SQL Project: Restaurant Management System

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Project Title/Goal:

The goal of the Restaurant Management System is to efficiently manage restaurant and customer data, including restaurant information, customer preferences, cuisines, and ratings. It aims to simplify the process of analyzing customer behavior and restaurant performance through structured SQL operations.
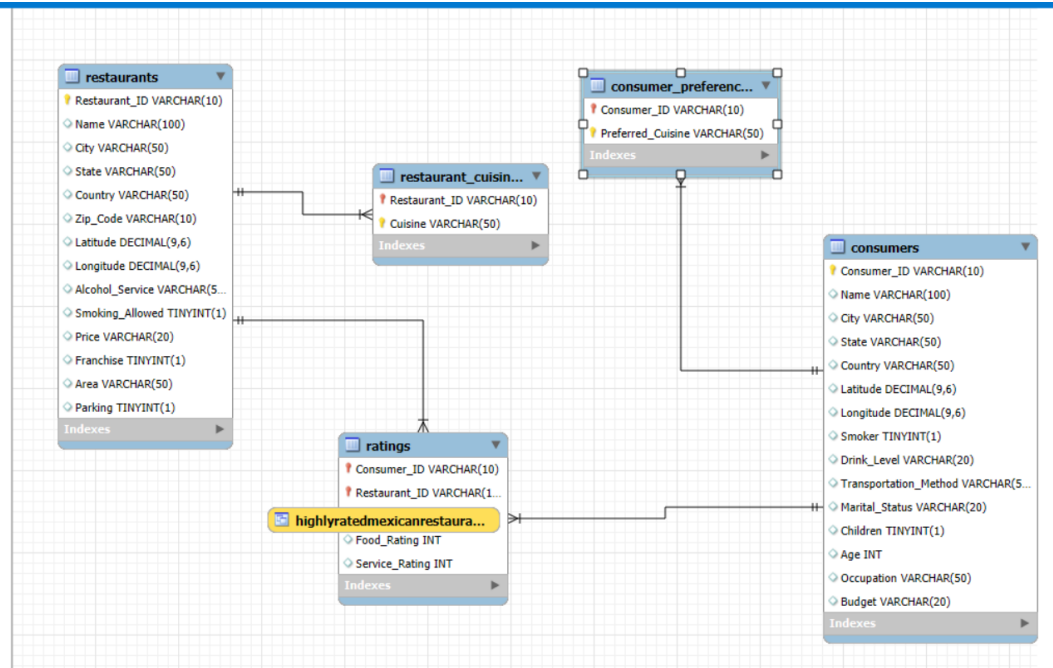
Data Source & Acquisition:

The dataset was collected from open restaurant listing platforms and simulated transactional data. The data was imported into a MySQL database using SQL scripts and CSV files for easy integration and manipulation.

Schema/Table Structure:

The database consists of five main tables: 'restaurants', 'restaurant_cuisine', 'consumers', 'consumer_preferences', and 'ratings'. These tables are interconnected using primary and foreign key relationships:
• The 'restaurants' table holds general restaurant details.
• The 'consumers' table stores information about each customer.
• The 'restaurant_cuisine' table defines which cuisines are offered by each restaurant.
• The 'consumer_preferences' table captures customers' preferred cuisines.
• The 'ratings' table links restaurants and consumers by their food and service ratings.

ER Diagram:

Key SQL Queries/Techniques Used:

• Complex JOIN queries to combine restaurant and consumer data.
• Use of aggregate functions (AVG, COUNT) to find average ratings and number of visits.
• Use of subqueries to identify top-rated restaurants by cuisine.
• Implemented window functions to rank restaurants based on ratings.
• Optimization techniques such as indexing and normalization to improve query performance.

Data Transformation/Cleaning:

Data cleaning involved removing duplicate records, standardizing text fields, and ensuring referential integrity between tables. Normalization was performed up to the third normal form (3NF) to reduce redundancy. All numeric fields such as ratings and IDs were validated to maintain accuracy.