PIZZA SALES ANALYSIS USING SQL SERVER

BY UPASANA BARA | DATA ANALYST

SELF INTRODUCTION

I’m **Upasana Bara, a passionate Data Analyst** with a strong focus on turning raw data into meaningful business insights.

I designed this **SQL Pizza Sales Analysis** project to strengthen my analytical and business intelligence skills. Through this project, I explored real-world datasets and applied SQL techniques to generate insights that could guide decision-making in the food industry.

DATABASE INTRODUCTION

The dataset has 48620 pizza orders from Kaggle.
It consisted of four relational tables

- **order_details → order_details_id, order_id, pizza_id, quantity**
- **orders → order_id, date, time**
- **pizza_types → pizza_type_id, name, category, ingredients**
- **pizzas → pizza_id,pizza_type_id, size, price .**

Using SQL Server Management Studio (SSMS),I joined and queried these tables to perform **sales trend analysis, identify top-performing pizzas, peak order times, etc**.

TOOLS & SKILLS USED

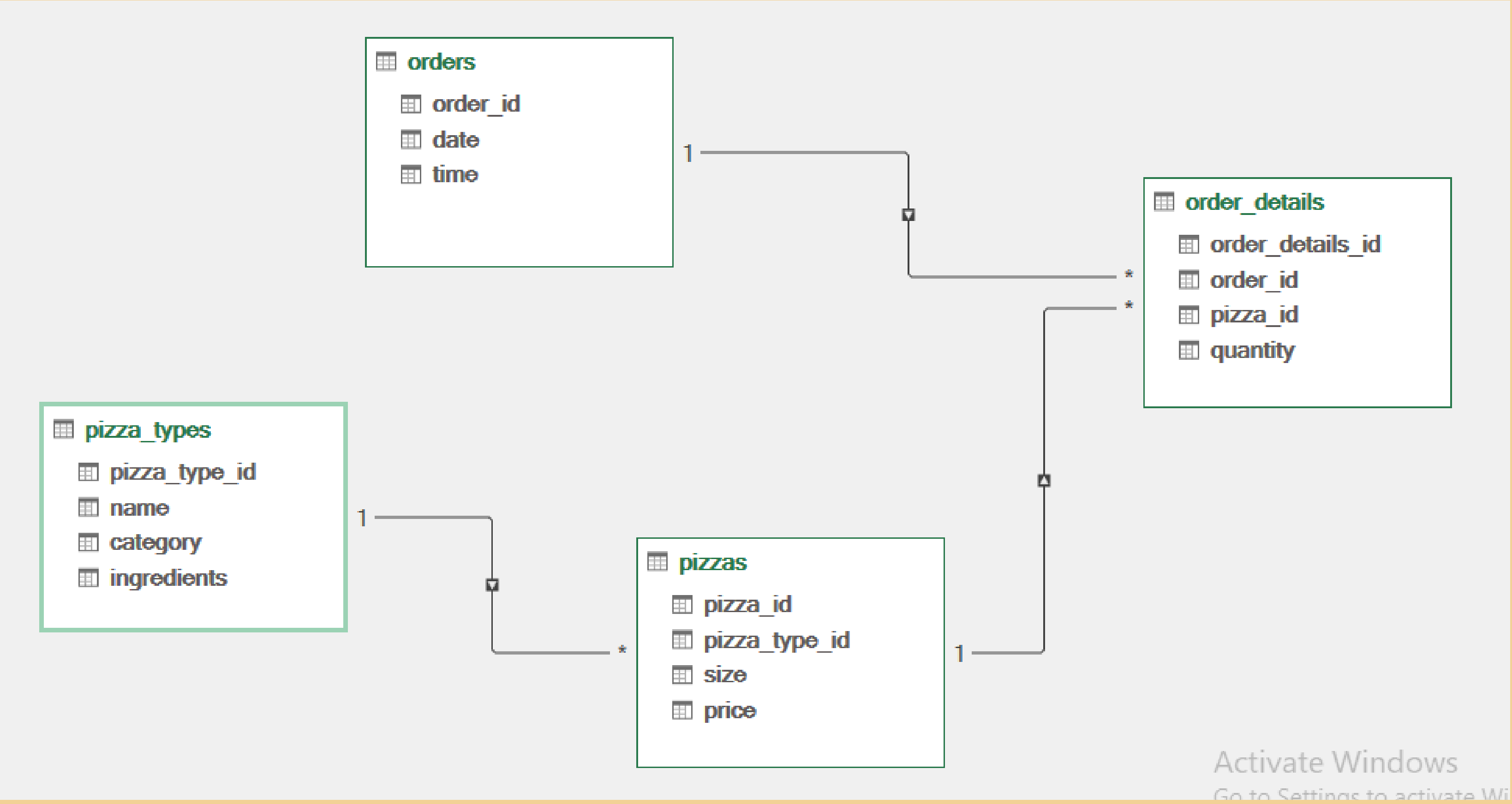
Tools - SQL Server Management Studio (SSMS), Microsoft Excel (for dataset review), Canva (for presentation visuals)

Skills - SQL Joins, Group By, Order By, Aggregate Functions, Subqueries, Window Function Data Cleaning, Datasets importing, Business Analysis

Concept- SUM(),COUNT(), MAX(), ORDER BY, INNER JOIN, GROUP BY, DATEPART(), RANK(), ROUND()

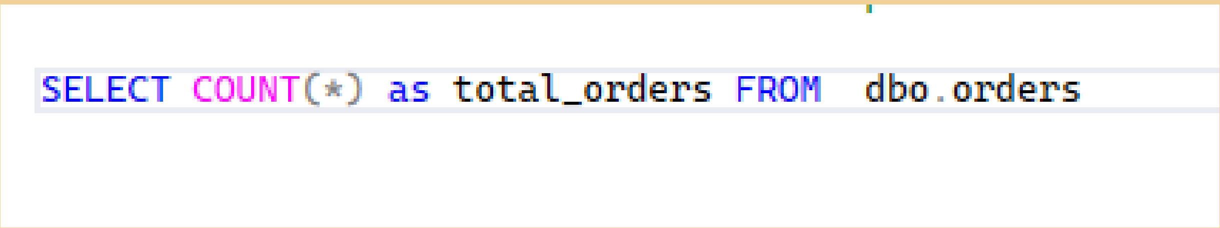
DATA MODEL

- **Created in Excel**

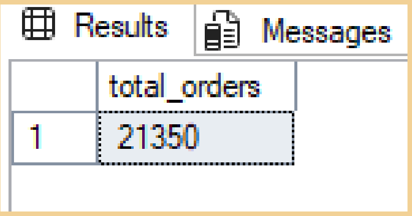


Insights / Questions

1. Retrieve the total number of orders placed.



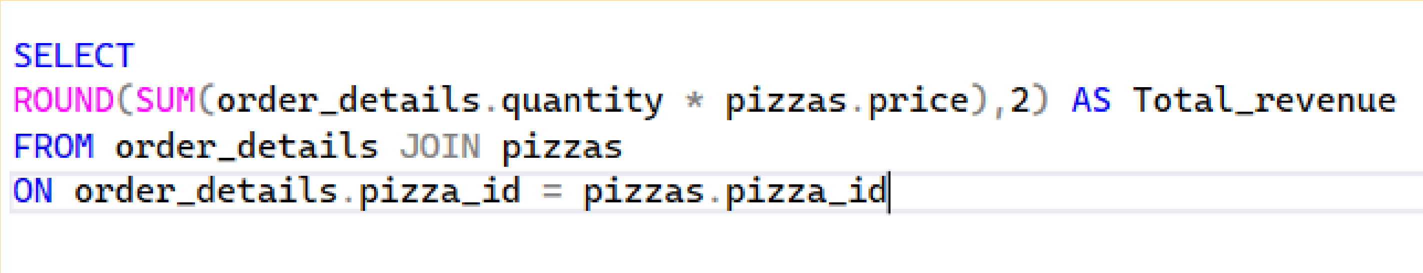
```sql
SELECT COUNT(*) as total_orders FROM  dbo.orders
```



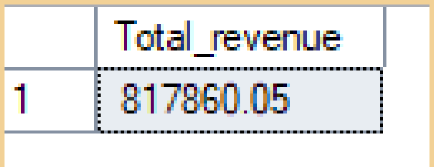
	total_orders
1	21350

- Total number of orders placed - 21350

2. Calculate the total revenue generated from pizza sales.



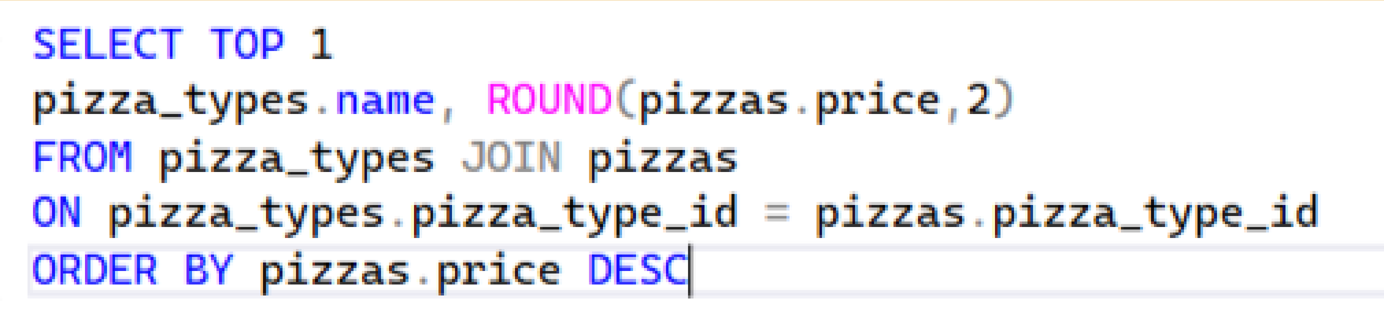
```sql
SELECT
ROUND(SUM(order_details.quantity * pizzas.price),2) AS Total_revenue
FROM order_details JOIN pizzas
ON order_details.pizza_id = pizzas.pizza_id
```



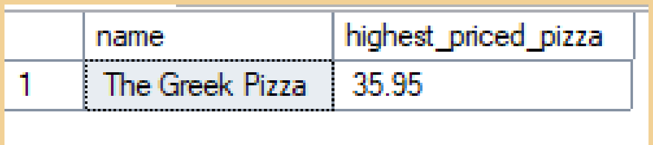
	Total_revenue
1	817860.05

- Total Revenue generated - 817860.05

3. Identify the highest-priced pizza.



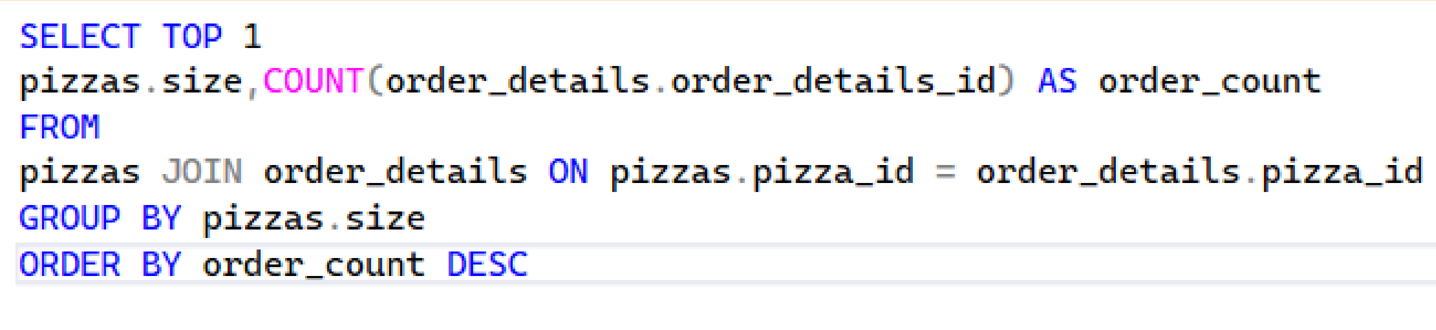
```sql
SELECT TOP 1
pizza_types.name, ROUND(pizzas.price,2)
FROM pizza_types JOIN pizzas
ON pizza_types.pizza_type_id = pizzas.pizza_type_id
ORDER BY pizzas.price DESC
```



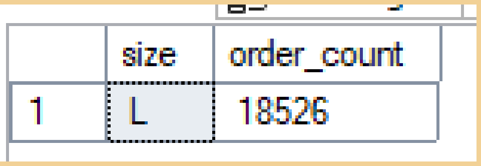
	name	highest_priced_pizza
1	The Greek Pizza	35.95

- The highest-priced pizza is The Greek pizza and price is 35.95

4. Identify the most common pizza size ordered.



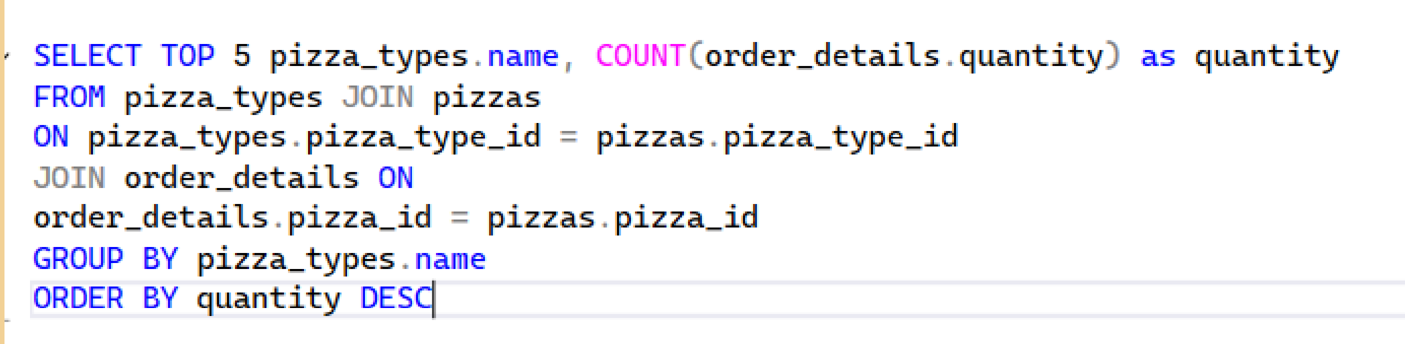
```sql
SELECT TOP 1
pizzas.size,COUNT(order_details.order_details_id) AS order_count
FROM
pizzas JOIN order_details ON pizzas.pizza_id = order_details.pizza_id
GROUP BY pizzas.size
ORDER BY order_count DESC
```



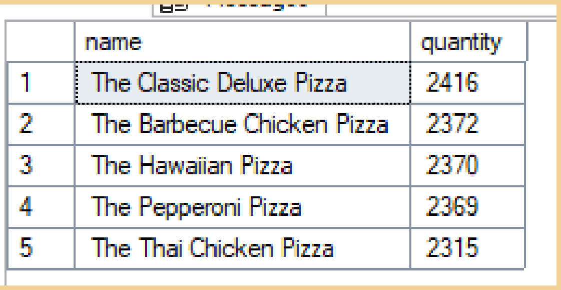
	size	order_count
1	L	18526

- The most common pizza size ordered is Large (L) and Total no. is 18526

5. List the top 5 most popular pizza types, along with their corresponding quantities.



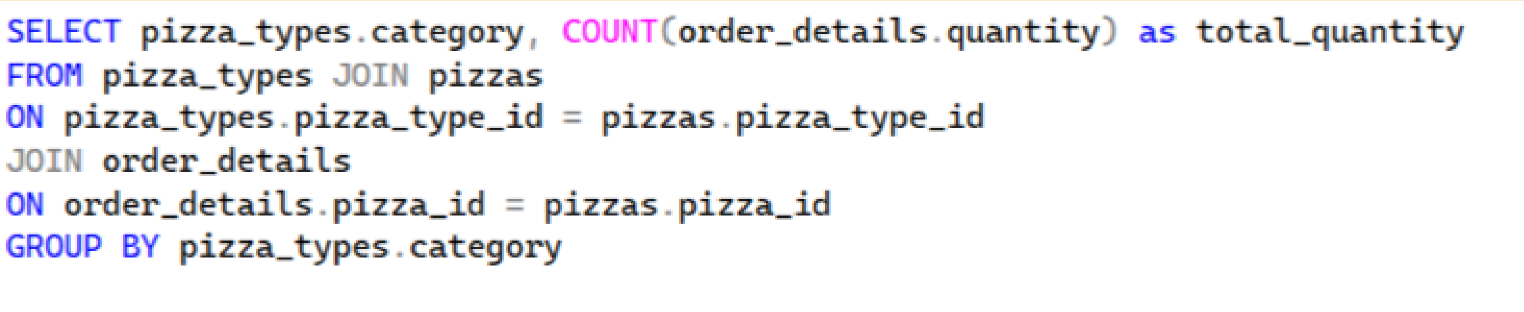
```
SELECT TOP 5 pizza_types.name, COUNT(order_details.quantity) as quantity
FROM pizza_types JOIN pizzas
ON pizza_types.pizza_type_id = pizzas.pizza_type_id
JOIN order_details ON
order_details.pizza_id = pizzas.pizza_id
GROUP BY pizza_types.name
ORDER BY quantity DESC
```



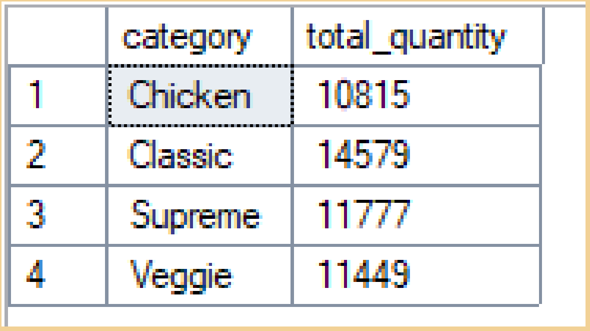
	name	quantity
1	The Classic Deluxe Pizza	2416
2	The Barbecue Chicken Pizza	2372
3	The Hawaiian Pizza	2370
4	The Pepperoni Pizza	2369
5	The Thai Chicken Pizza	2315

- The top 5 most popular pizza types and size are The Classic Deluxe Pizza -2416, The Barbecue Chicken Pizza -2372, The Hawaooan Pizza -2370, The Pepperoni Pizza 2369, The Thai Chicken Pizza 2315

6. Join the necessary tables to find the total quantity of each pizza category ordered.



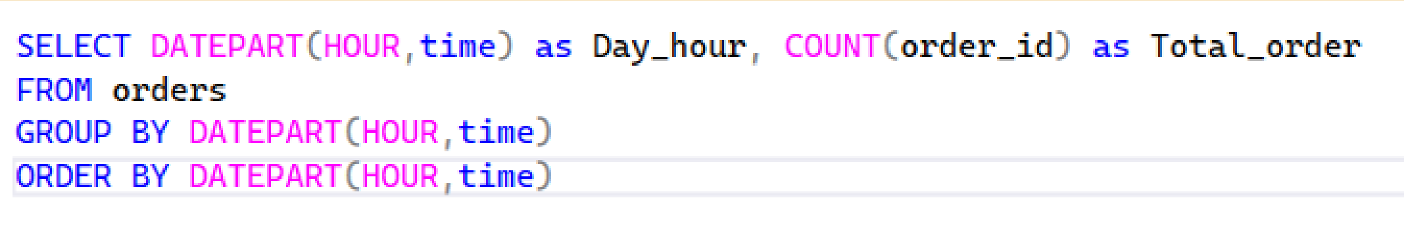
```
SELECT pizza_types.category, COUNT(order_details.quantity) as total_quantity
FROM pizza_types JOIN pizzas
ON pizza_types.pizza_type_id = pizzas.pizza_type_id
JOIN order_details
ON order_details.pizza_id = pizzas.pizza_id
GROUP BY pizza_types.category
```



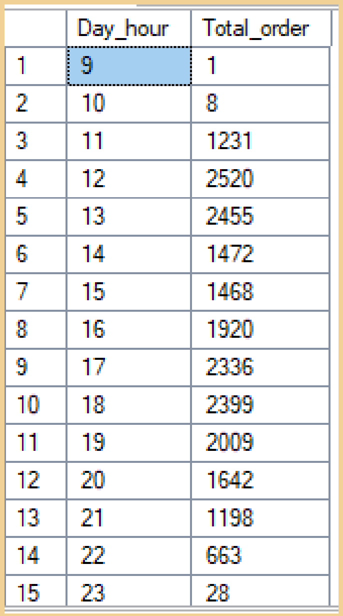
	category	total_quantity
1	Chicken	10815
2	Classic	14579
3	Supreme	11777
4	Veggie	11449

- The total quantity of each pizza category ordered are Chicken- 10815, Classic 14579, Supreme-11777, Veggie- 11449

7. Determine the distribution of orders by hour of the day.



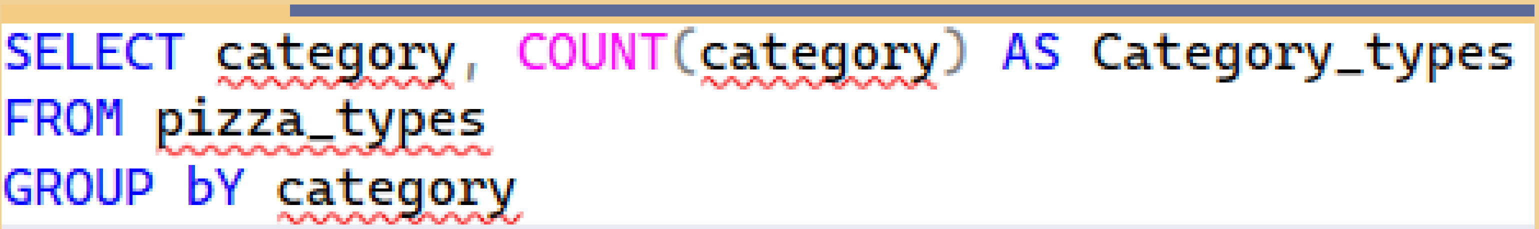
```
SELECT DATEPART(HOUR,time) as Day_hour, COUNT(order_id) as Total_order
FROM orders
GROUP BY DATEPART(HOUR,time)
ORDER BY DATEPART(HOUR,time)
```



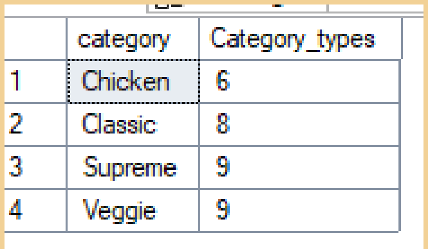
	Day_hour	Total_order
1	9	1
2	10	8
3	11	1231
4	12	2520
5	13	2455
6	14	1472
7	15	1468
8	16	1920
9	17	2336
10	18	2399
11	19	2009
12	20	1642
13	21	1198
14	22	663
15	23	28

- The no. of orders increases at 12-1 PM and at 5-7 PM.

8.Join relevant tables to find the category-wise distribution of pizzas.



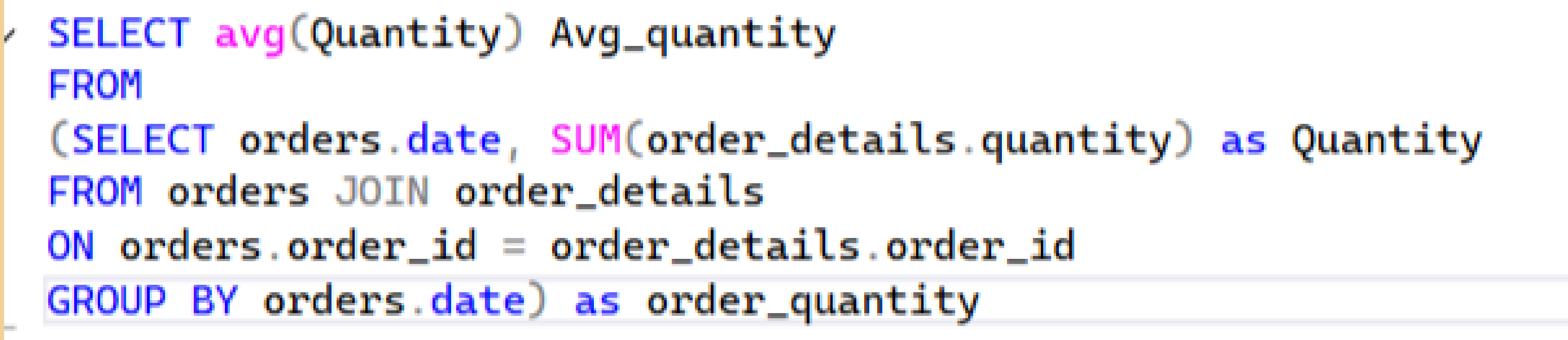
```
SELECT category, COUNT(category) AS Category_types
FROM pizza_types
GROUP bY category
```



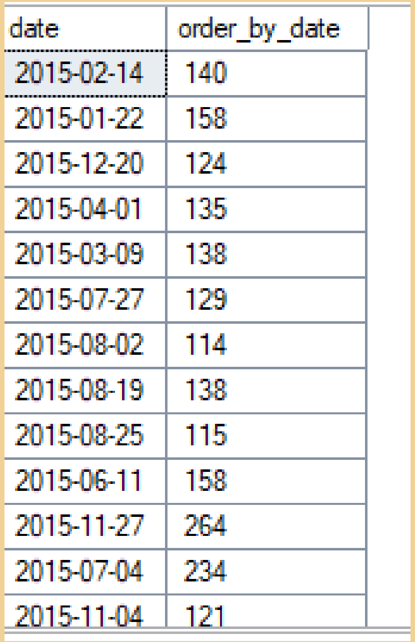
	category	Category_types
1	Chicken	6
2	Classic	8
3	Supreme	9
4	Veggie	9

- There are 6,8,9,9 types pizzas in chicken,classic,supreme and veggie respectively

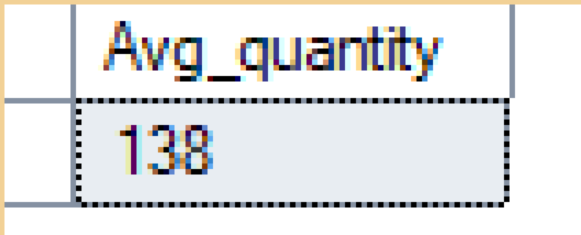
9. Group the orders by date and calculate the average number of pizzas ordered per day.



```
SELECT avg(Quantity) Avg_quantity
FROM
(SELECT orders.date, SUM(order_details.quantity) as Quantity
FROM orders JOIN order_details
ON orders.order_id = order_details.order_id
GROUP BY orders.date) as order_quantity
```



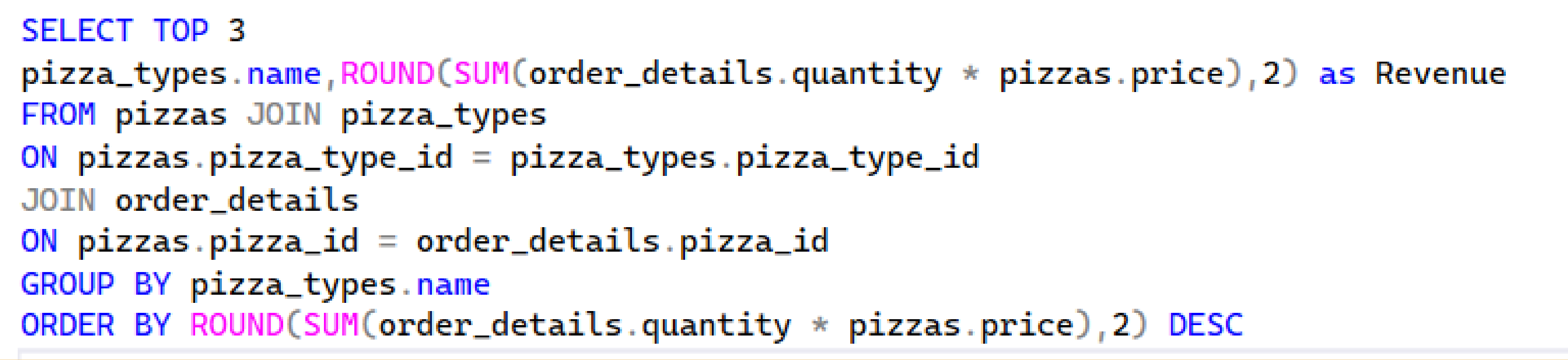
date	order_by_date
2015-02-14	140
2015-01-22	158
2015-12-20	124
2015-04-01	135
2015-03-09	138
2015-07-27	129
2015-08-02	114
2015-08-19	138
2015-08-25	115
2015-06-11	158
2015-11-27	264
2015-07-04	234
2015-11-04	121



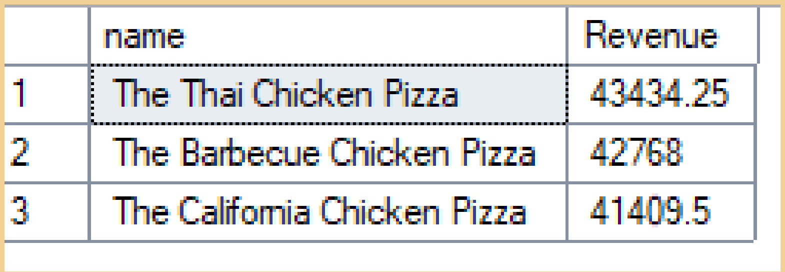
Avg_quantity
138

- Order by date come from subquery and average no. of pizzas ordered per day is 138.

10. Determine the top 3 most ordered pizza types based on revenue.



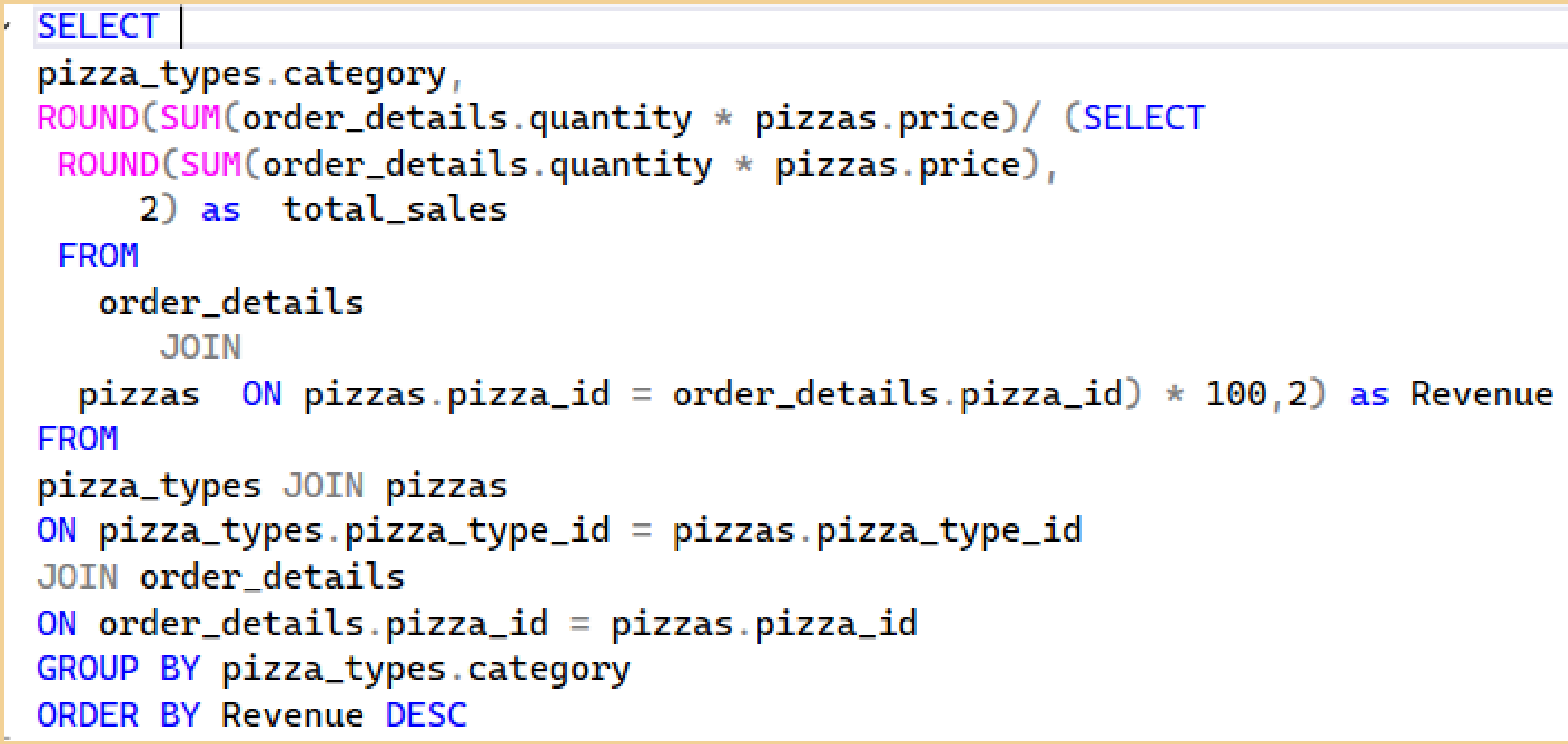
```
SELECT TOP 3
pizza_types.name,ROUND(SUM(order_details.quantity * pizzas.price),2) as Revenue
FROM pizzas JOIN pizza_types
ON pizzas.pizza_type_id = pizza_types.pizza_type_id
JOIN order_details
ON pizzas.pizza_id = order_details.pizza_id
GROUP BY pizza_types.name
ORDER BY ROUND(SUM(order_details.quantity * pizzas.price),2) DESC
```



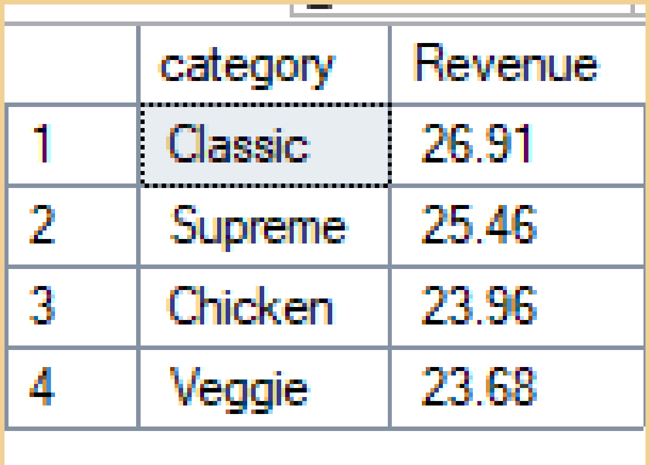
	name	Revenue
1	The Thai Chicken Pizza	43434.25
2	The Barbecue Chicken Pizza	42768
3	The California Chicken Pizza	41409.5

- The most popular pizza types based on revenue are The Thai Pizza -43434.25, The Barbecue Chicken Pizza - 42768, The California Pizza - 41409.5

11. Calculate the percentage contribution of each pizza type to total revenue.



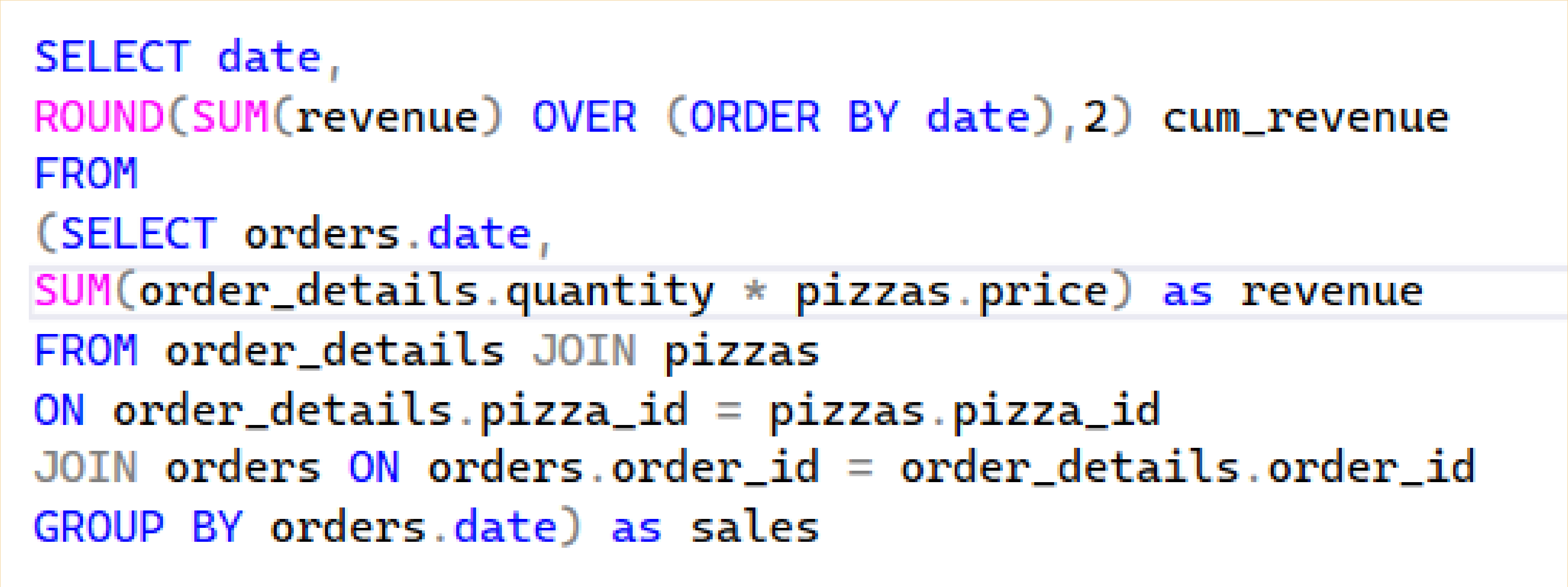
```
SELECT
pizza_types.category,
ROUND(SUM(order_details.quantity * pizzas.price)/ (SELECT
 ROUND(SUM(order_details.quantity * pizzas.price),
     2) as  total_sales
 FROM
   order_details
      JOIN
  pizzas  ON pizzas.pizza_id = order_details.pizza_id) * 100,2) as Revenue
FROM
pizza_types JOIN pizzas
ON pizza_types.pizza_type_id = pizzas.pizza_type_id
JOIN order_details
ON order_details.pizza_id = pizzas.pizza_id
GROUP BY pizza_types.category
ORDER BY Revenue DESC
```



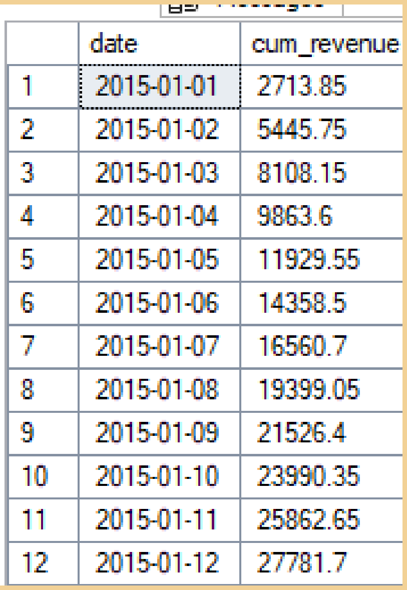
	category	Revenue
1	Classic	26.91
2	Supreme	25.46
3	Chicken	23.96
4	Veggie	23.68

- the maximum revenue generated by Classic Category pizza, i.e, 26.91% and Chicken and Veggie almost the same, 23.96% and 23.68% respectively.

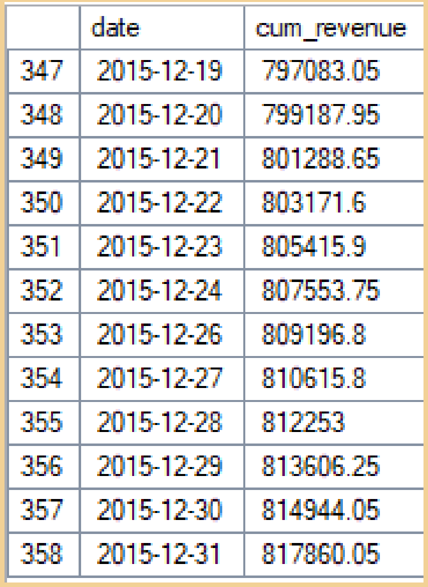
12. Analyze the cumulative revenue generated over time



```
SELECT date,
ROUND(SUM(revenue) OVER (ORDER BY date),2) cum_revenue
FROM
(SELECT orders.date,
SUM(order_details.quantity * pizzas.price) as revenue
FROM order_details JOIN pizzas
ON order_details.pizza_id = pizzas.pizza_id
JOIN orders ON orders.order_id = order_details.order_id
GROUP BY orders.date) as sales
```



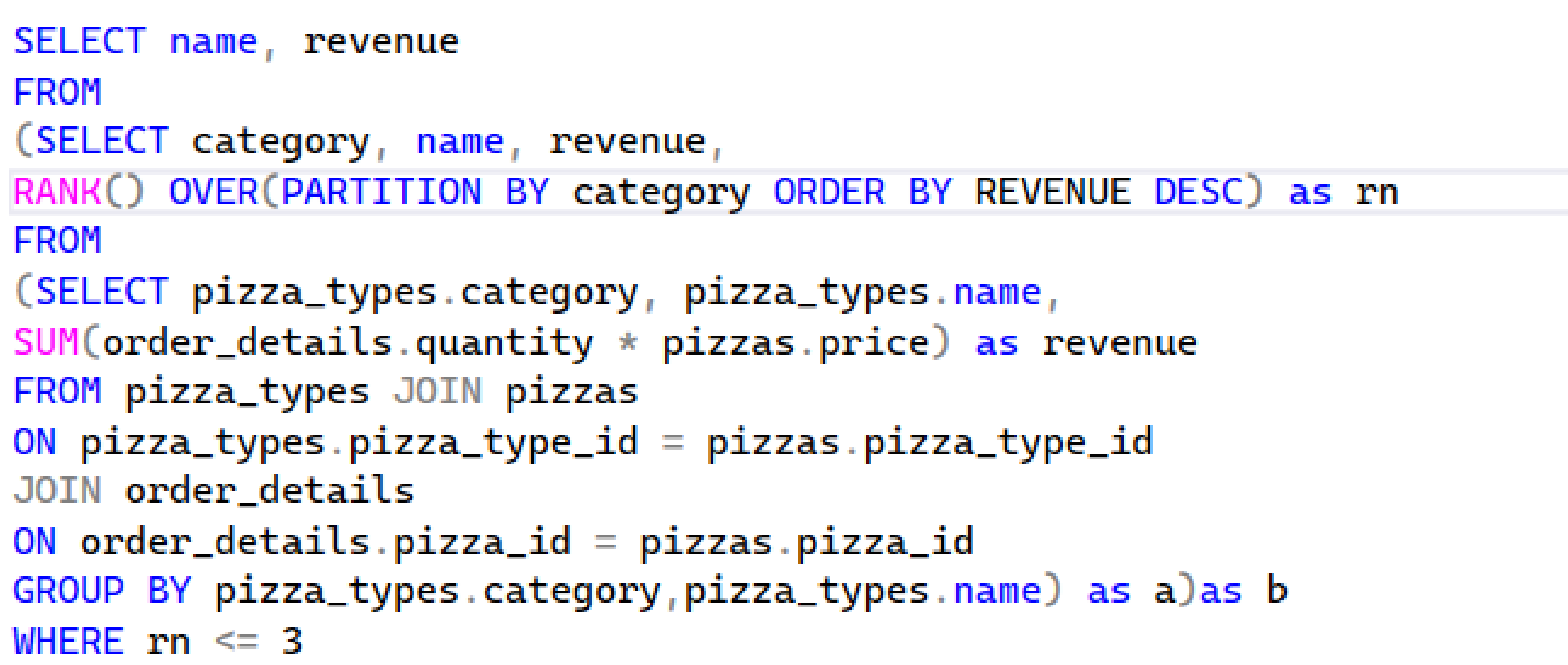
	date	cum_revenue
1	2015-01-01	2713.85
2	2015-01-02	5445.75
3	2015-01-03	8108.15
4	2015-01-04	9863.6
5	2015-01-05	11929.55
6	2015-01-06	14358.5
7	2015-01-07	16560.7
8	2015-01-08	19399.05
9	2015-01-09	21526.4
10	2015-01-10	23990.35
11	2015-01-11	25862.65
12	2015-01-12	27781.7



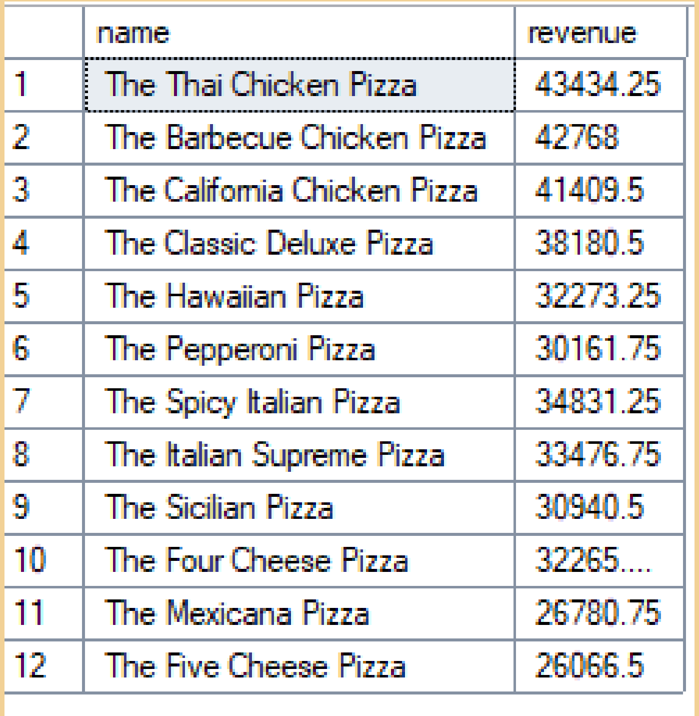
	date	cum_revenue
347	2015-12-19	797083.05
348	2015-12-20	799187.95
349	2015-12-21	801288.65
350	2015-12-22	803171.6
351	2015-12-23	805415.9
352	2015-12-24	807553.75
353	2015-12-26	809196.8
354	2015-12-27	810615.8
355	2015-12-28	812253
356	2015-12-29	813606.25
357	2015-12-30	814944.05
358	2015-12-31	817860.05

- Page 1 and the last page of Cumulative Revenue have shown here.

13. Determine the top 3 most ordered pizza types based on revenue for each pizza category.



```sql
SELECT name, revenue
FROM
(SELECT category, name, revenue,
RANK() OVER(PARTITION BY category ORDER BY REVENUE DESC) as rn
FROM
(SELECT pizza_types.category, pizza_types.name,
SUM(order_details.quantity * pizzas.price) as revenue
FROM pizza_types JOIN pizzas
ON pizza_types.pizza_type_id = pizzas.pizza_type_id
JOIN order_details
ON order_details.pizza_id = pizzas.pizza_id
GROUP BY pizza_types.category,pizza_types.name) as a)as b
WHERE rn <= 3
```



	name	revenue
1	The Thai Chicken Pizza	43434.25
2	The Barbecue Chicken Pizza	42768
3	The California Chicken Pizza	41409.5
4	The Classic Deluxe Pizza	38180.5
5	The Hawaiian Pizza	32273.25
6	The Pepperoni Pizza	30161.75
7	The Spicy Italian Pizza	34831.25
8	The Italian Supreme Pizza	33476.75
9	The Sicilian Pizza	30940.5
10	The Four Cheese Pizza	32265....
11	The Mexicana Pizza	26780.75
12	The Five Cheese Pizza	26066.5

- Top 3 pizzas of each category based on revenue.

RESULTS

- **Total Orders:** 21,350 pizzas ordered during the analyzed period.
- **Total Revenue:** $817860.05 generated from pizza sales.
- **Top Selling Pizza based on Revenue:** The Thai Chicken Pizza.
- **Top-selling pizza based on quantity:** The Classic Deluxe Pizza.
- **Highest-priced Pizza:** The Greek Pizza- $35.95
- **Most Common Size:** Large (L).
- **Top 5 Pizza Types based on revenue:** The Classic Deluxe Pizza, The Barbecue Chicken Pizza, The Hawaiian Pizza, The Pepperoni Pizza, and The Thai Pizza.
- **Peak order hours:** 12 PM - 2 PM and 5 PM - 7 PM.

- **Average Daily Orders:** 138 pizzas/day.
- **Total Category& Types:** Chicken(6), Classic(8), Supreme(9), Veggie(9).
- **Top Revenue Categories:** Classic & Supreme pizza contributed 52.37%.

Conclusion

The analysis reveals that customer demand peaks during lunch and evening hours, with large-sized pizzas being the most popular. The Classic and Supreme categories generate the most revenue, indicating strong customer preference for traditional flavours. Consistent daily order volume highlights stable sales performance, but premium pizzas offer potential for higher revenue growth.

Recommendations

- Focus Marketing on top-performing pizzas like Thai Chicken and Classic Deluxe to increase revenue.
- Promote Combo Offers for large-sized pizzas during peak hours (12 PM-2 PM, 5 PM-7PM).
- Revise Pricing for low-selling pizzas or introduce limited-time discounts to boost variety sales.
- Monitor Weekly Trends - tracking category performance can guide inventory and staffing decisions.
- Expand Analysis by integrating customer demographics or online/offline channels to refine targeting.

Links

https://www.linkedin.com/in/upasana-bara-225611247/