CS 561-B

Query Report

Assignment 1

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Table of contents

Query 1

```sql
WITH minimum_quantity AS (
    SELECT
        cust AS customer,
        min(quant) AS min_q
    FROM
        sales
    GROUP BY
        cust
),
maximum_quantity AS (
    SELECT
        cust AS customer,
        max(quant) AS max_q
    FROM
        sales
    GROUP BY
        cust
),
average_quantity AS (
    SELECT
        cust AS customer,
        round(avg(quant)) AS avg_q
    FROM
        sales
    GROUP BY
        cust
),
minimum_purchase_table AS (
    SELECT
        sales.cust,
        sales.quant,
        sales.prod,
        sales.date,
        sales.state
    FROM
        sales
        INNER JOIN minimum_quantity ON sales.cust = minimum_quantity.customer
            AND sales.quant = minimum_quantity.min_q
),
maximum_purchase_table AS (
    SELECT
        sales.cust,
        sales.quant,
        sales.prod,
        sales.date,
```

```sql
                sales.state
        FROM
                sales
        INNER JOIN maximum_quantity ON sales.cust = maximum_quantity.customer
                AND sales.quant = maximum_quantity.max_q
),
purchase_table AS (
        SELECT
                minimum_purchase_table.cust AS customer,
                minimum_purchase_table.quant AS min_q,
                minimum_purchase_table.prod AS min_prod,
                minimum_purchase_table.date AS min_date,
                minimum_purchase_table.state AS min_st,
                maximum_purchase_table.quant AS max_q,
                maximum_purchase_table.prod AS max_prod,
                maximum_purchase_table.date AS max_date,
                maximum_purchase_table.state AS max_st
        FROM
                minimum_purchase_table
        INNER JOIN maximum_purchase_table ON maximum_purchase_table.cust =
minimum_purchase_table.cust
)
SELECT
        purchase_table.customer,
        purchase_table.min_q,
        purchase_table.min_prod,
        purchase_table.min_date,
        purchase_table.min_st,
        purchase_table.max_q,
        purchase_table.max_prod,
        purchase_table.max_date,
        purchase_table.max_st,
        average_quantity.avg_q
FROM
        purchase_table
        JOIN average_quantity ON average_quantity.customer = purchase_table.customer
ORDER BY
        purchase_table.customer;
```

Query 2

```sql
WITH day_aggregate AS (
        SELECT
                year,
                month,
                day,
                sum(quant) AS sum_sale
        FROM
                sales
        GROUP BY
                year,
                month,
                day
),
minimum_sales AS (
        SELECT
                day_aggregate.year,
                day_aggregate.month,
                min(day_aggregate.sum_sale) AS min_sale
        FROM
                day_aggregate
        GROUP BY
                day_aggregate.year,
                day_aggregate.month
),
maximum_sales AS (
        SELECT
                day_aggregate.year,
                day_aggregate.month,
                max(day_aggregate.sum_sale) AS max_sale
        FROM
                day_aggregate
        GROUP BY
                day_aggregate.year,
                day_aggregate.month
),
slowest_day_sale AS (
        SELECT
                minimum_sales.year,
                minimum_sales.month,
                day_aggregate.day AS slowest_day,
                minimum_sales.min_sale AS slowest_total_q
        FROM
                minimum_sales
                JOIN day_aggregate ON day_aggregate.year = minimum_sales.year
                        AND day_aggregate.month = minimum_sales.month
```

```sql
                        AND day_aggregate.sum_sale = minimum_sales.min_sale
),
busiest_day_sale AS (
        SELECT
                maximum_sales.year,
                maximum_sales.month,
                day_aggregate.day AS busiest_day,
                maximum_sales.max_sale AS busiest_total_q
        FROM
                maximum_sales
        JOIN day_aggregate ON day_aggregate.year = maximum_sales.year
                AND day_aggregate.month = maximum_sales.month
                AND day_aggregate.sum_sale = maximum_sales.max_sale
)
SELECT
        slowest_day_sale.year,
        slowest_day_sale.month,
        slowest_day_sale.slowest_day,
        slowest_day_sale.slowest_total_q,
        busiest_day_sale.busiest_day,
        busiest_day_sale.busiest_total_q
FROM
        slowest_day_sale
JOIN busiest_day_sale ON slowest_day_sale.year = busiest_day_sale.year
        AND slowest_day_sale.month = busiest_day_sale.month
ORDER BY
        year,
        month;
```

Query 3

```
WITH total_products AS (
        SELECT
                cust,
                month,
                prod,
                sum(quant) AS sum_prod
        FROM
                sales
        GROUP BY
                cust,
                month,
                prod
),
maximum_product AS (
        SELECT
                total_products.cust,
                total_products.month,
                max(total_products.sum_prod) AS most_fav_prod
        FROM
                total_products
        GROUP BY
                total_products.cust,
                total_products.month
),
minimum_product AS (
        SELECT
                total_products.cust,
                total_products.month,
                min(total_products.sum_prod) AS least_fav_prod
        FROM
                total_products
        GROUP BY
                total_products.cust,
                total_products.month
),
most_favourite_product AS (
        SELECT
                maximum_product.cust,
                maximum_product.month,
                total_products.prod
        FROM
                maximum_product
                JOIN total_products ON total_products.cust = maximum_product.cust
```

```sql
                    AND total_products.month = maximum_product.month
                    AND total_products.sum_prod = maximum_product.most_fav_prod
),
least_favourite_product AS (
        SELECT
                minimum_product.cust,
                minimum_product.month,
                total_products.prod,
                minimum_product.least_fav_prod
        FROM
                minimum_product
        JOIN total_products ON total_products.cust = minimum_product.cust
                AND total_products.month = minimum_product.month
                AND total_products.sum_prod = minimum_product.least_fav_prod
)
SELECT
        least_favourite_product.cust AS customer,
        least_favourite_product.month,
        most_favourite_product.prod AS most_fav_prod,
        least_favourite_product.prod AS least_fav_prod
FROM
        least_favourite_product
JOIN most_favourite_product ON least_favourite_product.cust = most_favourite_product.cust
        AND least_favourite_product.month = most_favourite_product.month
ORDER BY
        least_favourite_product.cust,
        least_favourite_product.month;
```

Query 4

```
WITH quarter1 AS (
        SELECT
                cust,
                prod,
                quant
        FROM
                sales
        WHERE
                month IN ('1', '2', '3')
),
quarter1_avg AS (
        SELECT
                cust,
                prod,
                round(avg(quant)) AS q1_avg
        FROM
                quarter1
        GROUP BY
                cust,
                prod
),
quarter2 AS (
        SELECT
                cust,
                prod,
                quant
        FROM
                sales
        WHERE
                month IN ('4', '5', '6')
),
quarter2_avg AS (
        SELECT
                cust,
                prod,
                round(avg(quant)) AS q2_avg
        FROM
                quarter2
        GROUP BY
                cust,
                prod
),
quarter3 AS (
        SELECT
                cust,
                prod,
                quant
        FROM
                sales
        WHERE
```

```sql
                    month IN ('7', '8', '9')
),
quarter3_avg AS (
        SELECT
                cust,
                prod,
                round(avg(quant)) AS q3_avg
        FROM
                quarter3
        GROUP BY
                cust,
                prod
),
quarter4 AS (
        SELECT
                cust,
                prod,
                quant
        FROM
                sales
        WHERE
                month IN ('10', '11', '12')
),
quarter4_avg AS (
        SELECT
                cust,
                prod,
                round(avg(quant)) AS q4_avg
        FROM
                quarter4
        GROUP BY
                cust,
                prod
),
quarter_averages AS (
        SELECT
                quarter4_avg.cust,
                quarter4_avg.prod,
                quarter1_avg.q1_avg,
                quarter2_avg.q2_avg,
                quarter3_avg.q3_avg,
                quarter4_avg.q4_avg
        FROM
                quarter4_avg
                JOIN quarter3_avg ON quarter4_avg.cust = quarter3_avg.cust
                        AND quarter4_avg.prod = quarter3_avg.prod
                JOIN quarter2_avg ON quarter4_avg.cust = quarter2_avg.cust
                        AND quarter4_avg.prod = quarter2_avg.prod
                JOIN quarter1_avg ON quarter4_avg.cust = quarter1_avg.cust
                        AND quarter4_avg.prod = quarter1_avg.prod
),
average_sum_count AS (
        SELECT
                cust,
```

```
                prod,
                round(avg(quant)) AS average,
        sum(quant) AS total,
        count(quant) AS count
FROM
        sales
GROUP BY
        cust,
        prod
)
SELECT
        average_sum_count.cust AS customer,
        average_sum_count.prod AS product,
        quarter_averages.q1_avg,
        quarter_averages.q2_avg,
        quarter_averages.q3_avg,
        quarter_averages.q4_avg,
        average_sum_count.average,
        average_sum_count.total,
        average_sum_count.count
FROM
        average_sum_count
        JOIN quarter_averages ON average_sum_count.cust = quarter_averages.cust
                AND average_sum_count.prod = quarter_averages.prod
        ORDER BY
                customer,
                product;
```

Query 5

```
WITH quarter1 AS (
        SELECT
                prod,
                quant,
                date
        FROM
                sales
        WHERE
                month IN ('1', '2', '3')
),
quarter1_max AS (
        SELECT
                prod,
                max(quant) AS q1_max
        FROM
                quarter1
        GROUP BY
                prod
),
quarter2 AS (
        SELECT
                prod,
                quant,
                date
        FROM
                sales
        WHERE
                month IN ('4', '5', '6')
),
quarter2_max AS (
        SELECT
                prod,
                max(quant) AS q2_max
        FROM
                quarter2
        GROUP BY
                prod
),
quarter3 AS (
        SELECT
                prod,
                quant,
                date
        FROM
                sales
```

```sql
        WHERE
                month IN ('7', '8', '9')
),

quarter3_max AS (
        SELECT
                prod,
                max(quant) AS q3_max
        FROM
                quarter3
        GROUP BY
                prod
),
quarter4 AS (
        SELECT
                prod,
                quant,
                date
        FROM
                sales
        WHERE
                month IN ('10', '11', '12')
),
quarter4_max AS (
        SELECT
                prod,
                max(quant) AS q4_max
        FROM
                quarter4
        GROUP BY
                prod
),
intermediate1 AS (
        SELECT
                quarter1_max.prod,
                quarter1_max.q1_max,
                quarter1.date
        FROM
                quarter1_max
                JOIN quarter1 ON quarter1_max.prod = quarter1.prod
                        AND quarter1_max.q1_max = quarter1.quant
),
intermediate2 AS (
        SELECT
                quarter2_max.prod,
                quarter2_max.q2_max,
                quarter2.date
        FROM
                quarter2_max
```

```sql
                JOIN quarter2 ON quarter2_max.prod = quarter2.prod
                        AND quarter2_max.q2_max = quarter2.quant
),
intermediate3 AS (
        SELECT
                quarter3_max.prod,
                quarter3_max.q3_max,
                quarter3.date
        FROM
                quarter3_max
        JOIN quarter3 ON quarter3_max.prod = quarter3.prod
                AND quarter3_max.q3_max = quarter3.quant
),
intermediate4 AS (
        SELECT
                quarter4_max.prod,
                quarter4_max.q4_max,
                quarter4.date
        FROM
                quarter4_max
        JOIN quarter4 ON quarter4_max.prod = quarter4.prod
                AND quarter4_max.q4_max = quarter4.quant
)
SELECT
        intermediate4.prod,
        intermediate1.q1_max,
        intermediate1.date,
        intermediate2.q2_max,
        intermediate2.date,
        intermediate3.q3_max,
        intermediate3.date,
        intermediate4.q4_max,
        intermediate4.date
FROM
        intermediate4
JOIN intermediate3 ON intermediate4.prod = intermediate3.prod
JOIN intermediate2 ON intermediate4.prod = intermediate2.prod
JOIN intermediate1 ON intermediate4.prod = intermediate1.prod
ORDER BY
        prod;
```