Student Guide for Sync Session

Week 7: Aggregation Functions

This guide will help you navigate the session effectively. It includes key insights and strategies to enhance your learning experience. Stay engaged and make the most of this session!

Session Overview

<table>
<tr><td>Session Title</td><td>Aggregation Functions in SQL</td></tr>
<tr><td>Session Duration</td><td>3 hours</td></tr>
<tr><td>Session Type</td><td>• Lectures: Conceptual understanding of SQL aggregate functions
• Case Studies: Real-world applications of SQL aggregation for data summarisation</td></tr>
<tr><td>Scope</td><td>This session covers fundamental SQL aggregation techniques, their importance in data analysis, and practical applications, including:
• Definition and purpose of aggregate functions
• Key aggregate functions: SUM, AVG, COUNT, MAX, MIN
• Understanding WHERE, GROUP BY, and HAVING clauses
• Case study applications of SQL aggregation</td></tr>
<tr><td>Learning Objectives</td><td>
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<tr><th>Objective</th><th>Core Capability</th></tr>
<tr><td>Understand the purpose and use of aggregate functions</td><td>Foundational SQL knowledge</td></tr>
<tr><td>Apply SUM, AVG, COUNT, MAX, and MIN in SQL queries</td><td>Data analysis skills</td></tr>
<tr><td>Differentiate WHERE, GROUP BY, and HAVING clauses</td><td>Ability to filter and group data efficiently</td></tr>
<tr><td>Implement aggregation functions in real-world case studies</td><td>Practical SQL proficiency</td></tr>
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<tr><td>Software/Tools</td><td>SQL-based database systems such as MySQL, PostgreSQL, or SQL Server</td></tr>
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Pro Tips for Success

- **Ask Bold Questions**: No question is too small—curiosity is the key to learning!
- **Be Hands-On**: Coding is your superpower. Tweak, test, and break things (safely) to learn.
- **Collaborate**: Share your ideas in discussions. You might just spark the next big insight!

Session Details

Topic/Concept	A Glimpse	Insights/Actionable
Introduction to Aggregation Functions	Importance of summarising data for analysis	Understand how aggregation helps in large-scale data insights
Understanding SUM, AVG, COUNT, MAX, MIN	Overview of key aggregation functions	Learn how each function is applied in real-world scenarios
Using GROUP BY	Organising data into meaningful categories	Develop queries to categorise and analyse data effectively
Filtering with WHERE vs HAVING	Differences and appropriate use cases	Implement correct filtering techniques in SQL queries
Case Study: Product Revenue Analysis	Using aggregation for revenue insights	Apply aggregation to calculate product-wise revenue
Case Study: Regional Sales Analysis	Evaluating sales performance by region	Understand regional trends using SQL aggregation
Identifying High-Revenue Regions	Applying HAVING to filter grouped data	Use aggregation to extract high-performing business areas
Monthly Revenue Analysis	Tracking trends using aggregation functions	Learn how to analyse time-based trends in business data
Summary and Q&A	Recap key takeaways and open discussion	Reinforce learning and clarify doubts through discussion

Post-Session Activities

Reflection Challenge	Think about a dataset you have worked with. How could aggregation functions help analyse it more effectively? Write a short summary.
Explore More	**Read:** Experiment with SQL queries on different datasets. **Watch:** Research advanced aggregation techniques such as ROLLUP and CUBE. **Play around:** Explore how databases optimise queries using aggregation.
Get Inspired	Read case studies on how businesses use SQL aggregation to improve decision-making. - Watch tutorials on SQL optimisation and performance tuning.
The Journey Ahead	Apply SQL aggregation in your projects and real-world datasets. Continue learning advanced SQL topics such as window functions and analytical queries.