BIKE STORE

SQL ANALYSIS

Exploring customer and sales data through SQL queries

DATABASE & STRUCTURE

Tables included in the project:

🏷️ **Brands** – Information about bike manufacturers and suppliers

🧩 **Categories** – Product groupings such as mountain, road, and electric bikes

🚲 **Products** – Detailed product data including price and category

👥 **Customers** – Customer details and purchasing behavior

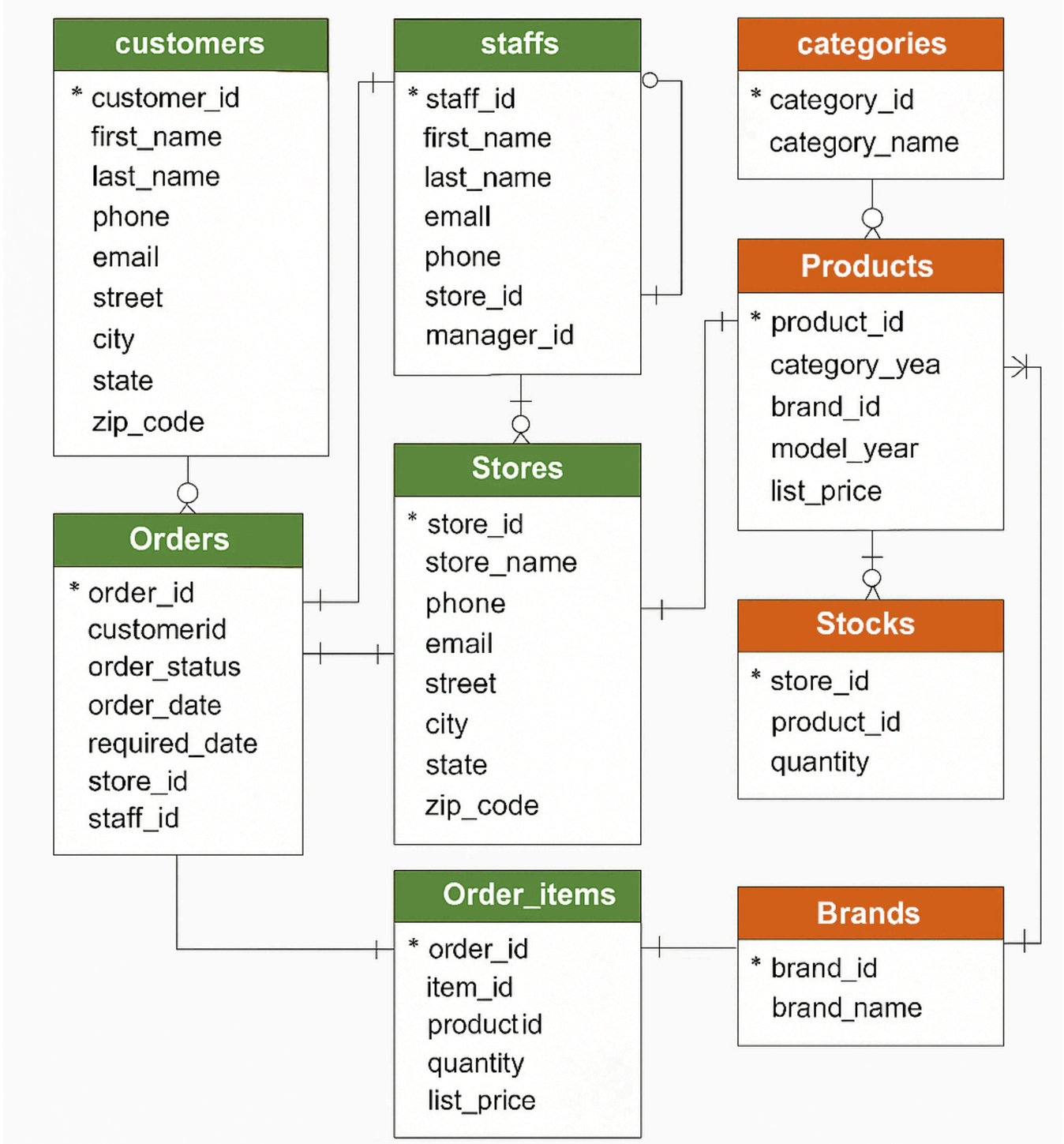
🧾 **Orders** – Transactional sales data

📦 **Order_Items** – Product-level details for each order

👔 **Staffs** – Employee information related to sales and management

🏬 **Stores** – Store locations and performance data

🏪 **Stocks** – Product inventory per store


customers
* customer_id
first_name
last_name
phone
email
street
city
state
zip_code
staffs
* staff_id
first_name
last_name
emall
phone
store_id
manager_id
categories
* category_id
category_name
Products
* product_id
category_yea
brand_id
model_year
list_price
Stores
* store_id
store_name
phone
email
street
city
state
zip_code
Orders
* order_id
customerid
order_status
order_date
required_date
store_id
staff_id
Stocks
* store_id
product_id
quantity
Order_items
* order_id
item_id
productid
quantity
list_price
Brands
* brand_id
brand_name

TOP-SELLING PRODUCT PER CATEGORY (BY REVENUE)

```sql
WITH ProductSales AS (
    SELECT p.product_id,p.product_name,p.category_id,
        SUM(oi.quantity * oi.list_price * (1 - oi.discount)) AS total_revenue
    FROM "Products" p
    JOIN "Order_Items" oi ON p.product_id = oi.product_id
    GROUP BY p.product_id, p.product_name, p.category_id
)
SELECT c.category_name,ps.product_name,ps.total_revenue,
    RANK() OVER(PARTITION BY c.category_name ORDER BY ps.total_revenue DESC) AS sales_rank_in_category
FROM ProductSales ps
JOIN "Categories" c ON ps.category_id = c.category_id
ORDER BY c.category_name, sales_rank_in_category;
```

	category_name	product_name	total_revenue	sales_rank_in_category
1	Children Bicycles	Electra Girl's Hawaii 1 (20-inch) - 2015/2016	41011.6329	1
2	Children Bicycles	Electra Girl's Hawaii 1 (16-inch) - 2015/2016	34728.8137	2
3	Children Bicycles	Electra Cruiser 1 (24-Inch) - 2016	34078.1378	3
4	Children Bicycles	Electra Townie 3i EQ (20-inch) - Boys' - 2017	17125.1505	4
5	Children Bicycles	Electra Girl's Hawaii 1 16" - 2017	12785.5738	5
6	Children Bicycles	Trek Precaliber 24 (21-Speed) - Girls - 2017	12179.652	6
7	Children Bicycles	Electra Townie 7D (20-inch) - Boys' - 2017	12079.8447	7

MOST FREQUENTLY BOUGHT PRODUCT PAIRS

```sql
WITH OrderProducts AS (
    SELECT oi.order_id, p.product_id, p.product_name
    FROM "Order_Items" oi
    JOIN "Products" p ON oi.product_id = p.product_id
),
ProductPairs AS (
    SELECT op1.product_name AS product_1,op2.product_name AS product_2,
        COUNT(*) AS times_ordered_together
    FROM OrderProducts op1
    JOIN OrderProducts op2 ON op1.order_id = op2.order_id
    AND op1.product_id < op2.product_id
    GROUP BY op1.product_name, op2.product_name
)
SELECT *
FROM ProductPairs
WHERE times_ordered_together > 15
ORDER BY times ordered together DESC;
```

	product_1	product_2	times_ordered_together
1	Electra Cruiser 1 (24-Inch) - 2016	Electra Girl's Hawaii 1 (16-inch) - 2015/2016	27
2	Trek Slash 8 27.5 - 2016	Electra Townie Original 21D - 2016	22
3	Electra Townie Original 21D - 2016	Electra Cruiser 1 (24-Inch) - 2016	22
4	Electra Girl's Hawaii 1 (16-inch) - 2015/2016	Electra Girl's Hawaii 1 (20-inch) - 2015/2016	22
5	Electra Cruiser 1 (24-Inch) - 2016	Electra Girl's Hawaii 1 (20-inch) - 2015/2016	21

TOP PERFORMING STORE BY MONTHLY REVENUE

```sql
WITH MonthlyTop AS (
    SELECT
        TO_CHAR(O.Order_date, 'YYYY-MM') AS MONTH,
        S.Store_name,
        ROUND(SUM(Oi.Quantity * Oi.List_price * (1 - Oi.Discount)), 2) AS Total_Revenue,
        COUNT(DISTINCT O.Order_id) AS Total_Orders,
        ROUND(AVG(Oi.Quantity * Oi.List_price * (1 - Oi.Discount)), 2) AS Avg_Revenue,
        ROW_NUMBER() OVER (PARTITION BY TO_CHAR(O.Order_date, 'YYYY-MM')
        ORDER BY SUM(Oi.Quantity * Oi.List_price * (1 - Oi.Discount)) DESC) AS rn
    FROM "Orders" O
    JOIN "Stores" S ON O.Store_id = S.Store_id
    JOIN "Order_Items" Oi ON O.Order_id = Oi.Order_id
    GROUP BY MONTH, S.Store_name
)
SELECT MONTH, Store_name, Total_Orders, Total_Revenue, Avg_Revenue
FROM MonthlyTop
WHERE rn = 1
ORDER BY MONTH;
```

	month	store_name	total_orders	total_revenue	avg_revenue
1	2016-01	Baldwin Bikes	34	132894.3	1265.66
2	2016-02	Baldwin Bikes	35	102201.91	1032.34
3	2016-03	Baldwin Bikes	39	110338.79	1161.46

YEARLY SALES AND YOY GROWTH

```sql
WITH YearlySales AS (
    SELECT EXTRACT(YEAR FROM o.order_date) AS order_year,
    ROUND(SUM(oi.quantity * oi.list_price * (1 - oi.discount)), 2) AS total_sales
    FROM "Orders" o
    JOIN "Order_Items" oi ON o.order_id = oi.order_id
    GROUP BY order_year
)
SELECT order_year,total_sales,
    COALESCE(
        ROUND((total_sales - LAG(total_sales) OVER (ORDER BY order_year)) /
        LAG(total_sales) OVER (ORDER BY order_year) * 100, 2),0) AS yoy_growth
FROM YearlySales
ORDER BY order_year;
```

	order_year	total_sales	yoy_growth
1	2016	2427378.53	0
2	2017	3447208.24	42.01
3	2018	1814529.79	-47.36

THE 15 LOWEST STOCKED PRODUCTS FOR EACH STORE

```sql
WITH StockRanking AS (
SELECT
        Stk.Store_id, Stk.Product_id, Stk.Quantity,
        ROW_NUMBER() OVER (PARTITION BY Stk.Store_id ORDER BY Stk.Quantity ASC) AS RowNum
      FROM "Stocks" Stk
)
SELECT
    St.Store_name, P.Product_name, SR.Quantity
FROM StockRanking SR
JOIN "Stores" St ON SR.Store_id = St.Store_id
JOIN "Products" P ON SR.Product_id = P.Product_id
WHERE SR.RowNum <= 15
ORDER BY St.Store_name, SR.Quantity DESC;
```

	store_name	product_name	quantity
1	Baldwin Bikes	Trek Remedy 29 Carbon Frameset - 2016	1
2	Baldwin Bikes	Electra Townie Original 21D Ladies' - 2018	1
3	Baldwin Bikes	Trek 820 - 2018	1
4	Baldwin Bikes	Heller Shagamaw GX1 - 2018	1
5	Baldwin Bikes	Heller Shagamaw Frame - 2016	1
6	Baldwin Bikes	Electra Townie Commute Go! - 2018	0

TOTAL ORDERS BY DAY OF THE WEEK

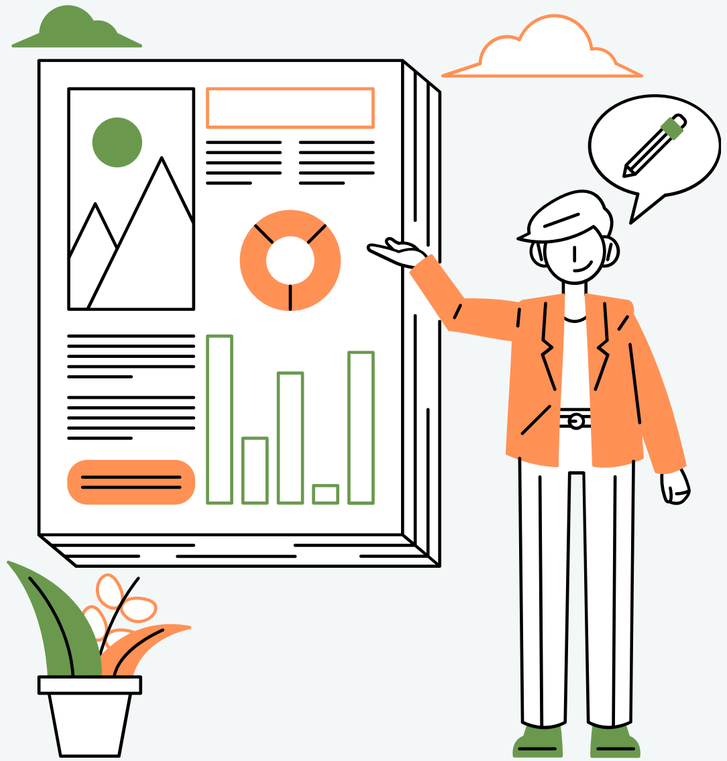
```sql
SELECT
    MOD(EXTRACT(DOW FROM order_date)::INT + 6, 7) + 1 AS day_num,
    TO_CHAR(order_date, 'FMDay') AS day_of_week,
    COUNT(order_id) AS total_orders
FROM "Orders"
GROUP BY day_num, TO_CHAR(order_date, 'FMDay')
ORDER BY day_num;
```

	day_num	day_of_week	total_orders
1	1	Monday	237
2	2	Tuesday	213
3	3	Wednesday	219
4	4	Thursday	232
5	5	Friday	219
6	6	Saturday	229
7	7	Sunday	266

MOST EXPENSIVE PRODUCT PER BRAND

```sql
SELECT brand_name, product_name, list_price
FROM (
    SELECT b.brand_name,p.product_name,p.list_price,
        RANK() OVER (PARTITION BY b.brand_id ORDER BY p.list_price DESC) AS rnk
    FROM "Brands" b
    JOIN "Products" p ON b.brand_id = p.brand_id
)
WHERE rnk = 1;
```

	brand_name	product_name	list_price
1	Electra	Electra Townie Commute Go! - 2018	2999.99
2	Electra	Electra Townie Commute Go! Ladies' - 2018	2999.99
3	Electra	Electra Townie Commute Go! - 2018	2999.99
4	Electra	Electra Townie Commute Go! Ladies' - 2018	2999.99
5	Haro	Haro Shift R3 - 2017	1469.99
6	Heller	Heller Shagamaw GX1 - 2018	2599
7	Heller	Heller Bloodhound Trail - 2018	2599



🔍 INSIGHTS SUMMARY

IN THIS PROJECT, THE BIKESTORES DATABASE WAS ANALYZED TO UNCOVER KEY INSIGHTS INTO **SALES, INVENTORY, CUSTOMER BEHAVIOR, AND STAFF PERFORMANCE.**

THE ANALYSIS IDENTIFIED TOP-PERFORMING STORES, BEST-SELLING PRODUCTS, AND REPEAT CUSTOMERS. STAFF PERFORMANCE AND DISCOUNT STRATEGIES WERE ALSO COMPARED.

OVERALL, THE PROJECT PROVIDED A SQL-BASED OVERVIEW OF SALES, CUSTOMER, AND INVENTORY PERFORMANCE—LAYING THE FOUNDATION FOR MORE EFFECTIVE BUSINESS DECISIONS.

TECH STACK USED

TOOL: POSTGRESQL

SKILLS: WINDOW FUNCTIONS, JOINS, AGGREGATIONS, SUBQUERIES, CTES

FOCUS: SALES PERFORMANCE, INVENTORY OPTIMIZATION, CUSTOMER INSIGHTS

PROJECT REPOSITORY

YOU CAN EXPLORE THE FULL SQL SCRIPTS, DATASET, AND DOCUMENTATION HERE:

GITHUB:
HTTPS://GITHUB.COM/CFRVSLMZ/BIKESTOREANALYSISPOSTGRESQL