**DATA-225 Sec 11 - Db Systems for Analytics**

**PROJECT CODE**

**SQL QUERIES:**

Create database EV;

show databases;

use EV;

CREATE TABLE zev\_sales (

county VARCHAR(50),

zev\_sale\_share\_Q1\_2022 FLOAT,

zev\_sale\_share\_Q1\_Q2\_2022 FLOAT,

zev\_sale\_share\_Q1\_Q3\_2022 FLOAT,

zev\_sale\_share\_Q1\_Q4\_2022 FLOAT

);

CREATE TABLE vehicle\_population (

year INTEGER,

county TEXT,

fuel\_type TEXT,

make TEXT,

model TEXT,

unit\_sold INTEGER

);

CREATE TABLE vehicle\_sales (

year INT,

county VARCHAR(255),

fuel\_type VARCHAR(255),

make VARCHAR(255),

model VARCHAR(255),

unit\_sold INT

);

CREATE TABLE charging\_stations (

county VARCHAR(50),

public\_level\_1 INT,

shared\_private\_level\_1 INT,

public\_level\_2 INT,

shared\_private\_level\_2 INT,

public\_dc\_fast INT,

shared\_private\_dc\_fast INT,

total INT,

year INT,

quarter VARCHAR(2)

);

select \* from vehicle\_population LIMIT 5;

select \* from charging\_stations LIMIT 5;

select \* from zev\_sales LIMIT 5;

select \* from vehicle\_sales LIMIT 5;

-- SQL query to total number of vehicle sales that have an electric as fuel type

select COUNT(\*) from vehicle\_sales WHERE FUEL\_TYPE = 'ELECTRIC';

-- SQL query to get the top 15 sales, their corresponding counties, and the quarter in which the sales occurred

- The query is selecting the county, the highest ZEV sale share among Q1, Q2, Q3, and Q4 for each county, and the corresponding quarter when the highest sale share occurred. It uses a **CASE** statement to determine the highest sales share and the corresponding quarter for each county.

The **ORDER BY** clause orders the results by the highest ZEV sale share in descending order, and the **LIMIT** clause limits the output to the top 15 results.

The **EXPLAIN** command is used to provide information on how the query will be executed. It shows the execution plan of the query, including the steps taken by the database engine to retrieve the required data. The output of **EXPLAIN** can help identify any performance issues in the query and optimize it accordingly.

SELECT county,

CASE

WHEN zev\_sale\_share\_Q1\_2022 >= zev\_sale\_share\_Q1\_Q2\_2022 AND zev\_sale\_share\_Q1\_2022 >= zev\_sale\_share\_Q1\_Q3\_2022 AND zev\_sale\_share\_Q1\_2022 >= zev\_sale\_share\_Q1\_Q4\_2022 THEN zev\_sale\_share\_Q1\_2022

WHEN zev\_sale\_share\_Q1\_Q2\_2022 >= zev\_sale\_share\_Q1\_2022 AND zev\_sale\_share\_Q1\_Q2\_2022 >= zev\_sale\_share\_Q1\_Q3\_2022 AND zev\_sale\_share\_Q1\_Q2\_2022 >= zev\_sale\_share\_Q1\_Q4\_2022 THEN zev\_sale\_share\_Q1\_Q2\_2022

WHEN zev\_sale\_share\_Q1\_Q3\_2022 >= zev\_sale\_share\_Q1\_2022 AND zev\_sale\_share\_Q1\_Q3\_2022 >= zev\_sale\_share\_Q1\_Q2\_2022 AND zev\_sale\_share\_Q1\_Q3\_2022 >= zev\_sale\_share\_Q1\_Q4\_2022 THEN zev\_sale\_share\_Q1\_Q3\_2022

ELSE zev\_sale\_share\_Q1\_Q4\_2022

END AS top\_sales,

CASE

WHEN zev\_sale\_share\_Q1\_2022 >= zev\_sale\_share\_Q1\_Q2\_2022 AND zev\_sale\_share\_Q1\_2022 >= zev\_sale\_share\_Q1\_Q3\_2022 AND zev\_sale\_share\_Q1\_2022 >= zev\_sale\_share\_Q1\_Q4\_2022 THEN 'zev\_sale\_share\_Q1\_2022'

WHEN zev\_sale\_share\_Q1\_Q2\_2022 >= zev\_sale\_share\_Q1\_2022 AND zev\_sale\_share\_Q1\_Q2\_2022 >= zev\_sale\_share\_Q1\_Q3\_2022 AND zev\_sale\_share\_Q1\_Q2\_2022 >= zev\_sale\_share\_Q1\_Q4\_2022 THEN 'zev\_sale\_share\_Q1\_Q2\_2022'

WHEN zev\_sale\_share\_Q1\_Q3\_2022 >= zev\_sale\_share\_Q1\_2022 AND zev\_sale\_share\_Q1\_Q3\_2022 >= zev\_sale\_share\_Q1\_Q2\_2022 AND zev\_sale\_share\_Q1\_Q3\_2022 >= zev\_sale\_share\_Q1\_Q4\_2022 THEN 'zev\_sale\_share\_Q1\_Q3\_2022'

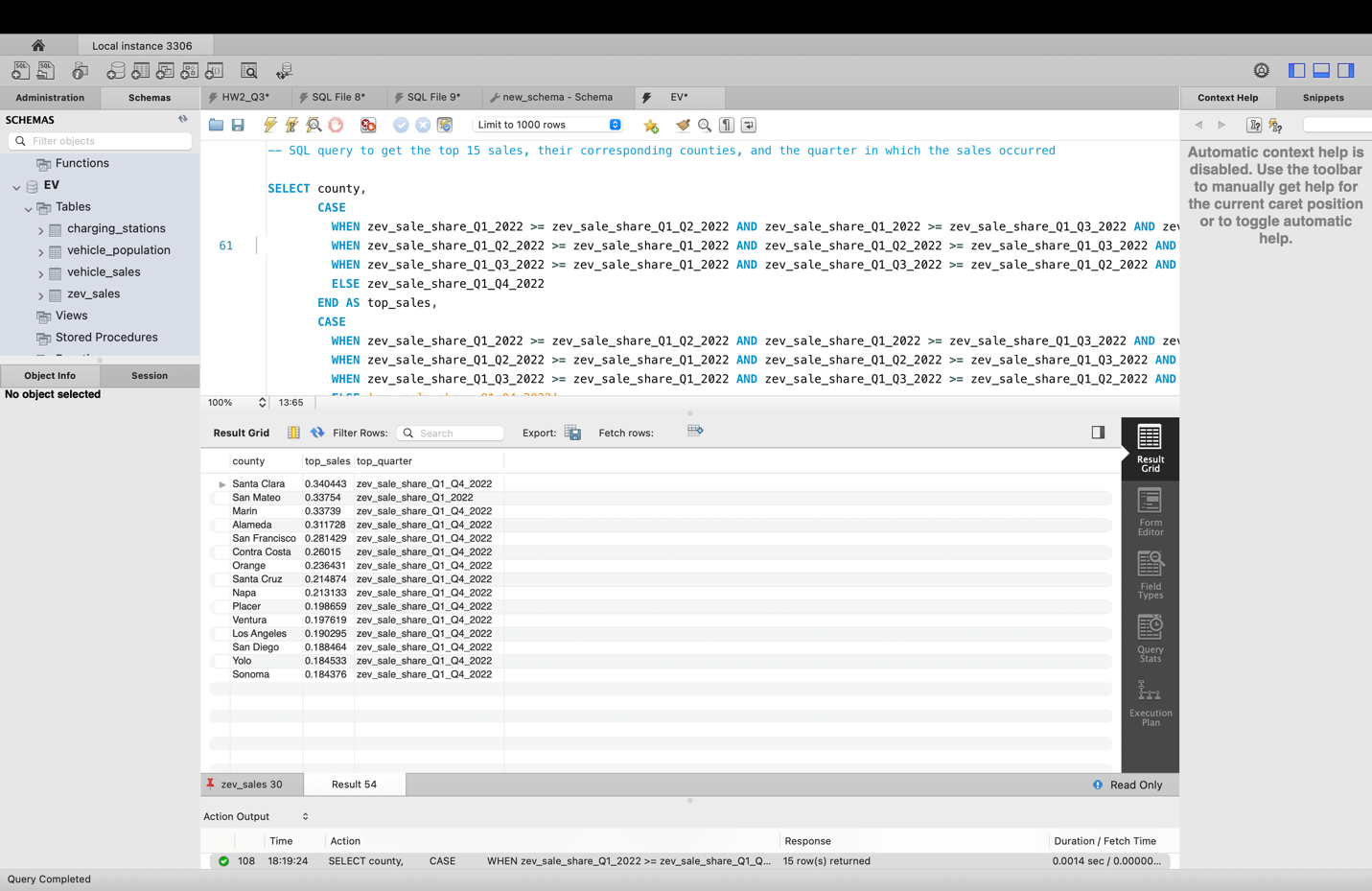
ELSE 'zev\_sale\_share\_Q1\_Q4\_2022'

END AS top\_quarter

FROM zev\_sales

ORDER BY top\_sales DESC

LIMIT 15;



-- Get the total number of EV chargers installed in each county by level

- -   
This SQL query selects the county and the total number of electric vehicle chargers by charger type (public level 1, shared private level 1, public level 2, shared private level 2, public DC fast, shared private DC fast, total) for each county. It then groups the results by county using the GROUP BY clause.

The SUM function is used to aggregate the number of chargers for each charger type and the total number of chargers. The result set is sorted by county.

In summary, this query retrieves the total number of electric vehicle chargers by charger type and county, allowing for analysis of the availability and distribution of charging infrastructure.

SELECT county,

SUM(public\_level\_1) AS total\_public\_level\_1,

SUM(shared\_private\_level\_1) AS total\_shared\_private\_level\_1,

SUM(public\_level\_2) AS total\_public\_level\_2,

SUM(shared\_private\_level\_2) AS total\_shared\_private\_level\_2,

SUM(public\_dc\_fast) AS total\_public\_dc\_fast,

SUM(shared\_private\_dc\_fast) AS total\_shared\_private\_dc\_fast,

SUM(total) AS total\_ev\_chargers

FROM charging\_stations

GROUP BY county;

Graphical user interface, table

Description automatically generated

-- Get the top 10 best-selling vehicle models in a specific county and year

SELECT make, model, SUM(unit\_sold) AS total\_sales

FROM vehicle\_population

GROUP BY make, model

ORDER BY total\_sales DESC

LIMIT 10;

Graphical user interface

Description automatically generated

-- Calculate the percentage of ZEV sales in each county for each quarter in 2022

SELECT Z.county,

zev\_sale\_share\_Q1\_2022,

zev\_sale\_share\_Q1\_Q2\_2022,

zev\_sale\_share\_Q1\_Q3\_2022,

zev\_sale\_share\_Q1\_Q4\_2022

FROM zev\_sales as Z, vehicle\_sales as V

WHERE V.year = 2022;

Graphical user interface

Description automatically generated

-- Get the total number of Electric's sold in each county in 2022

SELECT county, SUM(unit\_sold) AS total\_zev\_sales

FROM vehicle\_sales

WHERE fuel\_type = 'Electric' AND year = 2022

GROUP BY county;

Graphical user interface, application

Description automatically generated

-- Get the total number of EV chargers installed in California by year

SELECT year, quarter, SUM(total) AS total\_ev\_chargers

FROM charging\_stations

WHERE county = 'California'

GROUP BY year;

-- Get the top 5 counties with the highest percentage of ZEV sales in Q1 2022

SELECT county, zev\_sale\_share\_Q1\_2022

FROM zev\_sales

WHERE zev\_sale\_share\_Q1\_2022 IS NOT NULL

ORDER BY zev\_sale\_share\_Q1\_2022 DESC

LIMIT 5;

Graphical user interface

Description automatically generated

-- Get the total number of ZEV sales by make in Contra Costa in 2022

SELECT year, SUM(public\_level\_2) AS total\_public\_level\_2

FROM charging\_stations

WHERE county = 'Contra Costa'

GROUP BY year;

Graphical user interface, text, application

Description automatically generated

-- Get the total number of ZEV sales by make in California in 2022:

SELECT make, SUM(unit\_sold) AS total\_zev\_sales

FROM zev\_sales

WHERE county = 'California' AND year = 2022

GROUP BY make

ORDER BY total\_zev\_sales DESC;

-- Get the total number of EV chargers installed in each county for each quarter in 2022

SELECT county, quarter, SUM(total) AS total\_ev\_chargers

FROM charging\_stations

WHERE year = 2022

GROUP BY county, quarter;

Graphical user interface, application

Description automatically generated

**ELASTIC SEARCH:**

**DASHBOARD**

**Graphical user interface

Description automatically generated**

**SEARCH USING FILTERS:**

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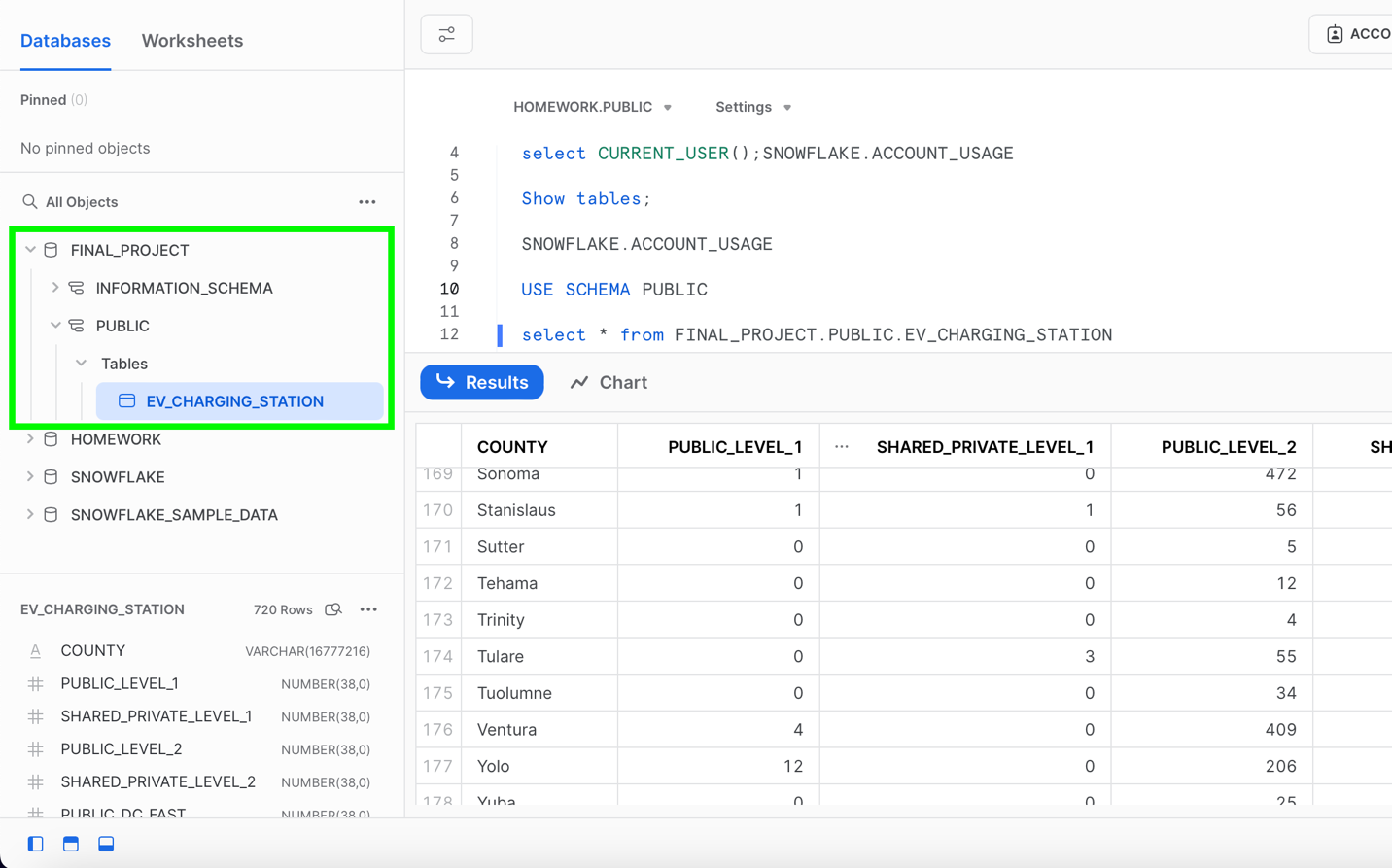
Graphical user interface, text, application

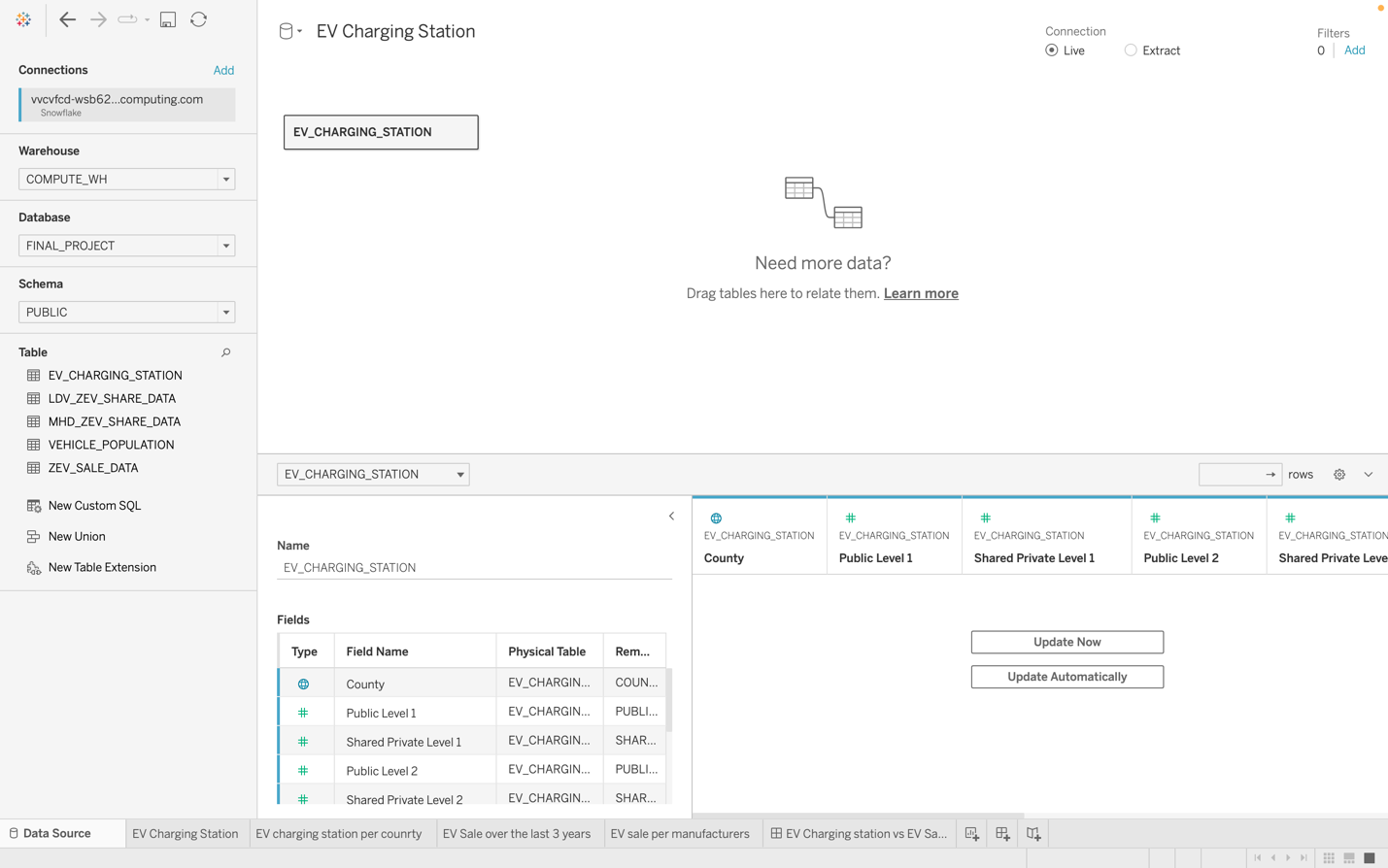
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**Snowflake:**

Graphical user interface, application

Description automatically generated





Graphical user interface, text

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