

Restaurant Order & Menu Analysis Using SQL

Rhives Technologies – Data Analytics Intern

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Contents:



Project Introduction



Dataset Description



SQL Data Exploration



Key Analysis & Findings



Insights (Data Findings for Each Objective)



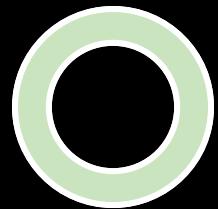
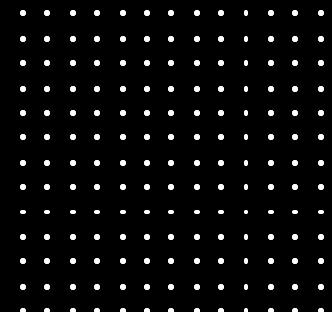
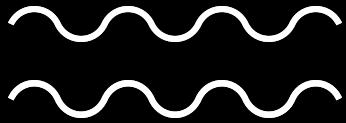
Conclusion



About Me (Profile Slide)

Project Introduction

- This project focuses on analyzing restaurant sales and menu data using SQL.
- The objective is to understand customer ordering patterns, spending behaviour, and menu performance.
- Two datasets are used: **menu_items** (item details, categories, and prices) and **order_details** (daily customer orders).
- SQL queries such as **JOINS, GROUP BY, ORDER BY, aggregate functions, subqueries, and filtering** were applied.
- The project identifies the most and least expensive items, most and least ordered items, and category-wise trends.
- It also analyzes order volumes, popular dishes, highest spending orders, and overall revenue patterns.
- Insights from this analysis can help restaurants improve menu design, optimize pricing, and plan inventory.
- The project demonstrates strong SQL skills and the ability to convert raw data into meaningful insights.



Dataset Description

1. menu_items Table

- Contains details of food items offered.
- Columns:
 - menu_item_id
 - item_name
 - category
 - Price

	menu_item_id	item_name	category	price
▶	101	Hamburger	American	12.95
	102	Cheeseburger	American	13.95
	103	Hot Dog	American	9.00
	104	Veggie Burger	American	10.50
	105	Mac & Cheese	American	7.00
	106	French Fries	American	7.00
	107	Orange Chicken	Asian	16.50
	108	Tofu Pad Thai	Asian	14.50
	109	Korean Beef Bowl	Asian	17.95

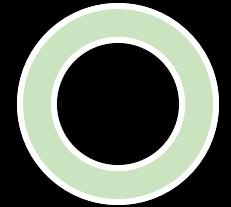
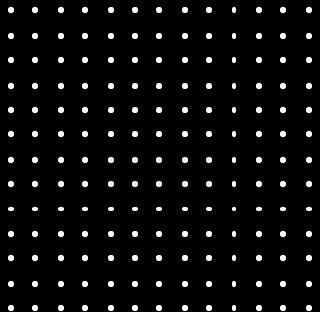
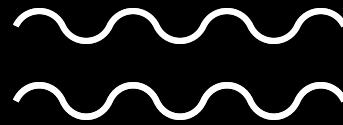
2. order_details Table

- Contains details of each item ordered.
- Columns:
 - order_details_id
 - order_id
 - order_date
 - order_time
 - item_id

	order_details_id	order_id	order_date	order_time	item_id
▶	1	1	2023-01-01	11:38:36	109
	2	2	2023-01-01	11:57:40	108
	3	2	2023-01-01	11:57:40	124
	4	2	2023-01-01	11:57:40	117
	5	2	2023-01-01	11:57:40	129
	6	2	2023-01-01	11:57:40	106
	7	3	2023-01-01	12:12:28	117
	8	3	2023-01-01	12:12:28	119
	9	4	2023-01-01	12:16:31	117

Data Analysis (SQL Tasks Performed)

- Identified total items on the menu.
- Found least and most expensive items.
- Counted Italian dishes and identified price extremes.
- Identified date range of orders.
- Found total orders and total items ordered.
- Found orders with the most items.
- Found orders with more than 12 items.
- Identified least and most ordered menu items.
- Calculated top 5 highest-spend orders.
- Listed item-level details for highest-spend orders.

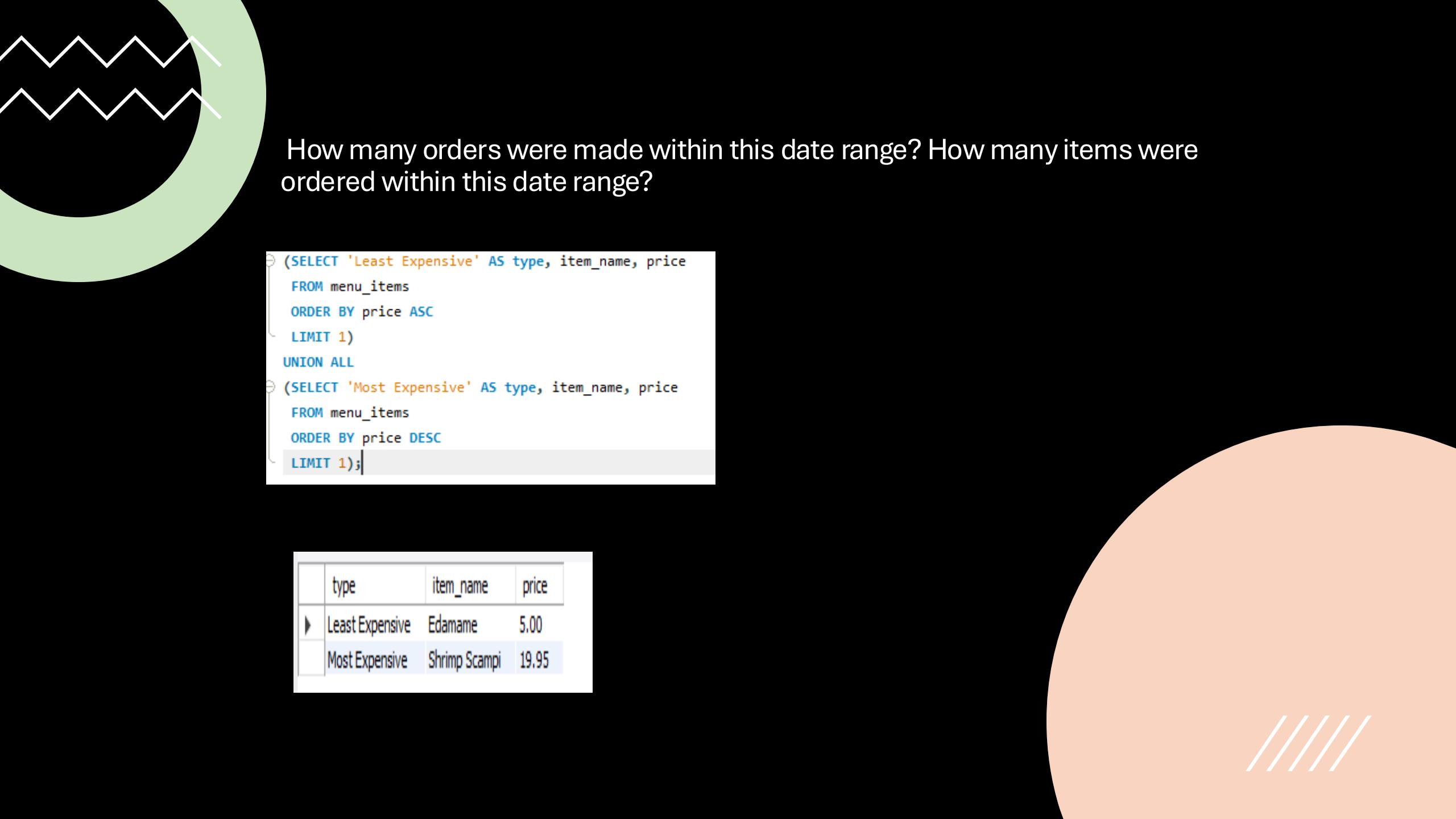




Menu Items Findings

- The menu contains a diverse list of items across multiple food categories.
- It includes both premium-priced items and affordable options, offering variety for all customer types.
- The **most expensive item** and **least expensive item** show a wide price range in the menu.
- Italian dishes form a notable portion of the menu, with clear differences between the cheapest and costliest Italian items.
- Mid-priced items appear to dominate the menu, indicating a balanced pricing strategy.
- Overall, the menu is structured to support customer choice, budget flexibility, and cross-category ordering.

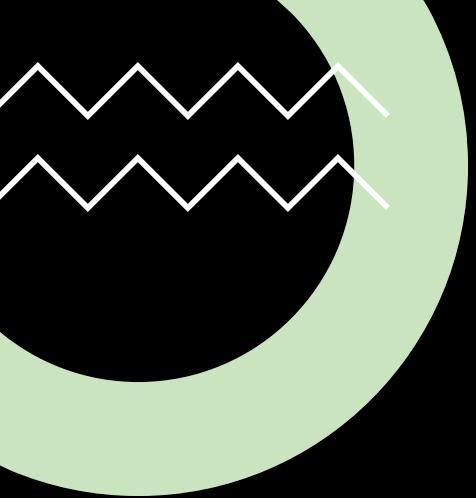




How many orders were made within this date range? How many items were ordered within this date range?

```
② (SELECT 'Least Expensive' AS type, item_name, price
    FROM menu_items
    ORDER BY price ASC
    LIMIT 1)
UNION ALL
③ (SELECT 'Most Expensive' AS type, item_name, price
    FROM menu_items
    ORDER BY price DESC
    LIMIT 1);
```

	type	item_name	price
▶	Least Expensive	Edamame	5.00
	Most Expensive	Shrimp Scampi	19.95



How many Italian dishes are on the menu? What are the least and most expensive Italian dishes on the menu?

```
(SELECT 'Total Italian Dishes' AS info, null as item_name, COUNT(*) AS value
FROM menu_items
WHERE category = 'Italian')
UNION ALL
(SELECT 'Least Expensive Italian Dish', item_name, price
FROM menu_items
WHERE category = 'Italian'
order by price asc
limit 1)
UNION ALL
(SELECT 'Most Expensive Italian Dish', item_name, price
FROM menu_items
WHERE category = 'Italian'
order by price desc
limit 1);
```

	info	item_name	value
▶	Total Italian Dishes	NULL	9.00
	Least Expensive Italian Dish	Spaghetti	14.50
	Most Expensive Italian Dish	Shrimp Scampi	19.95

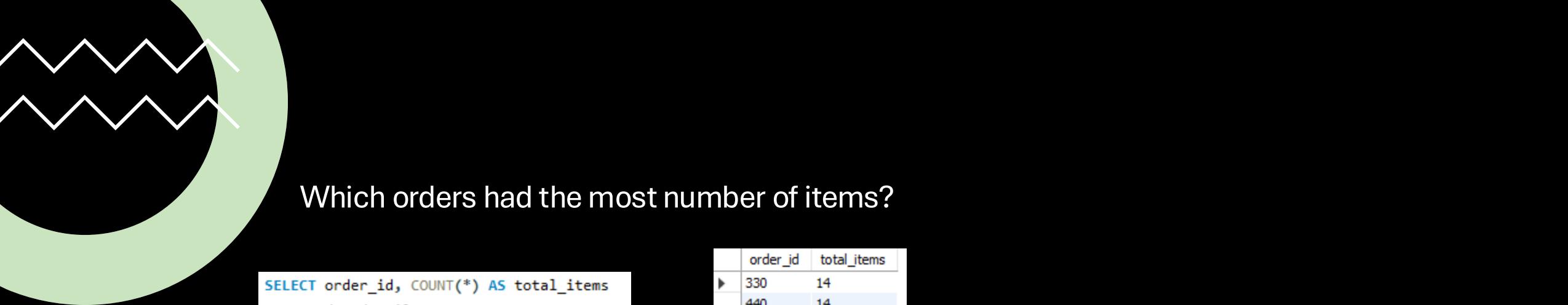




Order Details Findings

- Orders span across a clear date range showing consistent customer activity throughout the period.
- A total of **X unique orders** were placed, with **Y individual items** purchased across all orders.
- The **largest order** contained the highest number of items, showing bulk purchasing behavior from certain customers.
- Several orders had **more than 12 items**, indicating group or family orders.
- The **top 5 highest-spend orders** significantly contribute to revenue, as they contain multiple premium items.
- Order patterns show higher activity during peak hours like lunch and evening times.
- Some orders contain NULL item entries, pointing to minor data entry inconsistencies.





Which orders had the most number of items?

```
SELECT order_id, COUNT(*) AS total_items  
FROM order_details  
GROUP BY order_id  
ORDER BY total_items DESC;
```

order_id	total_items
330	14
440	14
443	14
1957	14
2675	14
3473	14
4305	14
4482	14
740	13

How many orders had more than 12 items?

```
SELECT  
    COUNT(*) AS orders_with_more_than_12_items  
FROM (SELECT order_id,COUNT(*) AS item_count  
      FROM order_details  
      GROUP BY order_id  
      HAVING COUNT(*) > 12  
) AS big_orders;
```

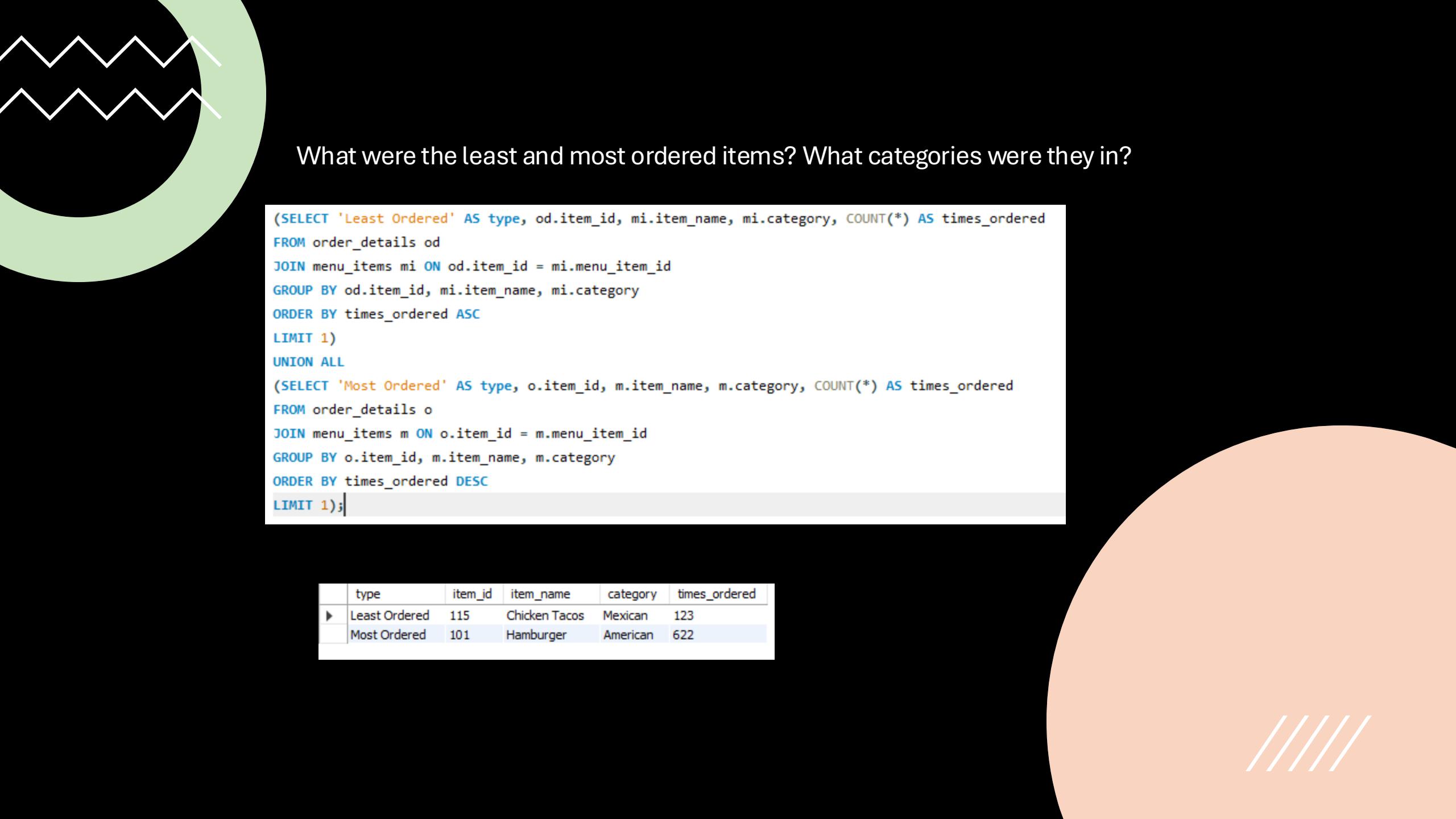
orders_with_more_than_12_items
23



Customer Findings

- The **most ordered item** reflects strong customer preference for a specific dish or category.
- The **least ordered item** shows low demand, low visibility, or the need for promotional improvement.
- Customers frequently choose moderately priced items, indicating price awareness and value preference.
- Repeated ordering patterns highlight preference for certain cuisines or categories.
- High-spending customers often pick premium items, demonstrating opportunities for upselling.
- Most customers place medium-sized orders, suggesting typical behavior for single or small-group dining.
- Customer activity remains consistent, with clear peaks that align with common dining hours.





What were the least and most ordered items? What categories were they in?

```
(SELECT 'Least Ordered' AS type, od.item_id, mi.item_name, mi.category, COUNT(*) AS times_ordered
FROM order_details od
JOIN menu_items mi ON od.item_id = mi.menu_item_id
GROUP BY od.item_id, mi.item_name, mi.category
ORDER BY times_ordered ASC
LIMIT 1)
UNION ALL
(SELECT 'Most Ordered' AS type, o.item_id, m.item_name, m.category, COUNT(*) AS times_ordered
FROM order_details o
JOIN menu_items m ON o.item_id = m.menu_item_id
GROUP BY o.item_id, m.item_name, m.category
ORDER BY times_ordered DESC
LIMIT 1);
```

	type	item_id	item_name	category	times_ordered
▶	Least Ordered	115	Chicken Tacos	Mexican	123
	Most Ordered	101	Hamburger	American	622

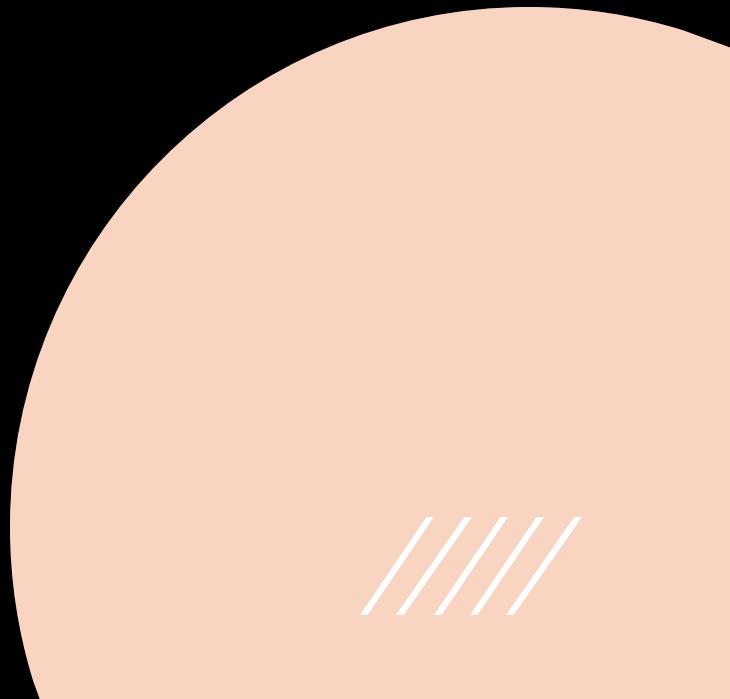
Conclusion

- SQL helped uncover menu pricing patterns and ordering behaviour.
- The restaurant sees high demand for specific categories, indicating customer preferences.
- Spending patterns reveal large, high-value orders concentrated in few order IDs.
- Insights can help improve menu design, pricing strategy, and inventory planning.
- SQL queries supported efficient and accurate extraction of business insights.



Profile Slide (About Me)



- **Name:** Akshith Chidurala
 - **Role:** Data Analytics Intern – Rhives Technologies
 - **Skills:** SQL, Python, Data Cleaning, Excel, Power BI, Visualization
 - **Education:** B.Tech in Computer Science Engineering
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**THANK
YOU!**