📊 Food Orders Analytics using SQL

🎯 Objective

The main objective of this project is to **analyze food delivery data** to uncover insights about:

- Customer behavior and preferences
- Restaurant performance and ratings
- Cuisine popularity across demographics
- City-level and time-based sales trends

The analysis helps in **data-driven decision making** for food delivery businesses and restaurants.

📂 Dataset Overview

The project is built using **four relational tables**:

1. **Orders**
    - Contains transaction details:
        - order_id, order_date, sales_qty, currency, user_id, restaurant_id, quarter, month_name, year.
    - Helps track sales performance across **time periods** (monthly, quarterly, yearly).
2. **Users**
    - Customer information:
        - user_id, name, age, gender, marital_status, occupation.
    - Enables segmentation based on **age, gender, occupation, and marital status**.
3. **Restaurant**
    - Restaurant details:
        - id, name, city, country, rating, rating_count, cuisine.
    - Used to evaluate **performance, ratings, and cuisine diversity**.
4. **Menu**
    - Menu information:
        - menu_id, restaurant_id, food_id, cuisine, price.
    - Provides **pricing and cuisine category** data for revenue calculation.

⚙️ Steps Involved

🔎 1. Data Exploration

- Checked the number of **orders, users, restaurants, cuisines, and cities**.
- Verified consistency across primary and foreign keys (user_id, restaurant_id).
- Sample query:
- SELECT COUNT(DISTINCT user_id) AS total_users FROM users;

🧹 **2. Data Cleaning**

- Identified missing/null values in all tables.
- Replaced them with standard placeholders:
    - cuisine = 'not_specified'
    - rating_count = 'no_rating_count'
    - name = 'no_users_specified'
- Ensured **referential integrity** between orders, users, menu, and restaurant.

📊 **3. Business Analysis (20+ Queries)**

Some key questions answered:

1. **Top 5 restaurants** by revenue in the last year
2. **Top 10 users** with the highest purchases
3. **City-wise revenue** by year and quarter
4. **Bottom 3 restaurants** by performance
5. **Top cuisines** by order count and rating
6. **Age-wise popular cuisines**
7. **Occupation-wise order distribution**
8. **Year-over-year revenue comparison**
9. **High demand cuisines** in the last 2 months
10. **Top-rated vs. lowest-rated cuisines**

🛠️ **Techniques Used**

- **SQL Joins**:
    - Combined data across multiple tables (users, orders, restaurant, menu).
- **Aggregations**:
    - Calculated total revenue, average ratings, and order counts using SUM, COUNT, AVG.
- **Window Functions**:
    - Used RANK() OVER (PARTITION BY ...) to find top restaurants, users, and cuisines.

- **Grouping & Filtering**:
    - Analyzed order trends with GROUP BY, filtered with HAVING.
- **Time-Based Analysis**:
    - Leveraged year, month_name, and quarter columns for **trend analysis**.

📈 Insights

🔹 Customer Behavior

- **Occupation matters**: Professionals and students ordered more compared to homemakers.
- **Age groups**: Young adults (18–30) preferred fast food, while older groups preferred traditional cuisines.

🔹 Restaurant Performance

- The **top 5 restaurants** contributed significantly to yearly revenue.
- The **bottom 3 restaurants** had consistently low sales despite being in high-demand cities, hinting at poor ratings or limited cuisine options.

🔹 City & Cuisine Trends

- Certain **metro cities dominate revenue** due to higher population density and demand.
- Seasonal cuisines (e.g., winter specials) showed spikes in the last 2 months of the year.
- A few **cuisines consistently performed better**, regardless of city or age group.

🔹 Revenue Patterns

- Year-over-year growth was visible in most cities.
- Peak demand was seen in **Q4 (October–December)** due to festive seasons.

💡 Business Impact

The analysis provides actionable recommendations:

- Focus marketing on **top cities and occupations**.
- Expand the menu in underperforming restaurants to include **high-demand cuisines**.
- Provide **seasonal promotions** during peak months.
- Encourage customer retention by offering **loyalty rewards to top users**.

🛠️ Tools & Environment

- **Database**: PostgreSQL

- **Client Tool**: pgAdmin
- **SQL Features**: Joins, Aggregates, Window Functions, Ranking, Grouping