SQL Project Report

Online Food Delivery

Advance Level

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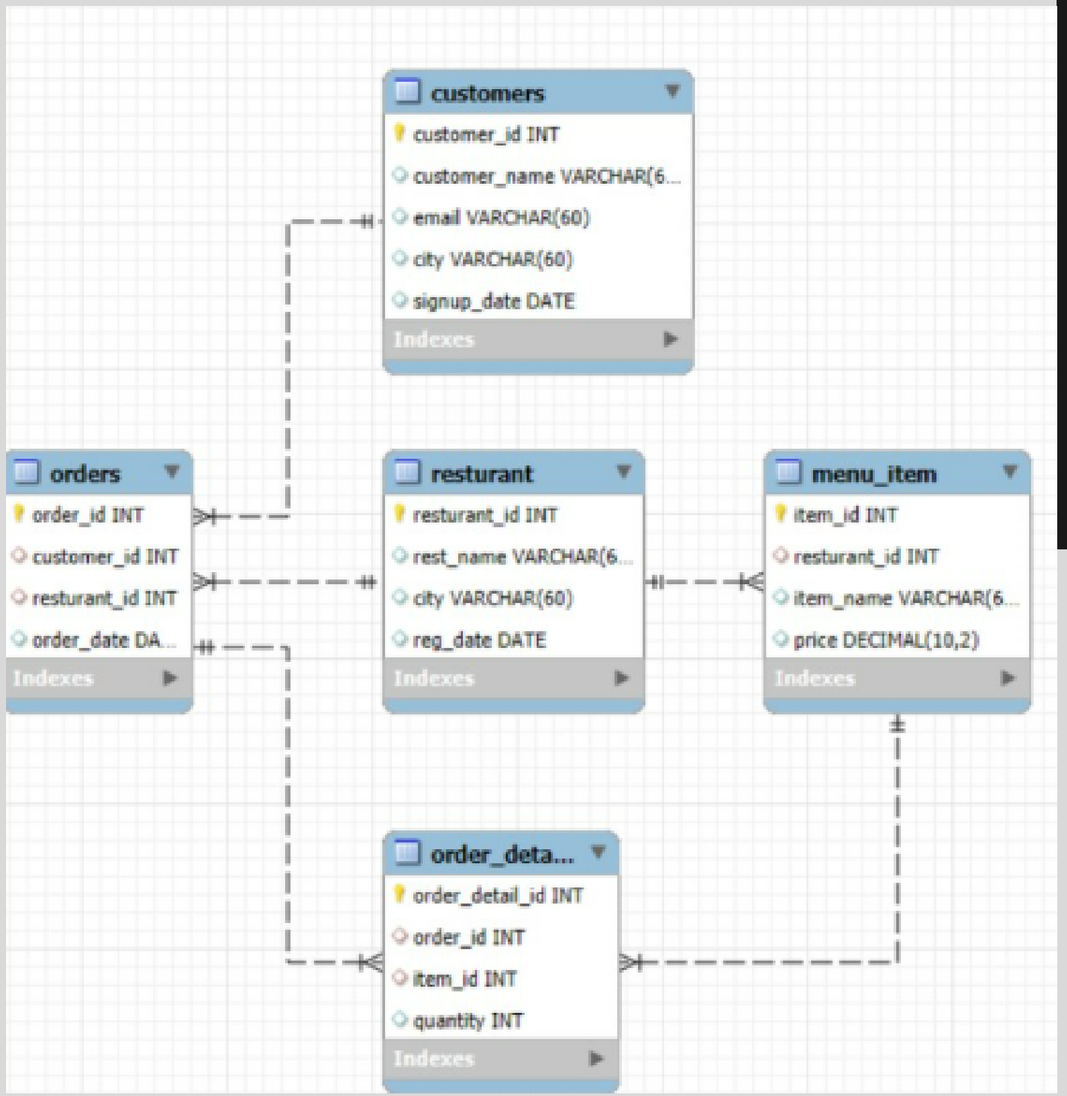
What the project is about

This advanced SQL project is designed to tackle several complex data challenges by leveraging SQL's powerful querying capabilities. Through in-depth analysis, it uncovers meaningful insights that address key problems within the business. The project also integrates data visualization techniques, transforming raw information into clear, actionable charts and reports. By combining robust data manipulation with practical visualization, this project empowers stakeholders to make informed decisions and drives data-driven solutions for real-world scenarios.

Problem Statements

1. REWARD TIER ON CUSTOMER BASED ON NUMBER OF ORDER PLACED
2. RESTAURANT SIZE CATEGORY
3. HOW MANY HIGH VALUE ORDERS
4. FOR EACH CITY,LIST THE RESTAURANT WITH HIGHEST TOTAL REVENUE
5. RANK RESTAURANT BY TOTAL REVENUE WITHOUT GAP
6. MONTHLY ORDER SUMMARY
7. POPULAR ITEMS
8. TOP N CUSTOMER BY ORDERS
9. CUSTOMER WE NEVER ORDERED
10. NUMBER OF ITEM COUNT PER RESTAURANT

Dataset & Schema



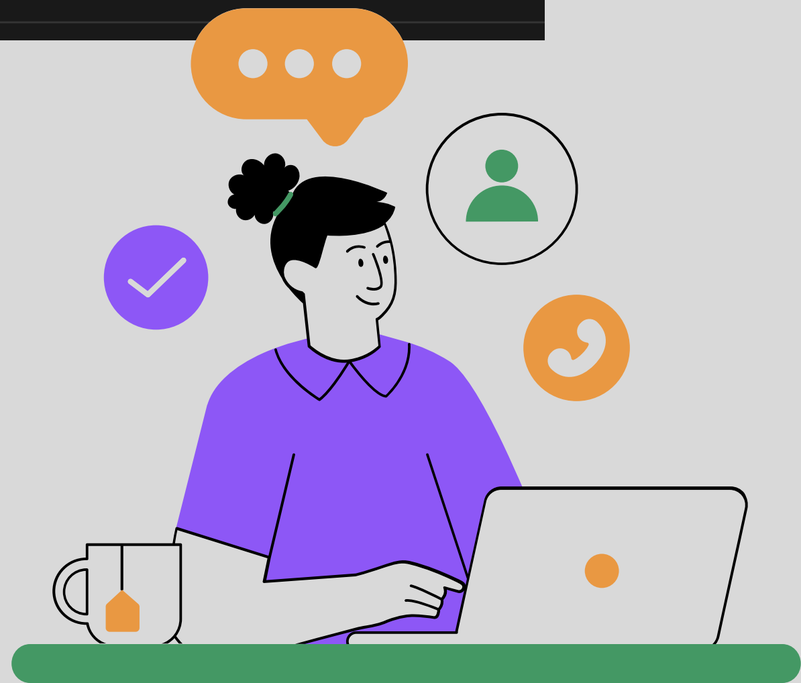
Dataset Description

Name: Online Food Delivery Dataset

Number of Tables: 5

Total Rows: Approx. 5000

Table Name	Description
resturant	resturant_id, resturant_name, city, registration_id
customers	Customer details like ID, name, city, city, email, signup date
orders	order_id, resturant_id, customer_id, orderdate
order_details	order_detail_id, order_id, item_id, quantity
menu_item	item_id, resturant_id, item_name, price

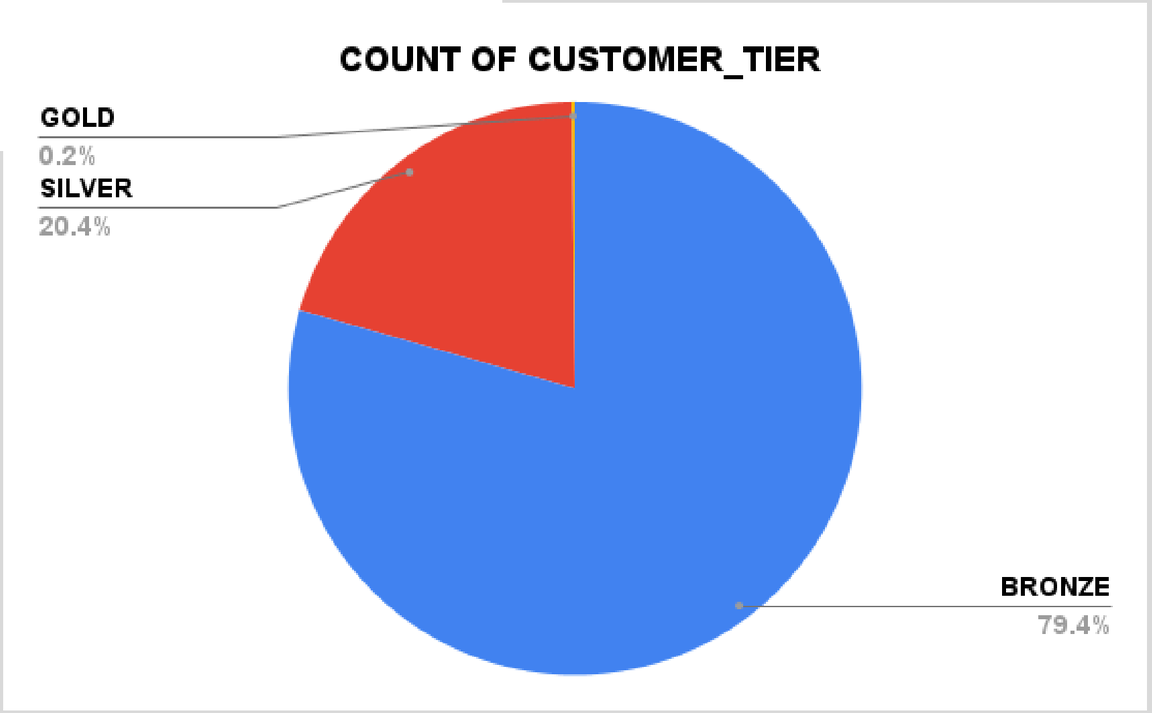


Queries & Methods

Q1: REWARD TIER ON CUSTOMER BASED ON NUMBER OF ORDER PLACED ABOVE OR EQUALS TO 10 GOLD, BETWEEN 5 TO 9 SILVER AND BELOW 5 BRONZE

```
143    -- 7 Reward Tier to customers Based on Number of Orders Placed (( >= 10 ) Gold, (BETWEEN 5 AND 9 ) Silver, (<5) Bronze)
144    SELECT c.customer_id,c.customer_name,COUNT(o.order_id) AS total_orders,
145    CASE
146    WHEN COUNT(o.order_id) >= 10 THEN 'GOLD'
147    WHEN COUNT(o.order_id) BETWEEN 5 AND 9 THEN 'SILVER'
148    ELSE 'BRONZE'
149    END AS customer_tier
150    FROM customers c
151    JOIN orders o ON c.customer_id = o.customer_id
152    GROUP BY c.customer_id, c.customer_name;
```

customer_id	customer_name	total_orders	customer_tier
1	Vivaan Sharma	3	BRONZE
2	Vihaan Patel	2	BRONZE
3	Krishna Verma	5	SILVER
4	Aarav Sharma	4	BRONZE
5	Vihaan Das	6	SILVER
6	Krishna Reddy	2	BRONZE
7	Vihaan Nair	7	SILVER
8	Aarav Patel	3	BRONZE
9	Arjun Patel	1	BRONZE
10	Reyansh Verma	4	BRONZE
11	Vivaan Mehta	5	SILVER

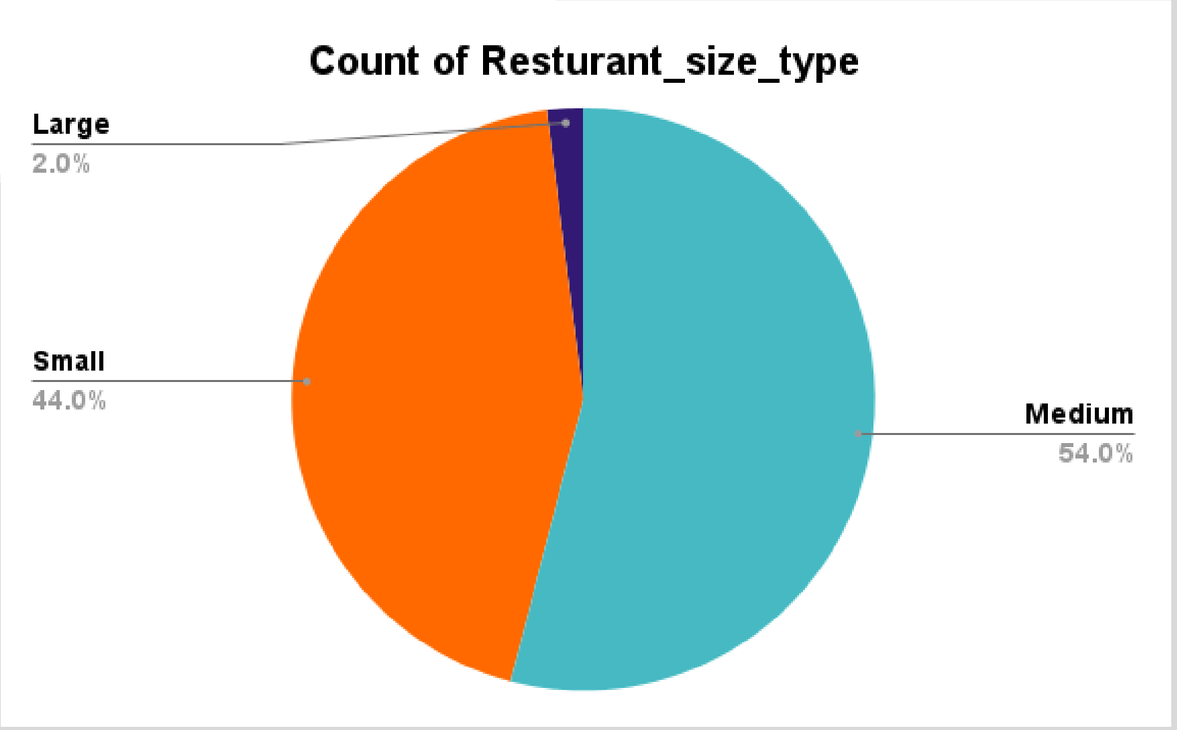


Queries & Methods

Q2:RESTAURANT SIZE CATEGORY LESS THAN 5 ITEMS IN SMALL CLASS, BETWEEN 5 TO 10 MEDIUM AND ABOVE 10 LARGE

```
906     -- 1 Restaurant Size Category
907     -- Task: Based on menu items, mark restaurants as Small (<5 items), Medium (5-10), or Large (>10).
908 •   SELECT resturant_id,COUNT(item_id) AS total_menu_items,
909     CASE
910     WHEN COUNT(item_id) < 5 THEN 'Small'
911     WHEN COUNT(item_id) BETWEEN 5 AND 10 THEN 'Medium'
912     ELSE 'Large'
913     END AS resturant_size_type
914     FROM menu_item
915     GROUP BY resturant id;
```

resturant_id	total_menu_items	resturant_size_type
1	5	Medium
2	3	Small
3	5	Medium
4	2	Small
5	4	Small
6	6	Medium
7	5	Medium
8	4	Small
9	4	Small
10	6	Medium
11	3	Small

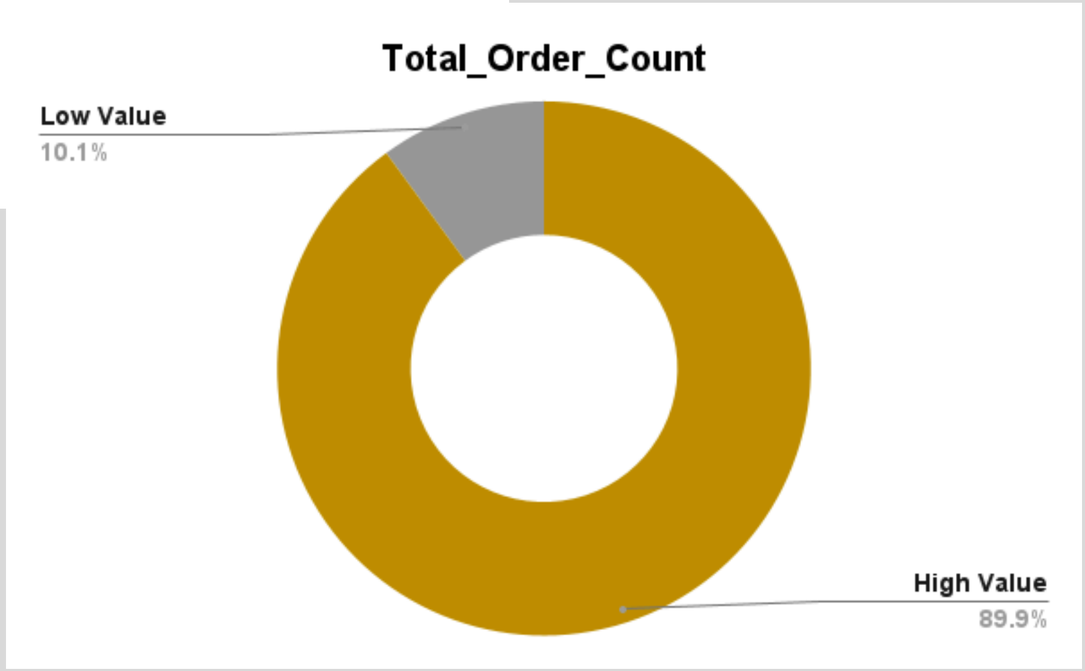


Queries & Methods

Q3:HOW MANY HIGH VALUE ORDERS ABOVE 500 HIGH VALUE BELOW 500 LOW VALUE

```
112    -- 4 Conditional Count – How Many High Value Orders (ABOVE ₹500) & low value orders (BELOW ₹500)
113 •  SELECT order_category,COUNT(*) AS total_order_count
114    FROM (SELECT o.order_id,
115    SUM(m.price * od.quantity) AS order_total,
116    CASE
117    WHEN SUM(m.price * od.quantity) > 500 THEN 'High Value'
118    ELSE 'Low Value'END AS order_category
119    FROM orders o
120    JOIN order_details od ON o.order_id = od.order_id
121    JOIN menu_item m ON od.item_id = m.item_id
122    GROUP BY o.order_id) AS order_totals
123    GROUP BY order_category;
```

order_category	total_order_count
High Value	1134
Low Value	127

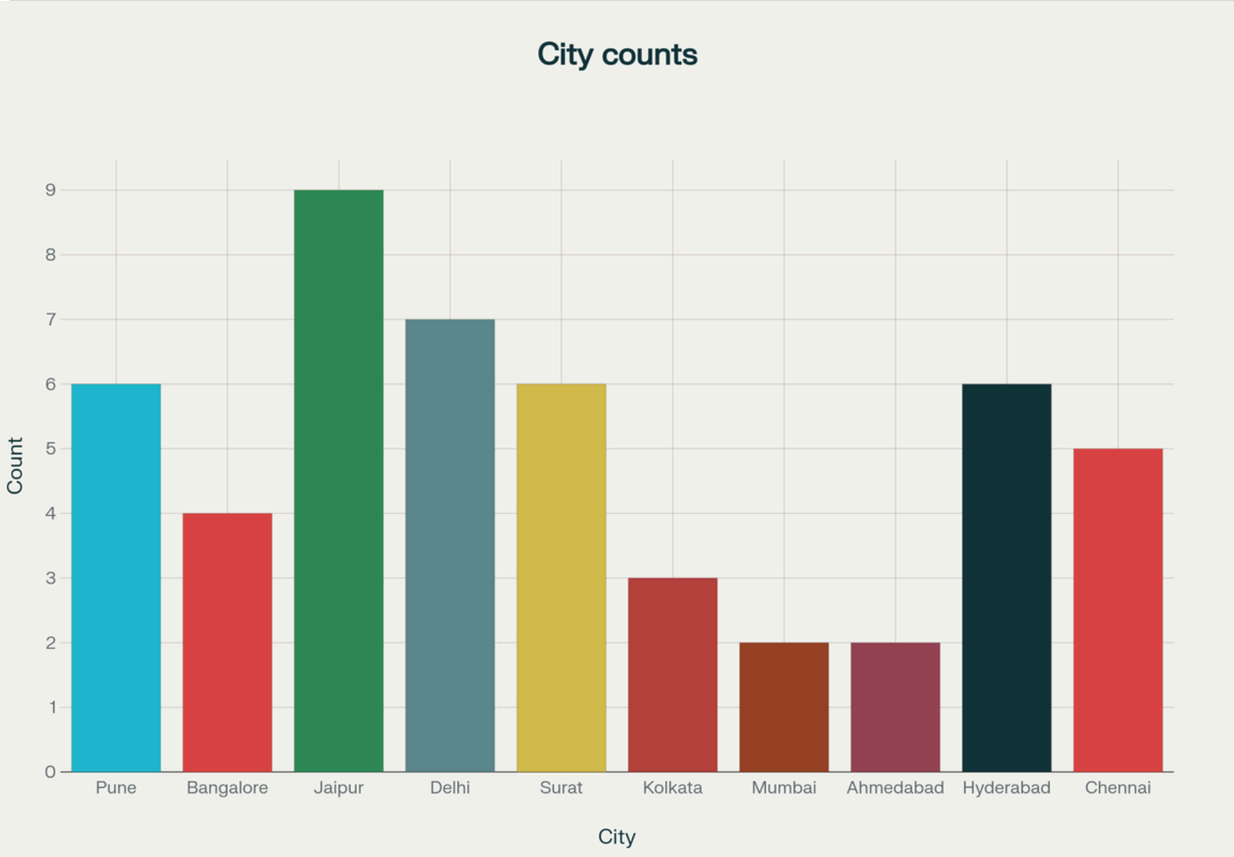


Queries & Methods

Q4:FOR EACH CITY,LIST THE RESTAURANT WITH HIGHEST TOTAL REVENUE

```sql
-- 3  For each city, list the restaurant with the highest total revenue.
SELECT r.rest_name,r.city
FROM resturant r
WHERE (r.resturant_id,r.city)IN(SELECT r.resturant_id,r2.city
FROM resturant r2
JOIN orders o ON r2.resturant_id=o.resturant_id
JOIN order_details od ON o.order_id=od.order_id
JOIN menu_item m ON od.item_id=m.item_id
GROUP BY r2.city,r2.resturant_id
HAVING SUM(m.price*od.quantity)=(SELECT MAX(total_revenue)
FROM (SELECT r3.city AS city_name,r3.resturant_id,SUM(m.price*od.quantity) AS total_revenue
FROM resturant r3
JOIN orders o ON r3.resturant_id=o.resturant_id
JOIN order_details od ON o.order_id=od.order_id
JOIN menu_item m ON od.item_id=m.item_id
GROUP BY r3.city,r3.resturant_id) AS city_revenue
WHERE city_revenue.city_name=r2.city));
```

city	city
Pune	6
Bangalore	4
Jaipur	9
Delhi	7
Surat	6
Kolkata	3
Mumbai	2
Ahmedabad	2
Hyderabad	6
Chennai	5

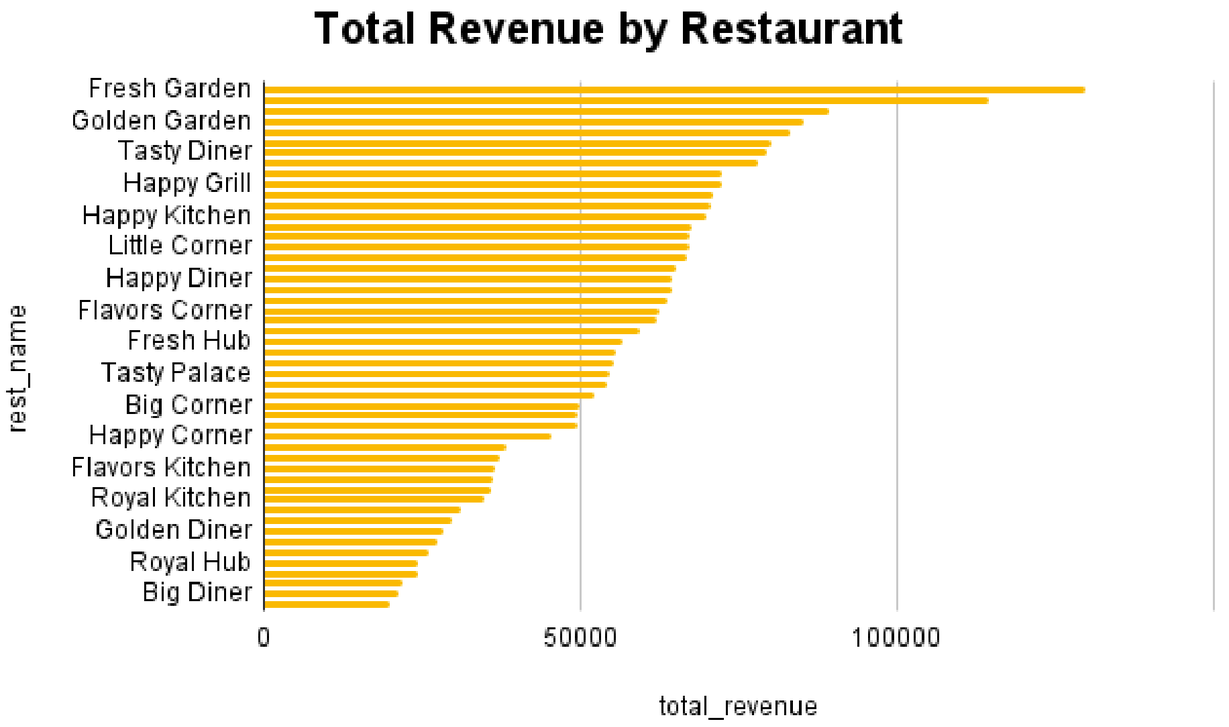


Queries & Methods

Q5:RANK RESTAURANT BY TOTAL REVENUE WITHOUT GAP

```
367  -- 8 Rank Restaurants by Total Revenue Without Gaps
368  -- (restaurants with the same revenue should have the same rank, without skipping numbers.)
369  SELECT  resturant_id,rest_name,total_revenue,
370  DENSE_RANK() OVER (ORDER BY total_revenue DESC) AS revenue_rank
371  FROM (SELECT r.resturant_id,r.rest_name,SUM(m.price * od.quantity) AS total_revenue
372  FROM resturant r
373  JOIN menu_item m ON r.resturant_id = m.resturant_id
374  JOIN order_details od ON m.item_id = od.item_id
375  GROUP BY r.resturant_id, r.rest_name) AS revenue_per_restaurant
376  ORDER BY revenue_rank, resturant_id;
```

resturant_id	rest_name	total_revenue	revenue_rank
48	Fresh Garden	129650.35	1
47	Spice Kitchen	114328.96	2
1	Fresh Hub	89213.84	3
15	Golden Garden	85065.36	4
23	Happy Corner	83193.87	5
36	Flavors Diner	80173.37	6
35	Tasty Diner	79533.66	7
26	Fresh CafÃ©	78209.64	8
21	Tasty Bistro	72445.76	9
43	Happy Grill	72342.64	10
30	Flavors Table	70871.94	11

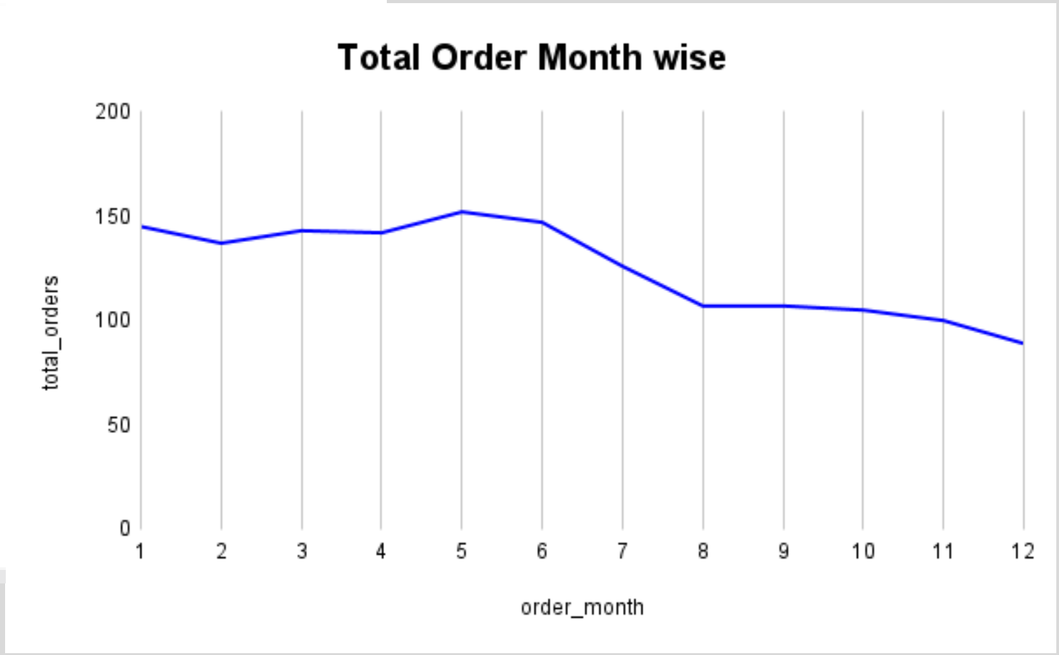


Queries & Methods

Q6:MONTHLY ORDER SUMMARY

```
895     -- 5 Monthly Order Summary
896     -- Task: Build a CTE for monthly orders and then filter only months with >50 orders
897     WITH monthly_orders AS
898     (SELECT MONTH(order_date) AS order_month,COUNT(order_id) AS total_orders
899     FROM orders GROUP BY MONTH(order_date))
900
901     SELECT order_month,total_orders
902     FROM monthly_orders
903     WHERE total_orders > 50
904     ORDER BY order_month;
```

order_month	total_orders
1	145
2	137
3	143
4	142
5	152
6	147
7	126
8	107
9	107

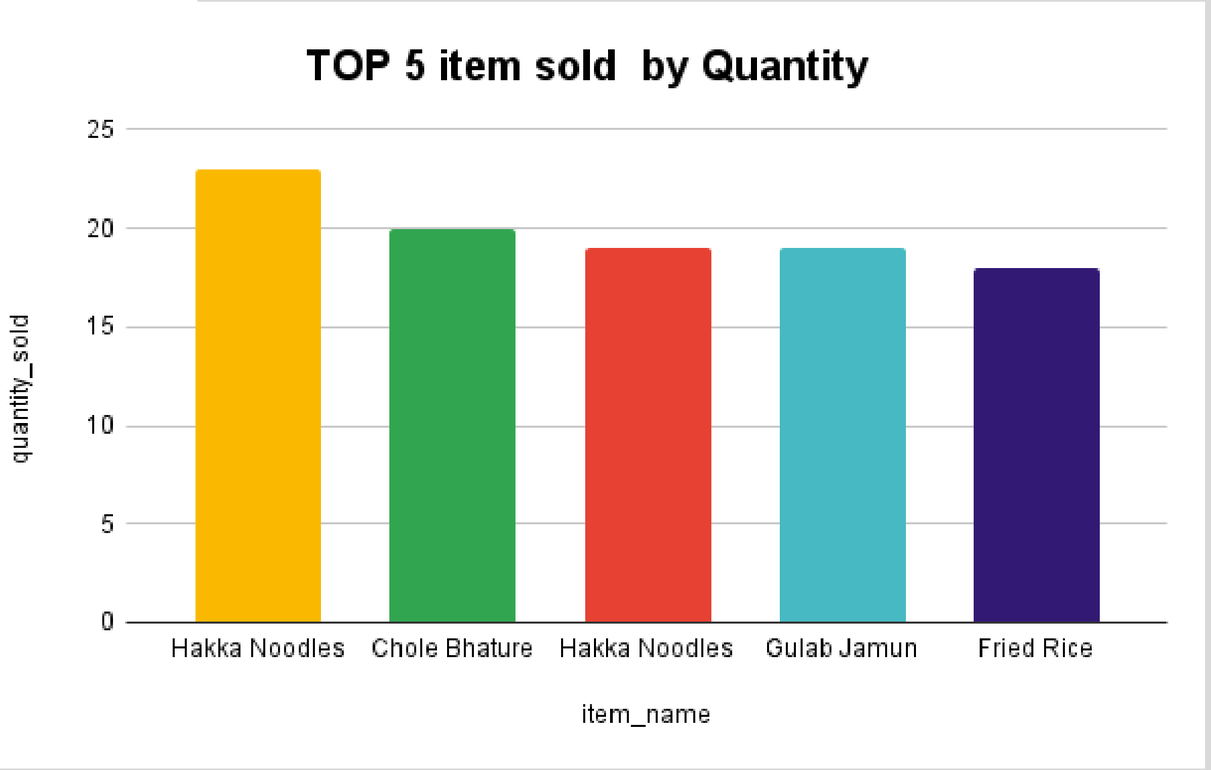


Queries & Methods

Q7: POPULAR ITEMS BY QUANTITY

```
564     -- 7 Popular Items
565 •   CREATE TEMPORARY TABLE temp_popular_item AS
566     SELECT m.item_id,m.item_name,COUNT(od.quantity) AS quantity_sold
567     FROM menu_item m
568     JOIN order_details od ON m.item_id=od.item_id
569     GROUP BY m.item_id,m.item_name;
570
571     -- show the top 5 items by quantity
572 •   SELECT * FROM temp_popular_item
573     ORDER BY quantity_sold DESC
574     LIMIT 5;
```

item_id	item_name	quantity_sold
122	Hakka Noodles	23
3	Chole Bhature	20
179	Hakka Noodles	19
186	Gulab Jamun	19
146	Fried Rice	18



Queries & Methods

Q8: TOP N CUSTOMER BY ORDERS

```
819     -- 6 Top N Customers by Orders
820     DELIMITER //
821 •   CREATE PROCEDURE topcustomer (IN limit_num INT)
822     BEGIN
823     SELECT c.customer_name,COUNT(o.order_id) AS total_order
824     FROM customers c
825     JOIN orders o ON c.customer_id=o.customer_id
826     GROUP BY c.customer_name
827     ORDER BY total_order DESC
828     LIMIT limit_num;
829     END //
830     DELIMITER ;
831 •   CALL topcustomer (5);
```

customer_name	total_order
Vihaan Patel	38
Sai Verma	35
Muhammad Patel	33
Arjun Mehta	32
Reyansh Verma	31

Queries & Methods

Q9: CUSTOMERS WHO NEVER ORDERED

```sql
-- 5 Customers who never ordered
WITH active_customers AS
(SELECT DISTINCT o.customer_id
FROM orders o)

SELECT c.customer_id,c.customer_name
FROM customers c
LEFT JOIN active_customers ac ON c.customer_id = ac.customer_id
WHERE ac.customer_id IS NULL;
```

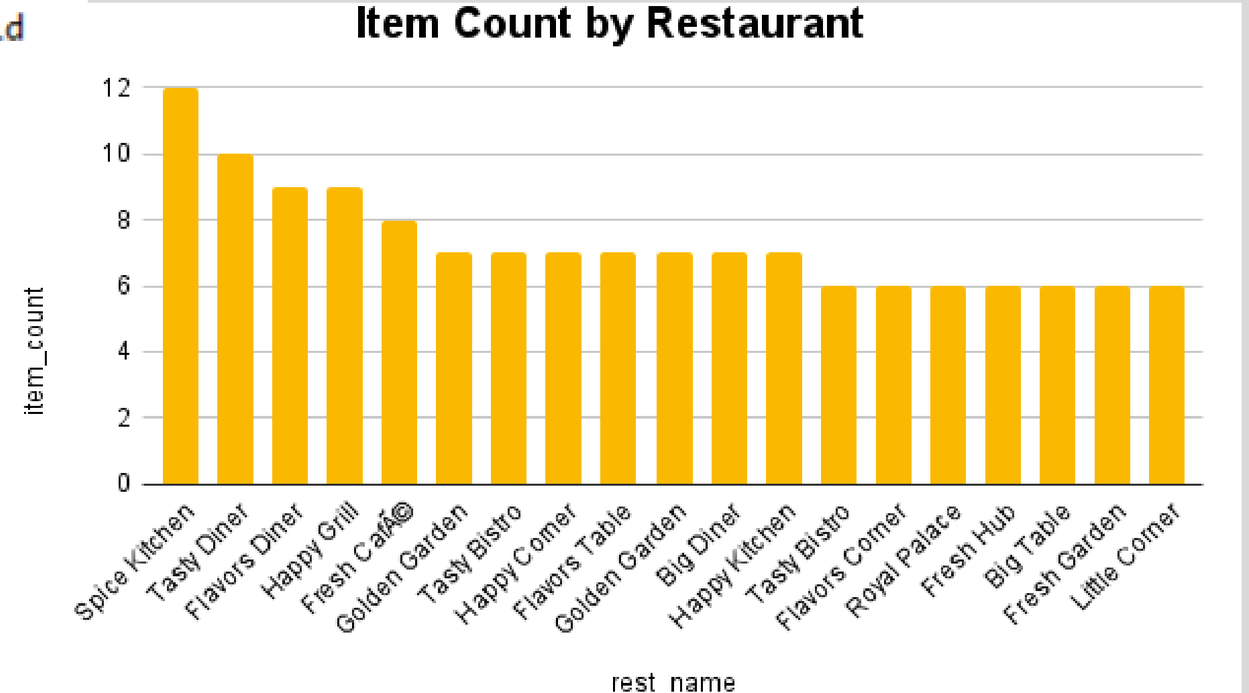
customer_name	customer_id
Vivaan Das	36
Sai Das	48
Muhammad Mehta	63
Aarav Bhat	76
Krishna Gupta	91
Sai Das	100
Vivaan Nair	140
Vihaan Sharma	175
Krishna Gupta	190
Sai Nair	218
Ishaan Bhat	224
Arjun Bhat	226
Muhammad Nair	231
Arjun Nair	233
Krishna Sharma	261
Reyansh Das	313
Vivaan Verma	347
Ishaan Patel	354
Aarav Verma	381
Reyansh Verma	404
Vivaan Reddy	405
Sai Sharma	420
Reyansh Gupta	440
Aditya Patel	446
Ishaan Patel	447
Arjun Nair	465
Sai Nair	466
Vivaan Sharma	467
Arjun Verma	470

Queries & Methods

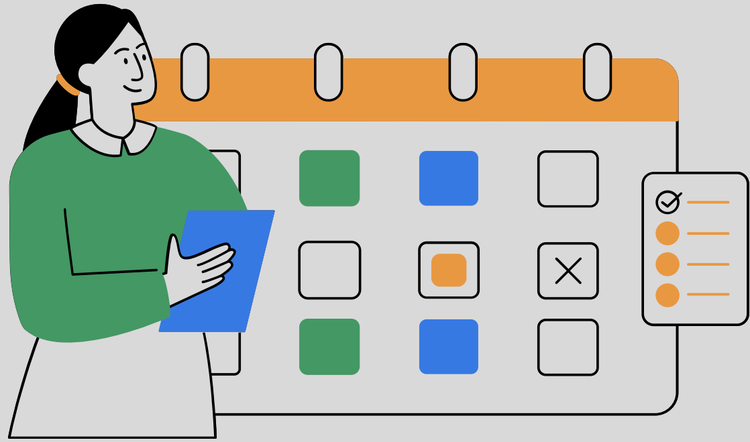
Q10: NUMBER OF MENU ITEM PER RESTAURANT

```
613     -- 3 Number of menu items per restaurant
614 •   WITH item_per_rest AS
615     (SELECT m.resturant_id,COUNT(*) AS item_count
616     FROM menu_item m
617     GROUP BY m.resturant_id)
618
619     SELECT r.rest_name,i.item_count
620     FROM item_per_rest i
621     JOIN resturant r ON r.resturant_id=i.resturant_id
622     ORDER BY i.item_count DESC;
```

rest_name	item_count
Spice Kitchen	12
Tasty Diner	10
Happy Grill	9
Flavors Diner	9
Fresh CafÃ©	8
Tasty Bistro	7
Happy Kitchen	7
Happy Corner	7
Big Diner	7



Insights & Storytelling



Point 01

- Most customers are in the Bronze tier: As shown the majority of customers (79.4%) have placed fewer than 5 orders, . This suggests most users are either new or infrequent in nature.
- Very few high-frequency customers: Only a tiny fraction of customers have placed 10 or more orders, qualifying for the Gold tier (0.2%), while a moderate 20.4% reach the Silver tier (5 to 9 orders). This indicates that high customer loyalty or frequent repeat ordering is rare on the platform.

Point 02

- Most restaurants fall into the Medium category: 54% of restaurants have a menu size between 5 and 10 items, indicating that having a moderate selection is most common among restaurants.
- Very few large restaurants: Only 2% of restaurants have more than 10 menu items and are classified as Large, while 44% are in the Small category (less than 5 menu items). This shows that extensive menus are rare, and nearly half of the restaurants operate with limited menu offerings.

Point 03

Insight:
A significant majority of orders (89.9%) are classified as High Value (above ₹500), while only 10.1% are Low Value (below ₹500). This indicates that most customers are spending more per order, either by purchasing more items or choosing higher-priced menu options.
Way to improve High Value further:
Introduce combo deals or discounts for larger orders These promotions can encourage customers to increase their order size, thereby boosting the number of High Value orders even further.

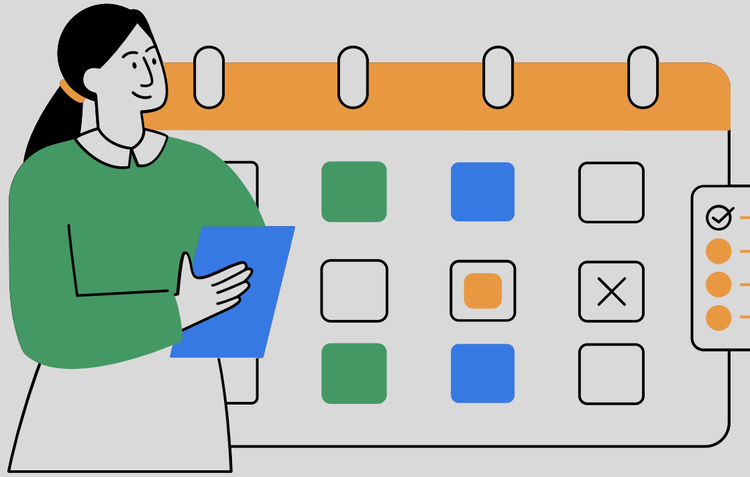
Point 04

Insight:
Jaipur has the highest count of restaurant.
Way to improve the rest by
Encouraging healthy competition by introducing city-specific leaderboards and reward programs for restaurants. This can motivate restaurants in lower-performing cities to increase quality, marketing, and customer engagement to boost their total revenue and rise to the top in their respective city.

Point 05

- Fresh Garden has the highest total revenue, significantly outpacing its competitors.
- Revenue distribution is highly uneven: The bar chart shows a sharp drop-off after the top-ranked restaurants, with most eateries generating much less revenue than the leaders. This indicates a concentration of revenue among a few top performers, while the majority of restaurants operate at significantly lower sales levels.

Insights & Storytelling



Point 06

Insights:

- Order volumes are highest around the May month, with 157 orders, indicating a seasonal or promotional spike.
- There's a noticeable decline in orders in months August, September, and October, with the lowest in the October month (97 orders), suggesting a consistent drop in customer engagement as the year progresses.

Way to improve the lowest month:
Introduce special campaigns, such as limited-time offers, discounts, or themed food festivals, during the October month to boost visibility and incentivize more orders during the low period.

Point 07

- Hakka Noodles is the most popular item: It appears twice in the top 5 with the highest quantity sold (23 and 19 units), showing strong customer preference for this dish.

Recommendation:-
Make sure that this items remain in stock throughout the year.

Point 08

Insight:
Vihaan Patel is the leading customer by order count, but there is a relatively small gap between all of the top five customers, showing a group of consistently engaged, high-frequency users.
Recommendation to improve:
Introduce a loyalty program that rewards frequent ordering (such as extra discounts or exclusive meal options for top customers). This can incentivize both existing and new users to place more orders, increasing overall engagement and moving more customers into the high-order bracket.

Point 09

- Collect feedback on onboarding experience: Reach out to these users via email or app notification and ask for feedback on why they haven't ordered yet. Understanding their problem—whether it's pricing, menu options, app usability, or unclear value—can guide service improvements and targeted campaigns.
- Personalized product suggestions: Use customer data (such as location or previously viewed items) to send tailored menu item recommendations or curated meal bundles directly to these users.

This is how one can retain those customer's who haven't done an order.

Point 10

- Insight:

Spice Kitchen offers the largest menu with 12 items, setting it apart as the most diverse restaurant in terms of menu choices.

- Recommendation:

Restaurants with fewer menu items can consider gradually introducing new popular dishes to attract a wider range of customers and remain competitive.

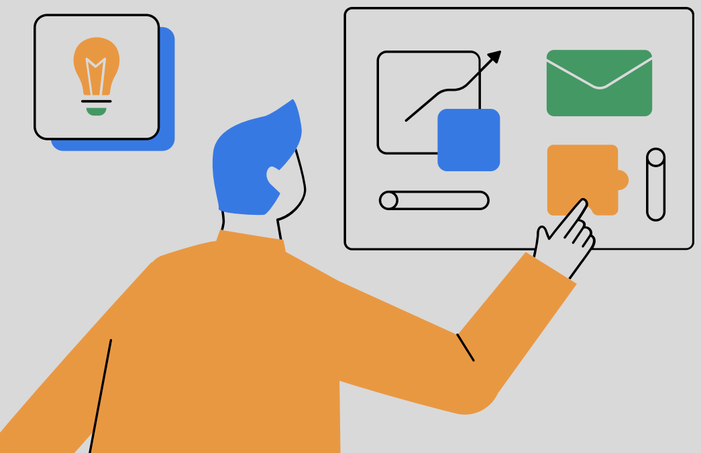
Conclusion & Recommendations

This advanced SQL project delivers a comprehensive analysis of an online food delivery dataset by addressing key business questions through robust data querying and insightful visualizations. Leveraging multi-table joins, CTE, window function, temporary tables, views, and ranking functions, the project successfully segments customers by order frequency, categorizes restaurants by menu size, and identifies high-value orders, top-performing cities, and restaurant revenue leaders.

The insights reveal critical trends such as the predominance of occasional customers, a concentration of revenue among a few top restaurants, seasonality in order volumes, and diverse popular menu items. These findings provide actionable intelligence to guide targeted marketing, loyalty reward initiatives, menu optimization, and geographic expansion strategies.

Recommendations include boosting customer engagement with tiered rewards, expanding menu options at smaller restaurants, increasing high-value orders through combo deals, reactivating inactive customers with personalized offers, fostering city-wise competition, and running promotions during slow months to drive growth.

Overall It equips stakeholders with data-driven guidance to enhance customer retention, maximize restaurant performance, and ultimately improve profitability in the competitive online food delivery space.



Thank You

Data Pencil and Kalyani Bhatnagar Ma’am for this opportunity

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