***Suppose that it is found that manual transmission systems produced between two given dates are defective.***

***Find the VIN of each car containing such a transmission and the customer to which it was sold;***

***the vehicle production date should be in the interval when the defective transmissions were produced.***

SELECT VIN, CUSTOMER\_ID, first\_NAME

FROM vehicle NAtural JOIN sells natural join customer

WHERE (PROD\_DATE BETWEEN '01-JAN-18' AND '31-DEC-18') AND TRANSMISSION='manual';

VIN CUSTOMER FIRST\_NAME

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09876543214536759 002 John

23658965478541258 005 Sarah

65867412025801461 005 Sarah

45210124536523982 005 Sarah

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***Show sales trends for various brands over the past 3 years, by year, buyer gender, and buyer income range.***

WITH TEMP AS (

SELECT ANNUAL\_INCOME, CASE

WHEN ANNUAL\_INCOME BETWEEN 0 AND 24999 THEN '0-24999'

WHEN ANNUAL\_INCOME BETWEEN 25000 AND 49999 THEN '25000-49999'

WHEN ANNUAL\_INCOME BETWEEN 50000 AND 79999 THEN '50000-79999'

WHEN ANNUAL\_INCOME BETWEEN 80000 AND 199999 THEN '80000-199999'

WHEN ANNUAL\_INCOME BETWEEN 200000 AND 399999 THEN '200000-399999'

WHEN ANNUAL\_INCOME BETWEEN 400000 AND 599999 THEN '400000-599999'

WHEN ANNUAL\_INCOME BETWEEN 600000 AND 1999999 THEN '600000-1999999'

WHEN ANNUAL\_INCOME BETWEEN 2000000 AND 10000000 THEN '2000000-10000000'

END AS INCOME\_BRACKET FROM CUSTOMER NATURAL JOIN sells natural join VEHICLE NATURAL JOIN models NATURAL JOIN BRAND

WHERE (EXTRACT(YEAR FROM (TO\_DATE(Sale\_DATE))) >= 2017))

SELECT BRAND\_NAME, GENDER, COUNT(ANNUAL\_INCOME) NUMBER\_OF\_CUSTOMERS, INCOME\_BRACKET

FROM TEMP NATURAL JOIN CUSTOMER NATURAL JOIN sells natural join VEHICLE NATURAL JOIN models NATURAL JOIN BRAND

GROUP BY BRAND\_NAME, INCOME\_BRACKET, GENDER ORDER BY BRAND\_NAME ASC;

// **NO income attribute in the customer table**

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***Find the top brand(s) by dollar-amount sold in the past year.***

WITH TOP\_BRANDS\_BY\_SALES AS (

SELECT BRAND\_NAME, SUM(SALE\_PRICE) sumSold

FROM sells NATURAL JOIN vehicle NATURAL JOIN models natural join brand

WHERE (PROD\_DATE BETWEEN '01-JAN-18' AND '31-DEC-18') AND sale\_price IS NOT NULL

GROUP BY BRAND\_NAME

ORDER BY sumSold DESC)

SELECT \* FROM TOP\_BRANDS\_BY\_SALES WHERE ROWNUM = 1;

BRAND\_NAME SUMSOLD

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Buick 121670.5

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***Find the top dealer(s) by dollar-amount sold in the past year.***

WITH TOP\_DEALERS AS (

SELECT NAME, SUM(SALE\_PRICE) AS DEALER\_TOTAL\_SALES

FROM sells NATURAL JOIN DEALER natural join vehicle

WHERE (PROD\_DATE BETWEEN '01-JAN-18' AND '31-DEC-18') AND sale\_price IS NOT NULL

GROUP BY NAME ORDER BY DEALER\_TOTAL\_SALES DESC)

SELECT \* FROM TOP\_DEALERS WHERE ROWNUM = 1;

NAME DEALER\_TOTAL\_SALES

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Hinkles 109500.5

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***Find the top brand(s) by unit sales in the past year.***

WITH TOP\_BRANDS\_BY\_UNITS AS (

SELECT BRAND\_NAME, COUNT(VIN)

FROM sells NATURAL JOIN vehicle NATURAL JOIN models natural join brand

WHERE SALE\_PRICE IS NOT NULL AND SALE\_DATE BETWEEN '01-JAN-19' AND '31-DEC-19'

GROUP BY BRAND\_NAME

ORDER BY COUNT(VIN) DESC)

SELECT \* FROM TOP\_BRANDS\_BY\_UNITS WHERE ROWNUM = 1;

BRAND\_NAME COUNT(VIN)

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Buick 3

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***In what month(s) do convertibles sell best?***

WITH CONVERTIBLE\_MONTH\_LIST AS (

SELECT to\_char(SALE\_DATE, 'MONTH') AS MONTH

FROM SELLS NATURAL JOIN VEHICLE NATURAL JOIN models natural join body\_style

WHERE BODY\_STYLE='CONVERTIBLE' AND SALE\_DATE IS NOT NULL)

SELECT MONTH, COUNT(MONTH) AS NUMBER\_OF\_CONVERTIBLES\_SOLD

FROM CONVERTIBLE\_MONTH\_LIST GROUP BY MONTH

ORDER BY NUMBER\_OF\_CONVERTIBLES\_SOLD DESC;

no rows selected

// **Our database did not have convertible body style in body\_style table.**

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***Find the dealer(s) who keeps a vehicle in inventory for the longest average time.***

WITH DEAD\_INVENTORY\_AGES AS (

SELECT name, to\_date('08-APR-2020') - to\_date(PROD\_DATE) AS dateDiff

FROM SELLS NATURAL JOIN VEHICLE NATURAL JOIN DEALER WHERE SALE\_DATE IS NULL AND DEALER\_ID IS NOT NULL)

SELECT NAME, ROUND(AVG(DATEDIFF)) AS AVERAGE\_DAYS\_OF\_UNSOLD\_CAR FROM DEAD\_INVENTORY\_AGES

GROUP BY NAME ORDER BY AVERAGE\_DAYS\_OF\_UNSOLD\_CAR DESC;

no rows selected

// **Every car were sold i.e. no sufficient data in the table to dig out unsold vehicle.**