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# Section 1:SQL

# **Question A**: Return the total listing across all cars under or equal to 3 years old, by month for Competitor 1 in 2022, sorted by month

-- Get the total number of car listings for each month in 2022

SELECT

bidding\_period AS "Bidding Month", -- The month the auction took place

SUM(listing\_count) AS "Listing Count" -- Total number of cars listed that month

FROM

purchase\_data\_competitor\_1\_2022 -- Competitor 1's data for 2022

WHERE

make\_year >= 2019 -- Only include cars that are 3 years old or newer

GROUP BY

bidding\_period -- Group by month

ORDER BY

bidding\_period ASC; -- Sort by month in ascending order

# **Question B**: Generate the top 2 models for each brand by highest listing count from Competitor 2 in Nov 2022.

-- First, rank the models for each brand by their listing count

WITH RankedModels AS (

SELECT

brand\_name, -- The brand of the car

model\_name, -- The model of the car

listing\_count, -- The number of times this model was listed for auction

-- Rank the models within each brand based on the listing count, highest first

ROW\_NUMBER() OVER (PARTITION BY brand\_name ORDER BY listing\_count DESC) AS rank

FROM

purchase\_data\_competitor\_2\_2022

WHERE

-- We're only interested in data from November 2022

bidding\_period = '2022-11-01'

)

-- Now, select the top 2 models for each brand

SELECT

brand\_name AS "Brand Name", -- The brand of the car

model\_name AS "Model Name", -- The model of the car

listing\_count AS "Listing Count" -- The number of listings

FROM

RankedModels

WHERE

-- Only include the top 2 ranked models per brand

rank <= 2

ORDER BY

-- Sort by brand name first, then by listing count

brand\_name ASC,

listing\_count DESC;

**Question C**: Compare the maximum Reserved Price (over all periods) by Make Year for the competitors.

-- Find the maximum reserved price by Make Year for both competitors

SELECT

make\_year AS "Make Year",

MAX(CASE WHEN purchase\_data\_competitor\_1\_2022.reserved\_price IS NOT NULL THEN reserved\_price ELSE 0 END) AS "Max Reserved Price (Competitor 1)",

MAX(CASE WHEN purchase\_data\_competitor\_2\_2022.reserved\_price IS NOT NULL THEN reserved\_price ELSE 0 END) AS "Max Reserved Price (Competitor 2)"

FROM

purchase\_data\_competitor\_1\_2022

FULL JOIN

purchase\_data\_competitor\_2\_2022

USING (make\_year)

GROUP BY

make\_year

ORDER BY

make\_year;

**Question D**: Show the median Winning Price by brand for Competitor 1 in Jan 2023.

-- Calculate the median winning price for each brand in January 2023 for Competitor 1

SELECT

brand\_name AS "Brand Name",

PERCENTILE\_CONT(0.5) WITHIN GROUP (ORDER BY winning\_price) AS "Median Winning Price"

FROM

purchase\_data\_competitor\_1\_2023

WHERE

bidding\_period = '2023-01-01'

GROUP BY

brand\_name

ORDER BY

brand\_name;

**Question E**: Compute the cumulative listings for Competitor 2 across months in 2022.

-- Calculate cumulative listings across months for Competitor 2 in 2022

SELECT

bidding\_period AS "Month",

SUM(listing\_count) OVER (ORDER BY bidding\_period ASC) AS "Cumulative Listing Count"

FROM

purchase\_data\_competitor\_2\_2022

ORDER BY

bidding\_period;