Mini Project: Pizza Sales Analysis with SQL

Problem Statement:
This SQL project involves analyzing a pizza sales dataset to gain insights about sales patterns, order distributions, and revenue. The dataset contains details about customer orders, pizzas, their categories, and prices. Students will be required to write SQL queries to extract and analyze data based on a series of progressively challenging questions.

Dataset Link:
Pizza Sales Dataset

Guidelines for Students:

1. **Data Understanding:**
    - Understand the structure of the dataset by inspecting the tables and their relationships.
    - Familiarize yourself with the schema, particularly the pizza categories, order details, and sales records.
2. **Data Exploration:**
    - Analyze the dataset by writing queries to retrieve basic information such as the total number of orders, revenue, and frequently ordered items.
3. **Advanced Analysis:**
    - Perform more complex queries involving joins and groupings to calculate metrics like revenue distribution, pizza category sales, and cumulative sales over time.
4. **Optimization and Interpretation:**
    - Ensure that your queries are optimized for performance (e.g., using `GROUP BY`, `JOIN` operations, and `HAVING` clauses).
    - Interpret the results of each query to understand trends and patterns.

Project Questions:

Basic:

1. **Retrieve the total number of orders placed.**

   Objective: Understand the total volume of orders.

2. **Calculate the total revenue generated from pizza sales.**

   Objective: Calculate the total revenue generated from all pizza orders.

3. **Identify the highest-priced pizza.**

   Objective: Find out which pizza is the most expensive.

4. **Identify the most common pizza size ordered.**

   Objective: Determine which pizza size (e.g., small, medium, large) is ordered the most.

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

   Objective: Find out which pizza types are most frequently ordered.

Intermediate:

1. **Join the necessary tables to find the total quantity of each pizza category ordered.**

   Objective: Explore the relationship between pizza categories and quantities ordered.

2. **Determine the distribution of orders by hour of the day.**

   Objective: Analyze how orders are distributed across different times of day.

3. **Join relevant tables to find the category-wise distribution of pizzas.**

   Objective: Find out how pizzas from different categories are ordered.

4. **Group the orders by date and calculate the average number of pizzas ordered per day.**

   Objective: Analyze daily order trends and average quantities.

5. **Determine the top 3 most ordered pizza types based on revenue.**

   Objective: Identify the pizza types that generated the most revenue.

Advanced:

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

   Objective: Understand each pizza's contribution to overall sales.

2. **Analyze the cumulative revenue generated over time.**

   Objective: Track how revenue accumulates over time.

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

   Objective: Find the highest-grossing pizzas within each category.

Expected Outcomes:

- **Basic:** Students will understand how to perform fundamental SQL queries to analyze pizza sales data, including aggregation and filtering.
- **Intermediate:** Students will be able to join tables, group data, and calculate average values or distributions.
- **Advanced:** Students will gain expertise in advanced SQL concepts such as percentage contribution, cumulative analysis, and partitioned ranking.