Food Delivery Platform Management System

Database Specification: Purpose, Business Problems, Addressed and Business rules

Database Purpose:

The purpose of this database is to maintain the data we generate, and to supply information that supports the food delivery services we provide to our customers. The database will be used by the platform's administration to generate business reports and make business decisions.

Business Problems Addressed:

- Allows the delivery platform administration, marketing department, and platform staff to generate descriptive reports.
- Provide information that allows the platform to set up rewards for the riders, based on their order numbers to help motivate riders to work hard.
- Allows platform managers to generate consumer behavior reports based on data such as when a user is logged in, how much time they used, and their basic info(date of birth, age, and so on).
- Permit the platform through the riders rating to help manage and improve the quality of rider service.
- Allow platform staff to analyze restaurant ratings to provide offers for top popular restaurant.
- The platform staff can provide data support for managers' decision-making by analyzing consumers' order preferences.

Business Rules:

- Each customer may have zero or more orders.
- Each customer may have zero or more login and logout.
- Each customer will have one or more address.
- Each order will have one rider.
- Each order will have one payment and delivery time.
- Each order will have one or more order items selected from menu item.
- A restaurant will have one or more opening hours.
- A restaurant will have one or more menu items.
- A restaurant will have zero, one or more orders.

Design Requirements:

- Use Crow's Foot Notation.
- Specify the primary key fields in each table by specifying PK beside the fields.
- Draw a line between the fields of each table to show the relationships between each table. This line should be pointed directly to the fields in each table that are used to form the relationship.
- Specify which table is on the one side of the relationship by placing a one next to the field where the line starts.
- Specify which table is on the many side of the relationship by placing a crow's feet symbol next to the field where the line ends.

Design Decisions:

Entity Name	Why Entity Included	How Entity is Related to Other Entities
Customer	Our database is mainly to collect the delivery information in which orders are created by platform's customers. The important Customer data also includes Customers personal information such as their names, contact systems, and addresses.	The Customer entity's primary key, CustomerID(unique label for each customer), relates it to Login, Order so that we can gain information about order created by which customer and the time customers log in and log out our platform. We also set the FK addressID in order to be related with Address entity and further to gain address information.
Login	One key function of the database is through the time of customers log in and log out our platform to analyze which time stage people are more likely to search and order food online.	We set the FK, customerID, in order to be related with customer. we can get the customers' info about their log in and log out time.
Address	We can get address info of customers and restaurants from Address entity through AddressID. And then we can count which street people are more likely to order food delivery and which street restaurants are popular with customers.	We set the primary key addressID and use it to relate with Restaurant entity and Customer entity to get the objective addresses.
Order	The most important key function of this database is to analyze order details info by the Order entity. We can get the info like who create this order, which restaurant provide food, who deliver this food from restaurant to customer, and we can get the food customer ordered should be categorized to which Menu by OrderID. In addition, we can also count and analyse the different payment methods popularity with customer. Also, we can calculate different restaurants their total sales per month or for a specific time stage. Lastly, we also can count the number of deliveries for each rider, we can provide extra bonus for these diligent riders according to their delivery condition.	We firstly set the PK, OrderID, to specifically recognize each order and we relate it with the tables of OrderItem FK(OrderID), Rating FK(OrderID), DeliveryTime PK(OrderID) by OrderID(Order PK). Secondly, we also set several FK keys in Order like customerID, restaurantID, paymentID, riderID in order to be related with the tables of Customer, Restaurant, payment, Rider.

Restaurant Type	The types of restaurant can be got by the RestaurantID from Restaurant entity. It is convenient for platform administration to check the business status of various types of restaurants	The primary key is TypeID and relate with Restaurant entity.
Restaurant	The Restaurant entity provides imporgtant information: the type and address of each restaurant. We can provide clients with data about which restaurants are more popular.	We set RestaurantID as primary key to track every restaurant. And we relate the Restaurant table with Opening Hour. We also set addressID and typeId as FK keys to be related with Resturant Type, Address and MenuItem tables.
Opening Hour	We will provide the opening hour of each restaurant by calculating the opening and closing time. This data allows customers to observe the operation of the restaurant	The Opening Hour's primary key is RestaurantID. The entity is related to the Restaurant entity.
Menu Item	The MenuItem collects the menu of each restaurant and records the price as well. The platform administration can know the target customer group of the restaurant	We set MenuID as PK and it is related to the OrderItem entity. It is used to collect menu information. We also set the FK (restaurantID) to be related with Restaurant entity.
Order Item	One of the essential functions of the database is to collect data and track the detailed information of each dish included in a customer's order. This entity provides the menu item id, order id, and quantity of each dish. It can help to get the total amount of each order a customer spends. The administrative team can track customers' ordering orientation and choice, which may provide data support for future promotional activities.	The OrderItem entity is directly related to the Order entity and MenuItem entity. This entity uses the Order ID and MenuItem ID to identify the order associated with the ordered item and the menu item associated with the ordered item, respectively. Many order items can be contained in one order, and each order item must come from one menu item.

Rider	Rider is one of the other most essential entities that must exist in the food delivery platform. It is important to be able to track information about orders delivered by riders, riders' delivery times, and riders' ratings. The team can use this data to monitor riders' performance and formulate reward and punishment mechanisms to stimulate the work efficiency of riders.	This entity is directly related to the Order entity. Each order is delivered by one rider, and each rider may have multiple orders to deliver every day. The rider's delivery service for each order may generate a rating for them.
Payment	The system also needs a payment entity to track the order payments made by the customers. Each payment has a unique id and contains information about the customer's payment method. The administrative team may be interested in this to help with future potential payment platform collaborations.	This entity is directly related to the order entity. Each order must and must only have one payment. The team can record each order's payer, recipient, payment date, payment amount, and all related information through the relationship between the order entity and the payment entity.
Rating	This entity is used to track customer ratings of restaurants and customer ratings of riders' food delivery services. The management team is definitely interested in the performance of the merchants and riders they work with, which directly affects customer satisfaction and engagement with the platform. This entity also helps the team generate reports on rider performance and merchant performance.	This entity is connected to the order entity, and the team can get the customer ratings for both the restaurant and the rider for each order.
DeliveryTime	To obtain the delivery time and the length of time spent for each order. These data can be used by the administration to analyze the efficiency and performance of riders, as well as the customers' ordering preferences at different points in time.	This entity is connected to the order entity, each order has exact one delivery time, and there may be multiple orders in the delivery process at each delivery time.