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Computer Science 204 - Assignment 2: Retail Data Analysis with SQL Queries

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About this Assignment

In this assignment, you will build on your previously created database for an electronics retail company. Now that the database schema has been implemented, your task is to write SQL queries to retrieve and analyze data using filtering, grouping, and JOIN operations. This will assess your understanding of single-table and multi-table queries in SQL.

Course Learning Outcomes

The following course learning outcomes are assessed in this assignment:

- Write SELECT statements using WHERE, ORDER BY, AND, OR, NOT, IN, GROUP BY, and HAVING clauses to retrieve data from a table.
- Develop SQL statements utilizing INNER JOIN, LEFT JOIN, RIGHT JOIN, and FULL JOIN clauses to effectively combine and retrieve data from multiple tables.

Related Lessons

- SQL Functions: Overview, Uses & Examples
- SQL: GROUP BY Clause
- SQL: Inner Joins

Prompt

Continuing your role as a database developer for the electronics retail company, you have been tasked with producing reports that provide insight into the business. Using your existing database, write SQL queries that analyze inventory, sales, and supplier information. Also, add comments to your queries to clarify their purpose, functionality, and logic.

Part 1: Data Retrieval from a Single Table

1. List all products, showing product name, category ID, price, and QOH (Quantity on Hand).
2. Retrieve all products that are out of stock (quantity = 0).
3. Display products priced between $100 and $500.
4. Show the total number of products grouped by category.
5. Display the average price of products per category using the GROUP BY clause.

Part 2: Multi-Table Queries using Joins

1. Join Products and Suppliers to list product name, supplier name, and contact details.
2. Join Products, Categories, and Orders to display: product name, category name, quantity sold, and date of sale.

3. Use a LEFT JOIN to list all suppliers and any products they supply (including those with none).

4. Use a FULL OUTER JOIN (or simulate one using UNION of LEFT JOIN and RIGHT JOIN) to show all products and suppliers, including unmatched records.

5. Use a HAVING clause to find all categories with more than 10 products in stock.

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Grading Rubric

Your output will be graded based on the following rubric:

Criteria	**Excellent (5)**	**Good (4)**	**Needs Improvement (2-3)**	**Unacceptable (1)**	**Total Possible Points**
Data Retrieval & Filtering (x2)	Queries retrieve correct and complete results with accurate use of SQL clauses and no syntax errors.	Minor syntax or logic issues that do not affect outcome.	Noticeable flaws or omissions; results partially incorrect.	Significant errors or incomplete queries; results incorrect or fail to run.	10

Aggregation & Grouping (x2)	Accurately groups and summarizes data with appropriate use of aggregate functions and clauses.	Minor issues that do not significantly impact query functionality.	Aggregation or grouping contains errors, or missing key elements.	Queries are incorrect or non-functional.	10
Multi-Table Querying with JOINs (x3)	JOINs are logically correct and return accurate results; syntax is flawless.	JOINs generally accurate with minor logic or syntax errors.	JOINs contain errors in logic or table relationships.	JOINs are missing, incorrect, or do not execute.	15
SQL Comments & Query Purpose Explanation (x3)	Comments are consistently clear, thoughtful, and provide strong insight into the purpose and logic of the SQL.	Most comments are clear and informative, but some lack depth.	Comments are incomplete, vague, or inconsistently applied.	Comments are missing, unclear, or fail to demonstrate understanding.	15
Query Accuracy & Execution (x2)	All queries run correctly and return expected results without errors.	Queries mostly run successfully with minor issues.	Several queries have logic or syntax issues affecting output.	Most queries do not run or produce invalid results.	10
					60

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When you are ready to submit your assignment, please fill out the following submission form by attaching your assignment as a Microsoft Word or Text document file**. After turning in your assignment, you may go ahead and take the proctored final exam. You do not need to wait for your written response to be graded. You should receive your assignment grade within one week.**

If you are not satisfied with the score you receive on your assignment, you may revise or rewrite it, and resubmit them for grading using the same submission form above. Keep in mind that the grade you receive on your assignment is only a portion of your overall grade

for the course. If this course has an exam, you are also free to retake the final exam as well if you choose. Please see the course syllabus for a more detailed breakdown of the grading policy.