

I N N O M A T I C S
R E S E A R C H L A B S

PROJECT ON

Grocery Store Management SQL Project

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Batch : 419

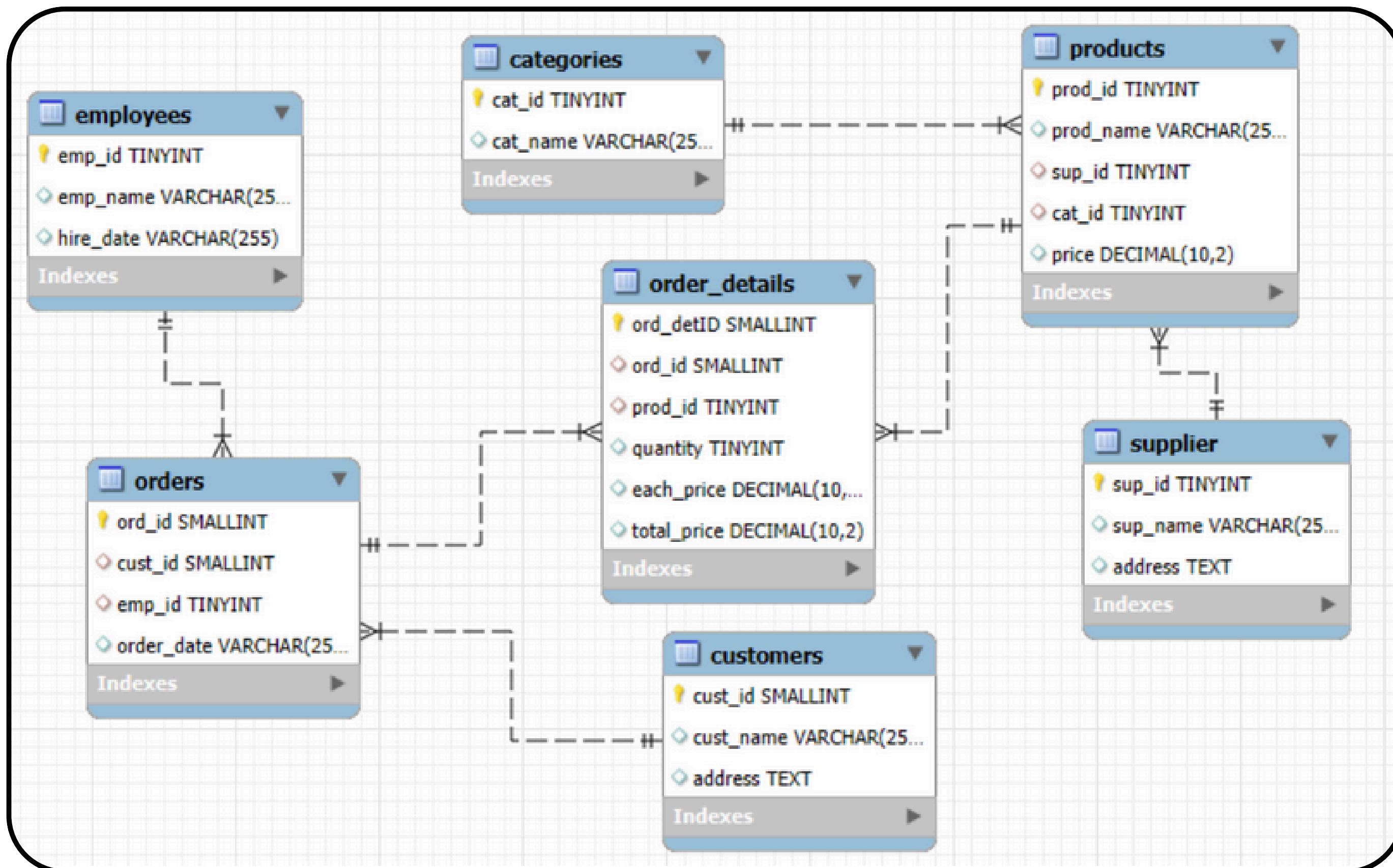
DATASET

- The database contains 7 tables used in a grocery store system.
- These tables store details about products, suppliers, customers, employees, orders, and order items.
- Data includes names, prices, quantities, dates, categories, and transaction details.
- All tables are connected through primary keys and foreign keys for accurate reporting.
- This dataset helps analyze sales patterns, customer purchases, product performance, and overall store activity.

Objectives

- To design and implement a relational database for a grocery store.
- To retrieve and manipulate data using SQL queries.
- To perform data analysis for business insights such as top customers, best-selling products, and revenue trends.
- To practice using joins, aggregations, subqueries, and filtering techniques.

ER Diagram



Customer Insights

```
SELECT
```

```
    COUNT(DISTINCT cust_id) AS unique_customers  
FROM orders;
```

Result Grid	
	unique_customers
▶	156

Total unique Customer 156

```
-- 4. Top 5 customers by total purchase
```

```
SELECT c.cust_name, SUM(od.total_price) AS total_spent  
FROM customers c  
JOIN orders o ON c.cust_id = o.cust_id  
JOIN order_details od ON o.ord_id = od.ord_id  
GROUP BY c.cust_id  
ORDER BY total_spent DESC  
LIMIT 5;
```

Result Grid		
	cust_name	total_spent
▶	Chetan Naidu	11256.82
	Kapila	11099.51
	Eshwar Rao	10819.96
	Aditi Rao	10230.64
	Eshwar Iyer	9188.45

These are Top 5 Customers on Purchases

```

SELECT c.cust_id, c.cust_name, COUNT(o.ord_id) AS total_orders
FROM customers c
JOIN orders o ON c.cust_id = o.cust_id
GROUP BY c.cust_id
ORDER BY total_orders DESC;

```

	cust_id	cust_name	total_orders
▶	165	Jyotika	7
	61	Aditi Rao	6
	19	Chetan Naidu	5
	32	Eshwar Menon	5
	128	Hari Naidu	5
	145	Chetan Rao	5
	195	Amit Savana	5

```

-- 3. Total & average purchase value per customer
SELECT c.cust_id, c.cust_name,
       SUM(od.total_price) AS total_purchase,
       AVG(od.total_price) AS avg_purchase
FROM customers c
JOIN orders o ON c.cust_id = o.cust_id
JOIN order_details od ON o.ord_id = od.ord_id
GROUP BY c.cust_id;

```

Result Grid	Filter Rows:	Export:		
	cust_id	cust_name	total_purchase	avg_purchase
▶	1	Aditi Shetty	1577.86	1577.860000
	2	Isha Reddy	1299.62	649.810000
	3	Chetan Rao	7693.41	854.823333
	5	Isha Rao	3327.05	1663.525000
	7	Eshwar Iyer	9188.45	656.317857
	8	Deepa Reddy	7929.13	881.014444
	13	Bala Krishnan	1161.66	580.830000

These are customers orders frequency with 7,
6,5,4,3..

Customers with Total Purchases, Avg Purchases

Product Performance

```
-- 4. Total revenue generated by each product
SELECT p.prod_name, SUM(od.total_price) AS revenue
FROM products p
JOIN order_details od ON p.prod_id = od.prod_id
GROUP BY p.prod_id
ORDER BY revenue DESC;
```

Result Grid		Filter Rows:
prod_name	revenue	
Hand Sanitizer	27787.76	
Biscuits	20995.92	
Moong Dal	19695.02	
Toothpaste	19688.95	
Mustard Seeds	19516.68	
Cashews	18561.92	
Butter	18548.40	
Cheese Slices	18519.61	
Turmeric Powder	17784.29	
Soya Sauce	16985.38	
Toilet Cleaner	16776.90	
White Bread	16576.71	

Result 88 ×

Total Revenue
Group by Product

```
-- 3. Top products by sales volume
SELECT p.prod_name, SUM(od.quantity) AS total_qty
FROM products p
JOIN order_details od ON p.prod_id = od.prod_id
GROUP BY p.prod_id
ORDER BY total_qty DESC;
```

Result Grid		Filter Rows:
prod_name	total_qty	
Bath Soap	60	
Hand Sanitizer	56	
Dishwashing Soap	54	
Potato Chips	54	
Biscuits	54	
Moong Dal	51	
Chapati	50	
Cumin Seeds	46	
Facial Tissue	45	
Mustard Seeds	45	
Toothpaste	44	
Mavonnaise	43	

Total Orders from
each product

```
-- 5. Sales variation by category & supplier
SELECT cat.cat_name, s.sup_name,
       SUM(od.total_price) AS total_revenue
  FROM order_details od
  JOIN products p ON od.prod_id = p.prod_id
  JOIN categories cat ON p.cat_id = cat.cat_id
  JOIN supplier s ON p.sup_id = s.sup_id
 GROUP BY cat.cat_id, s.sup_id;
```

Result Grid		Filter Rows:	Export:
cat_name	sup_name	total_revenue	
Grains & Cereals	Aarya	67701.10	
Grains & Cereals	Sai	18018.02	
Grains & Cereals	Suresh	26248.89	
Grains & Cereals	Karthik	39473.49	
Grains & Cereals	Aarav Sharma	6104.70	
Dairy Products	Sai	50740.60	
Dairy Products	Aarya	18519.61	
Dairy Products	Karthik	11100.45	
Snacks & Confectioneries	Karthik	8520.43	
Snacks & Confectioneries	Suresh	65307.14	
Snacks & Confectioneries	Sai	17103.15	
Snacks & Confectioneries	Aarva	65538.71	

Result 89 ×

Total Revenue from
each Category and supplier

```
-- 2. Average price per category
```

```
SELECT cat.cat_name, AVG(p.price) AS avg_price  
FROM categories cat  
JOIN products p ON cat.cat_id = p.cat_id  
GROUP BY cat.cat_id;
```

The Quantity of Products
in each Categorie

	cat_name	avg_price
▶	Grains & Cereals	287.673333
	Dairy Products	366.943333
	Snacks & Confectioneries	278.892353
	Personal Care	364.991667
	Household	363.336667

```
-- 1. Products count per category
```

```
SELECT cat.cat_name,  
COUNT(p.prod_id) AS product_count  
FROM categories cat  
LEFT JOIN products p ON cat.cat_id = p.cat_id  
GROUP BY cat.cat_id;
```

Average Price from
Each Categorie

	cat_name	product_count
▶	Grains & Cereals	18
	Dairy Products	6
	Snacks & Confectioneries	17
	Personal Care	6
	Household	3

Sales and Order Trends

Result Grid |

	total_orders
▶	300

Total Orders out of 1 year

Result Grid |

	avg_order_value
▶	2153.63

Average Order Value

-- 3. Dates with most orders

```
SELECT order_date, COUNT(*) AS total_orders  
FROM orders  
GROUP BY order_date  
ORDER BY total_orders DESC;
```

Result Grid | Filter Rows:

	order_date	total_orders
▶	9/10/2022	4
	3/30/2022	4
	1/30/2022	3
	4/22/2022	3
	1/14/2022	3
	10/23/2022	3
	12/5/2022	3
	5/24/2022	3
	1/16/2022	3
	6/27/2022	3
	12/21/2022	3
	1/28/2022	3

Result 94 ×

Total Order by
each day ordered by desc

```
-- 4. Monthly order & revenue trends
```

```
SELECT  
    DATE_FORMAT(STR_TO_DATE(order_date, '%m/%d/%Y'), '%Y-%m')  
        AS month,  
    COUNT(*) AS order_count,  
    SUM(od.total_price) AS revenue  
FROM orders o  
JOIN order_details od ON o.ord_id = od.ord_id  
GROUP BY month  
ORDER BY month;
```

	month	order_count	revenue
	2022-02	66	66929.42
	2022-03	57	45977.16
	2022-04	32	29118.54
	2022-05	46	41305.62
	2022-06	31	27378.69
	2022-07	50	48674.66
	2022-08	41	36045.01
	2022-09	57	52626.61
	2022-10	32	25917.32
	2022-11	47	46141.33
	2022-12	62	60903.12

Result 141 ×

Revenue generated in each month in the year of 2022

```
-- 5. Weekday vs Weekend patterns
```

```
SELECT  
    DAYNAME(STR_TO_DATE(order_date, '%m/%d/%Y')) AS day,  
    COUNT(*) AS order_count  
FROM orders  
GROUP BY day  
ORDER BY order_count DESC;
```

	day	order_count
	Friday	52
	Wednesday	51
	Sunday	48
	Saturday	42
	Thursday	39
	Monday	37
	Tuesday	31

The Frequency of Order on Week days and Weekends

total_suppliers

5

Supplier Contribution

```
-- 3. Average price of products per supplier  
SELECT s.sup_name, round(AVG(p.price),2) AS avg_price  
FROM supplier s  
JOIN products p ON s.sup_id = p.sup_id  
GROUP BY s.sup_id;
```

-- 2. Supplier with most products

```
SELECT s.sup_name, COUNT(p.prod_id) AS product_count  
FROM supplier s  
LEFT JOIN products p ON s.sup_id = p.sup_id  
GROUP BY s.sup_id  
ORDER BY product_count DESC;
```

-- 4. Supplier revenue contribution

```
SELECT s.sup_name, SUM(od.total_price) AS total_revenue  
FROM order_details od  
JOIN products p ON od.prod_id = p.prod_id  
JOIN supplier s ON p.sup_id = s.sup_id  
GROUP BY s.sup_id  
ORDER BY total_revenue DESC;
```

sup_name	avg_price
Aarav Sharma	271.37
Sai	342.67
Aarya	319.33
Suresh	281.82
Karthik	288.23

Average Price of
Each Supllier

sup_name	product_count
Aarya	18
Sai	10
Suresh	10
Karthik	9
Aarav Sharma	3

Frequency of Product by
Each Supllier

sup_name	total_revenue
Aarya	221137.83
Sai	113588.51
Suresh	101688.78
Karthik	81861.96
Aarav Sharma	33052.85

Total Revenue Generated by
Each Supllier

active_employees

10

-- 2. Employee with most orders

```
SELECT e.emp_name, COUNT(o.ord_id) AS total_orders
FROM employees e
JOIN orders o ON e.emp_id = o.emp_id
GROUP BY e.emp_id
ORDER BY total_orders DESC;
```

	emp_name	total_order
▶	Diya Sharma 1	38
	Aditya Singh 1	37
	Arjun Kumar 1	32
	Pari Kumar 1	31
	Pari Sharma 1	31
	Zara Verma 1	30
	Vihaan Singh 1	29
	Aditya Verma 1	26
	Aarav Kumar 1	23
	Arjun Verma 1	23

Result 149 ×

Total Orders by
Each Employee Handled

Employee Performance

-- 4. Average order value per employee

```
SELECT e.emp_name, AVG(t.order_total) AS avg_order_value
FROM (
    SELECT o.emp_id, o.ord_id, SUM(od.total_price) AS order_total
    FROM orders o
    JOIN order_details od ON o.ord_id = od.ord_id
    GROUP BY o.ord_id
) t
JOIN employees e ON t.emp_id = e.emp_id
GROUP BY e.emp_id;
```

	emp_name	avg_order_value
▶	Aarav Kumar 1	2768.572632
	Aditya Singh 1	2330.949706
	Pari Kumar 1	2227.279667
	Aditya Verma 1	1554.750455
	Pari Sharma 1	1833.373636
	Zara Verma 1	2650.472593
	Vihaan Singh 1	2112.081739
	Diya Sharma 1	2037.631818
	Arjun Kumar 1	2077.627308
	Arjun Verma 1	1835.842000

Average Order Value
By Employee

-- 3. Total sales handled by each employee

```
SELECT e.emp_name, SUM(od.total_price) AS total_sales
FROM employees e
JOIN orders o ON e.emp_id = o.emp_id
JOIN order_details od ON o.ord_id = od.ord_id
GROUP BY e.emp_id;
```

	emp_name	total_sales
▶	Aarav Kumar 1	52602.88
	Aditya Singh 1	79252.29
	Pari Kumar 1	66818.39
	Aditya Verma 1	34204.51
	Pari Sharma 1	40334.22
	Zara Verma 1	71562.76
	Vihaan Singh 1	48577.88
	Diya Sharma 1	67241.85
	Arjun Kumar 1	54018.31
	Arjun Verma 1	36716.84

Result 150 ×

#Toal Sales Generated
by Each Employee

Order Details

SELECT

```
    quantity,  
    SUM(total_price) AS total_revenue  
FROM order_details  
GROUP BY quantity  
ORDER BY total_revenue desc;
```

quantity	total_revenue
5	177526.53
4	140553.75
3	123960.76
2	69698.85
1	39590.04

Total Revenue out Quantity Frequencies

-- 3. Unit price variation across orders

```
SELECT DISTINCT p.prod_id, p.prod_name, od.each_price  
FROM products p  
JOIN order_details od ON p.prod_id = od.prod_id  
ORDER BY p.prod_id;
```

-- 2. Average quantity ordered per product

```
SELECT p.prod_name, AVG(od.quantity) AS avg_qty  
FROM products p  
JOIN order_details od ON p.prod_id = od.prod_id  
GROUP BY p.prod_id;
```

prod_id	prod_name	each_price
1	Basmati Rice	358.98
2	Wheat Flour	255.50
3	Moong Dal	386.18
4	Chickpeas	353.50
5	Soybean Oil	172.81
6	Ghee	487.46
7	Paneer	484.27
8	Yogurt	111.61
9	Mango Pickle	182.50

Result 156 ×

Each Product and their Prices

prod_name	avg_qty
Basmati Rice	3.2000
Wheat Flour	2.5333
Moong Dal	3.4000
Chickpeas	2.4286
Soybean Oil	1.6364
Ghee	3.3750
Paneer	3.0000
Yogurt	2.1429
Mango Pickle	3.3636
Mixed Vegetable Pickle	2.2857
Almonds	3.0000
Cashews	2.6250

Result 153 ×

Average Quantity of each Product

Challenges

- Understanding how tables are connected using primary and foreign keys.
- Handling data imports where some tables failed due to mismatched column names or invalid foreign key values.
- Managing date fields stored as text, which required conversion before doing time-based analysis.
- Writing correct JOIN queries to combine multiple tables for insights.
- Fixing errors with DISTINCT, ORDER BY, and aggregation rules.
- Ensuring referential integrity while loading and analysing data.
- Cleaning inconsistent values like prices, IDs, and date formats to avoid query errors.

Conclusion

- Demonstrated how structured SQL analysis can reveal clear insights into sales trends, product performance, and customer behaviour.
- Strengthened understanding of database design, relationships, and efficient query writing for real-world datasets.
- Showed the value of clean, well-connected data in supporting accurate reporting and better business decisions.

Thank You