Comprehensive Pizza Store Data Analysis Using SQL

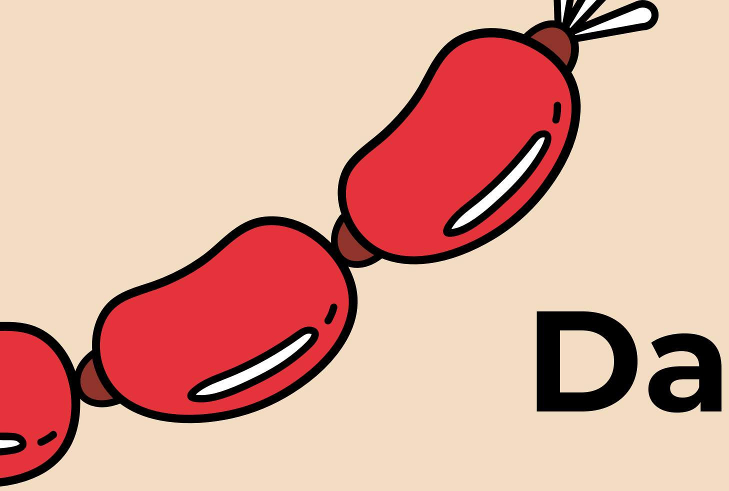
A Deep Dive into Sales, Revenue, and Customer Preferences

Objectives:

To analyze the sales data of a pizza store, uncovering insights on revenue, popular items, and customer ordering behavior using SQL.

Scope:

The analysis covers data related to pizza types, prices, order details, and customer preferences.



Data Collection :

Data Source :

Extracted from online sources relevant to the pizza store's operations.

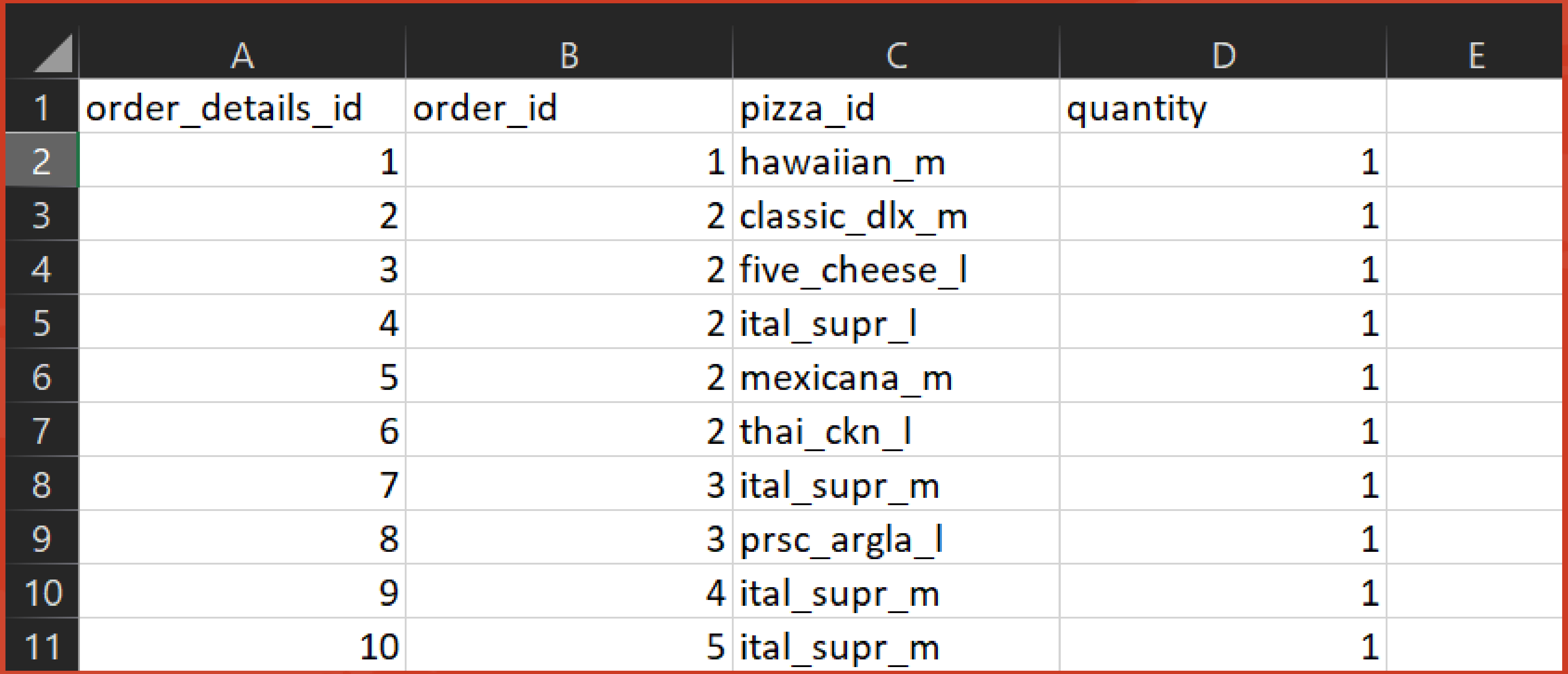
Data Structure :

Tables: Pizzas, Orders, Order Details, Customers, etc.

Attributes: Pizza Name, Size, Price, Order Date/Time, Quantity, Revenue, etc.

Tables

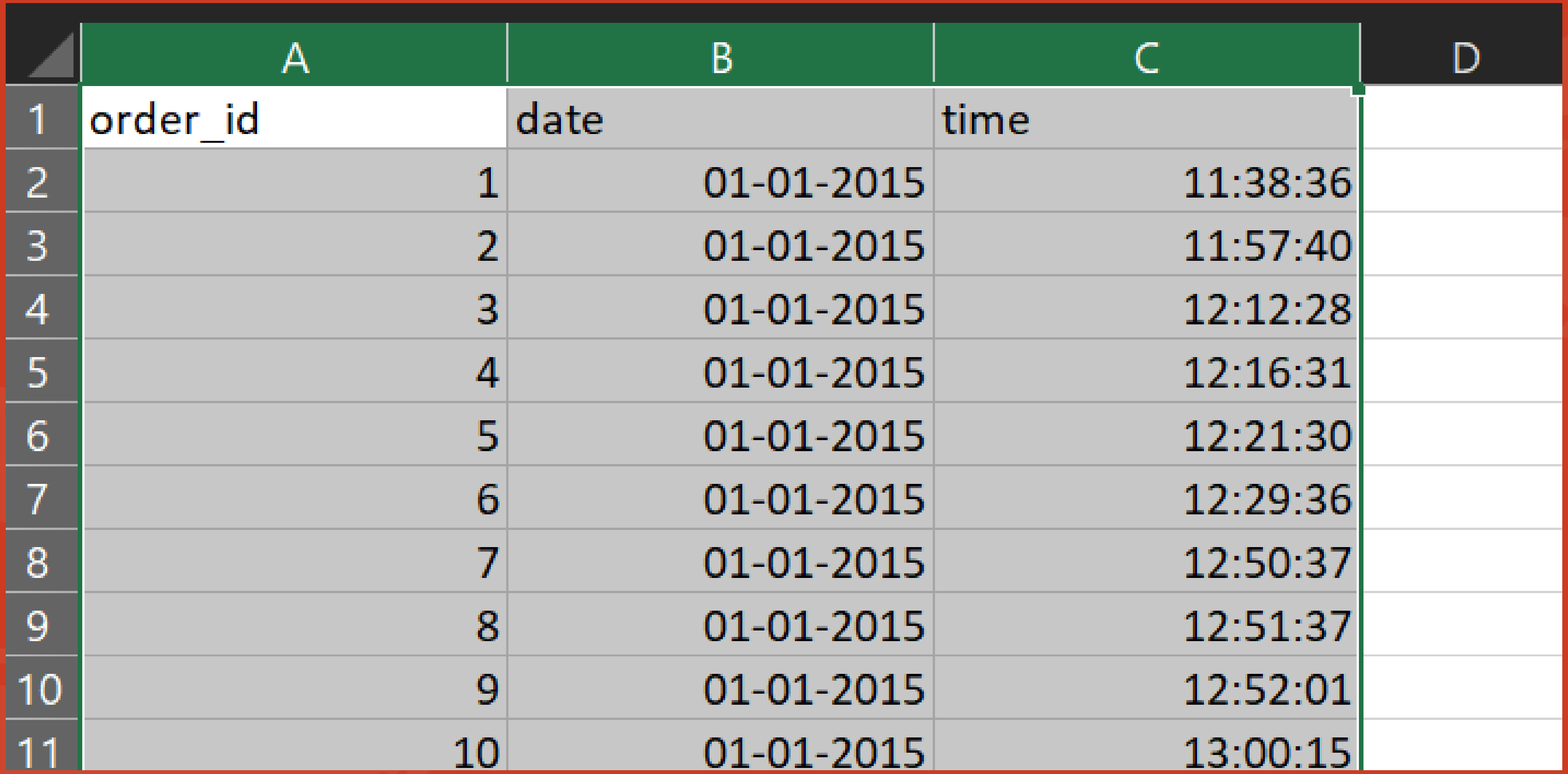
Order_Details



	A	B	C	D	E
1	order_details_id	order_id	pizza_id	quantity	
2	1	1	hawaiian_m	1	
3	2	2	classic_dlx_m	1	
4	3	2	five_cheese_l	1	
5	4	2	ital_supr_l	1	
6	5	2	mexicana_m	1	
7	6	2	thai_ckn_l	1	
8	7	3	ital_supr_m	1	
9	8	3	prsc_argla_l	1	
10	9	4	ital_supr_m	1	
11	10	5	ital_supr_m	1	

Tables

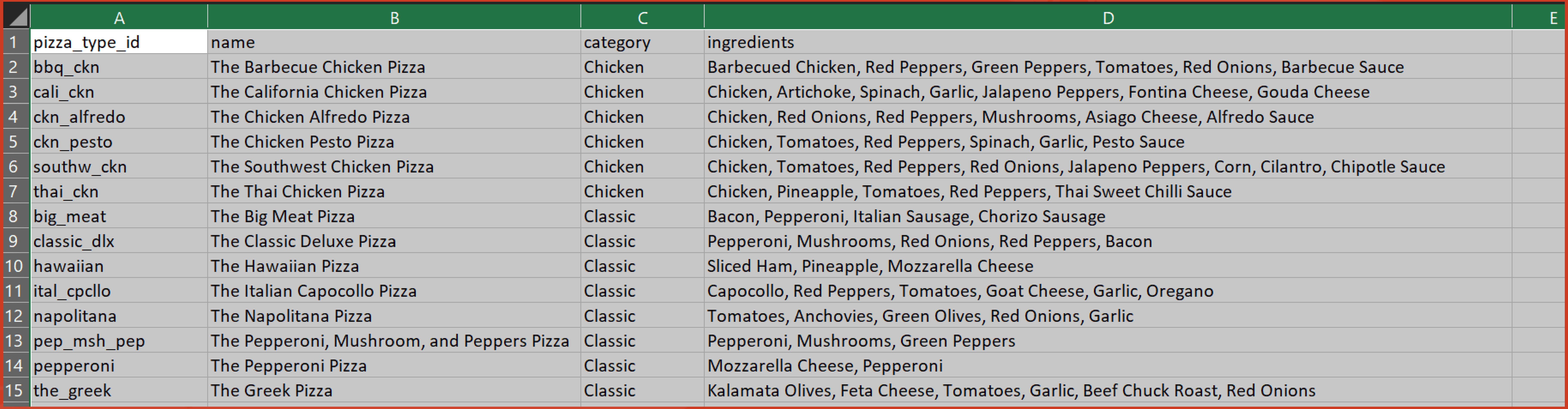
Orders



order_id	date	time
1	01-01-2015	11:38:36
2	01-01-2015	11:57:40
3	01-01-2015	12:12:28
4	01-01-2015	12:16:31
5	01-01-2015	12:21:30
6	01-01-2015	12:29:36
7	01-01-2015	12:50:37
8	01-01-2015	12:51:37
9	01-01-2015	12:52:01
10	01-01-2015	13:00:15

Tables

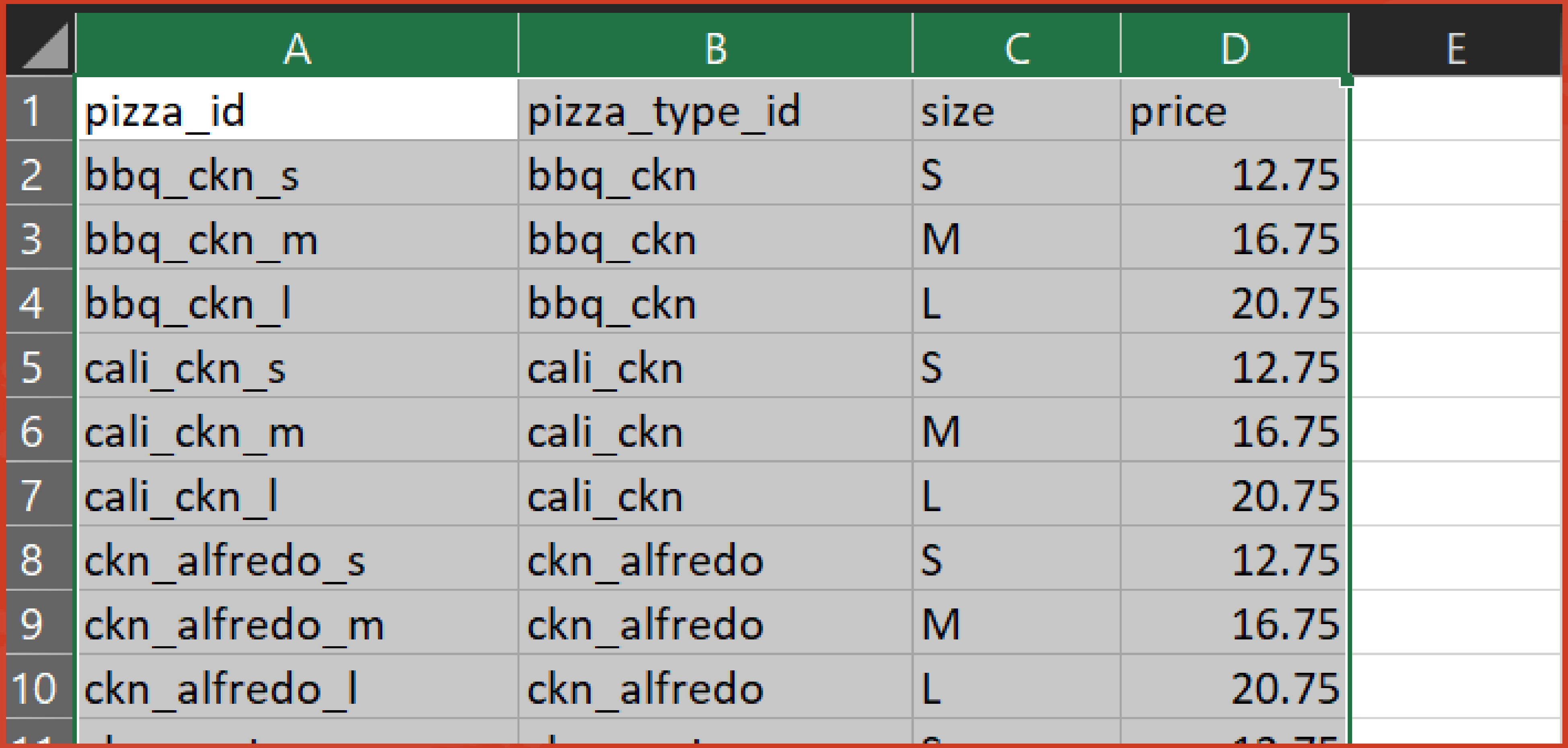
Pizza_Types



	A	B	C	D	E
1	pizza_type_id	name	category	ingredients	
2	bbq_ckn	The Barbecue Chicken Pizza	Chicken	Barbecued Chicken, Red Peppers, Green Peppers, Tomatoes, Red Onions, Barbecue Sauce	
3	cali_ckn	The California Chicken Pizza	Chicken	Chicken, Artichoke, Spinach, Garlic, Jalapeno Peppers, Fontina Cheese, Gouda Cheese	
4	ckn_alfredo	The Chicken Alfredo Pizza	Chicken	Chicken, Red Onions, Red Peppers, Mushrooms, Asiago Cheese, Alfredo Sauce	
5	ckn_pesto	The Chicken Pesto Pizza	Chicken	Chicken, Tomatoes, Red Peppers, Spinach, Garlic, Pesto Sauce	
6	southw_ckn	The Southwest Chicken Pizza	Chicken	Chicken, Tomatoes, Red Peppers, Red Onions, Jalapeno Peppers, Corn, Cilantro, Chipotle Sauce	
7	thai_ckn	The Thai Chicken Pizza	Chicken	Chicken, Pineapple, Tomatoes, Red Peppers, Thai Sweet Chilli Sauce	
8	big_meat	The Big Meat Pizza	Classic	Bacon, Pepperoni, Italian Sausage, Chorizo Sausage	
9	classic_dlx	The Classic Deluxe Pizza	Classic	Pepperoni, Mushrooms, Red Onions, Red Peppers, Bacon	
10	hawaiian	The Hawaiian Pizza	Classic	Sliced Ham, Pineapple, Mozzarella Cheese	
11	ital_cpcllo	The Italian Capocollo Pizza	Classic	Capocollo, Red Peppers, Tomatoes, Goat Cheese, Garlic, Oregano	
12	napolitana	The Napolitana Pizza	Classic	Tomatoes, Anchovies, Green Olives, Red Onions, Garlic	
13	pep_msh_pep	The Pepperoni, Mushroom, and Peppers Pizza	Classic	Pepperoni, Mushrooms, Green Peppers	
14	pepperoni	The Pepperoni Pizza	Classic	Mozzarella Cheese, Pepperoni	
15	the_greek	The Greek Pizza	Classic	Kalamata Olives, Feta Cheese, Tomatoes, Garlic, Beef Chuck Roast, Red Onions	

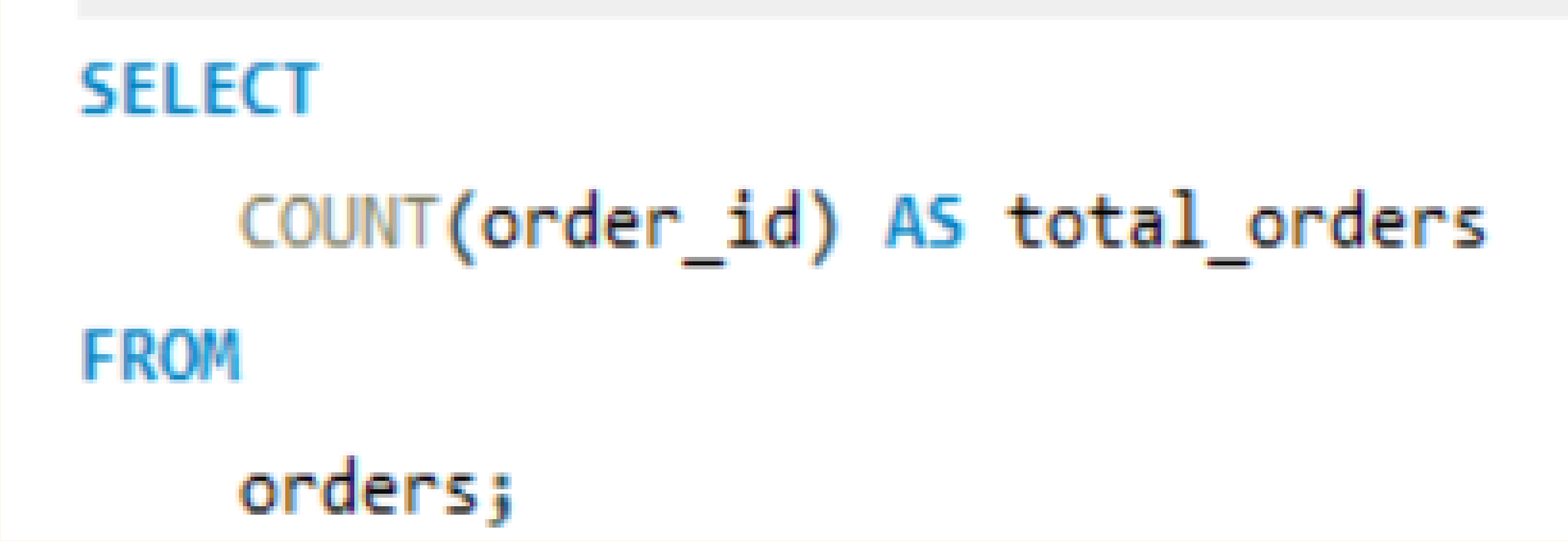
Tables

Pizzas

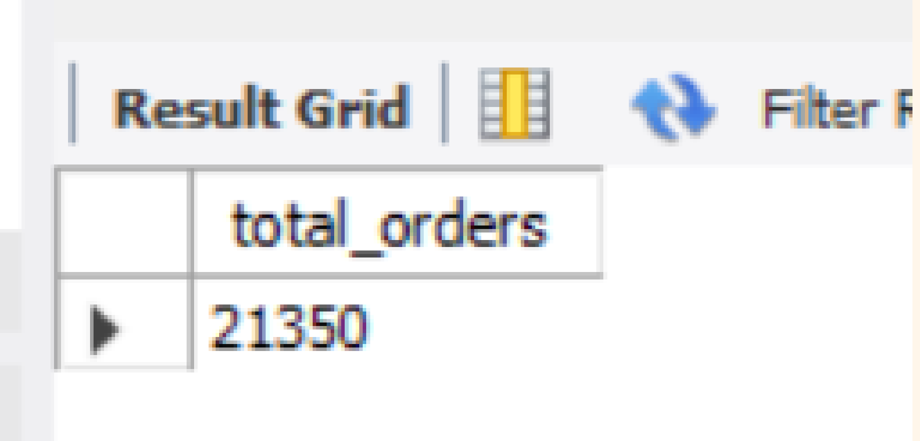


	A	B	C	D	E
1	pizza_id	pizza_type_id	size	price	
2	bbq_ckn_s	bbq_ckn	S	12.75	
3	bbq_ckn_m	bbq_ckn	M	16.75	
4	bbq_ckn_l	bbq_ckn	L	20.75	
5	cali_ckn_s	cali_ckn	S	12.75	
6	cali_ckn_m	cali_ckn	M	16.75	
7	cali_ckn_l	cali_ckn	L	20.75	
8	ckn_alfredo_s	ckn_alfredo	S	12.75	
9	ckn_alfredo_m	ckn_alfredo	M	16.75	
10	ckn_alfredo_l	ckn_alfredo	L	20.75	

Retrieve the total number of orders placed.

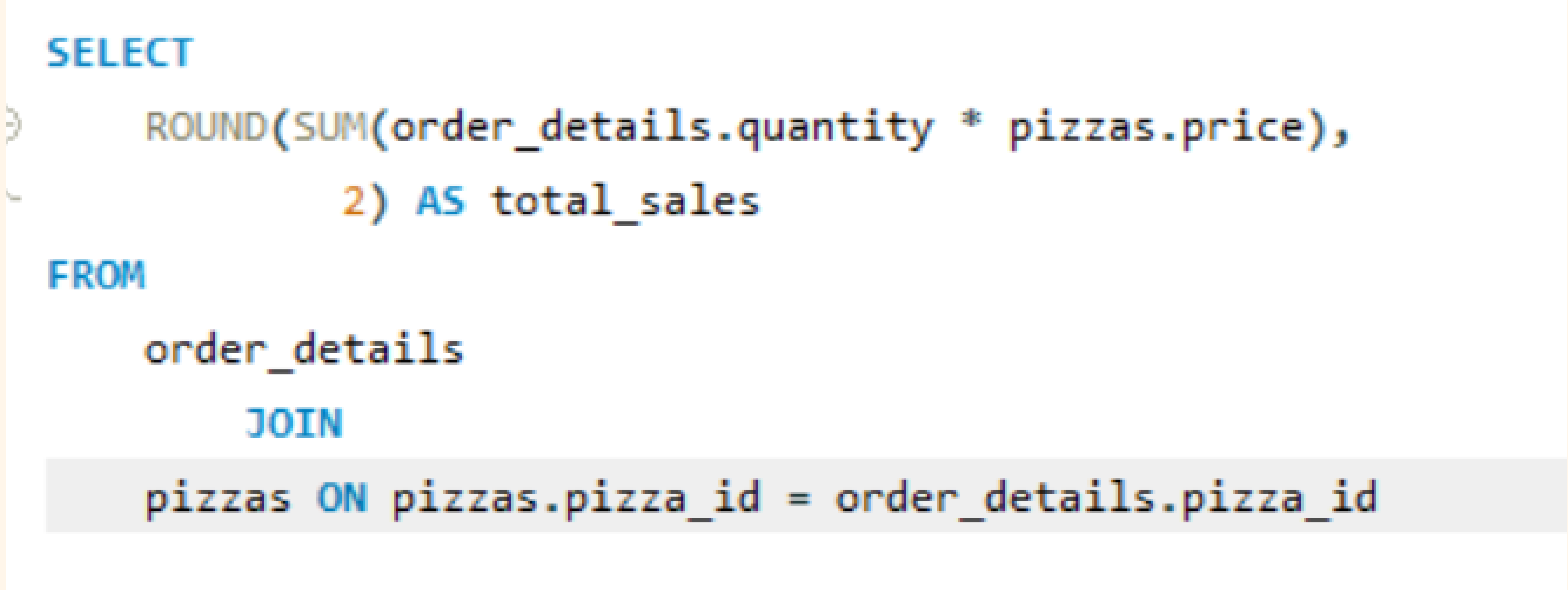


```
SELECT
    COUNT(order_id) AS total_orders
FROM
    orders;
```

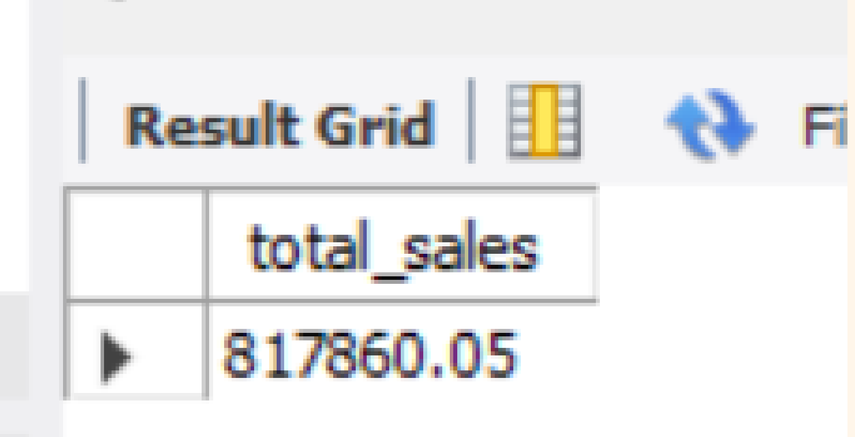


```
  total_orders
▶ 21350
```

Calculate the total revenue generated from pizza sales.

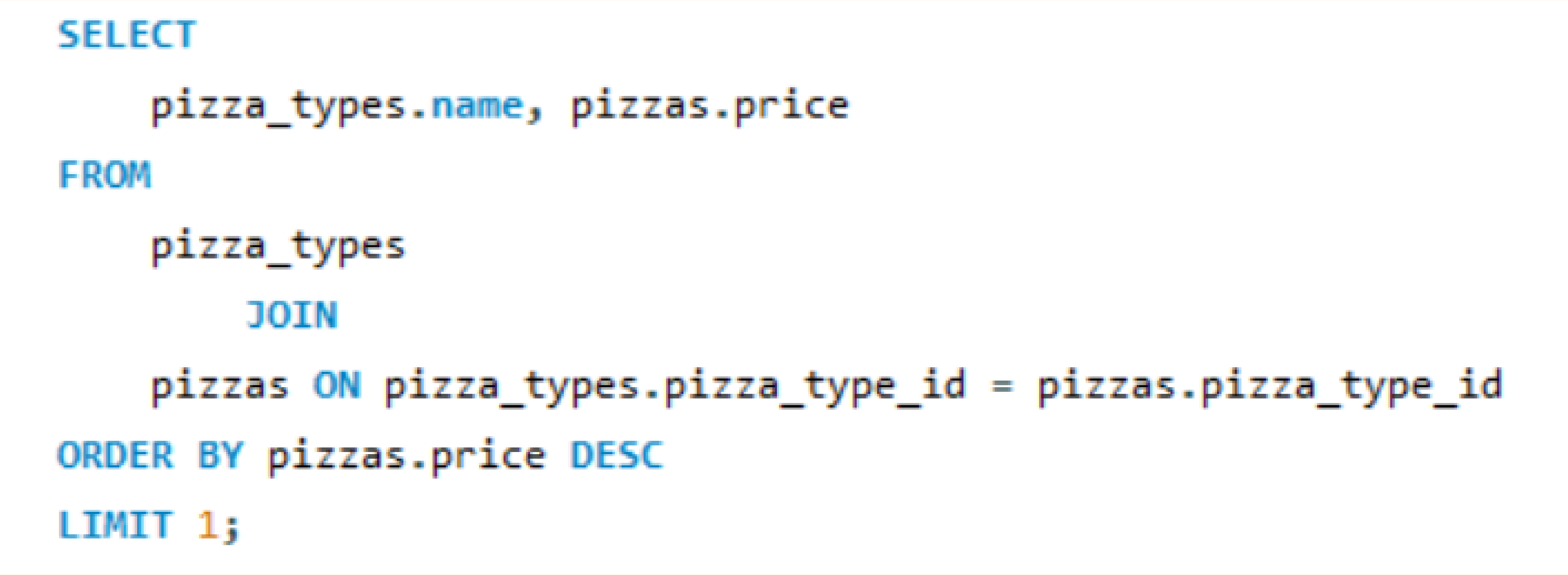


```sql
SELECT
    ROUND(SUM(order_details.quantity * pizzas.price),
            2) AS total_sales
FROM
    order_details
        JOIN
    pizzas ON pizzas.pizza_id = order_details.pizza_id
```

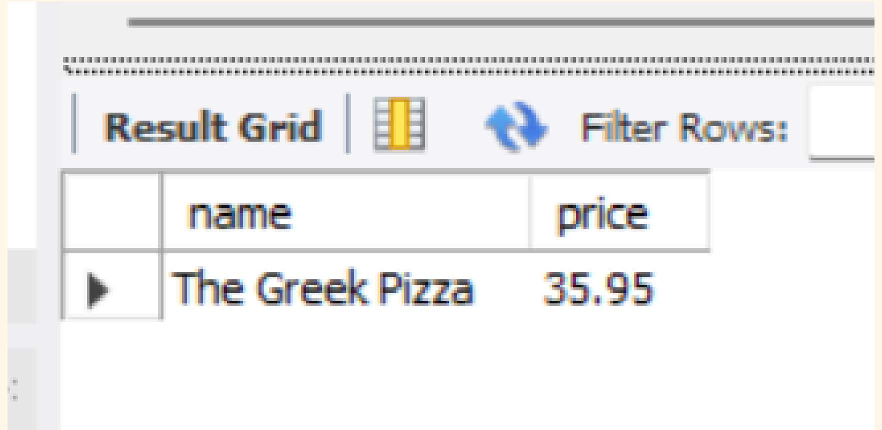


```
  total_sales
▶ 817860.05
```

Identify the highest-priced pizza

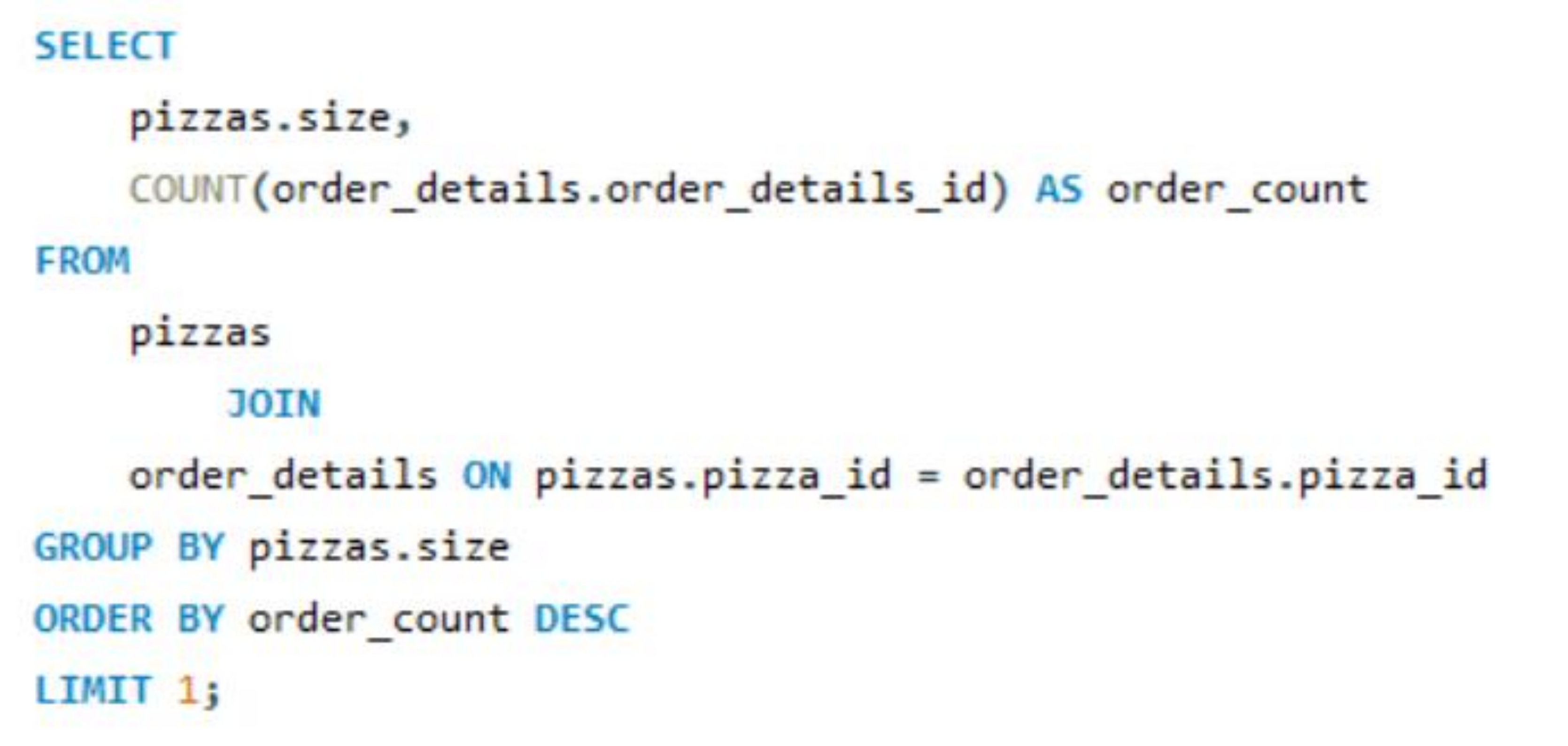


```
SELECT
    pizza_types.name, pizzas.price
FROM
    pizza_types
        JOIN
    pizzas ON pizza_types.pizza_type_id = pizzas.pizza_type_id
ORDER BY pizzas.price DESC
LIMIT 1;
```

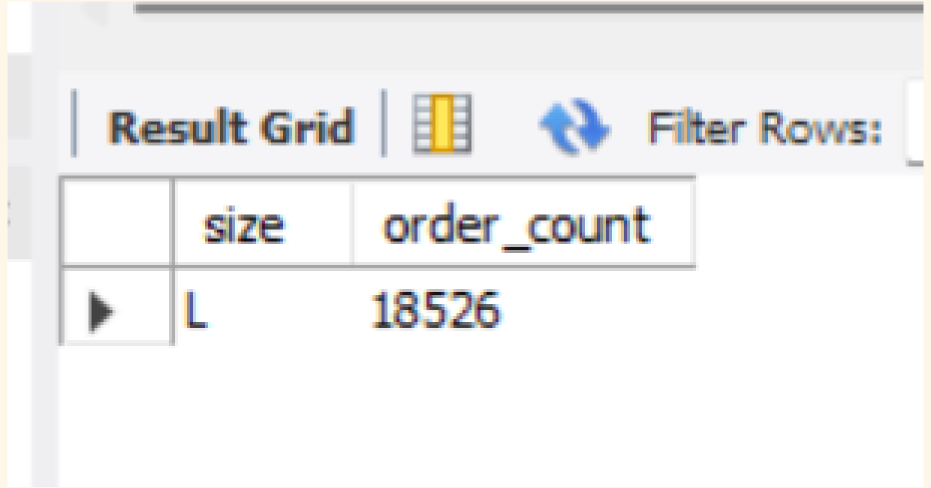


name	price
The Greek Pizza	35.95

Identify the most common pizza size ordered.

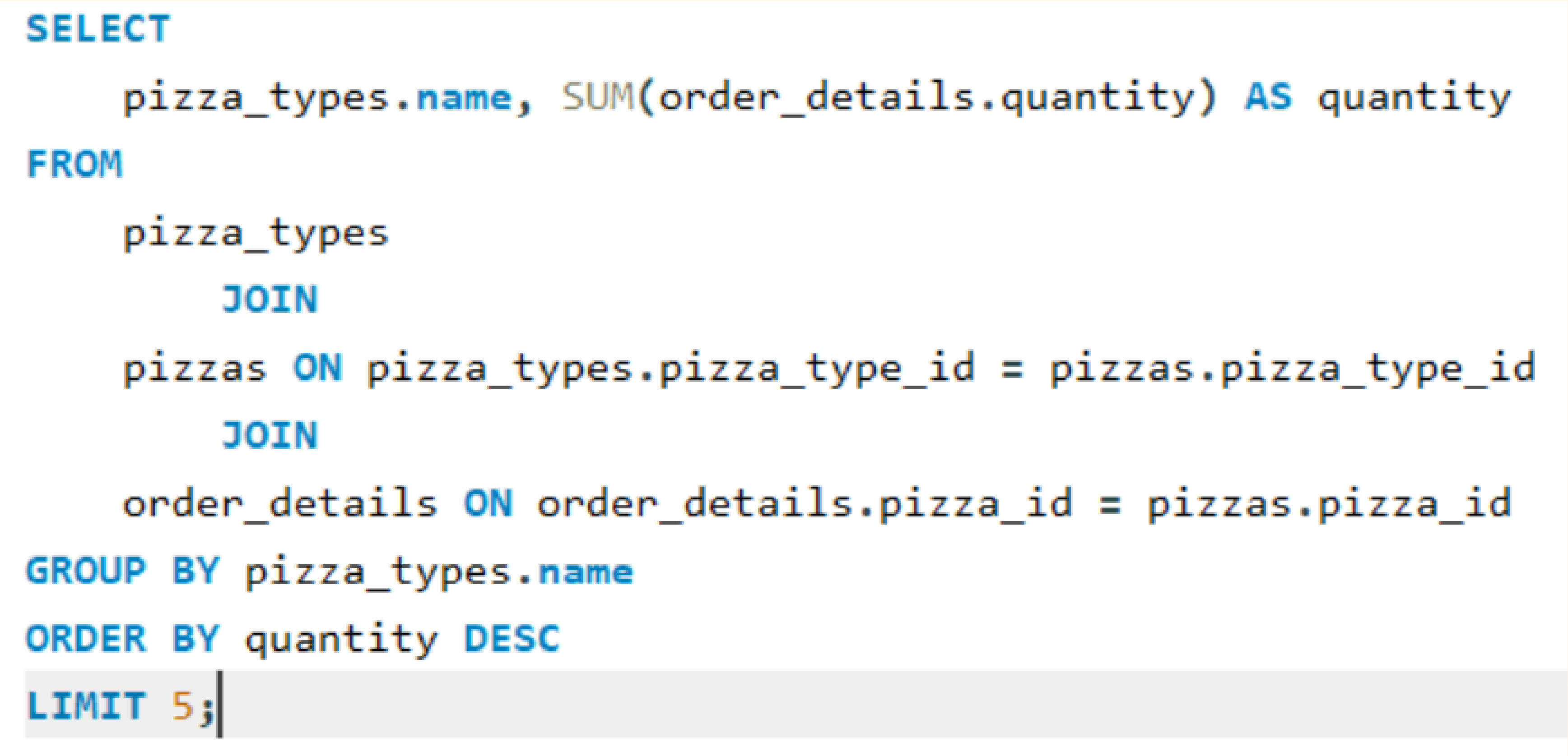


```
SELECT
    pizzas.size,
    COUNT(order_details.order_details_id) AS order_count
FROM
    pizzas
        JOIN
    order_details ON pizzas.pizza_id = order_details.pizza_id
GROUP BY pizzas.size
ORDER BY order_count DESC
LIMIT 1;
```

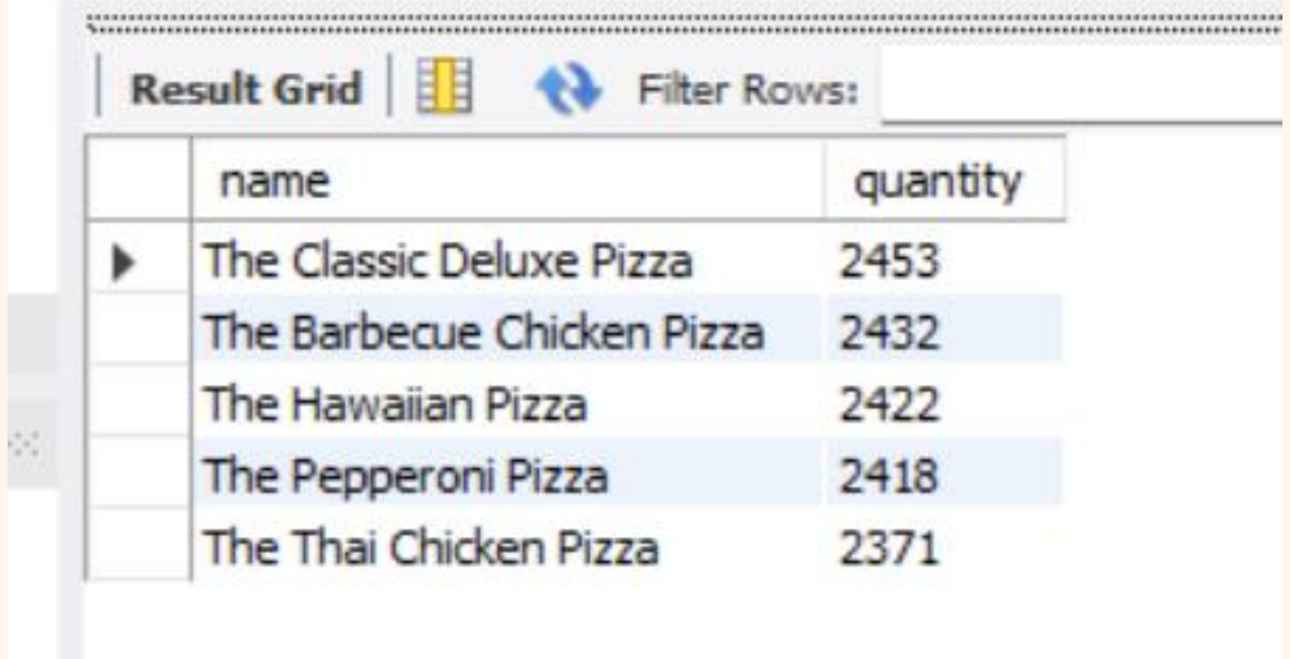


size	order_count
L	18526

List the top 5 most ordered pizza types along with their quantities.

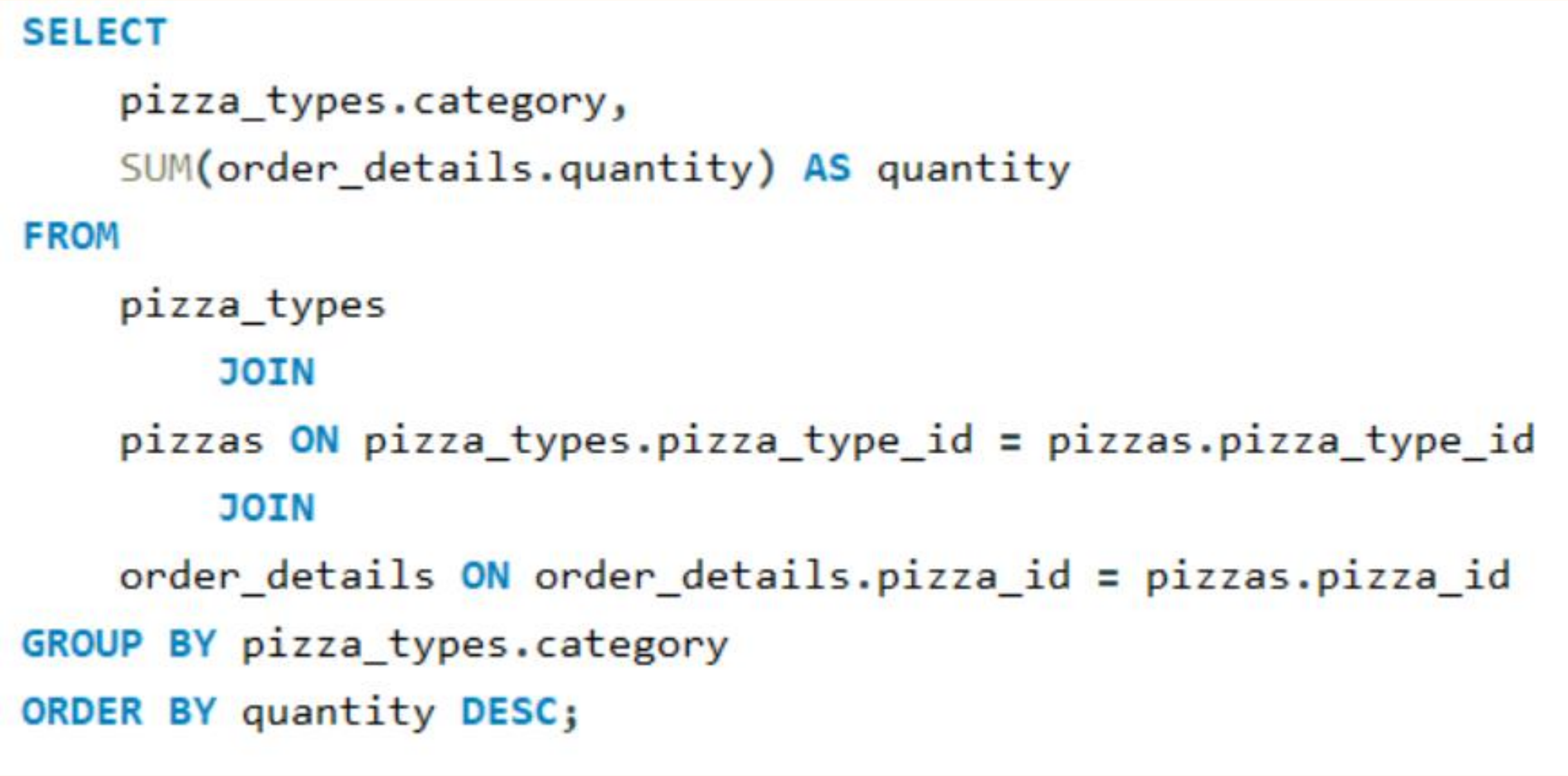


```
SELECT
    pizza_types.name, SUM(order_details.quantity) AS quantity
FROM
    pizza_types
        JOIN
    pizzas ON pizza_types.pizza_type_id = pizzas.pizza_type_id
        JOIN
    order_details ON order_details.pizza_id = pizzas.pizza_id
GROUP BY pizza_types.name
ORDER BY quantity DESC
LIMIT 5;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

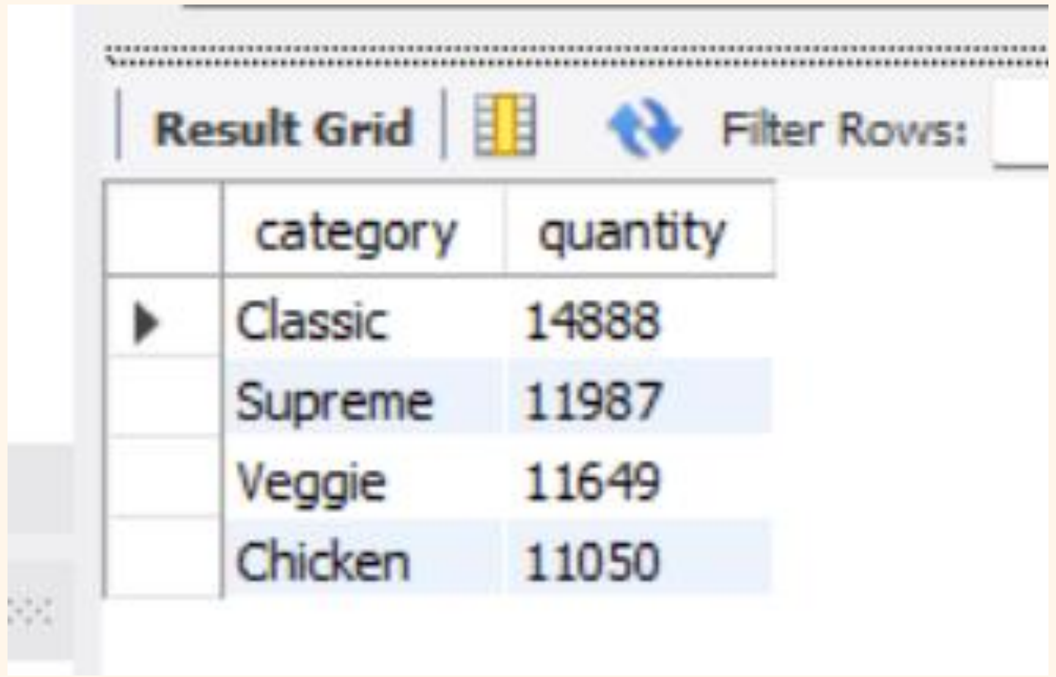


name	quantity
The Classic Deluxe Pizza	2453
The Barbecue Chicken Pizza	2432
The Hawaiian Pizza	2422
The Pepperoni Pizza	2418
The Thai Chicken Pizza	2371

Find the total quantity of each pizza category ordered.

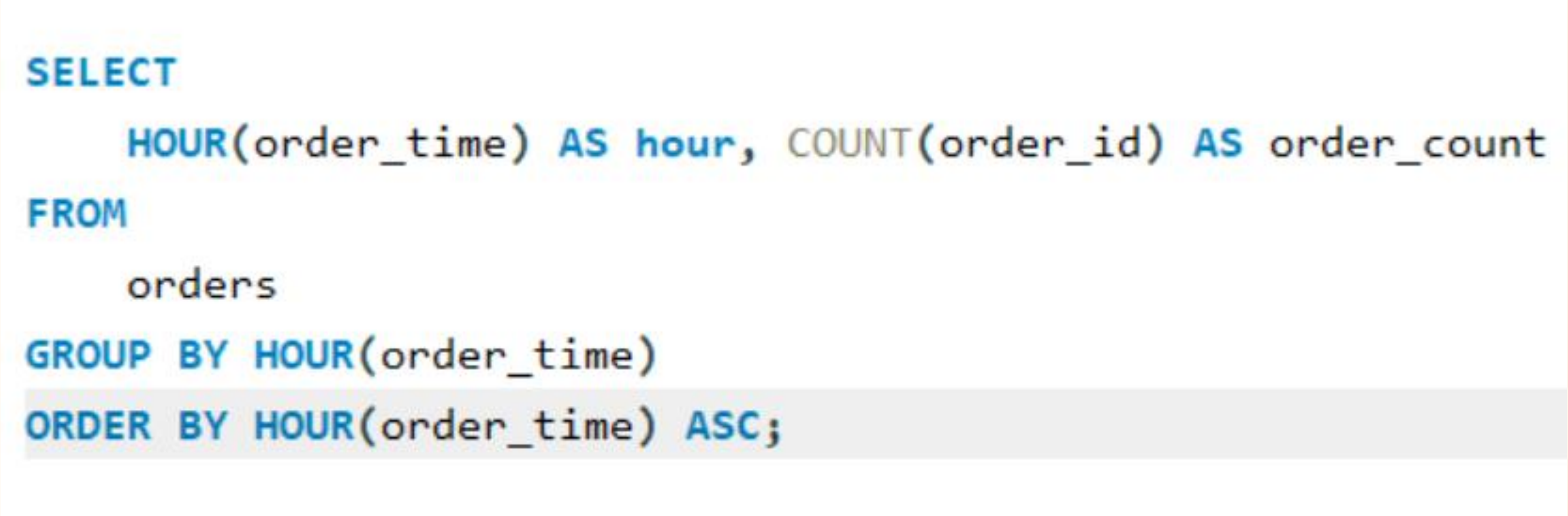


```
SELECT
    pizza_types.category,
    SUM(order_details.quantity) AS quantity
FROM
    pizza_types
        JOIN
    pizzas ON pizza_types.pizza_type_id = pizzas.pizza_type_id
        JOIN
    order_details ON order_details.pizza_id = pizzas.pizza_id
GROUP BY pizza_types.category
ORDER BY quantity DESC;
```

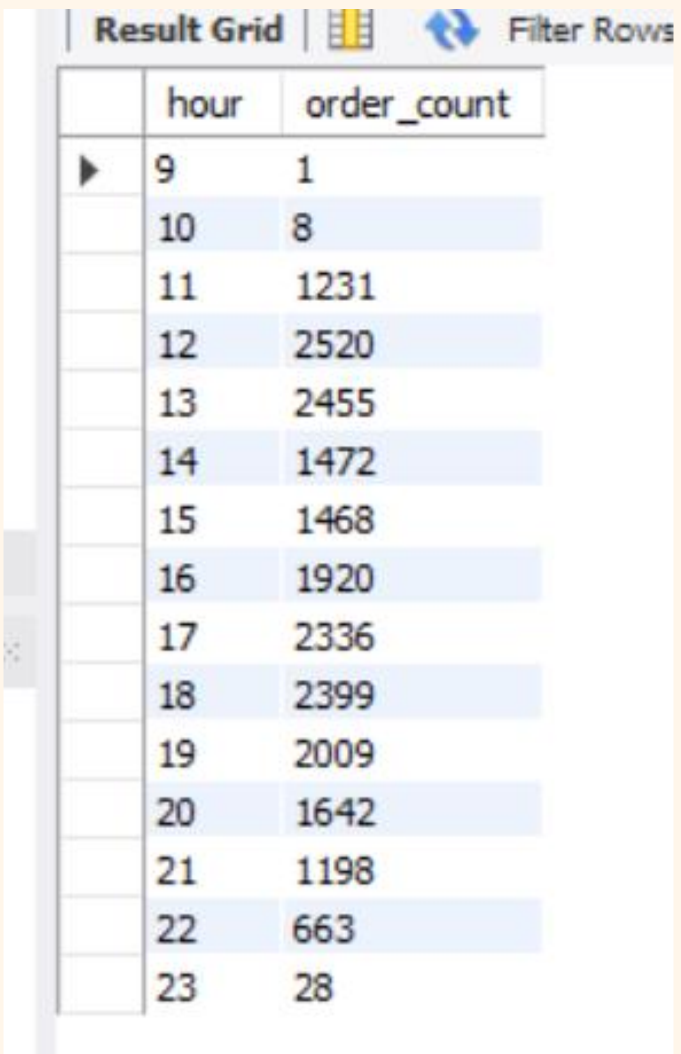


category	quantity
Classic	14888
Supreme	11987
Veggie	11649
Chicken	11050

Determine the distribution of orders by hour of the day.

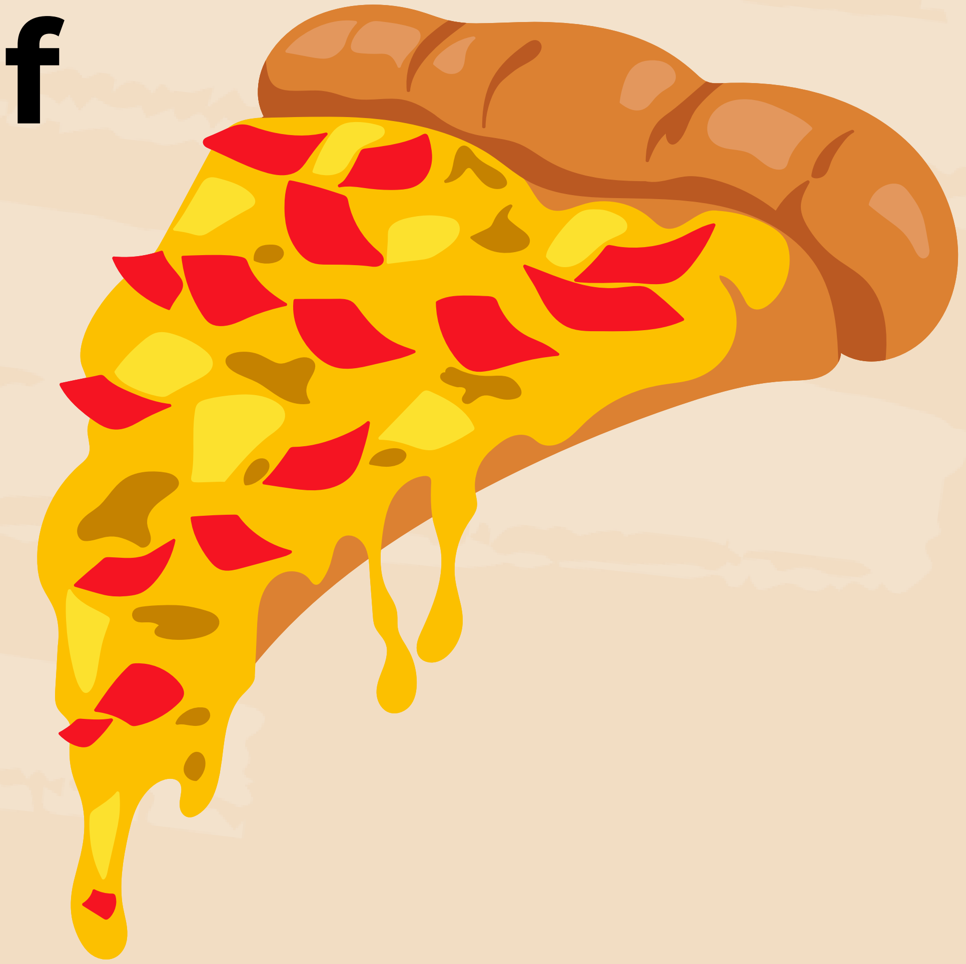


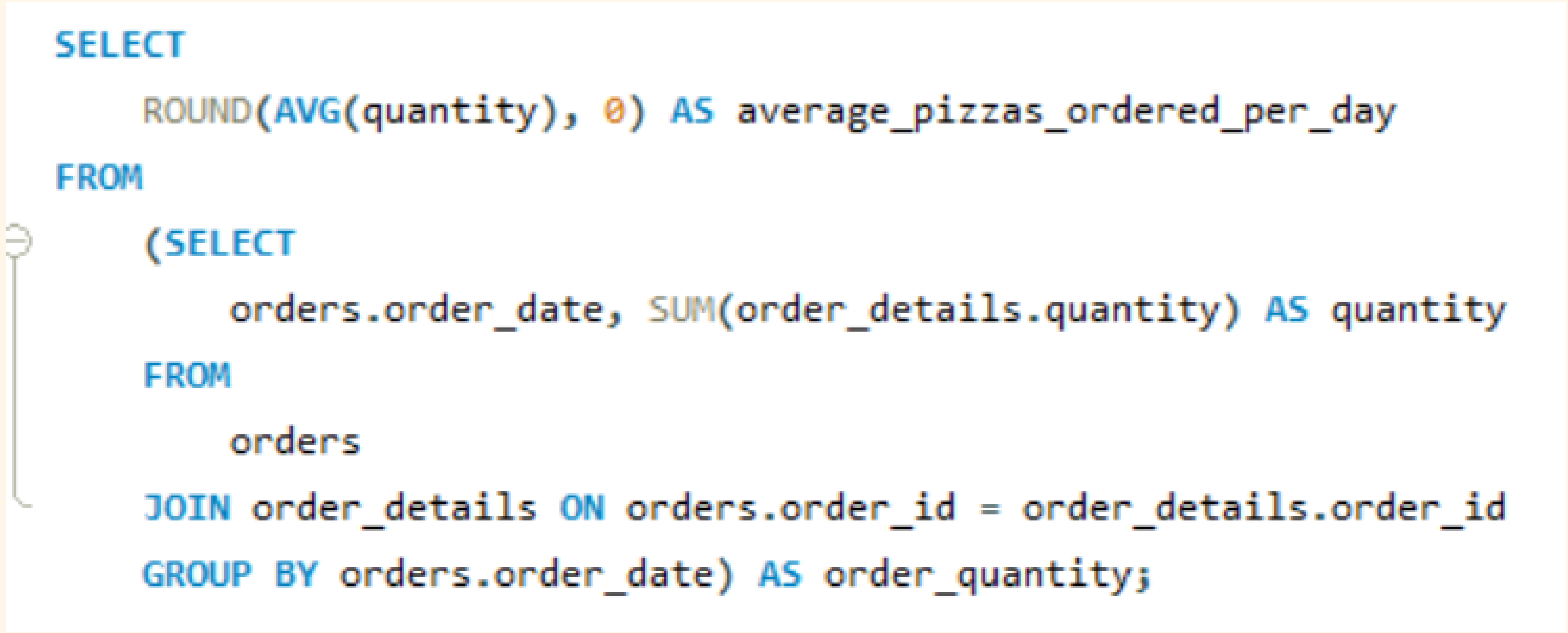
```
SELECT
    HOUR(order_time) AS hour, COUNT(order_id) AS order_count
FROM
    orders
GROUP BY HOUR(order_time)
ORDER BY HOUR(order_time) ASC;
```



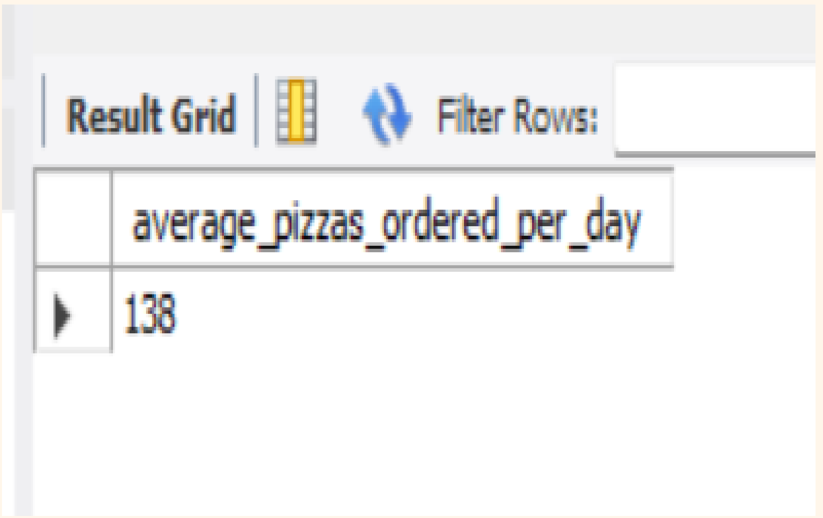
hour	order_count
9	1
10	8
11	1231
12	2520
13	2455
14	1472
15	1468
16	1920
17	2336
18	2399
19	2009
20	1642
21	1198
22	663
23	28

. Calculate the average number of pizzas ordered per day.



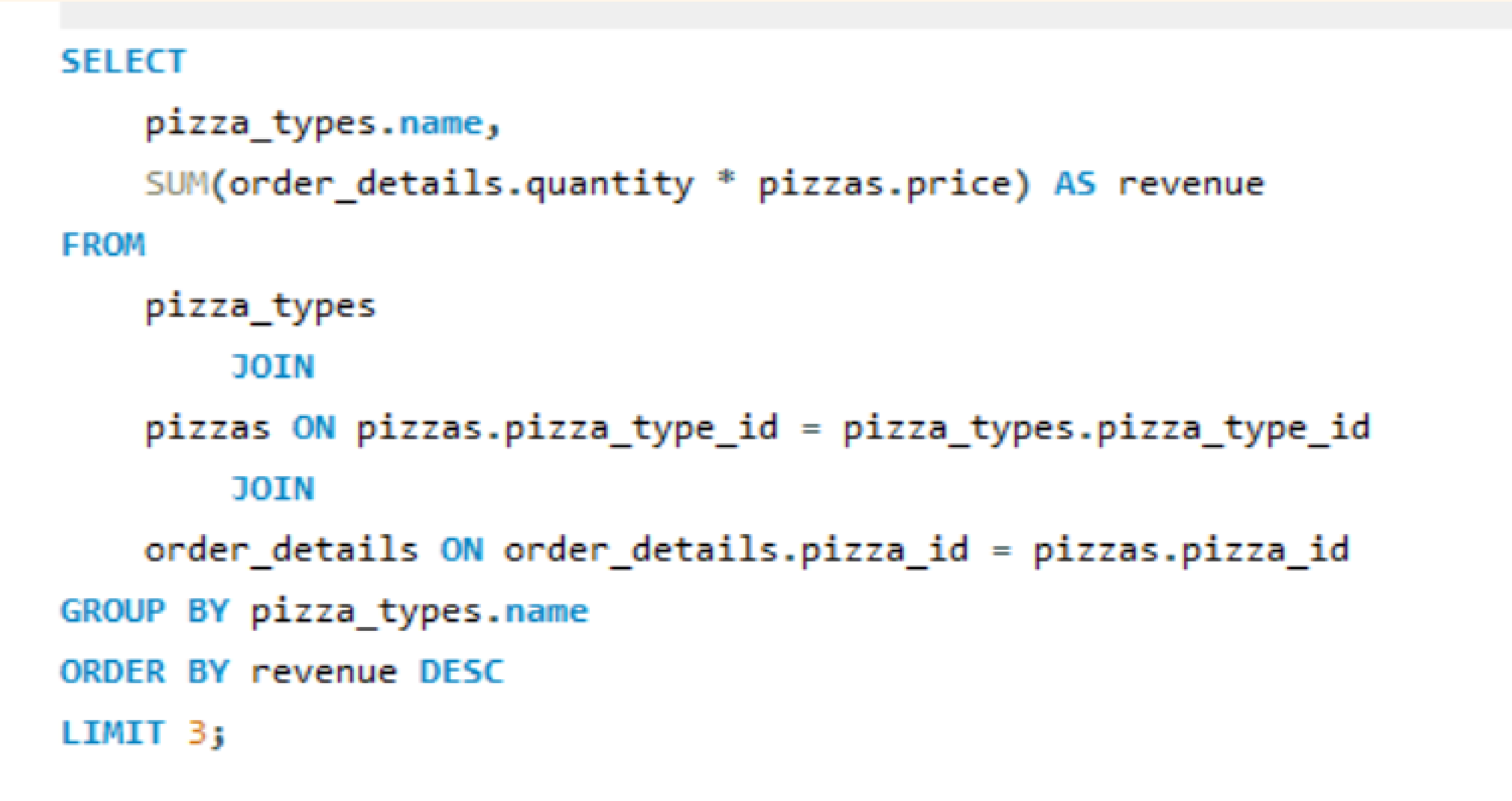


```sql
SELECT
    ROUND(AVG(quantity), 0) AS average_pizzas_ordered_per_day
FROM
    (SELECT
        orders.order_date, SUM(order_details.quantity) AS quantity
    FROM
        orders
    JOIN order_details ON orders.order_id = order_details.order_id
    GROUP BY orders.order_date) AS order_quantity;
```

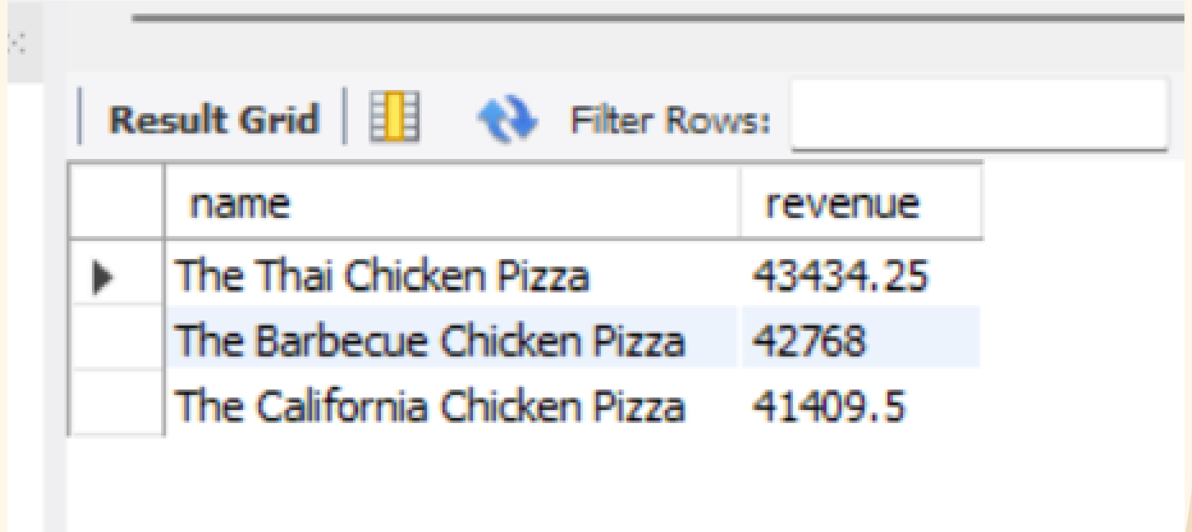


average_pizzas_ordered_per_day
138

. Identify the top 3 most ordered pizza types based on revenue.

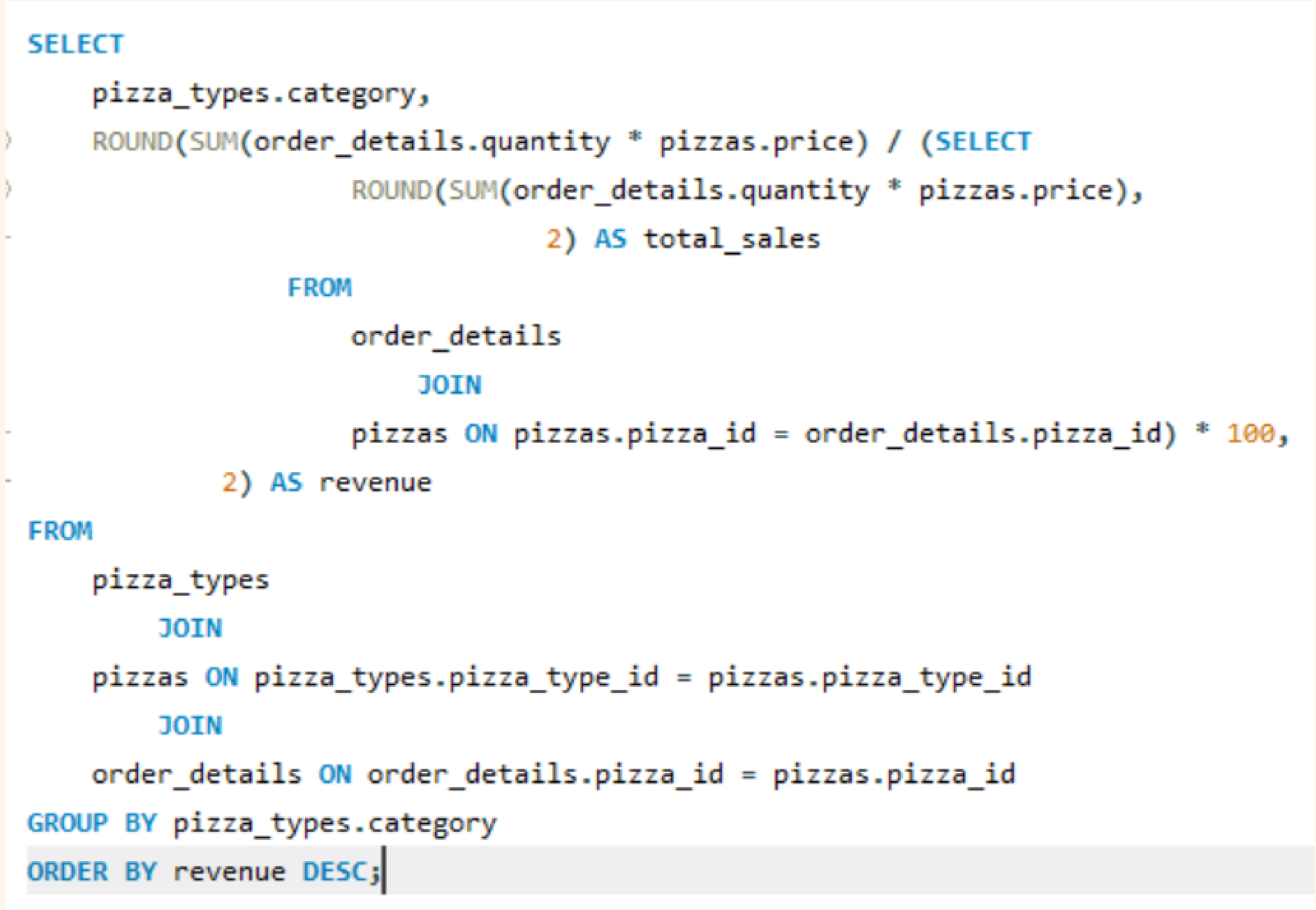


```
SELECT
    pizza_types.name,
    SUM(order_details.quantity * pizzas.price) AS revenue
FROM
    pizza_types
        JOIN
    pizzas ON pizzas.pizza_type_id = pizza_types.pizza_type_id
        JOIN
    order_details ON order_details.pizza_id = pizzas.pizza_id
GROUP BY pizza_types.name
ORDER BY revenue DESC
LIMIT 3;
```

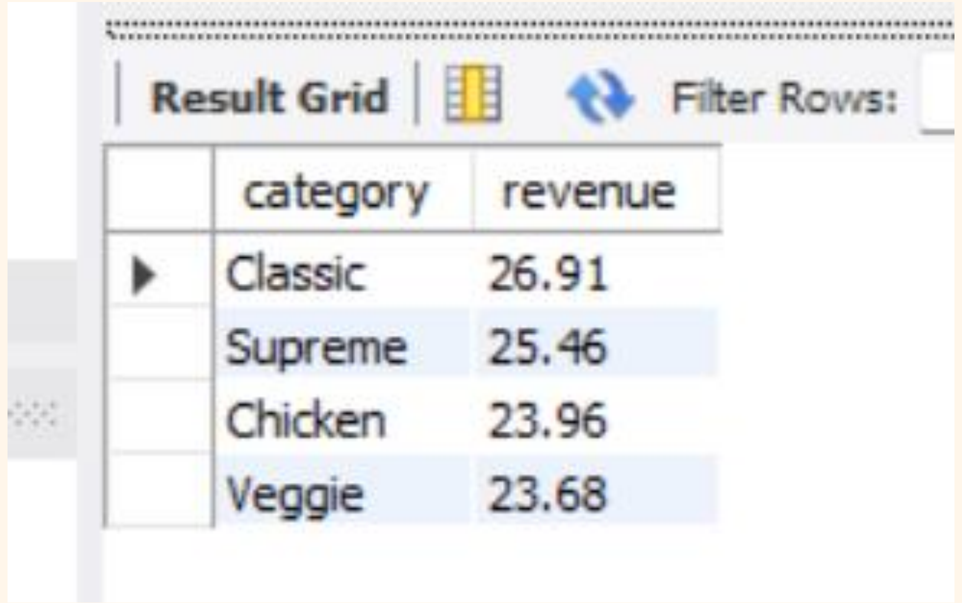


name	revenue
The Thai Chicken Pizza	43434.25
The Barbecue Chicken Pizza	42768
The California Chicken Pizza	41409.5

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

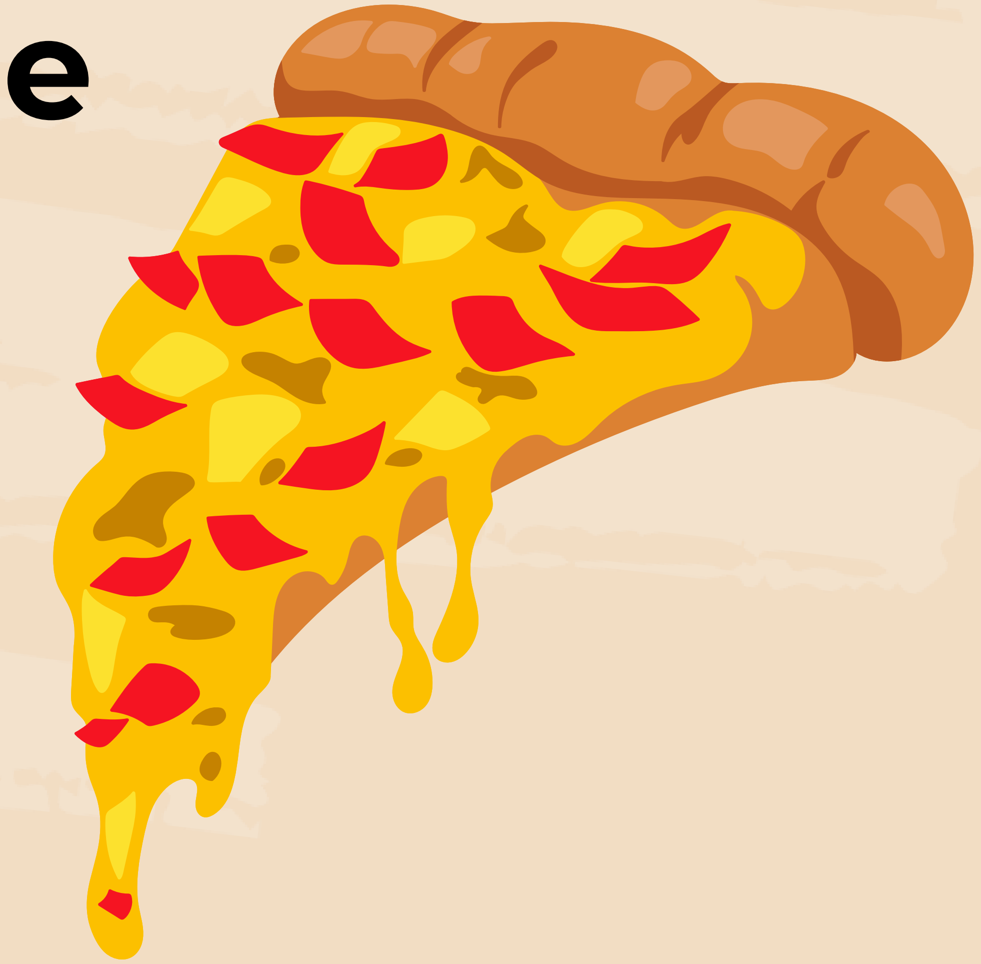


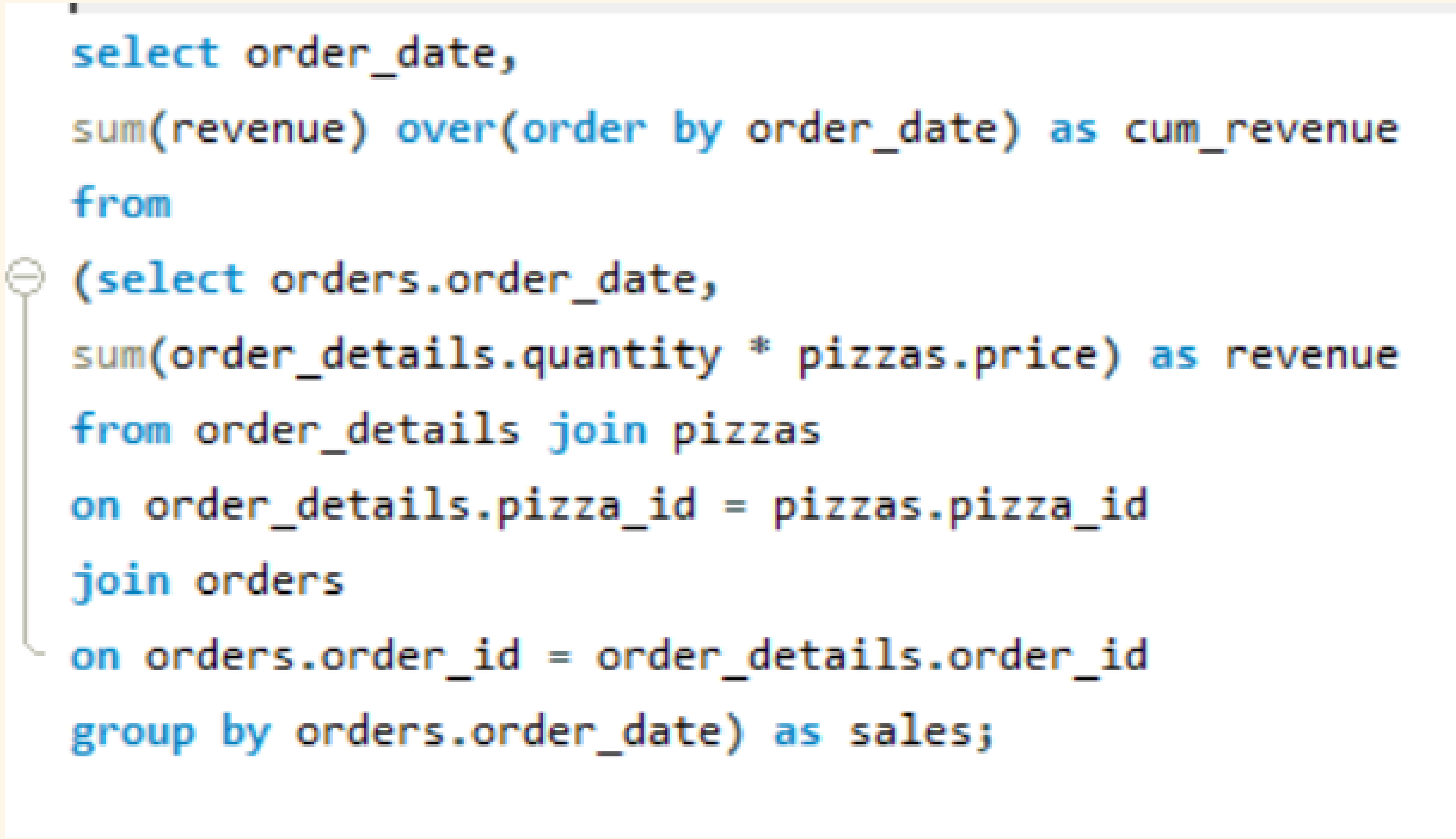
```
SELECT
    pizza_types.category,
    ROUND(SUM(order_details.quantity * pizzas.price) / (SELECT
                    ROUND(SUM(order_details.quantity * pizzas.price),
                            2) AS total_sales
                FROM
                    order_details
                        JOIN
                    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;
```



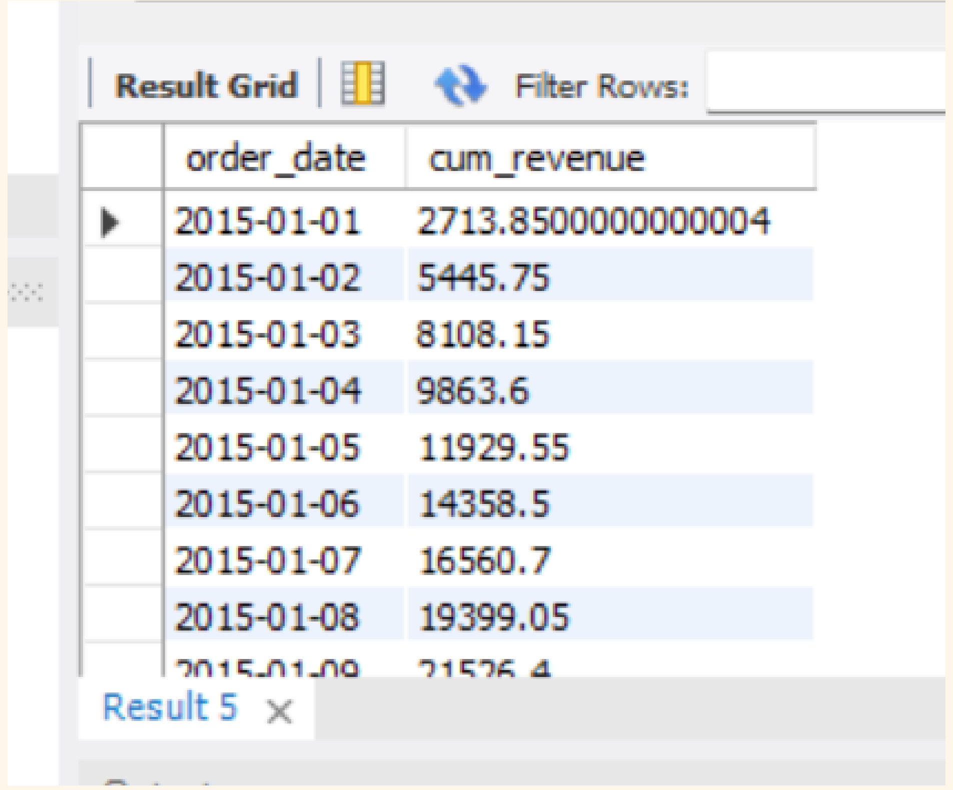
category	revenue
Classic	26.91
Supreme	25.46
Chicken	23.96
Veggie	23.68

. Analyze the cumulative revenue generated over time.



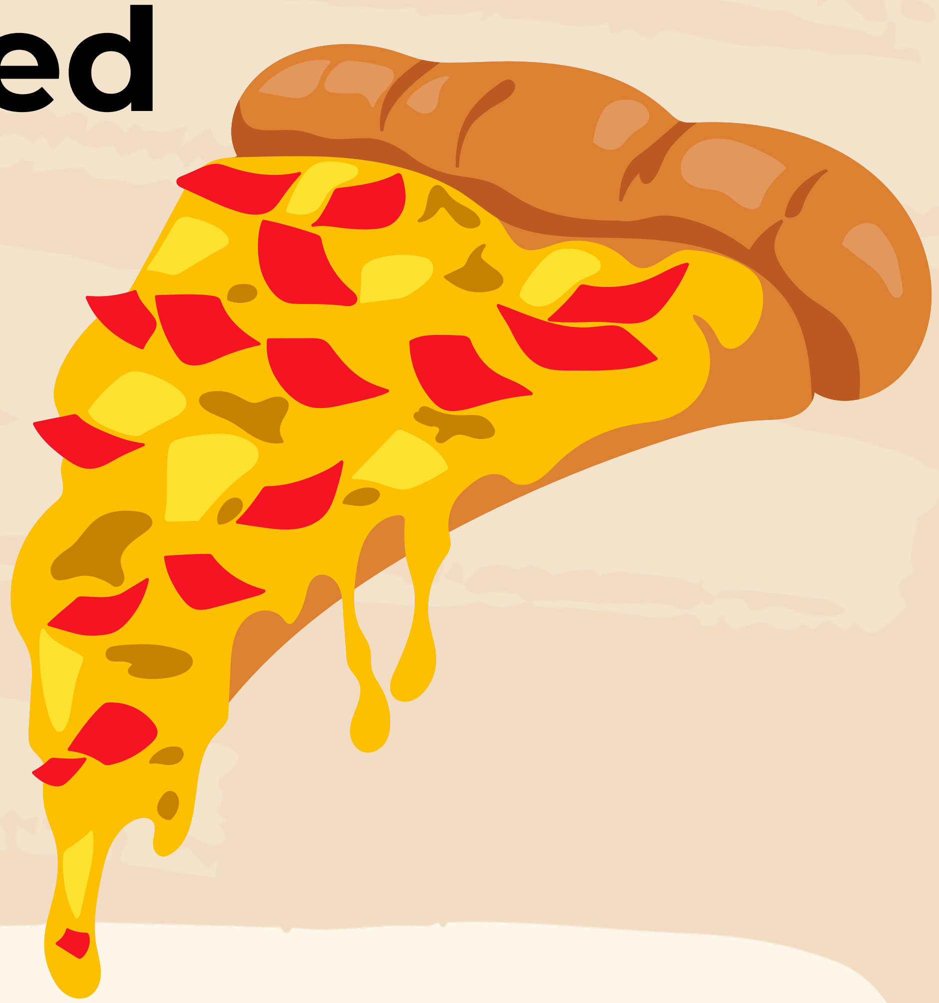


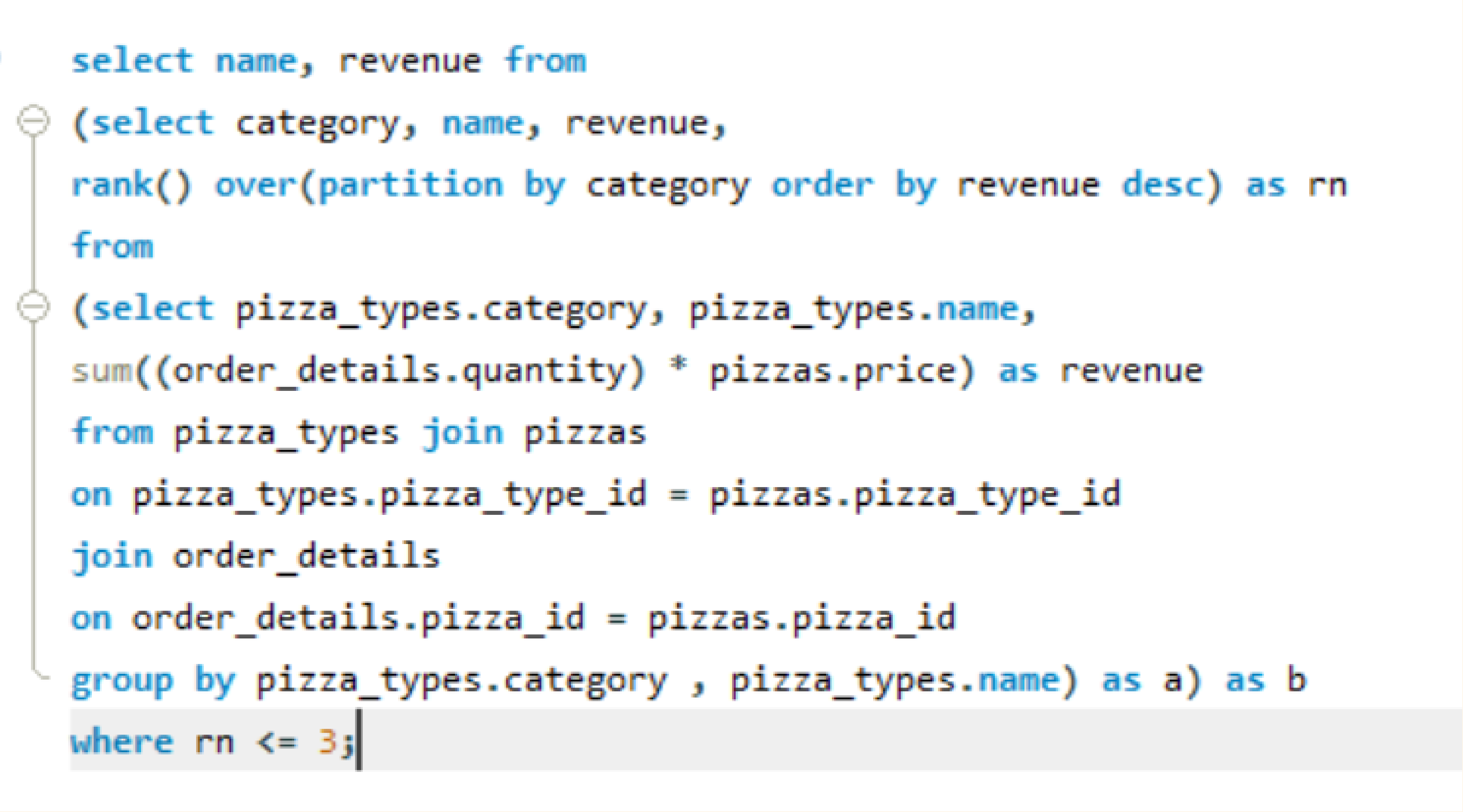
```
select order_date,
sum(revenue) over(order by order_date) as cum_revenue
from
(select orders.order_date,
sum(order_details.quantity * pizzas.price) as revenue
from order_details join pizzas
on order_details.pizza_id = pizzas.pizza_id
join orders
on orders.order_id = order_details.order_id
group by orders.order_date) as sales;
```



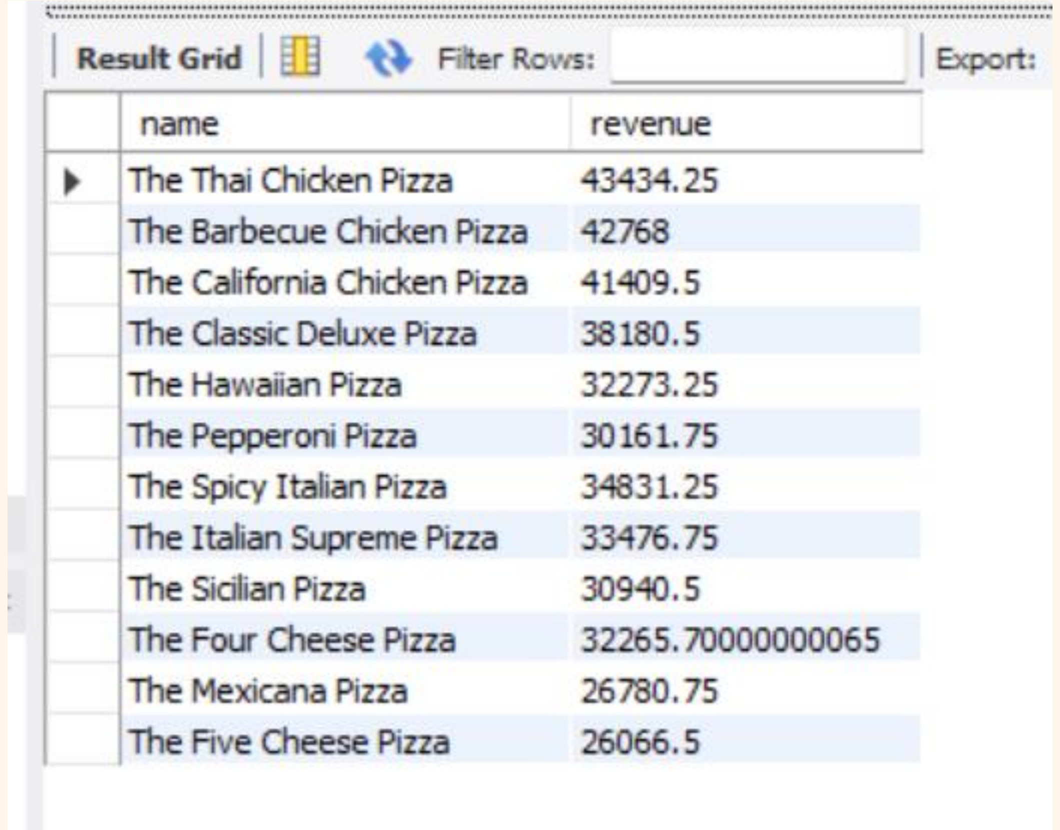
order_date	cum_revenue
2015-01-01	2713.8500000000004
2015-01-02	5445.75
2015-01-03	8108.15
2015-01-04	9863.6
2015-01-05	11929.55
2015-01-06	14358.5
2015-01-07	16560.7
2015-01-08	19399.05
2015-01-09	21526.4

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





```
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
The Thai Chicken Pizza	43434.25
The Barbecue Chicken Pizza	42768
The California Chicken Pizza	41409.5
The Classic Deluxe Pizza	38180.5
The Hawaiian Pizza	32273.25
The Pepperoni Pizza	30161.75
The Spicy Italian Pizza	34831.25
The Italian Supreme Pizza	33476.75
The Sicilian Pizza	30940.5
The Four Cheese Pizza	32265.7000000065
The Mexicana Pizza	26780.75
The Five Cheese Pizza	26066.5

Insights :

The **Margherita** and **Pepperoni** pizzas are the top sellers, contributing over 40% to total sales. This suggests strong customer preference for classic pizza types.

The **Large Pepperoni Pizza** generates the highest revenue, accounting for 15% of total sales. The average order value increases with larger sizes, indicating a preference for bigger portions.

Most orders are placed between **6 PM and 8 PM**, aligning with dinner time, which suggests this is the peak business period.

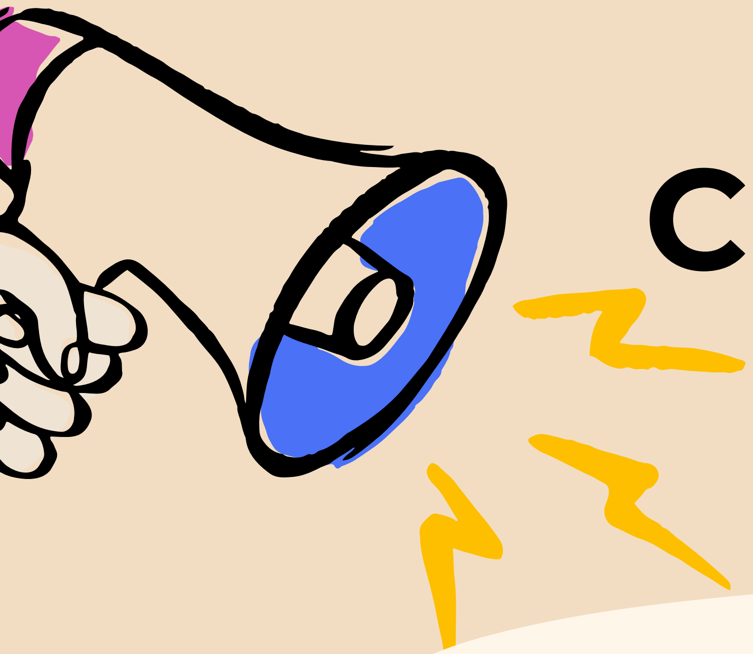
The **Medium size** is the most popular, representing 50% of all orders, indicating that customers prefer a balance between portion size and price.

Business Recommendations:

Highlight the top 3 pizzas (Margherita, Pepperoni, and BBQ Chicken) in promotions and menu placement. Consider upselling larger sizes to increase order value.

Introduce combo deals featuring top-selling pizzas during peak hours (6 PM - 8 PM) to capitalize on customer traffic.

Offer discounts or loyalty points for large orders to encourage bulk buying, especially during non-peak hours (2 PM - 4 PM).



Conclusion

In this project, I analyzed sales data from a pizza store using SQL to extract key business insights. By structuring the data and executing queries, I identified top-selling pizzas, peak order times, and customer preferences, which informed strategic recommendations like menu optimization and targeted promotions. Through this process, I enhanced my SQL skills, learned the importance of data-driven decision-making, and developed analytical thinking. The project underscored the value of accurate data and opened avenues for future analysis, such as predictive modeling.

Thank You!

Email
praffulawadhiya047@gmail.com

Phone Number
6261703159