



Project by

Md Rafi Islam

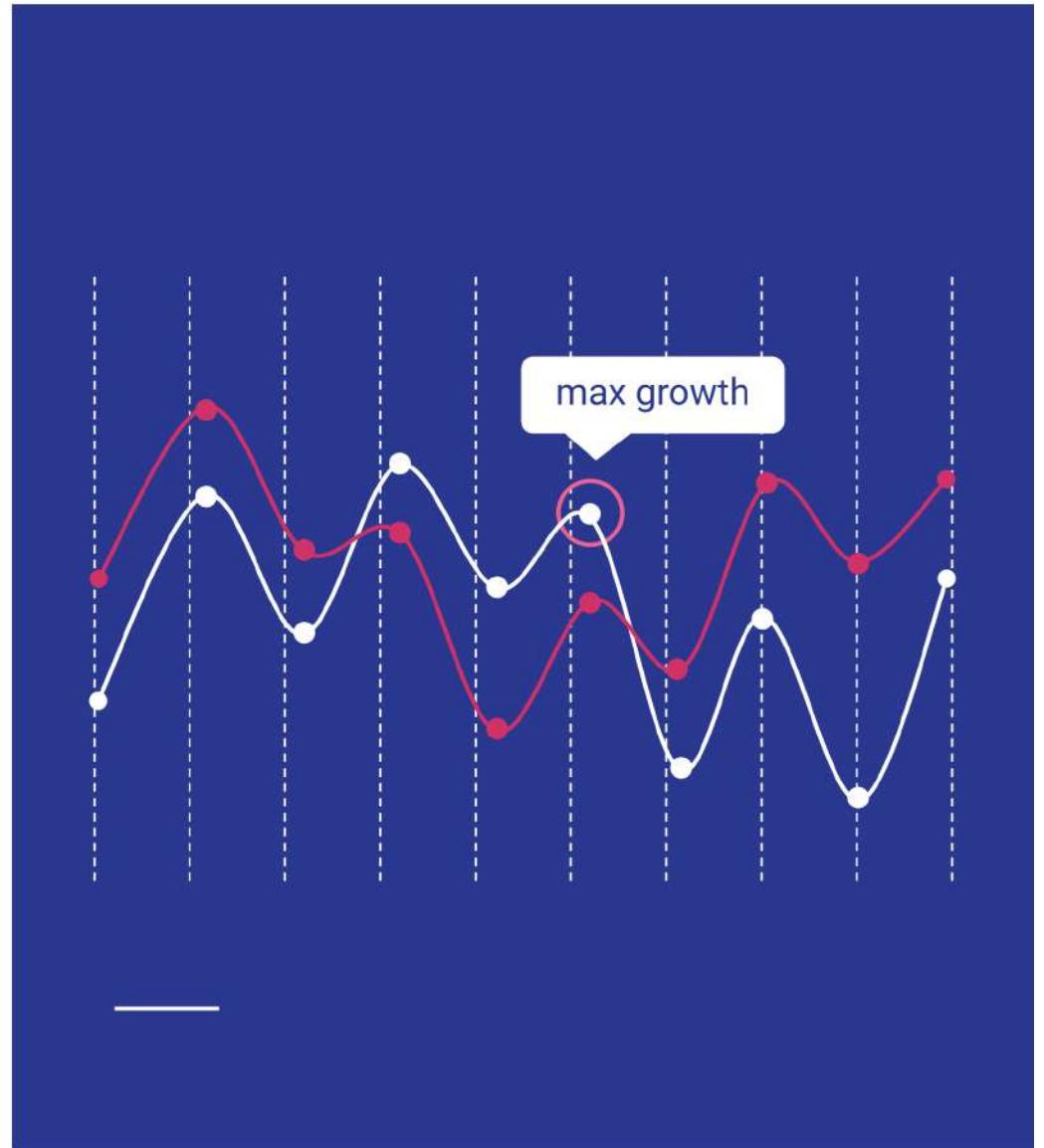


Contact

Email: rakars23@gmail.com



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JENSON USA

Data Analysis using Advanced SQL

Prepared by - Md Rafi Islam



JENSON USA
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About the Company:

FOUNDED : 1994

FOUNDER & CEO : MIKE CACHET

PRODUCTS : MOUNTAIN BIKES, COMPONENTS,
APPAREL, ACCESSORIES, CAMP & HIKE

MISSION : TO BE THE BEST FOR CUSTOMERS,
VENDORS AND EMPLOYEES



Aim Of The Project

As a Data Analyst at Jensen USA, craft SQL queries to derive insights on customer behavior, staff performance, inventory management and store operations.



-- Find the total number of products sold by each store along with the store name.

```
SELECT
    stores.store_name,
    SUM(order_items.quantity) total_products_sold
FROM
    stores
        JOIN
    orders ON stores.store_id = orders.store_id
        JOIN
    order_items ON order_items.order_id = orders.order_id
GROUP BY stores.store_name;
```



	store_name	total_products_sold
▶	Santa Cruz Bikes	1516
	Baldwin Bikes	4779
	Rowlett Bikes	783

-- Calculate the cumulative sum of quantities sold for each product over time.

```
WITH a AS
  (SELECT products.product_name,
  orders.order_date,
  SUM(order_items.quantity) total_orders
  FROM products JOIN order_items
  ON products.product_id = order_items.product_id
  JOIN orders ON orders.order_id = order_items.order_id
  GROUP BY products.product_name,
  orders.order_date)

  SELECT *,SUM(total_orders)
  OVER(PARTITION BY product_name ORDER BY order_date)
  cumulative_sum
  FROM a;
```

product_name	order_date	total_orders	cumulative_sum
Electra Amsterdam Fashion 3i Ladies' - 2017/2018	2018-01-01	1	1
Electra Amsterdam Fashion 3i Ladies' - 2017/2018	2018-01-21	2	3
Electra Amsterdam Fashion 3i Ladies' - 2017/2018	2018-04-30	2	5
Electra Amsterdam Fashion 7i Ladies' - 2017	2017-01-29	2	2
Electra Amsterdam Fashion 7i Ladies' - 2017	2017-02-28	1	3
Electra Amsterdam Fashion 7i Ladies' - 2017	2017-03-03	1	4
Electra Amsterdam Fashion 7i Ladies' - 2017	2017-03-09	2	6
Electra Amsterdam Fashion 7i Ladies' - 2017	2017-04-06	1	7
Electra Amsterdam Fashion 7i Ladies' - 2017	2017-04-15	2	9
Electra Amsterdam Fashion 7i Ladies' - 2017	2017-04-16	1	10
Electra Amsterdam Fashion 7i Ladies' - 2017	2017-06-27	4	14
Electra Amsterdam Fashion 7i Ladies' - 2017	2017-07-15	2	16
Electra Amsterdam Fashion 7i Ladies' - 2017	2017-07-19	2	18
Electra Amsterdam Fashion 7i Ladies' - 2017	2017-08-18	1	19
Electra Amsterdam Fashion 7i Ladies' - 2017	2017-09-21	2	21

-- Find the product with the highest total sales (quantity * price) for each category.

```
WITH a AS
  (SELECT categories.category_name,
  products.product_name,
  SUM(order_items.quantity * order_items.list_price) sales
  FROM order_items JOIN products
  ON order_items.product_id = products.product_id
  JOIN categories
  ON categories.category_id = products.category_id
  GROUP BY categories.category_name,
  products.product_name)

SELECT * FROM (SELECT *, RANK()
OVER(PARTITION BY category_name ORDER BY sales DESC) rnk FROM a)b
WHERE rnk = 1;
```

category_name	product_name	sales	rnk
Children Bicycles	Electra Girl's Hawaii 1 (20-inch) - 2015/2016	4619846.00	1
Comfort Bicycles	Electra Townie Original 7D EQ - 2016	8039866.00	1
Cruisers Bicycles	Electra Townie Original 7D EQ - 2016	9359844.00	1
Cyclocross Bicycles	Surly Straggler 650b - 2016	25382949.00	1
Electric Bikes	Trek Conduit+ - 2016	43499855.00	1
Mountain Bikes	Trek Slash 8 275 - 2016	61599846.00	1
Road Bikes	Trek Domane SLR 6 Disc - 2017	23649957.00	1

-- Find the customer who spent the most money on orders.

```
SELECT  
    orders.customer_id,  
    SUM(order_items.quantity * order_items.list_price) sales  
FROM  
    orders  
    JOIN  
    order_items ON orders.order_id = order_items.order_id  
GROUP BY orders.customer_id  
ORDER BY sales DESC  
LIMIT 1;
```

Md Rafi Islam www.linkedin.com/in/mrfi-islam-mu



	customer_id	sales
▶	10	3780184.00

-- Find the highest-priced product for each category name.

```
WITH product_rank_cte AS ( SELECT
    c.category_id,
    c.category_name,
    p.product_id,
    p.product_name,
    p.list_price,
    RANK() OVER (PARTITION BY c.category_id ORDER BY p.list_price DESC) AS prod_rank
    FROM products p JOIN categories c USING (category_id)

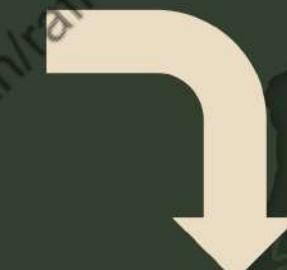
    SELECT
        category_id,
        category_name,
        product_id,
        product_name,
        list_price
        FROM product_rank_cte WHERE prod_rank = 1;
```



category_id	category_name	product_id	product_name	list_price
1	Children Bicycles	98	Electra Straight 8 3i (20-inch) - Boys' - 2017	48999.00
1	Children Bicycles	100	Electra Townie 3i EQ (20-inch) - Boys' - 2017	48999.00
1	Children Bicycles	280	Trek Superfly 24 - 2017/2018	48999.00
2	Comfort Bicycles	303	Electra Townie Go! 8i - 2017/2018	259999.00
3	Cruisers Bicycles	251	Electra Townie Commute Go! - 2018	299999.00
3	Cruisers Bicycles	252	Electra Townie Commute Go! Ladies' - 2018	299999.00
4	Cyclocross Bicycles	207	Trek Boone 7 Disc - 2018	399999.00
5	Electric Bikes	61	Trek Powerfly 8 FS Plus - 2017	499999.00
5	Electric Bikes	203	Trek Powerfly 7 FS - 2018	499999.00
5	Electric Bikes	205	Trek Super Commuter + 8S - 2018	499999.00
6	Mountain Bikes	43	Trek Fuel EX 9.8 275 Plus - 2017	529999.00
6	Mountain Bikes	47	Trek Remedy 9.8 - 2017	529999.00
7	Road Bikes	155	Trek Domane SLR 9 Disc - 2018	1199999.00

-- Find the total number of orders placed by each customer per store.

```
SELECT
    stores.store_name,
    customers.customer_id,
    CONCAT(customers.first_name, ' ', customers.last_name) full_name,
    COUNT(orders.order_id) total_orders
FROM
    customers
        JOIN
    orders ON customers.customer_id = orders.customer_id
        JOIN
    stores ON stores.store_id = orders.store_id
GROUP BY stores.store_name , customers.customer_id ,
CONCAT(customers.first_name, ' ',customers.last_name)
ORDER BY full_name;
```



store_name	customer_id	full_name	total_orders
Baldwin Bikes	1174	Aaron Knapp	1
Baldwin Bikes	338	Abbey Pugh	1
Baldwin Bikes	75	Abby Gamble	2
Rowlett Bikes	1224	Abram Copeland	1
Santa Cruz Bikes	673	Adam Henderson	1
Baldwin Bikes	1085	Adam Thornton	1
Baldwin Bikes	195	Addie Hahn	1
Santa Cruz Bikes	1261	Adelaida Hancock	1
Baldwin Bikes	22	Adelle Larsen	2
Baldwin Bikes	1023	Adena Blake	1
Baldwin Bikes	1412	Adrienne Hunter	1

-- Find the names of staff members who have not made any sales.

```
SELECT  
    staff_id, first_name, last_name  
FROM  
    staffs  
WHERE  
    staff_id NOT IN (SELECT DISTINCT  
                      staff_id  
                  FROM  
                  orders);
```



staff_id	first_name	last_name
1	Fabiola	Jackson
4	Virgie	Wiggins
5	Jannette	David
10	Bernardine	Houston
NULL	NULL	NULL

-- Find the top 3 most sold products in terms of quantity.

```
SELECT
    p.product_id, product_name, SUM(quantity) total_quantity
FROM
    order_items o
        JOIN
    products p USING (product_id)
GROUP BY product_id
ORDER BY total_quantity DESC
LIMIT 3;
```



product_id	product_name	total_quantity
6	Surly Ice Cream Truck Frameset - 2016	167
13	Electra Cruiser 1 (24-Inch) - 2016	157
16	Electra Townie Original 7D EQ - 2016	156

-- Find the median value of the price list.

```
• WITH list_price_cte AS (
    SELECT list_price,
    ROW_NUMBER() OVER (ORDER BY list_price) price_rank,
    COUNT(*) OVER () AS total_count FROM products)

    SELECT CASE
    WHEN total_count % 2 = 0 THEN
        (SELECT AVG(list_price) FROM list_price_cte
        WHERE price_rank IN (total_count/2, total_count/2+1))
    ELSE (SELECT list_price
        FROM list_price_cte
        WHERE price_rank = (total_count+1)/2)
    END AS median

    FROM list_price_cte
    LIMIT 1;
```



median
74999.00

-- List all products that have never been ordered, using 'Exists' operator.

- **SELECT**

```
p.product_id, product_name
FROM
products p
WHERE
NOT EXISTS( SELECT
    1
FROM
order_items ot
WHERE
ot.product_id = p.product_id);
```



product_id	product_name
1	Trek 820 - 2016
121	Surly Krampus Frameset - 2018
125	Trek Kids' Dual Sport - 2018
154	Trek Domane SLR 6 Disc Women's - 2018
195	Electra Townie Go! 8i Ladies' - 2018
267	Trek Precaliber 12 Girl's - 2018
284	Electra Savannah 1 (20-inch) - Girl's - 2018
291	Electra Sweet Ride 1 (20-inch) - Girl's - 2018
316	Trek Checkpoint ALR 4 Women's - 2019
317	Trek Checkpoint ALR 5 - 2019
318	Trek Checkpoint ALR 5 Women's - 2019
319	Trek Checkpoint SL 5 Women's - 2019

-- List the names of staff members who have made more sales than the average number of sales by all staff members.

```
• WITH a AS (select staffs.staff_id,  
COALESCE(sum(order_items.quantity*order_items.list_price),0) sales  
FROM staffs LEFT JOIN orders  
ON staffs.staff_id = orders.staff_id  
LEFT JOIN order_items  
ON order_items.order_id = orders.order_id  
GROUP BY staffs.staff_id)  
  
SELECT * FROM a WHERE sales > (SELECT AVG(sales) FROM a);
```



	staff_id	sales
▶	3	95272226.00
	6	293888873.00
	7	288735348.00

-- Identify the customers who have ordered all types of products
(i.e., from every category).

```
SELECT
    orders.customer_id,
    customers.first_name,
    customers.last_name
FROM
    order_items
        JOIN
    orders USING (order_id)
        JOIN
    products ON order_items.product_id = products.product_id
        JOIN
    customers ON orders.customer_id = customers.customer_id
GROUP BY orders.customer_id , customers.first_name , customers.last_name
HAVING COUNT(DISTINCT products.category_id) = (SELECT COUNT(category_id)
    FROM
        categories)
ORDER BY orders.customer_id;
```



	customer_id	first_name	last_name
▶	9	Genoveva	Baldwin

KEY INSIGHTS

1. Customer Behavior

- Identify high-spending customers and their shopping patterns.
- Understand customer loyalty by tracking those who shop across all product categories.

2. Staff Performance

- Highlight underperforming staff members who haven't made any sales.
- Recognize top-performing staff who exceed average sales, encouraging better performance across the team.

3. Inventory Management

- Track product performance by identifying best-sellers and high-revenue products.
- Spot inventory gaps, like products that have never been ordered, and optimize stock.
- Analyze price trends and cumulative sales for informed pricing strategies.

4. Store Operations

- Evaluate store sales performance by comparing product sales across locations.
- Use price data insights like the median value to help with competitive pricing and cost management.

