Pizza Sales Analysis Using SQL

A Data-Driven Approach to Business Insights

👤 About Me:

My name is Junaid Iqbal Sayed, a tech enthusiast with a background in Engineering and hands-on experience in data analysis, SQL querying, and customer-facing roles. I'm passionate about using data to solve real-world business problems.

📊 About This Project:

In this project, I performed a comprehensive Pizza Sales Analysis using SQL. I:

- Designed and queried a structured database from raw CSV files
- Explored key metrics such as total revenue, most popular pizza types, and order timing
- Derived business insights that could help optimize sales, inventory, and marketing strategies

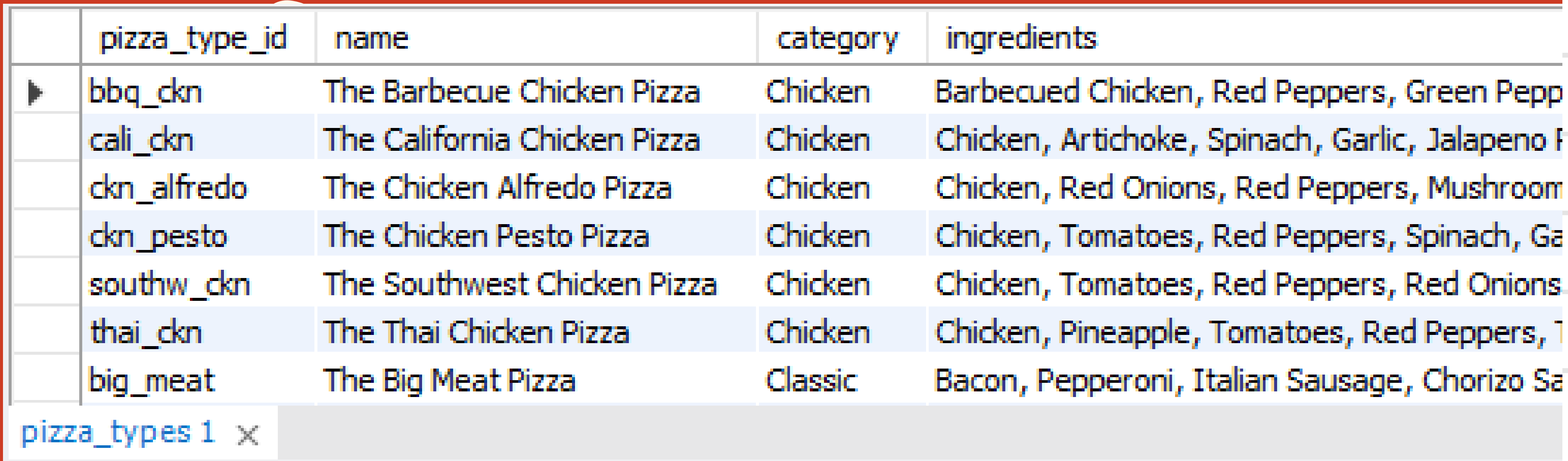
🍕 Project Overview:

- This project involves analyzing the sales performance of Pizza Hut using structured data.
- The goal is to derive actionable business insights from order records, product details, and revenue data, i have used total 8 months of sales data.
- SQL was used extensively to explore trends, customer behavior, and product popularity.

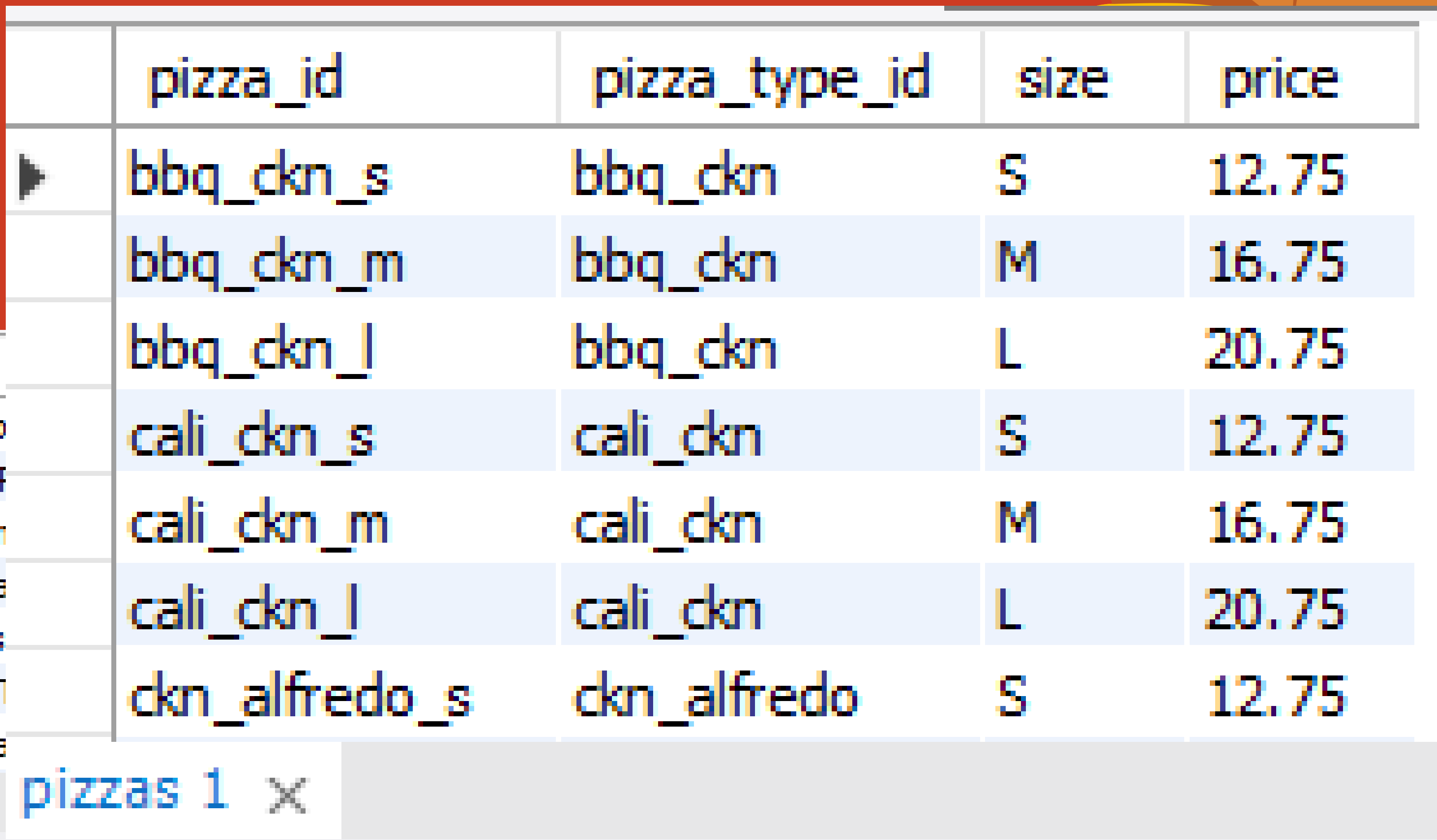
🛠️ Tools & Technologies:

- Database Used: MySQL
- Data Source: CSV files loaded into 4 related tables:
- orders
- order_details
- pizzas
- pizza_types

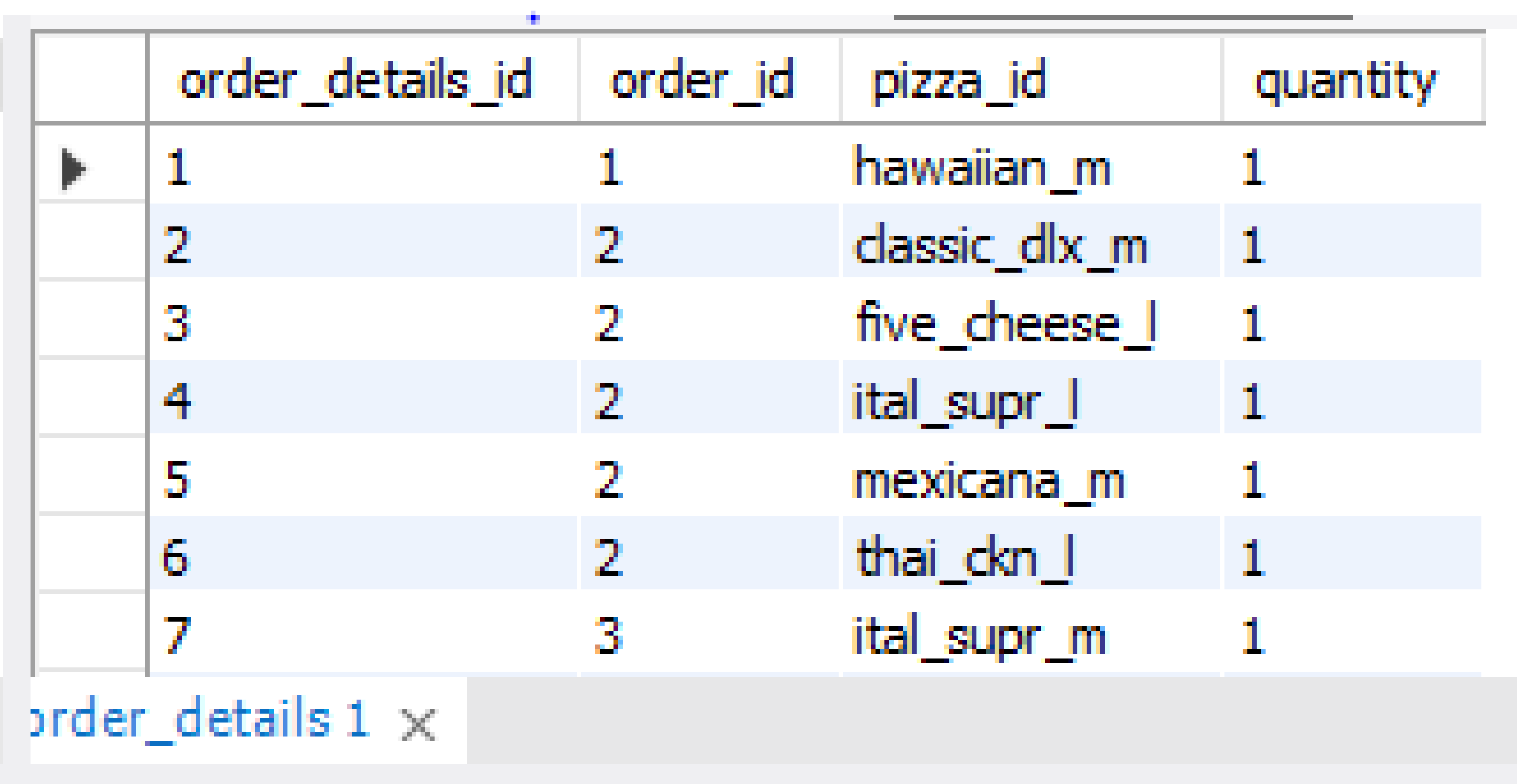
Database Structure



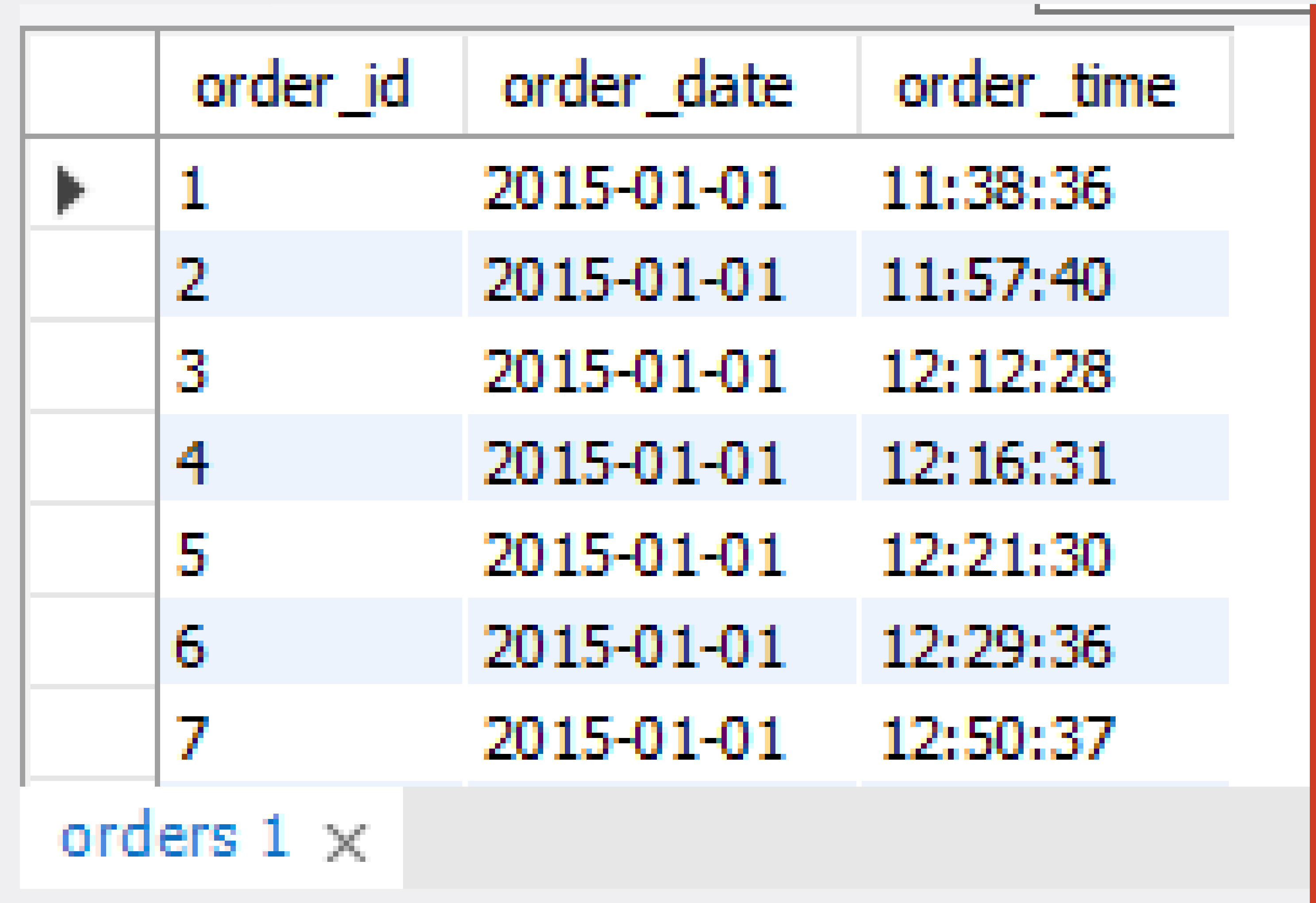
	pizza_type_id	name	category	ingredients
▶	bbq_ckn	The Barbecue Chicken Pizza	Chicken	Barbecued Chicken, Red Peppers, Green Pepp
	cali_ckn	The California Chicken Pizza	Chicken	Chicken, Artichoke, Spinach, Garlic, Jalapeno P
	ckn_alfredo	The Chicken Alfredo Pizza	Chicken	Chicken, Red Onions, Red Peppers, Mushroom
	ckn_pesto	The Chicken Pesto Pizza	Chicken	Chicken, Tomatoes, Red Peppers, Spinach, Ga
	southw_ckn	The Southwest Chicken Pizza	Chicken	Chicken, Tomatoes, Red Peppers, Red Onions
	thai_ckn	The Thai Chicken Pizza	Chicken	Chicken, Pineapple, Tomatoes, Red Peppers, T
	big_meat	The Big Meat Pizza	Classic	Bacon, Pepperoni, Italian Sausage, Chorizo Sa



	pizza_id	pizza_type_id	size	price
▶	bbq_ckn_s	bbq_ckn	S	12.75
	bbq_ckn_m	bbq_ckn	M	16.75
	bbq_ckn_l	bbq_ckn	L	20.75
	cali_ckn_s	cali_ckn	S	12.75
	cali_ckn_m	cali_ckn	M	16.75
	cali_ckn_l	cali_ckn	L	20.75
	ckn_alfredo_s	ckn_alfredo	S	12.75



	order_details_id	order_id	pizza_id	quantity
▶	1	1	hawaiian_m	1
	2	2	classic_dlx_m	1
	3	2	five_cheese_l	1
	4	2	ital_supr_l	1
	5	2	mexicana_m	1
	6	2	thai_ckn_l	1
	7	3	ital_supr_m	1



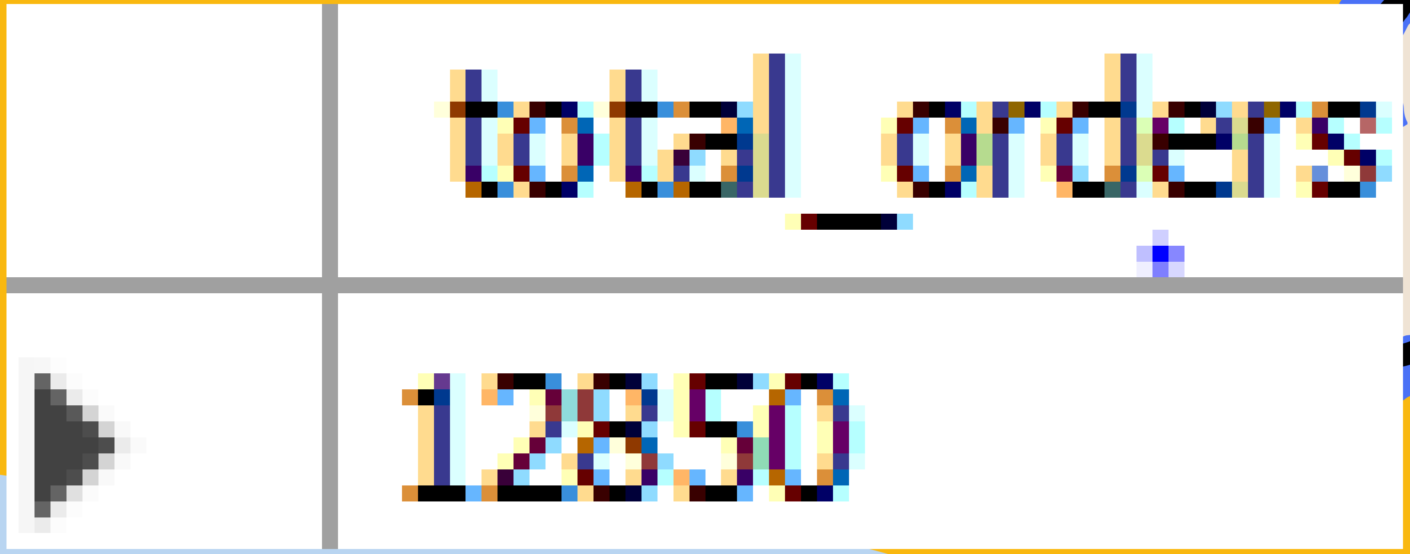
	order_id	order_date	order_time
▶	1	2015-01-01	11:38:36
	2	2015-01-01	11:57:40
	3	2015-01-01	12:12:28
	4	2015-01-01	12:16:31
	5	2015-01-01	12:21:30
	6	2015-01-01	12:29:36
	7	2015-01-01	12:50:37

Total Orders & Revenue

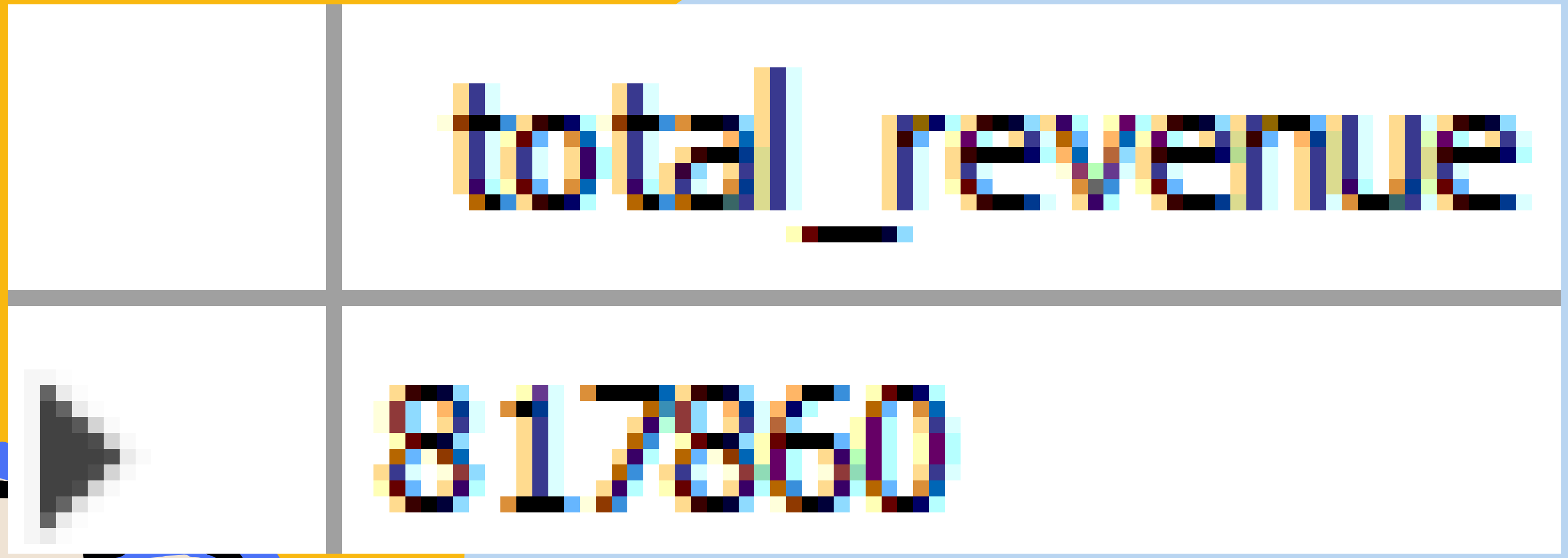
🧾 SQL Queries Used:

- Total Number of Orders:

```
SELECT COUNT(order_id) AS total_orders
FROM orders;
```



	total_orders
▶	12850



	total_revenue
▶	817860

🧾 SQL Queries Used:

- Total Revenue Generated:

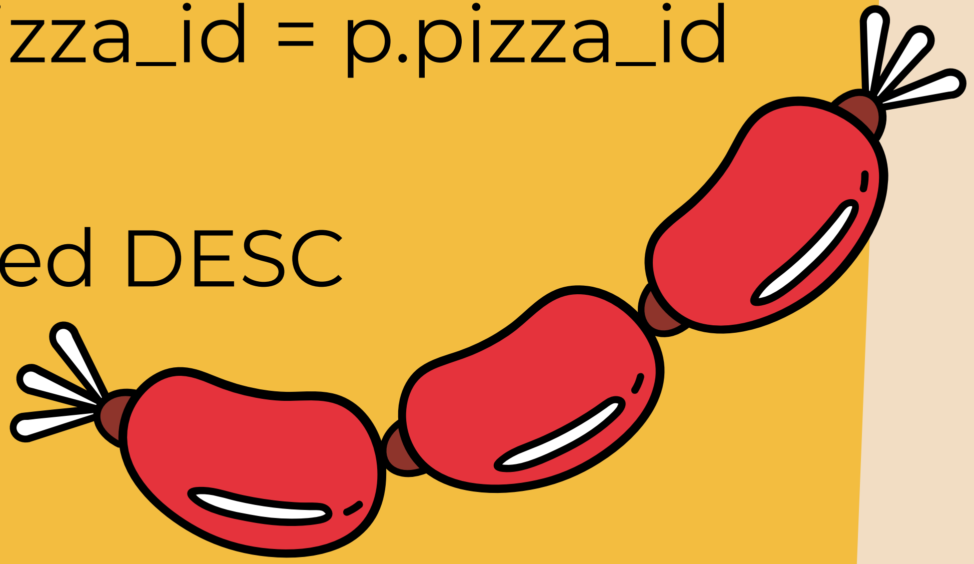
```
SELECT round(sum(p.price * od.quantity),0) AS
total_revenue
FROM order_details od
JOIN pizzas p ON od.pizza_id = p.pizza_id;
```

Top Performers

🍕 Most Ordered Pizza Sizes

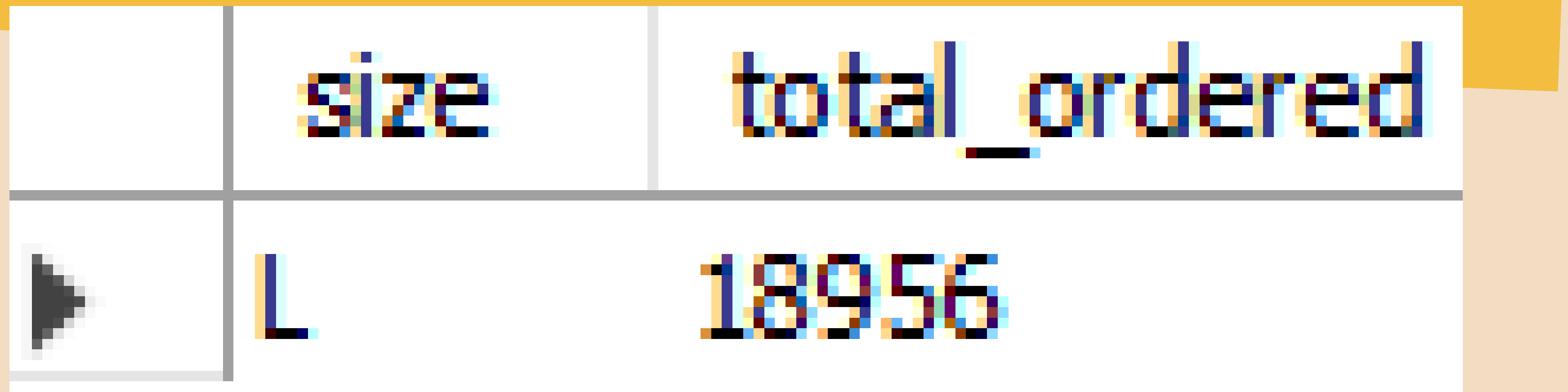
SQL Query:

```
SELECT p.size, SUM(od.quantity) AS
total_ordered
FROM order_details od
JOIN pizzas p ON od.pizza_id = p.pizza_id
GROUP BY p.size
ORDER BY total_ordered DESC
LIMIT 1;
```



🔍 Insight:

The most ordered size is large (L) — ideal for sharing

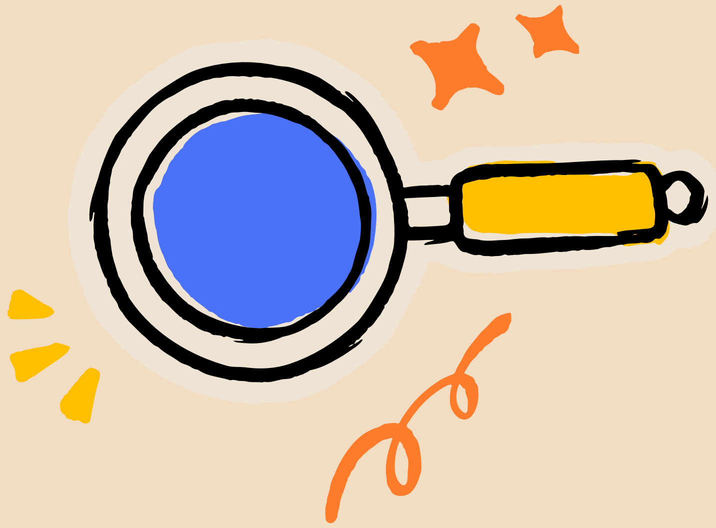


	size	total_ordered
▶	L	18956

💸 Highest-Priced Pizza

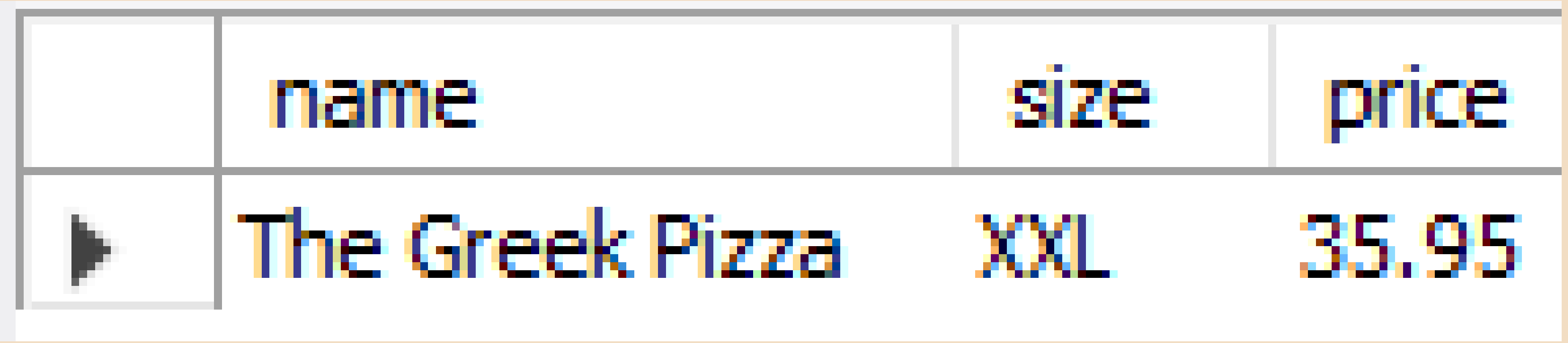
SQL Query:

```
SELECT pt.name, p.size, p.price
FROM pizzas p
JOIN pizza_types pt ON p.pizza_type_id =
pt.pizza_type_id
ORDER BY p.price DESC
LIMIT 1;
```



🔍 Insight:

This item represents a premium offering, possibly a good upsell option.

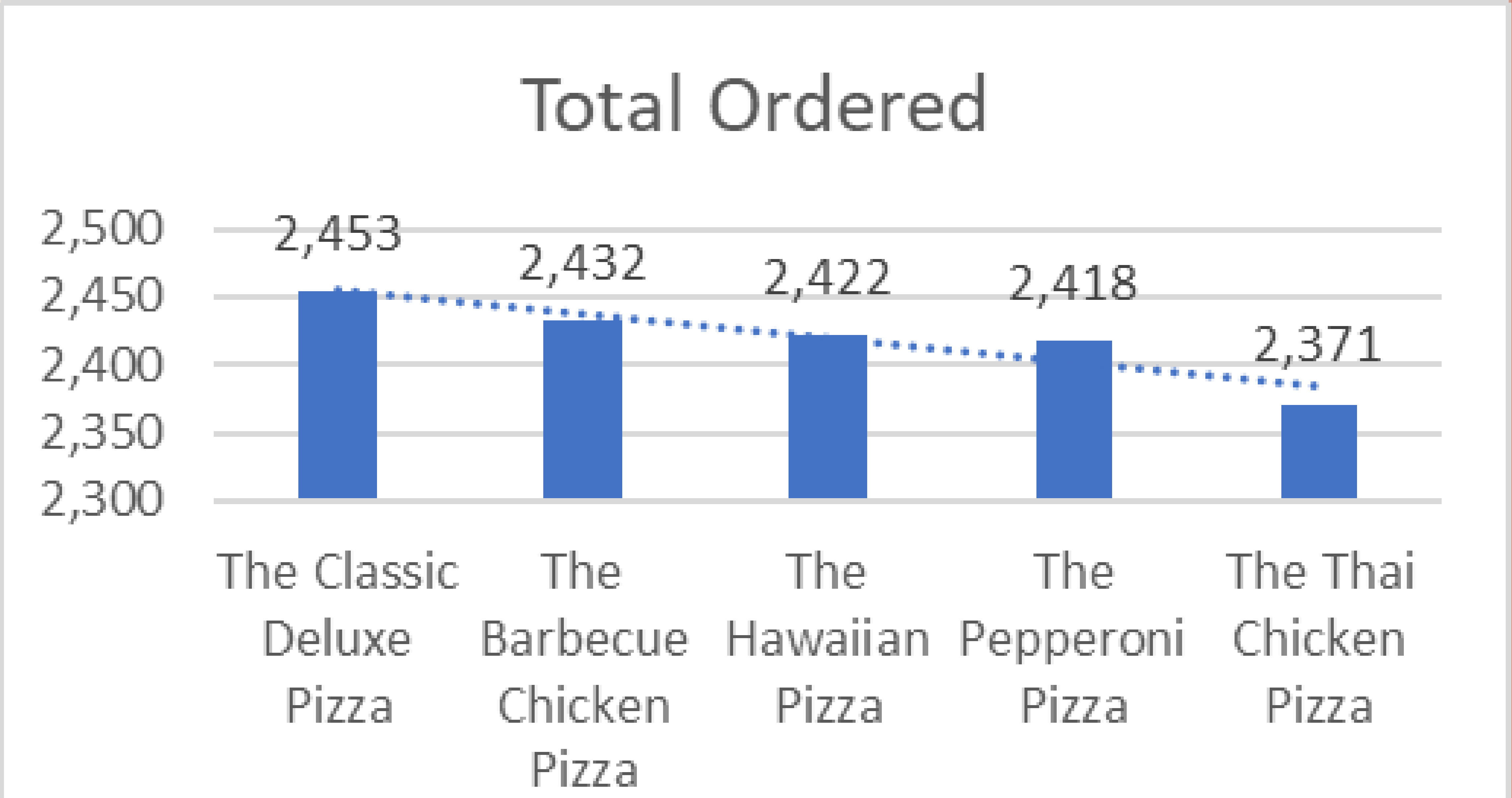


	name	size	price
▶	The Greek Pizza	XXL	35.95

🍕 Top 5 Most Ordered Pizza Types

SQL Query:

```
SELECT pt.name AS pizza_type,
SUM(od.quantity) AS total_ordered
FROM order_details od
JOIN pizzas p ON od.pizza_id = p.pizza_id
JOIN pizza_types pt ON p.pizza_type_id =
pt.pizza_type_id
GROUP BY pt.name
ORDER BY total_ordered DESC
LIMIT 5;
```

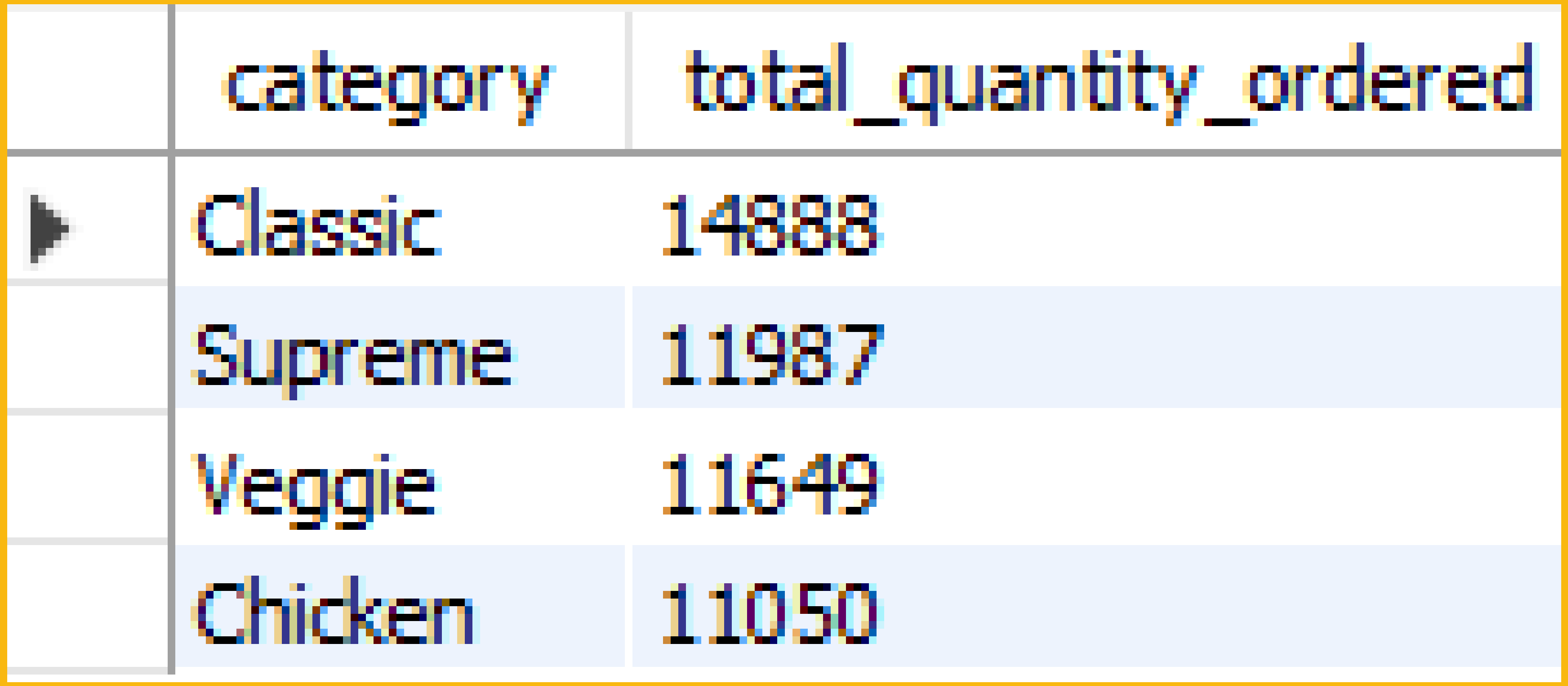


Category-Level Insight

🍕 Category-wise Distribution of Pizzas (Total Quantity)

SQL Query:

```
select pizza_types.category,
sum(order_details.quantity) as
total_quantity_ordered
from order_details
join pizzas on pizzas.pizza_id =
order_details.pizza_id
join pizza_types on pizzas.pizza_type_id =
pizza_types.pizza_type_id
group by pizza_types.category
order by total_quantity_ordered desc;
```

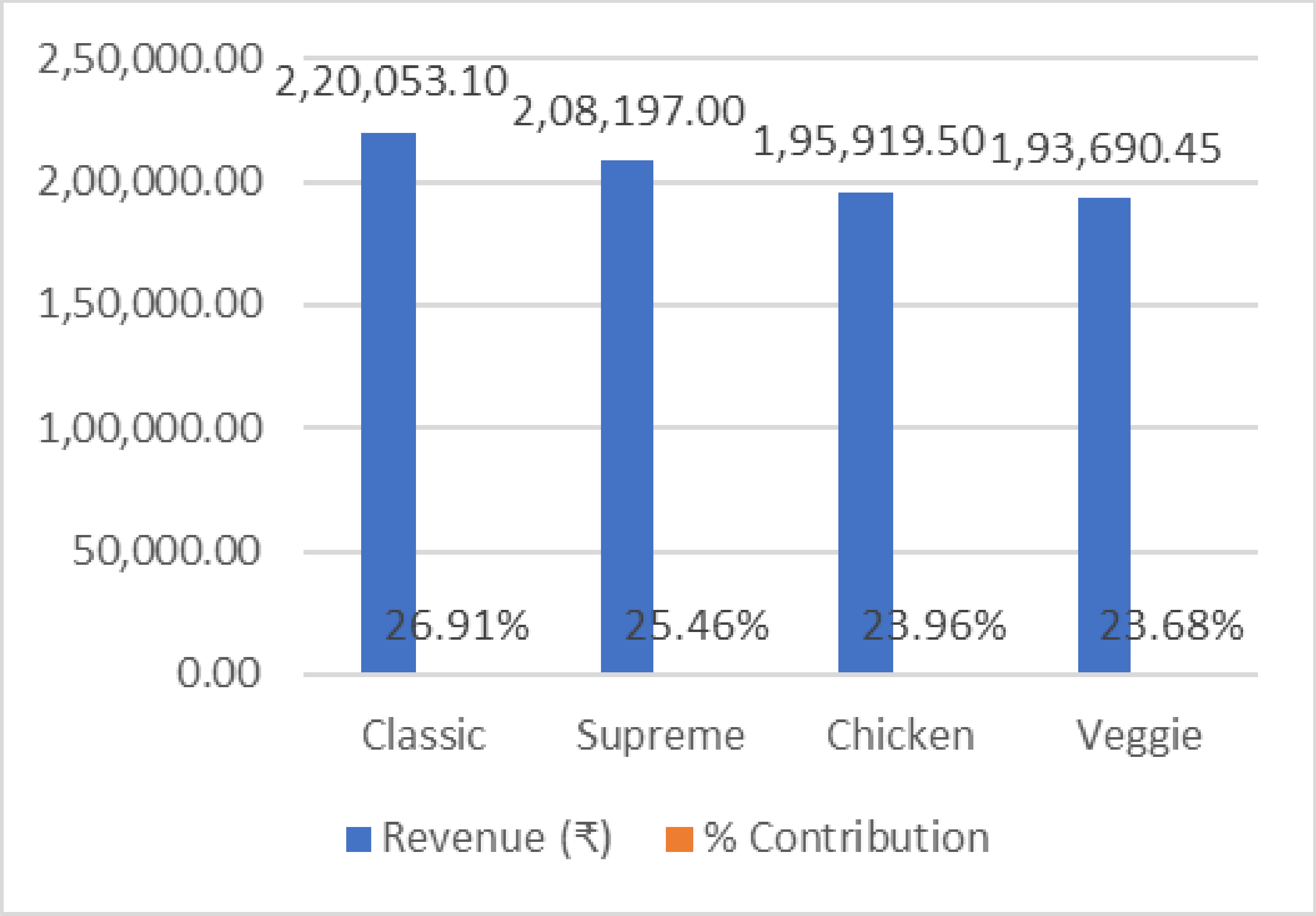


category	total_quantity_ordered
Classic	14888
Supreme	11987
Veggie	11649
Chicken	11050

💰 Category-wise Revenue Contribution (with Percentages)

SQL Query:

```
SELECT
    pt.category,
    ROUND(SUM(p.price * od.quantity), 2) AS
category_revenue,
    ROUND(SUM(p.price * od.quantity) * 100.0 / (
        SELECT SUM(p2.price * od2.quantity)
        FROM order_details od2
        JOIN pizzas p2 ON od2.pizza_id = p2.pizza_id
    ), 2) AS percentage_contribution
FROM order_details od
JOIN pizzas p ON od.pizza_id = p.pizza_id
JOIN pizza_types pt ON p.pizza_type_id =
pt.pizza_type_id
GROUP BY pt.category
ORDER BY percentage_contribution DESC;
```



Time-Based Analysis

🕒 Orders Distribution by Hour of the Day

SQL Query:

```
SELECT HOUR(order_time) AS
order_hour, COUNT(*) AS total_orders
FROM orders
GROUP BY HOUR(order_time)
ORDER BY total_orders desc ;
```

📊 Insight:

Peak Order Hours:

12 PM – 1504 orders
1 PM – 1452 orders
5 PM – 1447 orders
6 PM – 1442 orders

Significant drop after 9 PM and before 11 AM.

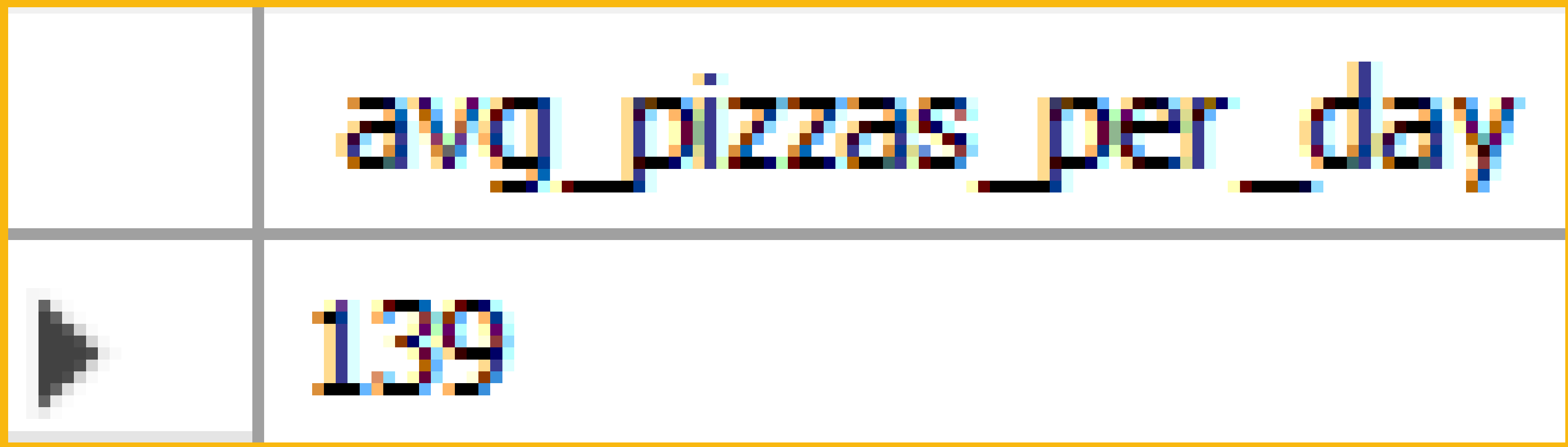
🧠 Interpretation:

Target lunch and evening hours for promotions or combo offers.

📦 Average Number of Pizzas Ordered Per Day

SQL Query:

```
SELECT round(AVG(daily_pizzas),0) AS
avg_pizzas_per_day
FROM (
   SELECT o.order_date, SUM(od.quantity) AS
daily_pizzas
   FROM orders o
   JOIN order_details od ON o.order_id = od.order_id
   GROUP BY o.order_date
) AS daily_totals;
```

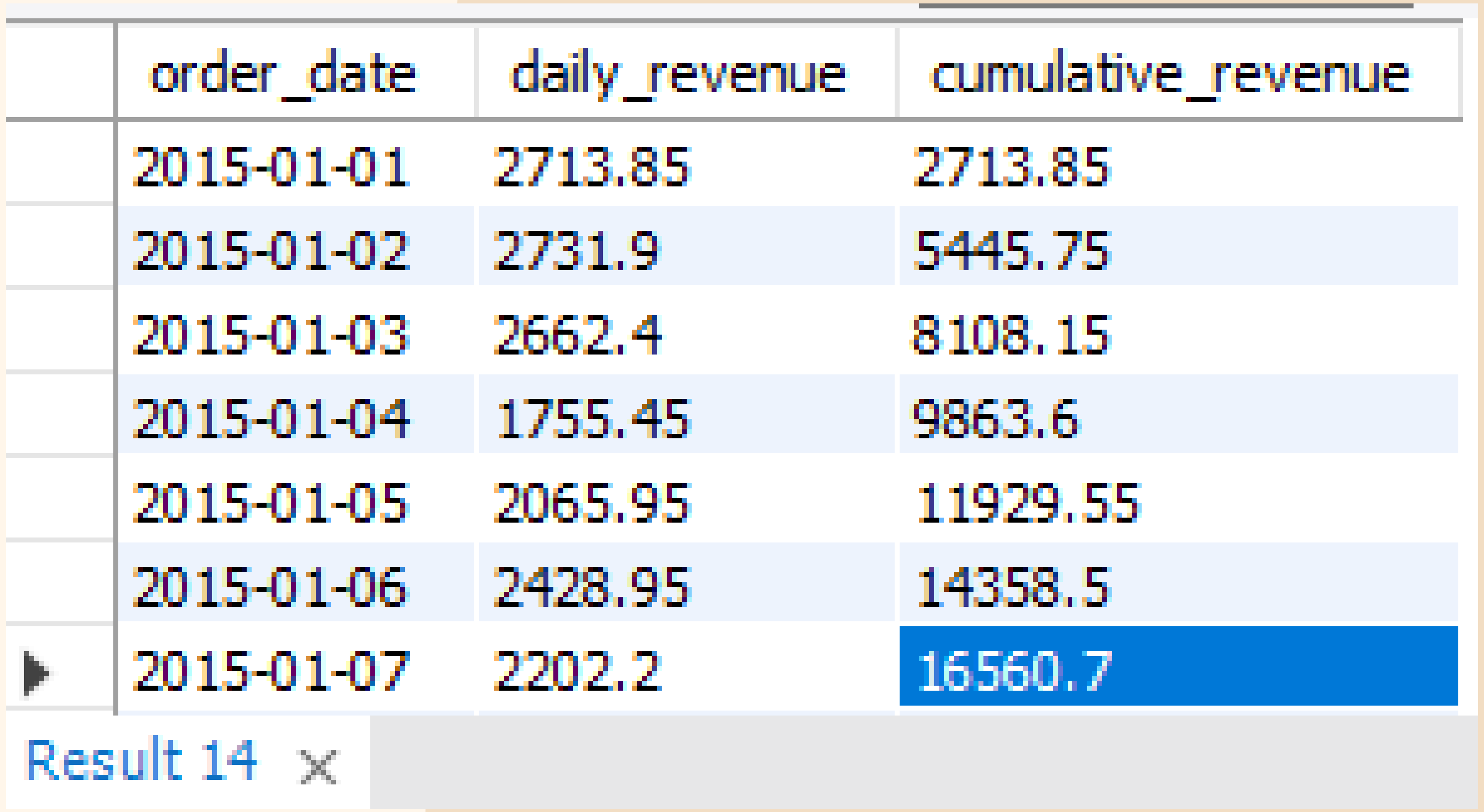


```
   | avg_pizzas_per_day
▶  | 139
```

📈 Cumulative Revenue Over Time

SQL Query:

```
SELECT
    o.order_date,
    ROUND(SUM(p.price * od.quantity), 2) AS daily_revenue,
    ROUND(SUM(SUM(p.price * od.quantity)) OVER (ORDER BY o.order_date), 2) AS
cumulative_revenue
FROM orders o
JOIN order_details od ON o.order_id = od.order_id
JOIN pizzas p ON od.pizza_id = p.pizza_id
GROUP BY o.order_date
ORDER BY o.order_date;
```



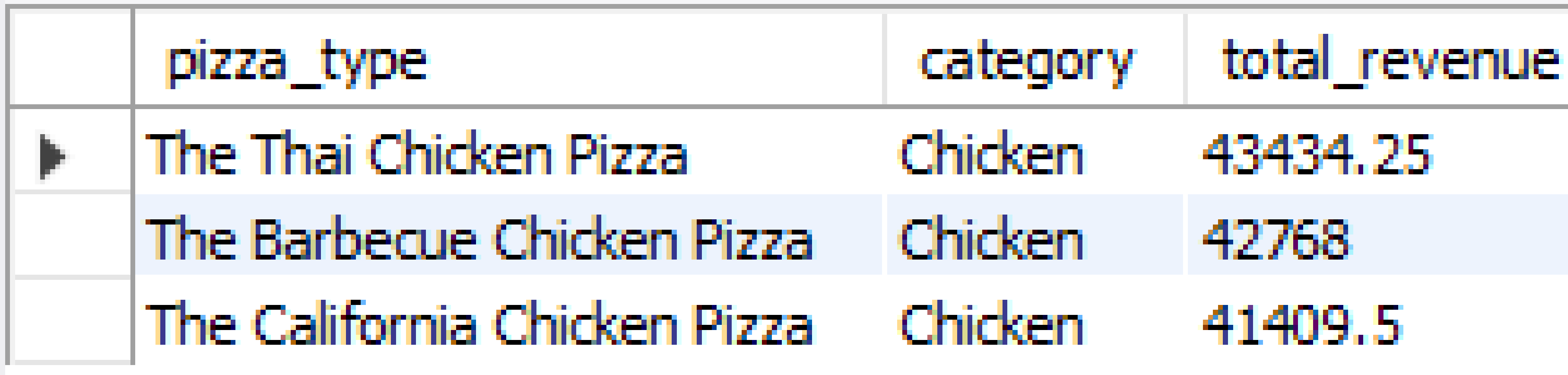
order_date	daily_revenue	cumulative_revenue
2015-01-01	2713.85	2713.85
2015-01-02	2731.9	5445.75
2015-01-03	2662.4	8108.15
2015-01-04	1755.45	9863.6
2015-01-05	2065.95	11929.55
2015-01-06	2428.95	14358.5
2015-01-07	2202.2	16560.7

Revenue by Pizza Type

🍕 Top 3 Pizza Types by Revenue per Category

SQL Query:

```
SELECT pizza_type, category, total_revenue
FROM (
    SELECT
        pt.name AS pizza_type,
        pt.category,
        ROUND(SUM(p.price * od.quantity), 2) AS total_revenue,
        ROW_NUMBER() OVER (PARTITION BY pt.category ORDER
BY SUM(p.price * od.quantity) DESC) AS rank_in_category
    FROM order_details od
    JOIN pizzas p ON od.pizza_id = p.pizza_id
    JOIN pizza_types pt ON p.pizza_type_id = pt.pizza_type_id
    GROUP BY pt.category, pt.name
) ranked
WHERE rank_in_category <= 3
ORDER BY category, total_revenue DESC
limit 3;
```

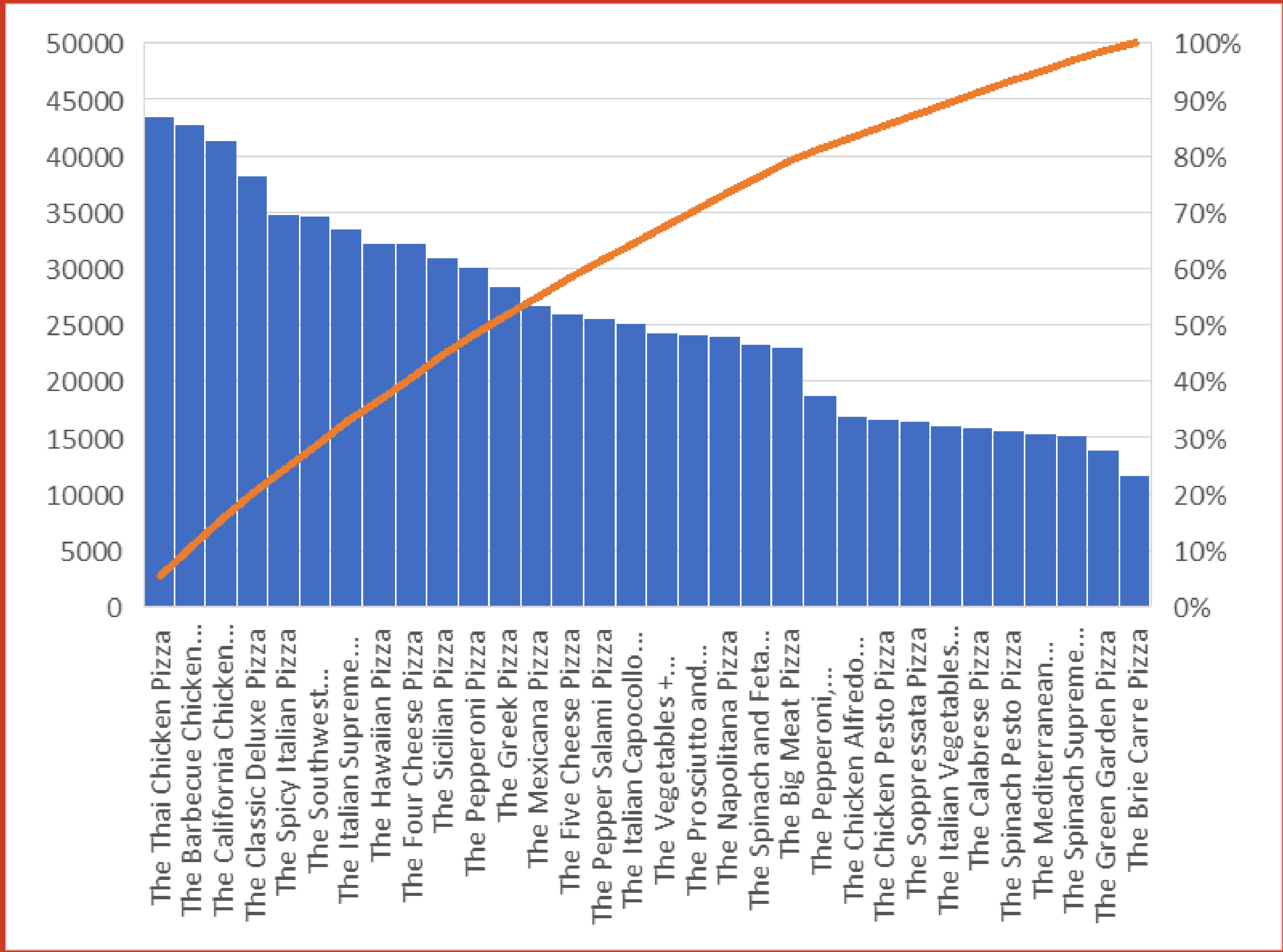


	pizza_type	category	total_revenue
▶	The Thai Chicken Pizza	Chicken	43434.25
	The Barbecue Chicken Pizza	Chicken	42768
	The California Chicken Pizza	Chicken	41409.5

💰 Percentage Contribution of Each Pizza Type

SQL Query:

```
SELECT
    pt.name AS pizza_type,
    ROUND(SUM(p.price * od.quantity), 2) AS revenue,
    ROUND(SUM(p.price * od.quantity) * 100.0 / (
        SELECT SUM(p2.price * od2.quantity)
        FROM order_details od2
        JOIN pizzas p2 ON od2.pizza_id = p2.pizza_id
    ), 2) AS percentage_contribution
FROM order_details od
JOIN pizzas p ON od.pizza_id = p.pizza_id
JOIN pizza_types pt ON p.pizza_type_id =
pt.pizza_type_id
GROUP BY pt.name
ORDER BY percentage_contribution DESC;
```



Business Insights

📦 1. Best-Selling Categories & Pizza Types

Top Revenue-Contributing Categories

- Classic 26.92%
- Chicken 24.95%
- Veggie 24.64%
- Supreme 23.49%

✅ Classic and Supreme dominate the orders
Veggie and Deluxe (Chicken) follow closely.
This helps stock inventory accordingly.

Top 5 Pizza Types by Revenue

1 The Thai Chicken Pizza-Chicken-₹43,434.25
2 The Barbecue Chicken Pizza-Chicken-₹42,768.00
3 The California Chicken Pizza-Chicken-₹41,409.50
4 The Classic Deluxe Pizza-Classic-₹38,180.50
5 The Spicy Italian Pizza-Supreme-₹34,831.25

📝 These five pizzas are your most profitable—use them in featured bundles, homepage banners, and upsells.

⏰ 2. Peak Order Hours

Peak order times are 12–1 PM (Lunch) and 5–6 PM (Snacks / Munching) These are your prime windows for launching time-sensitive promotions and combo offers.

🔻 Orders drop significantly after 9 PM and before 11 AM.

🧠 Interpretation & Actionable Tips

🥗 Lunch: Promote offers by 11:30 AM

🍽️ Dinner/Snacks: Run ads/promos by 5:30 PM

❌ Avoid marketing late at night — ROI drops sharply

Conclusion

🔍 Summary of Findings:

- Peak Revenue Days: Highest sales on weekends and month-end days.
- Top Performing Hours: 12 PM, 1 PM, 5 PM, and 6 PM – ideal for promotions.
- High Revenue Drivers: Classic and chicken pizza category dominate sales.
- Steady Revenue Growth: Consistent daily orders with occasional spikes.

📊 Value of SQL in Business Decision-Making:

- Enabled data-driven insights into customer behavior and sales trends.
- Helped identify high-performing categories, times, and products, even with very large datasets.
- Supported efficient strategy planning across marketing, inventory, and staffing, ensuring decisions are based on accurate, real-time data from massive datasets.

💡 Suggestions:

- Stock Planning: Increase inventory of high-demand items during peak times.
- Targeted Promotions: Focus lunch & evening hours for deals and combos.
- Menu Optimization: Promote top-selling pizza types and profitable combos.
- Operational Efficiency: Prepare staffing around peak hours for fast service.

Thank You

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