Database Management System – MC212

Course Project

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Online Food Delivery System

Problem Description: Online Food Delivery System

An Online food delivery system that requires a DBMS that can handle different aspects such as customer management, restaurant management, menu management, order processing, delivery tracking, and payment processing. The system needs to ensure data integrity, security, scalability, and perform well even with many transactions happening at once, providing real-time updates.

Database Requirements: **Entities**

and Their Attributes

Customer:

- Customer ID (Primary Key): Username of the customer which he/she uses to order food.
- Name: Name of the customer.
- Phone Number: Phone number of customer for verification.
- Address: Composite attribute for the delivery of food.

Customer-Email:

- E-mail (Primary key): E-mail of the customers.
- Customer ID (Foreign key) : References to the customer table.

Restaurant:

- Restaurant ID (Primary Key): It has personal ID which is unique for every restaurant.
- Name: Name of the restaurant, for customer to search.
- Address: To avoid confusion between franchise of restaurant.
- Contact Information: To contact restaurant for specific making of order.
- Operating Hours: To ensure that restaurant is open.
- Cuisine: To search appropriately for the food.
- Ratings and Reviews: To ensure the restaurant is good.

Menu:

- Dish Name (Primary Key): To make sure there is only one dish of a given name in each restaurant.
- Restaurant ID (Foreign key): To which restaurant menu belongs.
- Description: To give details about the dish.
- Price: To check if the dish fits in the budget.

Order:

- Order ID (Primary Key): To make sure there is a different id for every different orders.
- Customer ID (Foreign Key): To which customer the order belongs.
- Restaurant ID (Foreign Key): To see which restaurant order belongs to.
- Order Date and Time: So, no confusion stays about the delivery.
- Item Ordered: Item ordered from the menu.
- Total Amount: Amount needed to be paid by the customer.
- Payment Status: Is payment already paid or cash on delivery.

Customer Address:

- Customer ID (Foreign key): The ID of the customer.
- Delivery Address (Primary key): References to the order table.

Delivery Personnel:

- Delivery Person ID (Primary Key): The id of the delivery person.
- Name: Name of the delivery person.
- Phone Number: To contact the delivery person.

Payments:

- Payment ID (Primary Key): The id for a given payment by customer.
- Order ID (Foreign Key): For which the payment has been done.
- Payment Method: Method by which the customer has paid.
- Payment Date and Time: When the payment is done for everything to be transparent.

Reviews and Ratings:

- Review ID (Primary Key): A particular id given to a single review.
- Customer ID (Foreign Key): The customer who gave the review.
- Restaurant ID (Foreign Key): The restaurant to whom the review is given.
- Rating: The rating given by the customer.
- Review Text: The review given by customer in form of words.
- Review Date and Time: When the review is given.

Coupons:

- Coupon ID (Primary Key): Unique identifier for each coupon.
- Coupon Code: Code used by the customer to apply the coupon.
- Discount Amount: The amount or percentage of discount offered by the coupon.
- Expiration Date: The date when the coupon expires.
- Customer ID (Foreign Key): List of customers eligible to use the coupon.
- Minimum Order Value: Minimum value of the order required to apply the coupon.

Feedback for Delivery Personnel:

- Feedback ID (Primary Key): Unique identifier for each feedback record.
- Delivery Person ID (Foreign Key): ID of the delivery person receiving the feedback.
- Customer ID (Foreign Key): ID of the customer giving the feedback.
- Rating: Rating given by the customer for the delivery experience (e.g., out of 5).
- Comments: Text feedback provided by the customer regarding the delivery experience.
- Feedback Date and Time: The date and time when the feedback was given.

Relationships and Constraints

1. Customer-**places-** Order: (One-to-Many)
   - A customer can place multiple orders, but each order belongs to exactly one customer.
   - Participation Constraint: Each order must be associated with a customer (mandatory).

     In the Orders table, the Customer ID is NOT NULL to ensure mandatory participation.

2. Restaurant-**has**-Menu: (One-to-One)
   - A restaurant can only have a single

   menu.

- Each menu belongs to exactly one restaurant.

- Participation constraint: Mandatory for menu (each menu must be associated with a restaurant) and vice versa.

3. Order-**placed from**-Menu: (Many-to-

One) - Each order corresponds to one

menu.

- A menu can be a part of multiple orders.

- Participation Constraint: Each menu item must be associated with a restaurant.

  Restaurant ID in Menu is NOT NULL to ensure mandatory participation.

4. Order- **Delivered by** - delivery person: (One-to-One)

- Relationship: Each order is delivered by exactly one delivery person, and each delivery person is associated with exactly one order at a given time.

- Participation Constraint: Mandatory participation for each order; Delivery Person ID in Orders is NOT NULL.

5. Order-**needs**-Payment: (One-to-One)

- Each order has exactly one payment record.
- Each payment record corresponds to exactly one order.

- Participation Constraint: Mandatory participation; the Order ID in Payments is NOT NULL.

6. Customer-**gives**-Review: (One-to-Many)

- A customer can write multiple reviews.

- Each review is written by exactly one customer.

- Participation constraint: Mandatory for reviews (each review must have a customer).

7. Restaurant-**given a**-Review: (One-to-Many)

- A restaurant can have multiple reviews.
- Each review is associated with exactly one restaurant.
- Participation constraint: Mandatory for reviews (each review must be associated with a restaurant).

8. Customer-**gives**-Feedback: (One-to-Many)

- A customer can provide feedback on multiple deliveries, but each feedback is given by exactly one customer.
- Participation Constraint: Each feedback must be associated with a customer. The Customer ID in the Feedback table must be NOT NULL.

9. Delivery Person-**receives**-Feedback: (One-to-Many)

- A delivery person can receive feedback from multiple customers, but each feedback is associated with one delivery person.
- Participation Constraint: Every feedback entry must be tied to a delivery person, so Delivery Person ID in the Feedback table is NOT NULL.

10. Customer-**applies**-Coupons: (Many-to-Many)

- A customer can apply multiple coupons, and a coupon can be used by multiple customers.

- Participation Constraint: A coupon may or may not be used by customers.

11. Restaurant-**offers**-Coupons: (One-to-Many)

- A restaurant can offer multiple coupons, but each coupon belongs to exactly one restaurant.

- Participation Constraint: Each coupon must be associated with a restaurant, so the Restaurant ID in the Coupons table is NOT NULL.

From the above proposed project on database management system we can solve various number of queries of various users like:

Queries related to:

A) Customer Orders:

- What is the total number of orders placed by each customer?
- What are the most regularly ordered dishes by a specific customer? ● What is the history of orders placed by a customer?

B) Restaurant Performance:

- What are the top-rated restaurants based on customer reviews?
- Which restaurant has the highest number of orders in the last month?
- What are the most popular dishes (highest number of orders) across all restaurants? ● What is the average rating for each restaurant?

C) Order and Delivery Statistics:

- How many orders were delivered by each delivery person in the last month?
- What is the number of orders placed in a day?
- What percentage of orders were paid online versus cash on delivery?

D) Payment Analysis:

- What is the amount of sales by each restaurant in the last month?
- What are the most used payment methods used by customers? ● What is the average bill amount ?

E) Review and Rating:

- What is the average rating given by each customer?
- Which restaurant received the most reviews in the last month? ● How do ratings compare between different cuisine types?