITH Clause That Produces Two Tables
Finding the First Occurrence of a Row using WITH
Finding the First Occurrence of a Row using a Derived Table
Finding the Last Occurrence Using a WITH Derived Table
Finding the Last Occurrence Using a Derived Table
The Same Derived Query shown Three Different Ways
Quiz - Answer the Questions
Answer to Quiz - Answer the Questions
Clever Tricks on Aliasing Columns in a Derived Table
A Derived Table lives only for the lifetime of a single query
An Example of Two Derived Tables in a Single Query
Create Table Syntax
Basic Temporary Table Examples
More Advanced Temporary Table Examples
Advanced Temporary Table Examples
Performing a Deep Copy
Deep Copy Using the Original DDL
Deep Copy Using A CTAS
Deep Copy Using A Create Table LIKE
Deep Copy By Creating a Temp Table and Truncating Original

Chapter 15 - Sub-query Functions

- An IN List is much like a Subquery
- An IN List Never has Duplicates – Just like a Subquery
- An IN List Ignores Duplicates
- The Subquery
- The Three Steps of How a Basic Subquery Works
- These are Equivalent Queries
- The Final Answer Set from the Subquery
- Quiz- Answer the Difficult Question
- Answer to Quiz- Answer the Difficult Question
- Should you use a Subquery of a Join?
- Quiz- Write the Subquery
- Answer to Quiz- Write the Subquery
- Quiz- Write the More Difficult Subquery
- Answer to Quiz- Write the More Difficult Subquery
- Quiz – Write the Extreme Subquery
- Answer To Quiz – Write the Extreme Subquery
- Quiz- Write the Subquery with an Aggregate
- Answer to Quiz- Write the Subquery with an Aggregate
- Quiz- Write the Correlated Subquery
- Answer to Quiz- Write the Correlated Subquery
- The Basics of a Correlated Subquery
- The Top Query always runs first in a Correlated Subquery
- Correlated Subquery Example vs. a Join with a Derived Table
- Quiz- A Second Chance To Write a Correlated Subquery
- Answer - A Second Chance to Write a Correlated Subquery
- Quiz- A Third Chance To Write a Correlated Subquery
- Answer - A Third Chance to Write a Correlated Subquery
- Quiz- Last Chance To Write a Correlated Subquery

Interrogating the Data

The Basics of CAST (Convert And STore)
Some Great CAST (Convert And STore) Examples
Some Great CAST (Convert And STore) Examples
Some Great CAST (Convert And STore) Examples
The Basics of the CASE Statements
The Basics of the CASE Statement
Valued Case Vs. A Searched Case
Quiz - Valued Case Statement
Answer - Valued Case Statement
Quiz - Searched Case Statement
Answer - Searched Case Statement
Quiz - When NO ELSE is present in CASE Statement
Answer - When NO ELSE is present in CASE Statement
When an ELSE is present in CASE Statement
Answer - When an ELSE is present in CASE Statement
When an Alias is NOT used in a CASE Statement
Answer - When an Alias is NOT used in a CASE Statement
Combining Searched Case and Valued Case
Nested Case
Put a CASE in the ORDER BY

View Functions

Creating a Simple View to Restrict Sensitive Columns
Creating a Simple View to Restrict Sensitive Columns
Creating a Simple View to Restrict Rows
Creating a View to Join Tables Together
You Select From a View
Basic Rules for Views
An ORDER BY Example Inside of a View

Set Operators Functions