Datapencil

SQL Project Report

Online Food Delivery

Advance Level

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What the project is about

This advanced SQL project showcased the power of data in shaping business strategy for the online food delivery industry. By leveraging complex queries, joins, and aggregations, I uncovered patterns in customer behavior, peak order times, and restaurant performance that go far beyond surface-level insights. The findings highlight the importance of personalized engagement, optimized menus, and strategic market expansion. To translate these insights into action, food delivery platforms should introduce tailored loyalty programs, focus on profitable high-demand items while diversifying offerings, and adopt city-level strategies for growth. Embedding advanced SQL analytics into everyday decision-making empowers businesses to boost customer retention, streamline operations, and achieve sustainable profitability in this highly competitive sector.

Problem Statements

Q1: Tag customers based on city
Q2: Restaurants in a Specific City
Q3: Top 5 most-sold items (by quantity)
Q4:Best-Selling Menu Items
Q5 :Popular Items
Q6: Customer Signups Category
Q7: Orders With More Than 3 Items
Q8: Restaurant Size Category
Q9: Find the Cheapest Item per Restaurant
Q10: show total amount spent by each customer

Dataset & Schema

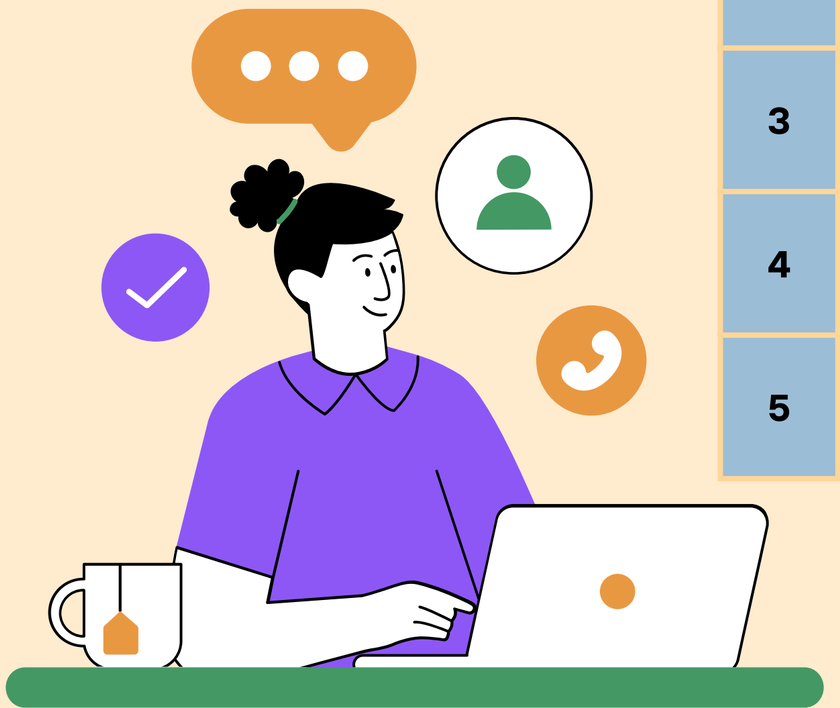
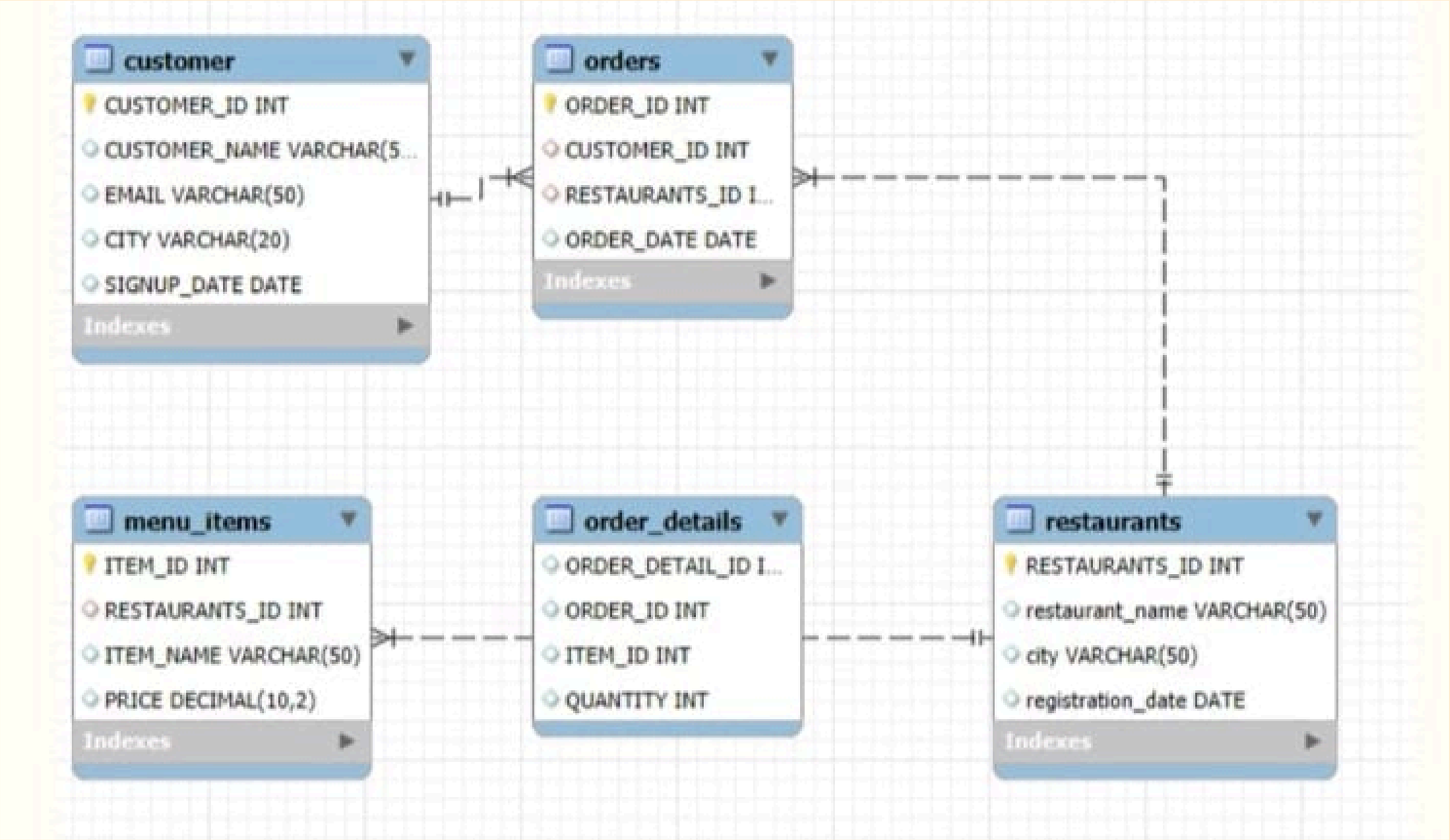


	Table	Data Description
1	Customers	Customer details like ID,name,city,email,signup
2	Restaurant	restaurant_id,restaurant_name,city,registration_id
3	Orders	order_id,restaurant_id,customer_id,order_date
4	Order_details	order_detail_id,order_id,item_id,quantity
5	menu_item	item_id,restaurant_id,item_name,price

E-R DIAGRAM

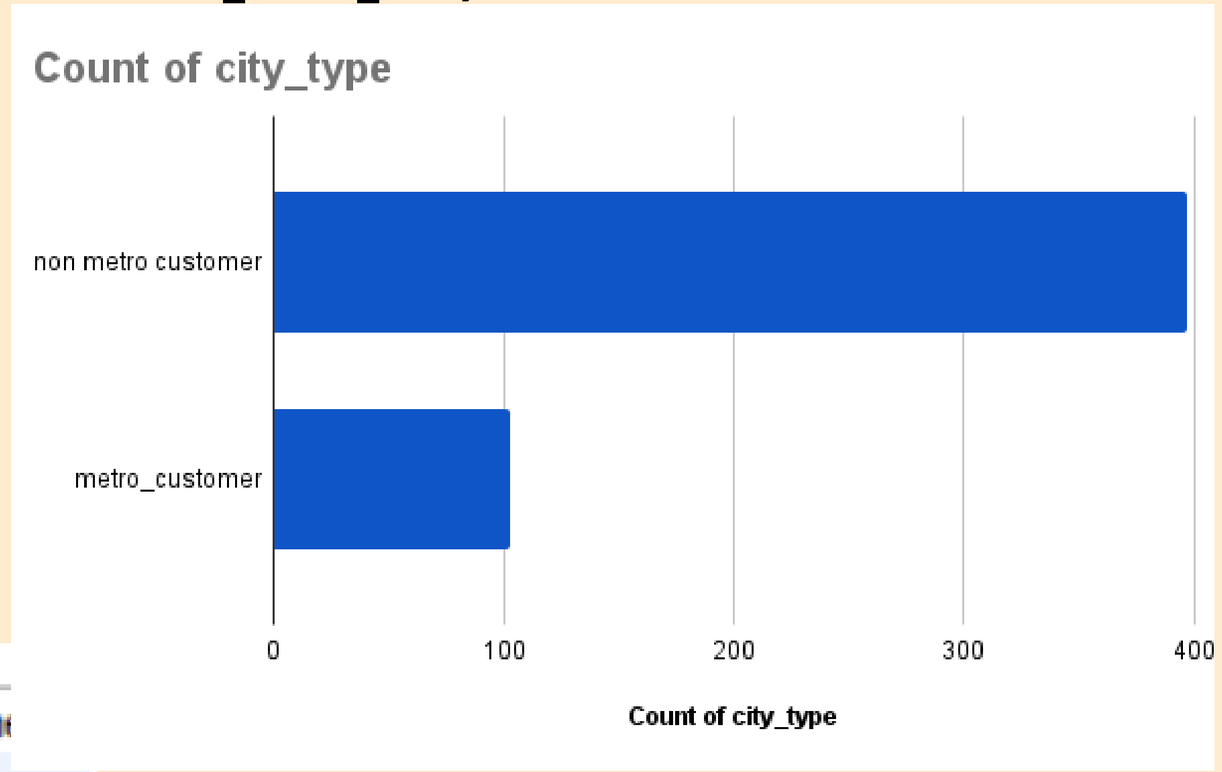

customer
CUSTOMER_ID INT
CUSTOMER_NAME VARCHAR(5...
EMAIL VARCHAR(50)
CITY VARCHAR(20)
SIGNUP_DATE DATE
Indexes
orders
ORDER_ID INT
CUSTOMER_ID INT
RESTAURANTS_ID I...
ORDER_DATE DATE
Indexes
menu_items
ITEM_ID INT
RESTAURANTS_ID INT
ITEM_NAME VARCHAR(50)
PRICE DECIMAL(10,2)
Indexes
order_details
ORDER_DETAIL_ID I...
ORDER_ID INT
ITEM_ID INT
QUANTITY INT
restaurants
RESTAURANTS_ID INT
restaurant_name VARCHAR(50)
city VARCHAR(50)
registration_date DATE
Indexes

Queries & Methods

Q1: Tag customers based on city(mum=metro_cust,delhi=metro_cust,rest=non_metro_cust)

```
select customer_name,customer_id,city,
case
when city= 'Mumbai' then 'metro_customer'
when city= 'Delhi' then 'metro_customer'
else 'non metro customer'
end
as city_type
from customers;
```

customer_name	customer_id	city	city_type
Vivaan Sharma	1	Ahmedabad	non metro custome
Vihaan Patel	2	Mumbai	metro_customer
Krishna Verma	3	Surat	non metro customer
Aarav Sharma	4	Mumbai	metro_customer
Vihaan Das	5	Surat	non metro customer
Krishna Reddy	6	Jaipur	non metro customer
Vihaan Nair	7	Surat	non metro customer
Aarav Patel	8	Kolkata	non metro customer
Arjun Patel	9	Hyderabad	non metro customer

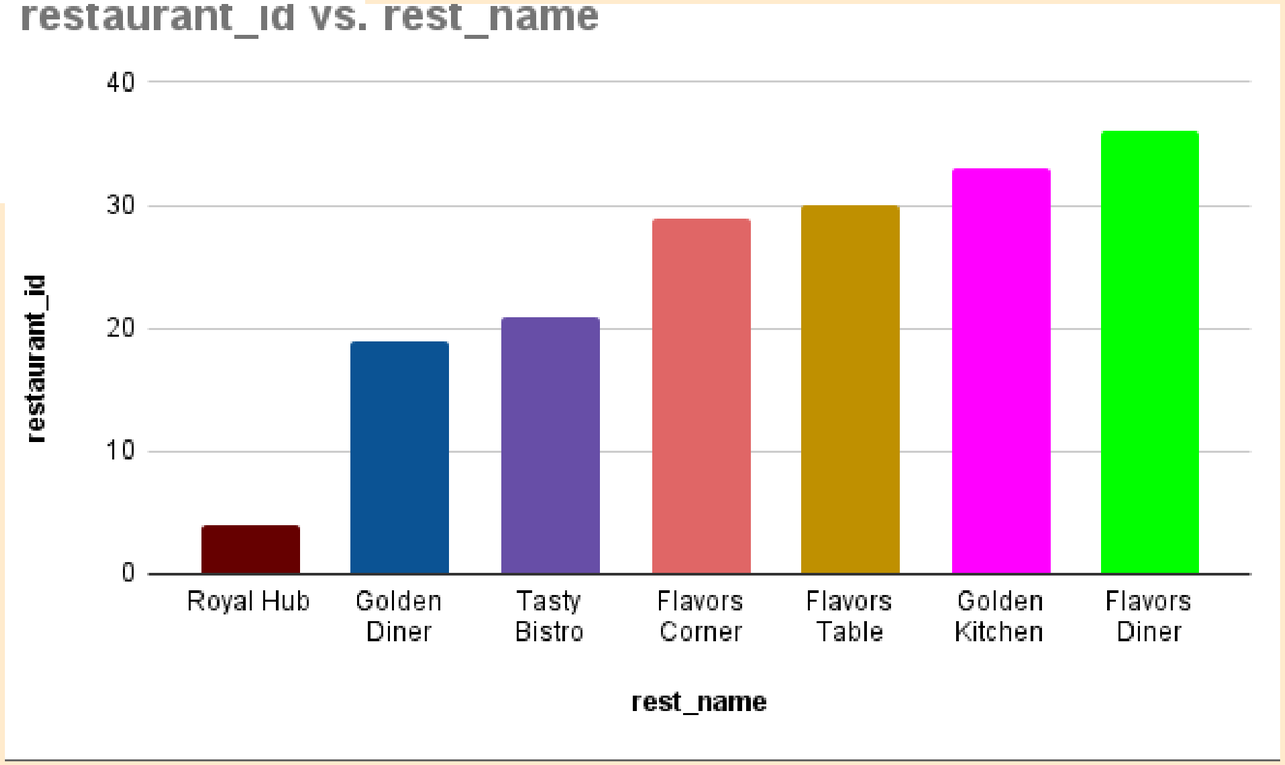


Queries & Methods

Q2: Restaurants in a Specific City

```
DELIMITER //
CREATE PROCEDURE restbycity (IN  city_name VARCHAR(5))
BEGIN
SELECT r.restaurant_id,r.rest_name,r.city FROM restaurant r
WHERE r.city=city_name ;
END//
DELIMITER ;
CALL restbycity('delhi');
```

restaurant_id	rest_name	city
4	Royal Hub	Delhi
19	Golden Diner	Delhi
21	Tasty Bistro	Delhi
29	Flavors Corner	Delhi
30	Flavors Table	Delhi
33	Golden Kitchen	Delhi
36	Flavors Diner	Delhi

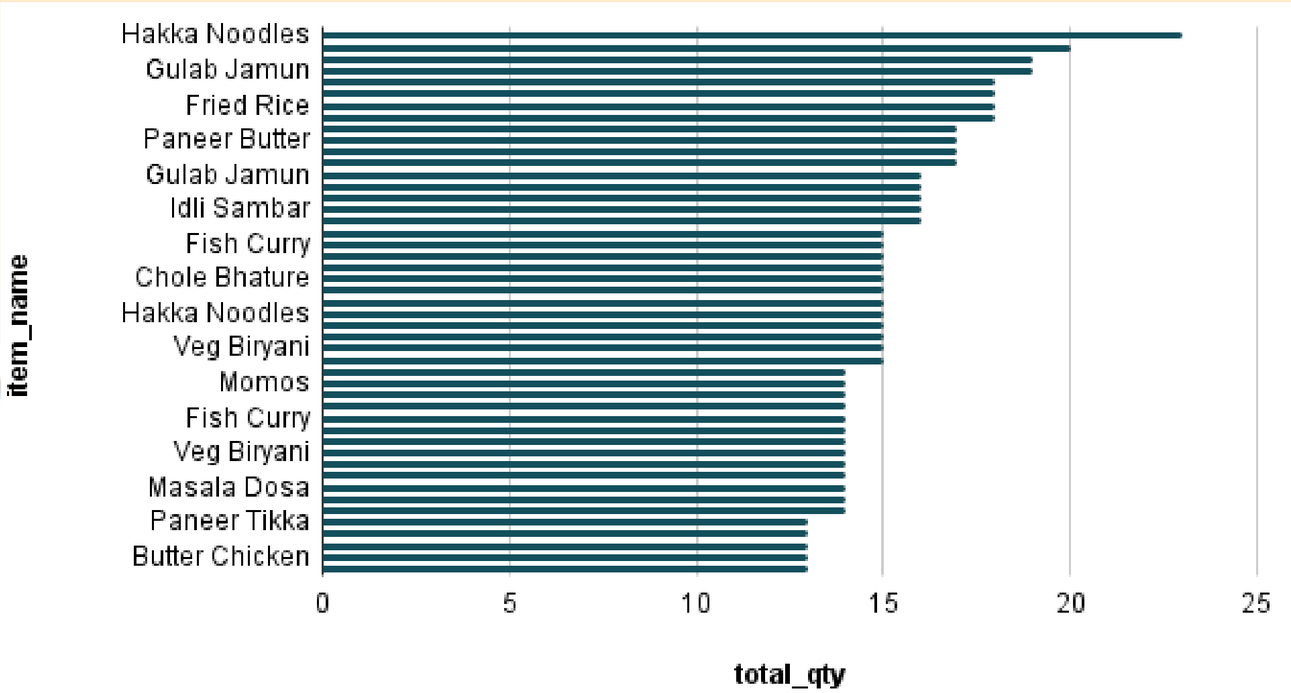


Queries & Methods

Q3: Top 5 most-sold items (by quantity)

```sql
with item_qty as
(select od.item_id,count(od.quantity)as total_qty
from order_details od
group by od.item_id)

select m.item_name,i.total_qty
from item_qty i
join menu_item m on m.item_id=i.item_id
order by i.total_qty desc;
```

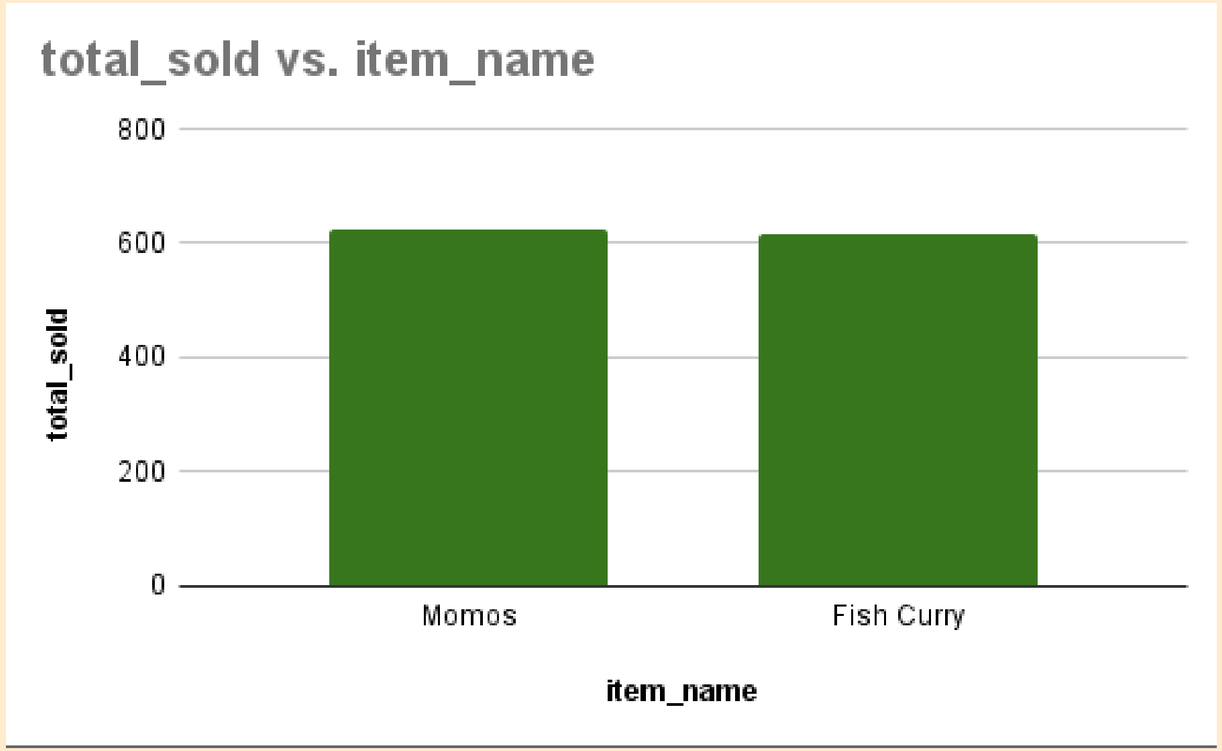


item_name	total_qty
Hakka Noodles	23
Chole Bhature	20
Hakka Noodles	19
Gulab Jamun	19
Masala Dosa	18
Gulab Jamun	18
Fried Rice	18
Samosa Chaat	18
Momos	17

Queries & Methods

Q4: Best-Selling Menu Items

```
DELIMITER //
CREATE PROCEDURE bestsellingitems(IN limit_num INT)
BEGIN
SELECT m.item_name,SUM(od.quantity) AS total_sold
FROM menu_item m
JOIN order_details od on m.item_id=od.item_id
GROUP BY m.item_name
ORDER BY total_sold DESC
LIMIT limit_num;
END //
DELIMITER ;
CALL bestsellingitems(2);
```



item_name	total_sold
Momos	623
Fish Curry	617

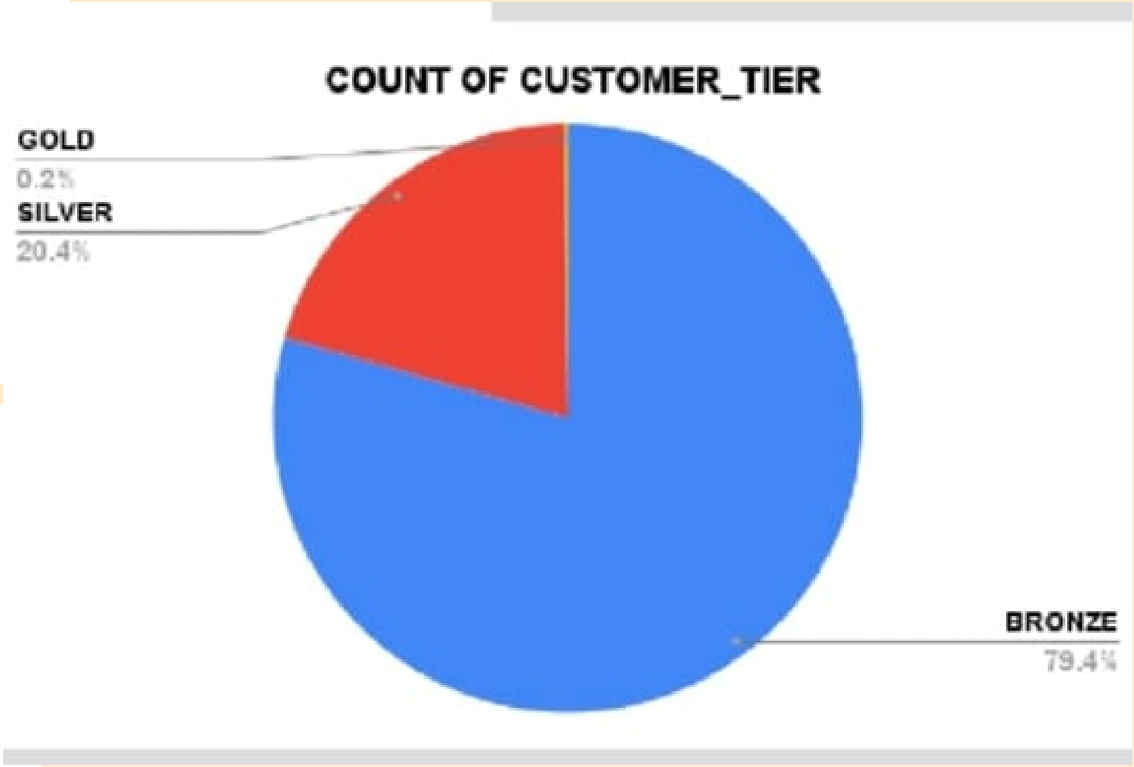
Queries & Methods

Q5: Reward Tier to customers Based on Number of Orders Placed ((>= 10) Gold, (BETWEEN 5 AND 9) Silver, (<9) Bronze)

```
select c.customer_id,c.customer_name,count(o.order_id)as total_orders,
case
when count(o.order_id) >= 10 then 'Gold'
when count(o.order_id) between 5 and 9 then 'Silver'
else 'Bronze'
end as reward_tier
from customers c
join orders o on c.customer_id=o.customer_id
group by c.customer_id,c.customer_name;
```

customer_id	customer_name	total_orders	reward_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

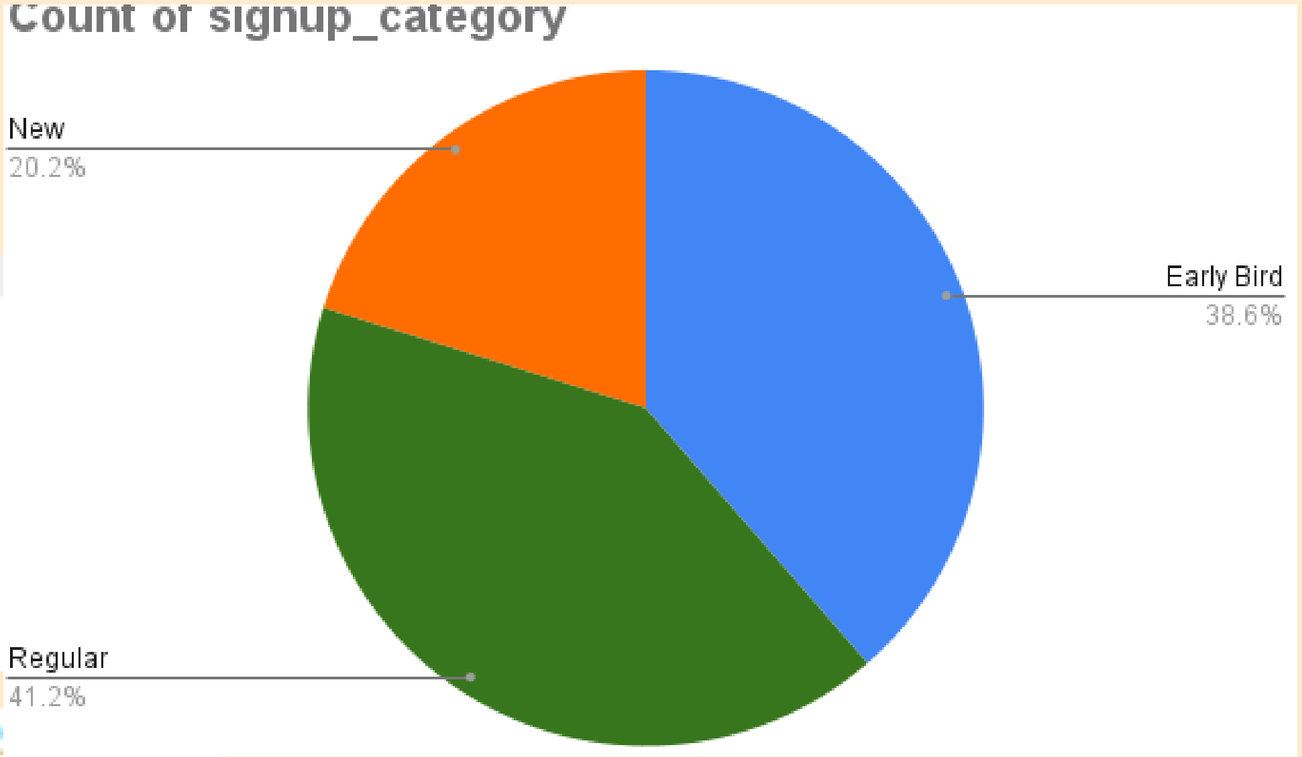
Vivaan Sharma



Queries & Methods

Q6: Customer Signups Category

```sql
SELECT customer_id,customer_name,signup_date,
CASE
WHEN (signup_date) < '2024-01-01' THEN 'Early Bird'
WHEN (signup_date) Between  '2020-01-01' and '2024-12-31'
ELSE 'New'
END AS signup_category
FROM customers;
```



customer_id	customer_name	signup_date	signup
1	Vivaan Sharma	2023-09-08	Early Bird
2	Vihaan Patel	2024-11-23	Regular
3	Krishna Verma	2024-03-08	Regular
4	Aarav Sharma	2023-08-12	Early Bird
5	Vihaan Das	2023-01-28	Early Bird
6	Krishna Reddy	2024-03-05	Regular
7	Vihaan Nair	2023-10-12	Early Bird
8	Aarav Patel	2023-12-15	Early Bird
9	Arjun Patel	2025-02-20	New

Queries & Methods

Q7: Orders With More Than 3 Items

```sql
with order_count as
(select od.order_id,sum(quantity)as times_ordered
from order_details od
group by od.order_id)

select * from order_count oc
where times_ordered > 3
order by times_ordered desc;
```

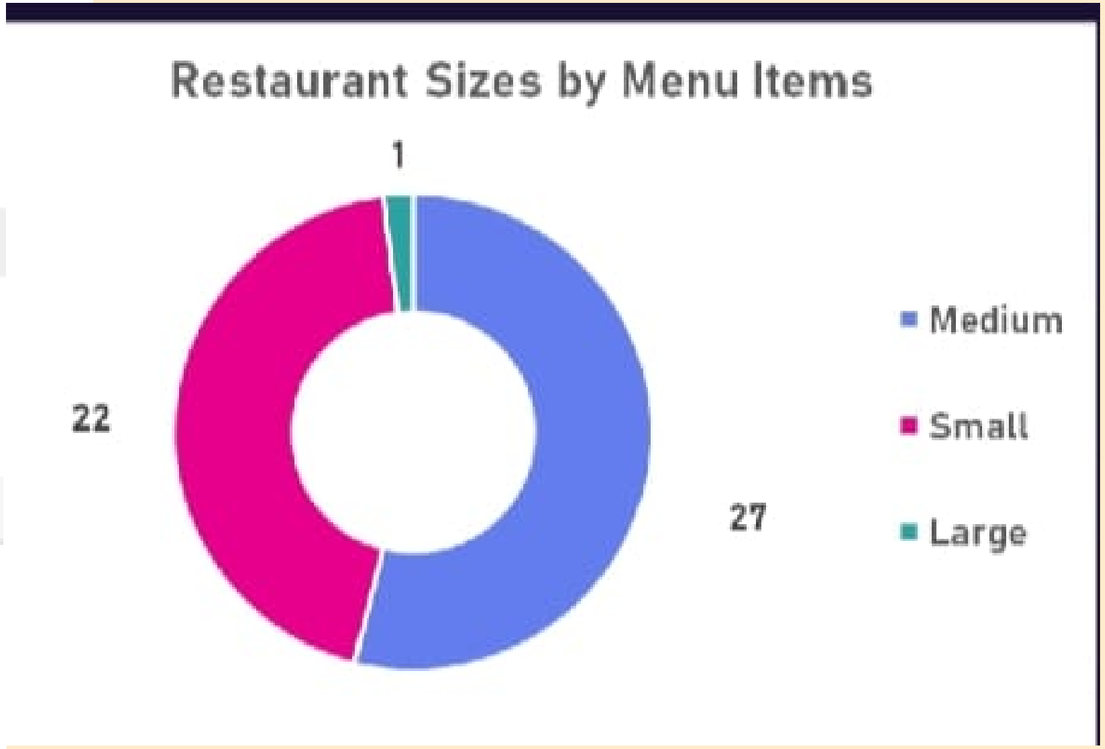
order_id	times_ordered
286	24
1065	24
569	23
261	21
1351	21
1408	21
542	20

Queries & Methods

Q8: Restaurant Size Category--Based on menu items, mark restaurants as Small (<5 items), Medium (5–10), or Large (>10).

```
select restaurant_id,count(item_id) as total_menu_items,
case
when count(item_id) < 5 then 'Small'
when count(item_id) between 5 and 10 then 'Medium'
else 'Large'
End as restaurant_size_type
from menu_item
group by restaurant_id;
```

restaurant_id	total_menu_items	restaurant_size_type
1	5	Medium
2	3	Small
3	5	Medium
4	2	Small
5	4	Small
6	6	Medium



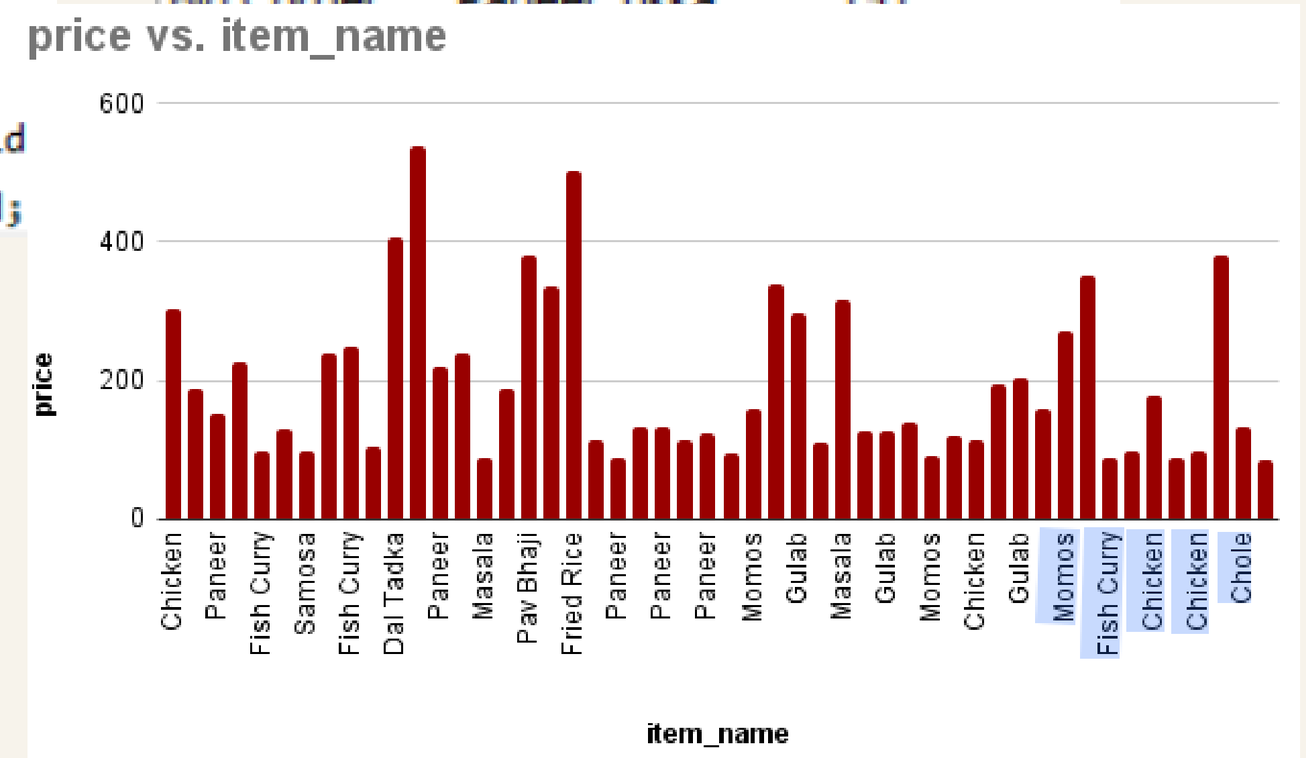
Queries & Methods

Q9: Find the Cheapest Item per Restaurant

```
with min_price as
(select m.restaurant_id,MIN(m.price)as min_price
from menu_item m
group by m.restaurant_id)

select r.rest_name,m.item_name,min_price
from min_price mp
join menu_item m  on m.restaurant_id=mp.restaurant_id
join restaurant r on r.restaurant id=m.restaurant id;
```

rest_name	item_name	min_price
Fresh Hub	Chicken Biryani	304
Fresh Hub	Momos	304
Fresh Hub	Hakka Noodles	304
Fresh Hub	Hakka Noodles	304
Fresh Hub	Momos	304
Big Diner	Rasgulla	187
Big Diner	Fried Rice	187
Big Diner	Dal Tadka	187
Big Corner	Paneer Tikka	151

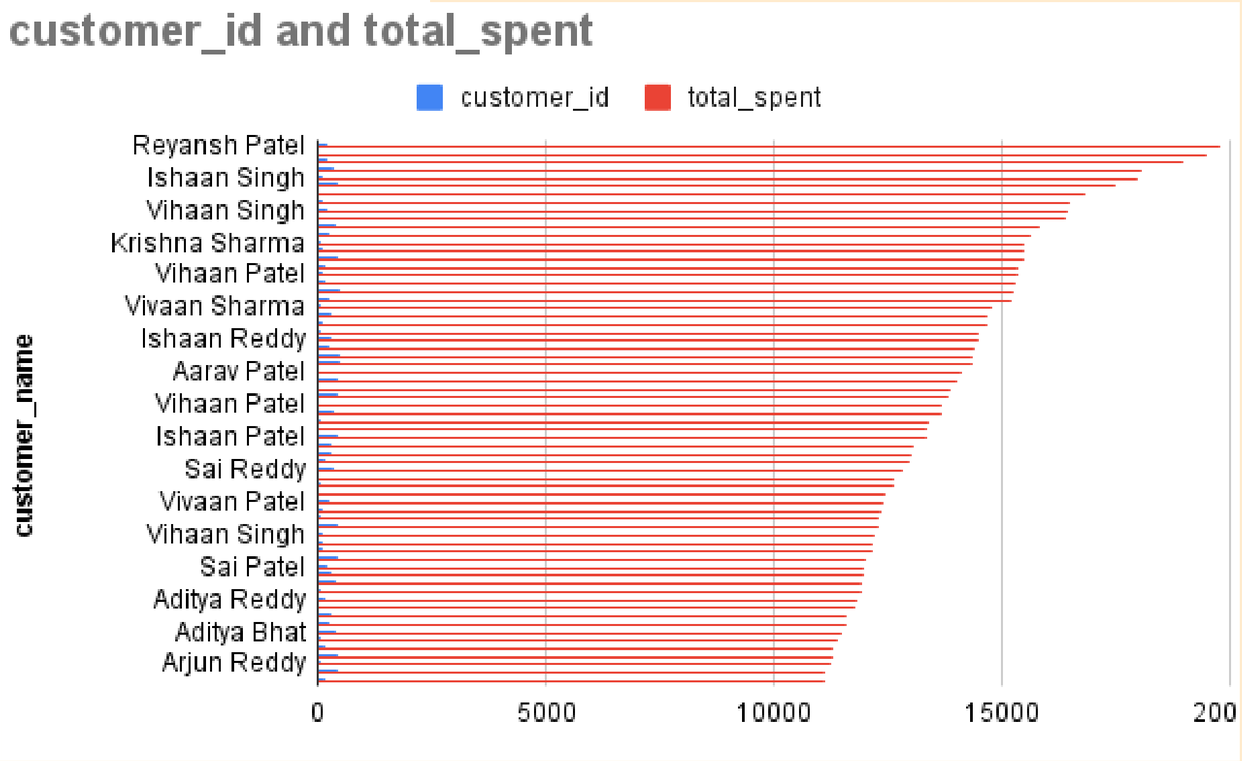


Queries & Methods

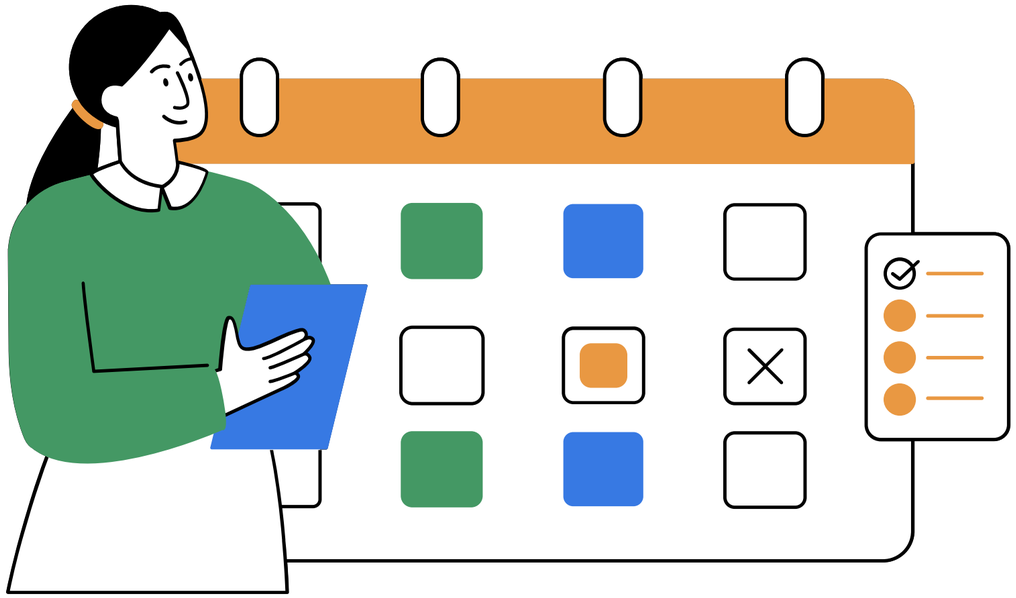
Q10: Show total amount spent by each customer

```
select c.customer_name,c.customer_id,sum(m.price*od.quantity)as total_spent
from customers c
join orders o on c.customer_id=o.customer_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 c.customer_name,c.customer_id
order by total_spent desc;
```

customer_name	customer_id	total_spent
Reyansh Patel	213	19783
Vihaan Nair	7	19484
Krishna Nair	191	18967
Ishaan Sharma	336	18060
Ishaan Singh	120	17965
Vihaan Nair	428	17486
Vivaan Bhat	20	16837
Ishaan Gupta	119	16519



Insights & Storytelling



Point 01

Most of our customers are from non-metro cities, showing wider reach in smaller regions.
Only a small portion comes from metro cities like Mumbai and Delhi.
The non-metro customer base is nearly four times larger than metro customers.
This highlights the strong presence and growth opportunities in non-metro markets.

Point 02

Delhi has a good number of restaurants listed in the data.
Some restaurants belong to the same brand, like Flavors and Golden, showing chain presence.
The city offers variety in dining choices, from casual spots like Tasty Bistro to larger setups like Royal Hub.
The Flavors group stands out as it appears under different names, showing brand expansion in Delhi.
Overall, the data highlights that Delhi is a competitive food market with both unique and chain restaurants.

Point 03

Hakka Noodles is the most popular item, with the highest sales among all dishes.
Chole Bhature follows closely, showing strong demand for traditional Indian food.
Gulab Jamun also ranks high, highlighting the preference for sweets.
Masala Dosa and Fried Rice are consistently chosen, showing a mix of South Indian and Indo-Chinese tastes.
Overall, the top items reflect a blend of Indian traditional food and Indo-Chinese dishes, catering to diverse customer preferences.

Point 04

Momos is the top-selling item with 623 orders.
Fish Curry is almost equally popular, with 617 orders.
The small difference in sales shows that both items are customer favorites.
The menu reflects a mix of street-style snacks (Momos) and traditional meals (Fish Curry).
These two items together make up the core demand drivers for the restaurant

Point 05

Most customers are in the Bronze tier (low orders).
A smaller share has reached the Silver tier (moderate orders).
No customers have yet achieved the Gold tier (high loyalty).
This shows a gap in repeat orders and loyalty building.
Efforts should focus on converting Bronze customers into Silver and Gold tiers.

Insights & Storytelling

Point 06

Many customers placed orders with more than 3 items, showing bulk buying behavior.

The largest order contained 24 items, highlighting special group or event purchases.

Orders with 21–23 items appear frequently, pointing to consistent bulk demand.

This indicates a mix of individual meals and group dining patterns.

Restaurants can benefit by offering combo packs, family deals, and discounts for bulk orders.

Point 07

Restaurants are grouped as Small (≤5 items), Medium (5–10 items), and Large (>10 items).

Medium-sized restaurants are the most common, showing a balanced menu approach.

A few restaurants belong to the Small category, with limited menu options.

Only one restaurant is Large, offering a wide range of items.

Overall, most restaurants prefer focused menus instead of very extensive ones.

Takeaway Points

Medium-sized menus are the dominant trend.

Small restaurants cater to niche or limited offerings.

Large restaurants are rare in this dataset.

Point 08

Each restaurant has at least one low-priced item that attracts budget-friendly customers.

The cheapest items vary widely — from snacks like samosas and momos to main dishes like dal tadka and fried rice.

Prices of cheapest items are not uniform, showing how each restaurant positions itself in the market.

Some restaurants keep affordable starters, while others price even main courses as the cheapest option.

This mix suggests restaurants use different strategies to balance affordability and menu appeal.

Takeaway Point

"Cheapest items play a key role in attracting price-sensitive customers and driving initial orders."

Point 09

Spending patterns vary significantly among customers, showing a wide range of purchase behaviors.

A few customers like Revansh Patel and Vihaan Nair stand out as top spenders, contributing a major share to revenue.

Most other customers have moderate to low spending, creating a clear gap between high-value and regular customers.

The chart highlights a long tail effect, where many customers spend smaller amounts while only a few

Point 10

Peak orders around 14:29 & 16:43

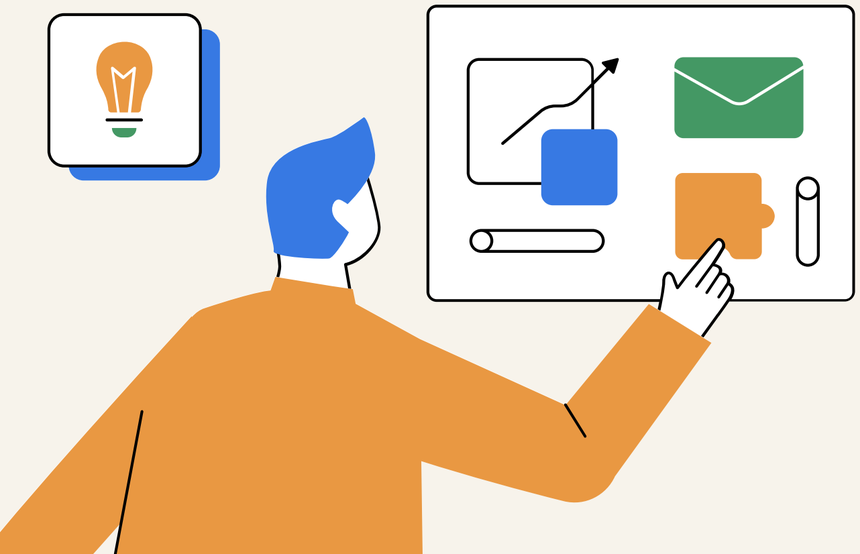
Many orders had 3+ items

Order ID 286 topped with 24 items

Table shows top high-volume orders

Few customers drive large bulk orders

Conclusion & Recommendations



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Thank You

Data pencil and Kalyani Bhatnagar Ma’am for this oppurtunity

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