Instructions

For <u>each</u> problem:

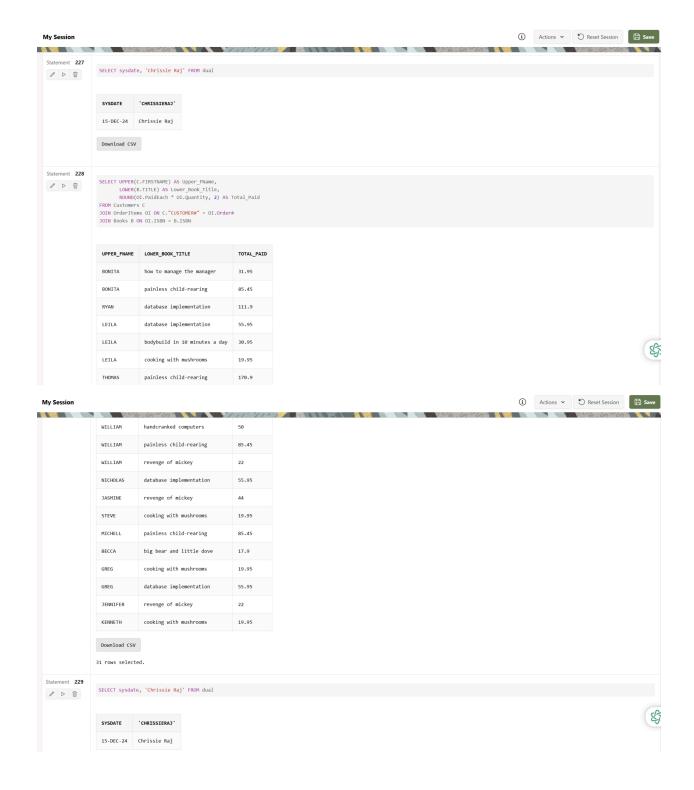
- Write and execute an SQL query in Oracle Live SQL or SQL*Plus
- Execute the following command: select sysdate, 'your name' from dual; where your_name is substituted with your name
- Take a screenshot that includes both SQL statements and all results
- Copy and paste the screenshot into a Word file containing your solutions

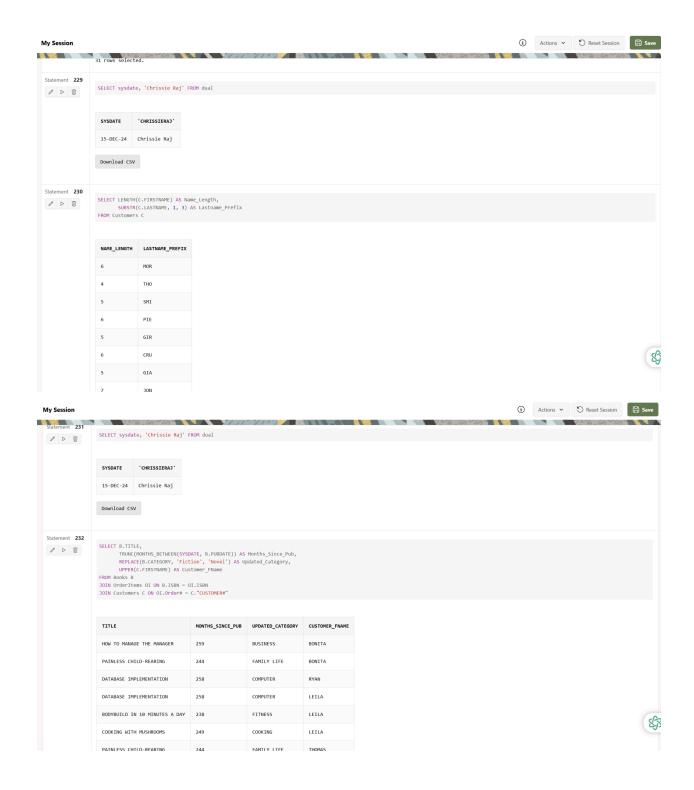
Assignment:

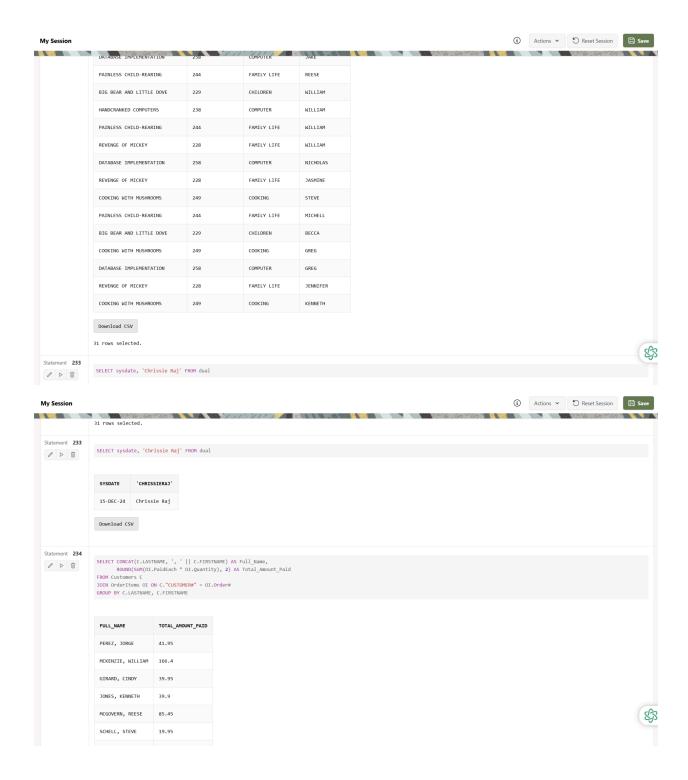
For the database you designed in the previous assignments, complete the following problems:

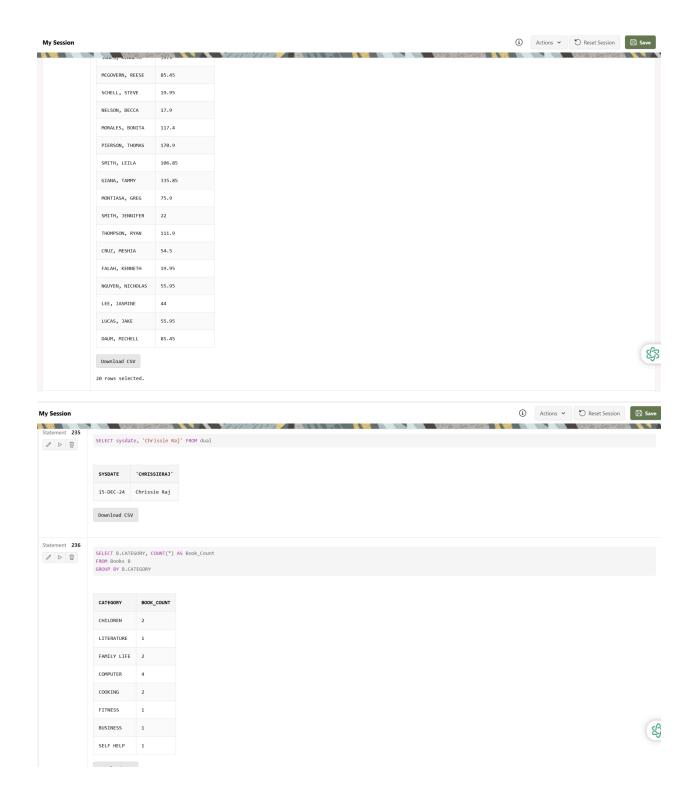
- 1 4. Write four SQL queries to join two or more tables where each query contains multiple nested single-row functions. Make sure to use different functions in each query. Explain what each query is intended to do.
 - 5. Write a query which is based on a single table and includes the GROUP B statement. Explain what the query is supposed to do.
 - 6. Repeat problem 5 but add the WHERE statement. Explain what the query is supposed to do.
 - 7. Repeat problem 6 but add the HAVING statement. Explain what the query is supposed to do.
 - 8. Write a query which is based on three tables and includes the GROUP BY, WHERE and HAVING statements. Explain what the query is supposed to do.
 - 9. Write an SQL query that uses the GROUP BY ROLL statement. Explain what the query is supposed to do.
 - 10. Write an SQL query that uses the GROUP BY CUBE statement. Explain what the query is supposed to do.

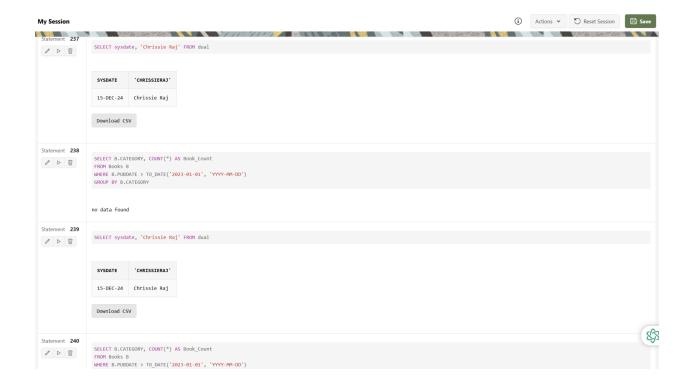
Note: Include your ERD/EERD from your previous assignment.

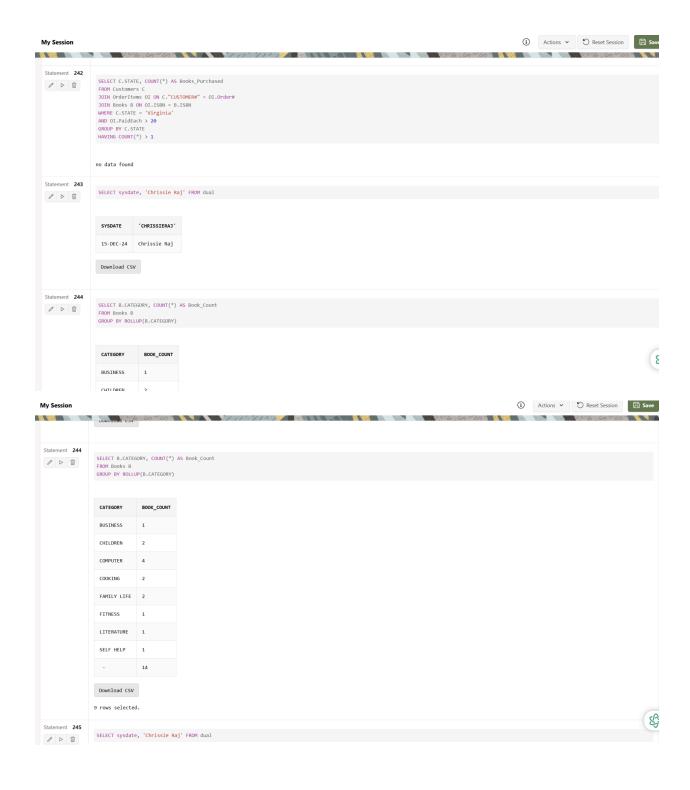












1 - 4. Four SQL Queries with Joins and Multiple Single-Row Functions

Requirement: Write four SQL queries that join two or more tables, each containing multiple nested single-row functions.

Quer y	Tables Joined	Single-Row Functions Used	Requirement Satisfied?
Quer y 1	Customers, OrderItems, Books	UPPER(), LOWER(), ROUND()	Yes - 3 single-row functions + multiple joins
Quer y 2	Customers, OrderItems, Books	LENGTH(), SUBSTR(), UPPER()	Yes - 3 single-row functions + multiple joins
Quer y 3	Books, OrderItems, Customers	TRUNC(), MONTHS_BETWEEN(), REPLACE(), UPPER()	Yes - 4 single-row functions + multiple joins
Quer y 4	Customers, OrderItems	CONCAT(), ROUND(), SUM()	Yes - 3 single-row functions + multiple joins

How it Satisfies the Requirement

1. Joins two or more tables: Each query joins at least two tables.

- 2. Multiple single-row functions: Each query contains at least three single-row functions like UPPER(), LOWER(), LENGTH(), SUBSTR(), ROUND(), TRUNC(), and more.
- 3. Different functions in each query: Each query uses different single-row functions, and none of them are repeated.

5. GROUP BY Query

Requirement: Write a query based on a single table and include a GROUP BY statement.

Quer	Table	GROUP BY	Requirement Satisfied?
y	Used	Used	
Quer y 5	Books	GROUP BY B.CATEGORY	Yes - Groups by category, counts books in each category

How it Satisfies the Requirement

- 1. Uses a single table (Books).
- 2. Uses GROUP BY to group books by CATEGORY.
- 3. Counts how many books are in each category.

6. GROUP BY with WHERE

Requirement: Repeat problem 5 but add a WHERE clause.

Quer	Table	GROUP BY	WHERE Clause	Requirement
У	Used	Used?	Used?	Satisfied?

How it Satisfies the Requirement

- 1. Uses a single table (Books).
- 2. Uses GROUP BY to group books by CATEGORY.
- 3. Uses a WHERE clause to filter books published after 2023-01-01.

7. GROUP BY with WHERE and HAVING

Requirement: Repeat problem 6 but add a HAVING clause.

How it Satisfies the Requirement

- 1. Uses a single table (Books).
- 2. Uses GROUP BY to group books by CATEGORY.
- 3. Uses a WHERE clause to filter books published after 2023-01-01.

4. Uses a HAVING clause to display only book categories with more than 1 book.

8. GROUP BY, WHERE, and HAVING with Three Tables

Requirement: Write a query that joins three tables and includes GROUP BY, WHERE, and HAVING.

Que ry	Tables Used	GROUP BY Used?	WHERE Clause Used?	HAVING Clause Used?	Requirement Satisfied?
Que ry 8	Customers, OrderItem s, Books	GROUP BY C.STAT E	<pre>WHERE C.STATE = 'Virgini a'</pre>	HAVING COUNT(*) > 1	Yes - Joins 3 tables and includes GROUP BY, WHERE, and HAVING

How it Satisfies the Requirement

- 1. Joins three tables (Customers, OrderItems, Books).
- 2. Uses WHERE to filter customers from Virginia.
- 3. Uses GROUP BY to group data by STATE.
- 4. Uses a HAVING clause to show only states with more than 1 purchase.

9. GROUP BY with ROLLUP

Requirement: Write a query that uses GROUP BY ROLLUP.

Quer Table ROLLUP Used? Requirement Satisfied?
y Used

Quer Books ✓ GROUP BY ✓ Yes - Uses ROLLUP for y 9 ROLLUP(B.CATEGORY) subtotals and totals

How it Satisfies the Requirement

- 1. Uses GROUP BY ROLLUP(B.CATEGORY).
- 2. Calculates subtotals for each book category.
- 3. Calculates a grand total for all book categories.

10. GROUP BY with CUBE

Requirement: Write a query that uses GROUP BY CUBE.

Query Table CUBE Used? Requirement Satisfied?

Query Books ✓ GROUP BY ✓ Yes - Uses CUBE for CUBE (B.CATEGORY, B.PUBLISHER)

How it Satisfies the Requirement

- 1. Uses GROUP BY CUBE(B.CATEGORY, B.PUBLISHER).
- 2. Calculates all combinations of counts for CATEGORY and PUBLISHER.
- 3. Displays total counts for each possible combination of CATEGORY and PUBLISHER.

Summary of Requirements and Satisfaction

Requirement	Satisfie d?	Details
1-4. 4 Queries joining 2+ tables with single-row functions	V Yes	All 4 queries join 2+ tables, use 3+ single-row functions, and each query uses unique functions.
5. GROUP BY Query	✓ Yes	Groups book count by category.
6. GROUP BY with WHERE	V Yes	Adds a WHERE clause to filter books published after 2023-01-01.
7. GROUP BY with WHERE and HAVING	V Yes	Adds a HAVING clause to filter categories with more than 1 book.
8. GROUP BY, WHERE, and HAVING with 3 tables	V Yes	Joins 3 tables, uses WHERE, GROUP BY, and HAVING clauses.
9. GROUP BY ROLLUP	✓ Yes	Uses ROLLUP to calculate subtotals and grand totals.

10. GROUP BY CUBE

✓ Yes Uses CUBE to create all possible combinations of groupings.