

• Determine the company's growth volume by the Overall Session and Order Volume; trended in Quarterly review.

```
SELECT YEAR(website_sessions.created_at) AS Year
      , QUARTER(website_sessions.created_at) AS Quarter,
      , COUNT(DISTINCT website_sessions.website_session_id) AS Sessions,
      , COUNT(DISTINCT orders.order_id) AS Orders
  FROM website_sessions
 LEFT JOIN orders ON website_sessions.website_session_id =
orders.website_session_id
 WHERE website_sessions.created_at < '2015-01-01'
 GROUP BY YEAR(website_sessions.created_at),
          QUARTER(website_sessions.created_at)
```

• Demonstrate all the efficiency improvements since the website launch period by Showcasing the:
Session to Order Conversion Rate | Revenue per Order | Revenue per Session; in Quarterly review

```
SELECT YEAR(website_sessions.created_at) AS year
      , QUARTER(website_sessions.created_at) AS Quarter
      , COUNT(DISTINCT orders.order_id)/COUNT(DISTINCT
website_sessions.website_session_id) AS Sess_to_Order_Convr_rate
      , SUM(orders.price_usd)/COUNT(DISTINCT orders.order_id) AS
Revenue_per_Order
      , SUM(orders.price_usd)/COUNT(DISTINCT
website_sessions.website_session_id) AS Revenue_per_Session
  FROM website_sessions
 LEFT JOIN orders ON website_sessions.website_session_id =
orders.website_session_id
 WHERE website_sessions.created_at < '2015-01-01'
 GROUP BY YEAR(website_sessions.created_at),
          QUARTER(website_sessions.created_at)
```

• Showcase the Paid Channels' Traffic Efficiency to Order by Pulling the Quarterly trend for: i.
Gsearch nonbrand ii. Bsearch nonbrand iii. G/Bsearch brand iv. Organic search v. Direct-type-in

```
SELECT MIN(DATE(website_sessions.created_at)) Date_in_quarters
      , COUNT(DISTINCT CASE WHEN utm_source = 'gsearch' AND utm_campaign =
'nonbrand' THEN order_id END) AS Gsearch_nonbrand
      , COUNT(DISTINCT CASE WHEN utm_source = 'bsearch' AND utm_campaign =
'nonbrand' THEN order_id END) AS Bsearch_nonbrand
      , COUNT(DISTINCT CASE WHEN utm_source IN ('gsearch', 'bsearch') AND
utm_campaign = 'brand' THEN order_id END) AS Brand_search
      , COUNT(DISTINCT CASE WHEN utm_source IS NULL AND http_referer IN
('https://www.gsearch.com', 'https://www.bsearch.com') THEN order_id END) AS
Organic_search
      , COUNT(DISTINCT CASE WHEN utm_source IS NULL AND http_referer IS NULL THEN
order_id END) AS Direct_type_in
  FROM website_sessions
 LEFT JOIN orders ON website_sessions.website_session_id =
orders.website_session_id
 WHERE website_sessions.created_at < '2015-01-01'
 GROUP BY YEAR(website_sessions.created_at),
          QUARTER(website_sessions.created_at)
```

• Find all customers who placed at least 1 order in 2017 but did not place any orders in 2018.

```
*****  
SELECT CONTACT_NAME  
, COUNT(*) NUMBER_OF_ORDERS  
, COUNT(CASE WHEN STRFTIME('%Y', ORDER_DATE) = '2017' THEN 1 END) CUST_2017  
, COUNT(CASE WHEN STRFTIME('%Y', ORDER_DATE) = '2018' THEN 1 END) CUST_2018  
FROM CUSTOMERS  
JOIN ORDERS ON ORDERS.CUSTOMER_ID = CUSTOMERS.CUSTOMER_ID  
GROUP BY 1  
HAVING COUNT(CASE WHEN STRFTIME('%Y', ORDER_DATE) = '2017' THEN 1 END) >= 1  
AND COUNT(CASE WHEN STRFTIME('%Y', ORDER_DATE) = '2018' THEN 1 END) = 0  
*****
```

• For each customer label as loyal or not loyal: Loyal = more than 10 orders.

```
*****  
SELECT CONTACT_NAME  
, COUNT(*) AS NUMBER_OF_ORDERS  
, CASE WHEN COUNT(*) > 10 THEN 'LOYAL' ELSE 'N/A' END AS  
LABEL_LOYAL_CUSTOMERS  
FROM CUSTOMERS  
JOIN ORDERS ON ORDERS.CUSTOMER_ID = CUSTOMERS.CUSTOMER_ID  
GROUP BY 1  
*****
```

• Find percent total for each Category

```
*****  
SELECT CATEGORY_NAME  
, AVG(UNIT_PRICE) AS AVG_UNIT_PRICE_FOR_CATEGORY  
, SUM(UNIT_PRICE * QUANTITY) TOTAL_PRICE_PER_CATEGORY  
, SUM(SUM(UNIT_PRICE * QUANTITY)) OVER()  
, SUM(UNIT_PRICE * QUANTITY) / SUM(SUM(UNIT_PRICE * QUANTITY)) OVER()  
FROM CATEGORIES  
JOIN PRODUCTS ON PRODUCTS.CATEGORY_ID = CATEGORIES.CATEGORY_ID  
JOIN ORDER_DETAILS ON ORDER_DETAILS.PRODUCT_ID = PRODUCTS.PRODUCT_ID  
GROUP BY 1  
*****
```

• Calculate the average number of products per product category.

```
*****  
SELECT ROUND(AVG(NUMBER_OF_PRODUCTS), 2) AVG_NUMBER_OF_PRODUCTS_PER_CATEGORY  
FROM  
(SELECT COUNT(PRODUCT_NAME) NUMBER_OF_PRODUCTS  
, CATEGORY_NAME  
FROM PRODUCTS  
JOIN CATEGORIES ON CATEGORIES.CATEGORY_ID = PRODUCTS.CATEGORY_ID  
GROUP BY CATEGORY_NAME) TEMP1  
*****
```

• Calculate average number of employees per manager.

```
*****  
SELECT AVG(NUMBER_EMPLOYEES) AS AVG_NUMBER_OF_EMPLOYEES  
FROM  
(SELECT COUNT(*) NUMBER_EMPLOYEES  
, REPORTS_TO  
FROM EMPLOYEES  
WHERE REPORTS_TO IN (2,5)  
GROUP BY 2) TEMP1  
*****
```

• Calculate the average number of products per product category.

```
*****  
SELECT ROUND(AVG(NUMBER_OF_PRODUCTS), 2) AVG_NUMBER_OF_PRODUCTS_PER_CATEGORY  
FROM  
(SELECT COUNT(PRODUCT_NAME) NUMBER_OF_PRODUCTS  
, CATEGORY_NAME  
FROM PRODUCTS  
JOIN CATEGORIES ON CATEGORIES.CATEGORY_ID = PRODUCTS.CATEGORY_ID  
GROUP BY CATEGORY_NAME) TEMP1  
*****
```

• For each product category, show total revenue and average unit price. Flag categories with average price below a threshold, like \$10.

```
*****  
SELECT CATEGORY_NAME  
, AVG(UNIT_PRICE) AS AVG_UNIT_PRICE_FOR_CATEGORY  
, SUM(UNIT_PRICE * QUANTITY) AS TOTAL_REVENUE  
, CASE WHEN AVG(UNIT_PRICE) < 25  
        THEN 'LESS THAN 25' ELSE 'ABOVE 25'  
    END AS MORE_OR_LESS_THAN_TWENTY_FIVE  
FROM CATEGORIES  
JOIN PRODUCTS ON PRODUCTS.CATEGORY_ID = CATEGORIES.CATEGORY_ID  
JOIN ORDER_DETAILS ON ORDER_DETAILS.PRODUCT_ID = PRODUCTS.PRODUCT_ID  
GROUP BY 1  
*****
```

• Find all orders that are above average order value and label them as either above or below.

```
*****  
SELECT ORDER_ID  
, SUM(QUANTITY * UNIT_PRICE) TOTAL_PRICE_PER_ORDER  
, AVG(SUM(QUANTITY * UNIT_PRICE)) OVER() AOV  
, CASE WHEN  
        SUM(QUANTITY * UNIT_PRICE) > AVG(SUM(QUANTITY * UNIT_PRICE))  
    OVER()  
        THEN 'ABOVE AVG ORDER PRICE'  
        ELSE 'BELOW AVG ORDER PRICE'  
    END AS BELOW_OR_ABOVE  
FROM ORDER_DETAILS  
JOIN PRODUCTS ON PRODUCTS.PRODUCT_ID = ORDER_DETAILS.PRODUCT_ID  
GROUP BY 1  
*****
```

• Identify the customers whose revenue falls below the 10th percentile.

```
*****  
WITH CTE1 AS (SELECT CUSTOMERS.CONTACT_NAME  
, SUM(QUANTITY * UNIT_PRICE) TOTAL_REVENUE  
, SUM(SUM(QUANTITY * UNIT_PRICE)) OVER(ORDER BY SUM(QUANTITY * UNIT_PRICE))  
RUNNING_TOTAL  
, SUM(SUM(QUANTITY * UNIT_PRICE)) OVER() TOTAL_REV  
, SUM(SUM(QUANTITY * UNIT_PRICE)) OVER(ORDER BY SUM(QUANTITY * UNIT_PRICE))  
/ SUM(SUM(QUANTITY * UNIT_PRICE)) OVER() * 100 PERCENTAGE  
FROM CUSTOMERS  
JOIN ORDERS ON ORDERS.CUSTOMER_ID = CUSTOMERS.CUSTOMER_ID  
JOIN ORDER_DETAILS ON ORDER_DETAILS.ORDER_ID = ORDERS.ORDER_ID  
JOIN PRODUCTS ON PRODUCTS.PRODUCT_ID = ORDER_DETAILS.PRODUCT_ID  
GROUP BY 1)  
SELECT CONTACT_NAME  
, RUNNING_TOTAL  
, TOTAL_REV  
, PERCENTAGE  
FROM CTE1  
WHERE PERCENTAGE < 10  
*****
```

• Find customers who have ordered at least one product from every category.

```
*****  
SELECT CUSTOMERS.CUSTOMER_ID  
, COUNT(DISTINCT CATEGORY_ID)  
FROM CUSTOMERS  
JOIN ORDERS ON ORDERS.CUSTOMER_ID = CUSTOMERS.CUSTOMER_ID  
JOIN ORDER_DETAILS ON ORDER_DETAILS.ORDER_ID = ORDERS.ORDER_ID  
JOIN PRODUCTS ON PRODUCTS.PRODUCT_ID = ORDER_DETAILS.PRODUCT_ID  
GROUP BY 1  
HAVING COUNT(DISTINCT CATEGORY_ID) >1  
ORDER BY COUNT(DISTINCT CATEGORY_ID) DESC  
*****
```

• For the customers countries that start with letter "S" find the average number of orders per customer for each country.

```
*****  
SELECT COUNTRY  
, AVG(NUMBER_OF_ORDERS) AVG_NUM_ORDERS_PER_CUST  
FROM  
(SELECT CUSTOMERS.CUSTOMER_ID  
, COUNT(*) NUMBER_OF_ORDERS  
, COUNTRY  
FROM CUSTOMERS  
JOIN ORDERS ON ORDERS.CUSTOMER_ID = CUSTOMERS.CUSTOMER_ID  
WHERE COUNTRY LIKE 'S%'  
GROUP BY 1,3) TEMP  
GROUP BY 1  
*****
```

• Return products that contribute to 80% of the overall Revenue.

```
*****  
WITH CTE1 AS (select PRODUCT_NAME  
, SUM(QUANTITY * UNIT_PRICE) revenue_per_product  
, SUM(sum(quantity * unit_price)) over()  
, SUM(QUANTITY * UNIT_PRICE) / SUM(sum(quantity * unit_price)) over() * 100  
PERCENT_OF_TOTAL  
from products  
join order_details on products.product_id = order_details.product_id  
JOIN ORDERS ON ORDERS.ORDER_ID = ORDER_DETAILS.ORDER_ID  
WHERE ORDER_DATE >= JULIANDAY('2017-01-21')  
GROUP BY 1  
ORDER BY revenue_per_product DESC)  
  
, CTE2 AS (SELECT PRODUCT_NAME  
, REVENUE_PER_PRODUCT  
, PERCENT_OF_TOTAL  
, SUM(PERCENT_OF_TOTAL) OVER(ORDER BY PERCENT_OF_TOTAL DESC) RUNNING_TOTAL  
FROM CTE1)  
  
SELECT *  
FROM CTE2  
WHERE RUNNING_TOTAL <=81  
*****
```

• Find users who were active for 4 consecutive days.

```
*****  
WITH customer_orders AS (  
    SELECT  
        customerid,  
        CAST(orderdate AS date) AS order_date  
    FROM orders  
    GROUP BY customerid, CAST(orderdate AS date)  
,  
ordered_dates AS (  
    SELECT  
        customerid,  
        order_date,  
        ROW_NUMBER() OVER (PARTITION BY customerid ORDER BY order_date) AS rn  
    FROM customer_orders  
,  
grouped_dates AS (  
    SELECT  
        customerid,  
        order_date,  
        order_date - (rn * INTERVAL '1 day') AS grp_key  
    FROM ordered_dates  
)  
SELECT  
    customerid,  
    MIN(order_date) AS start_date,  
    MAX(order_date) AS end_date,  
    COUNT(*) AS consecutive_days  
FROM grouped_dates  
GROUP BY customerid, grp_key  
HAVING COUNT(*) >= 4  
ORDER BY customerid, start_date;  
*****
```

• Find Number of orders related to the Beverages category for each customer

```
*****  
SELECT FIRST_NAME ||' '|LAST_NAME  
, count(DISTINCT O.ORDER_ID)  
FROM EMPLOYEES E  
JOIN ORDERS O ON O.EMPLOYEE_ID = E.EMPLOYEE_ID  
JOIN ORDER_DETAILS OD ON OD.ORDER_ID = O.ORDER_ID  
JOIN PRODUCTS P ON P.PRODUCT_ID = OD.PRODUCT_ID  
JOIN CATEGORIES C ON C.CATEGORY_ID = P.CATEGORY_ID  
WHERE CATEGORY_NAME = 'Beverages'  
GROUP BY 1  
*****
```

• Add Columns that show Product Name and Revenue for worst selling Product

```
*****  
WITH top_income AS (  
    SELECT CATEGORY_NAME  
    , PRODUCT_NAME  
    , SUM(UNIT_PRICE * QUANTITY) AS REVENUE  
    , RANK() OVER (PARTITION BY CATEGORY_NAME ORDER BY SUM(UNIT_PRICE * QUANTITY)  
DESC) RK  
FROM CATEGORIES  
JOIN PRODUCTS ON PRODUCTS.CATEGORY_ID = CATEGORIES.CATEGORY_ID  
JOIN ORDER_DETAILS ON ORDER_DETAILS.PRODUCT_ID = PRODUCTS.PRODUCT_ID  
GROUP BY 1,2      )  
  
,lowest_income AS (  
    SELECT CATEGORY_NAME  
    , PRODUCT_NAME  
    , SUM(UNIT_PRICE * QUANTITY) AS REVENUE  
    , RANK() OVER (PARTITION BY CATEGORY_NAME ORDER BY SUM(UNIT_PRICE * QUANTITY)  
ASC) RK2  
FROM CATEGORIES  
JOIN PRODUCTS ON PRODUCTS.CATEGORY_ID = CATEGORIES.CATEGORY_ID  
JOIN ORDER_DETAILS ON ORDER_DETAILS.PRODUCT_ID = PRODUCTS.PRODUCT_ID  
GROUP BY 1,2)  
  
SELECT top_income.CATEGORY_NAME  
    , top_income.PRODUCT_NAME as highest_selling_product  
    , top_income.REVENUE as highest_selling_product_price  
    , lowest_income.product_name as lowest_selling_product  
    , lowest_income.revenue as lowest_selling_product_price  
FROM top_income  
JOIN lowest_income ON lowest_income.CATEGORY_NAME = top_income.CATEGORY_NAME  
WHERE RK = 1  
AND RK2 = 1  
*****
```

• For each employee, calculate their total sales revenue for each quarter of the year 2016.
The output should include the employee's name and four separate columns for the total sales in Quarter 1, Quarter 2, Quarter 3, and Quarter 4. If an employee had no sales in a particular quarter, the value should be

```
*****  
SELECT FIRST_NAME || ' ' || LAST_NAME  
    ,SUM(QUANTITY * UNIT_PRICE) TOTAL_REVENUE  
    ,SUM(CASE WHEN  
        STRFTIME('%m',ORDER_DATE) IN ('01','02','03') THEN QUANTITY * UNIT_PRICE END)  
AS Q1  
    ,SUM(CASE WHEN  
        STRFTIME('%m',ORDER_DATE) IN ('04','05','06') THEN QUANTITY * UNIT_PRICE END)  
AS Q2  
    ,SUM(CASE WHEN  
        STRFTIME('%m',ORDER_DATE) IN ('07','08','09') THEN QUANTITY * UNIT_PRICE END)  
AS Q3  
    ,SUM(CASE WHEN  
        STRFTIME('%m',ORDER_DATE) IN ('10','11','12') THEN QUANTITY * UNIT_PRICE END)  
AS Q4  
FROM EMPLOYEES  
JOIN ORDERS ON ORDERS.EMPLOYEE_ID = EMPLOYEES.EMPLOYEE_ID  
JOIN ORDER_DETAILS ON ORDER_DETAILS.ORDER_ID = ORDERS.ORDER_ID  
JOIN PRODUCTS ON PRODUCTS.PRODUCT_ID = ORDER_DETAILS.PRODUCT_ID  
GROUP BY 1  
*****
```

• For each employee, calculate their total sales revenue in 2016 and 2017, and compute the percentage growth.

```
*****  
WITH CTE1 AS (SELECT FIRST_NAME  
,LAST_NAME  
,SUM(CASE WHEN STRFTIME('%Y',ORDER_DATE) = '2016'  
        THEN QUANTITY * UNIT_PRICE END)AS REVENUE_2016  
,SUM(CASE WHEN STRFTIME('%Y',ORDER_DATE) = '2017'  
        THEN QUANTITY * UNIT_PRICE END)AS REVENUE_2017  
FROM EMPLOYEES  
JOIN ORDERS ON ORDERS.EMPLOYEE_ID = EMPLOYEES.EMPLOYEE_ID  
JOIN ORDER_DETAILS ON ORDER_DETAILS.ORDER_ID = ORDERS.ORDER_ID  
JOIN PRODUCTS ON PRODUCTS.PRODUCT_ID = ORDER_DETAILS.PRODUCT_ID  
GROUP BY 1,2)  
SELECT FIRST_NAME  
,LAST_NAME  
,REVENUE_2016  
,REVENUE_2017  
,((REVENUE_2017 - REVENUE_2016) / REVENUE_2016) * 100 AS PCT_CHANGE  
FROM CTE1  
*****
```

• Calculate month over month increase or decrease

```
*****  
SELECT COUNT(*) NUMBER_OF_ORDERS  
, STRFTIME('%m',order_date) as mnth  
, LAG(COUNT(*)) OVER(ORDER BY STRFTIME('%m',order_date)ASC)  
, (COUNT(*) / (LAG(COUNT(*)) OVER(ORDER BY STRFTIME('%m',order_date)ASC) * 1.0) -  
1)* 100 AS MoM_change  
FROM ORDERS  
group by 2  
*****
```

• For each order number return order value, freight charge, freight charge + order value:

```
*****  
SELECT ORDERS.ORDER_ID  
,SUM(QUANTITY * UNIT_PRICE) AS ORDER_VALUE  
, FREIGHT  
, SUM(QUANTITY * UNIT_PRICE) + FREIGHT AS FREIGHT_PLUS_ORDER_VALUE  
, (SUM(QUANTITY * UNIT_PRICE) - (SUM(QUANTITY * UNIT_PRICE) * DISCOUNT)) + FREIGHT  
AS DISCOUNTED_PRICE  
FROM ORDERS  
JOIN ORDER_DETAILS ON ORDER_DETAILS.ORDER_ID = ORDERS.ORDER_ID  
JOIN PRODUCTS ON PRODUCTS.PRODUCT_ID = ORDER_DETAILS.PRODUCT_ID  
GROUP BY 1,3  
*****
```

• Find all orders that have above average order value and label them as above or below average:

```
*****  
WITH CTE1 AS (  
    SELECT ORDER_ID  
, SUM(QUANTITY * UNIT_PRICE) TOTAL_PRICE_PER_ORDER  
    FROM ORDER_DETAILS  
    JOIN PRODUCTS ON PRODUCTS.PRODUCT_ID = ORDER_DETAILS.PRODUCT_ID  
    GROUP BY 1  
)  
  
, CTE2 AS (  
    SELECT AVG(TOTAL_PRICE_PER_ORDER) AVG_ORDER_VALUE  
    FROM CTE1  
  
)  
SELECT CTE1.ORDER_ID  
, CTE1.TOTAL_PRICE_PER_ORDER  
, AVG_ORDER_VALUE  
, CASE  
    WHEN CTE1.TOTAL_PRICE_PER_ORDER > AVG_ORDER_VALUE  
    THEN 'ABOVE AVG ORDER VALUE'  
    ELSE 'BELOW AVG ORDER VALUE'  
    END AS ABOVE_OR_BELOW  
FROM CTE1, CTE2  
*****
```

• Find the customer who placed orders over the longest span of time (from first order to most recent)

```
*****  
SELECT CONTACT_NAME  
, MIN(ORDER_DATE) FIRST_ORDER_DATE  
, MAX(ORDER_DATE) MOST_RECENT_ORDER_DATE  
, JULIANDAY(MAX(ORDER_DATE)) - JULIANDAY(MIN(ORDER_DATE)) CUSTOMER_DURATION  
FROM CUSTOMERS  
JOIN ORDERS ON ORDERS.CUSTOMER_ID = CUSTOMERS.CUSTOMER_ID  
GROUP BY 1  
ORDER BY CUSTOMER_DURATION DESC  
LIMIT 1  
*****
```