Database group project

Cinema booking database

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Overview

Since the spring of 2020, the world has been fighting coronavirus and had to adapt to many restrictions. One field that got affected the most is the entertainment business like cinemas. Currently, many cinemas around the globe are closed. However, once the situation starts to normalize and cinemas return to business, people will be extremely eager to visit them. Among them, one reason is that a lot of companies that produce a movie have delayed their releases for screenings at movie theatres after the coronavirus and many fans have been waiting for the movies.

Because we expect the theatres will be crowded with people when they can go themselves, cinemas will have to deal with a lot of customers with the high demand. Cinemas usually have multiple auditoriums with many seats, a large offer of movies, different movies per day in each auditorium, and the status of movies, sessions, and seats must be monitored. For cinema to function well, there must be a system where this data is stored.

Our database will benefit both the cinema and the customers. Customers will be able to view the information about movies, see the screenings for movies, and seat availability. Cinema will be able to monitor the flow of customers. It will ease the work of creating planning new screening. Each auditorium will have time slots when the movie can be screened, and when creating a new screening, the end-user will be able to see what time slots are available.

Additionally, the system allows users to purchase tickets both online and in the cinema. For the latter, there will be dedicated CustomerIDs for cashiers.

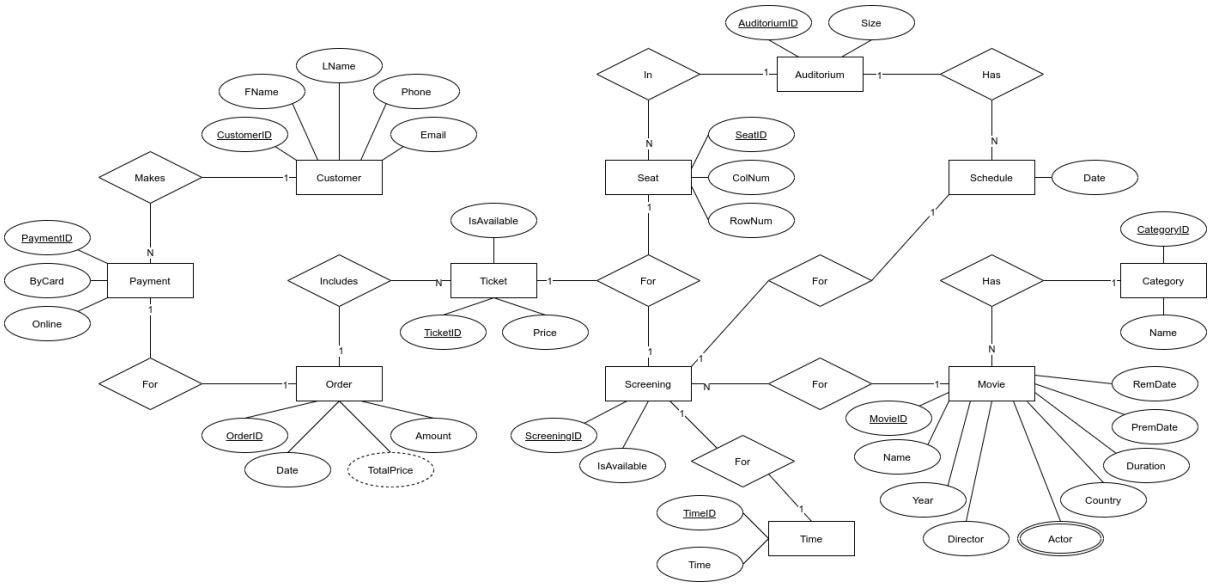
Requirements

- The system stores data about movies that are being screened or releasing soon.
- The system stores data about tickets.
- The system stores data about auditoriums and seats in them.
- The system automatically will determine the number of seats available or the screening time.
- To reserve a seat, a customer must purchase a ticket.
- The system won't allow users to order a ticket for a screening that has started.
- If a movie is unreleased but has a screening, customers can order tickets for it.
- A movie can’t be screened on a date after the removal date.
- Movies and screenings have to be added manually.
- Time and date of purchase are added automatically by the system.

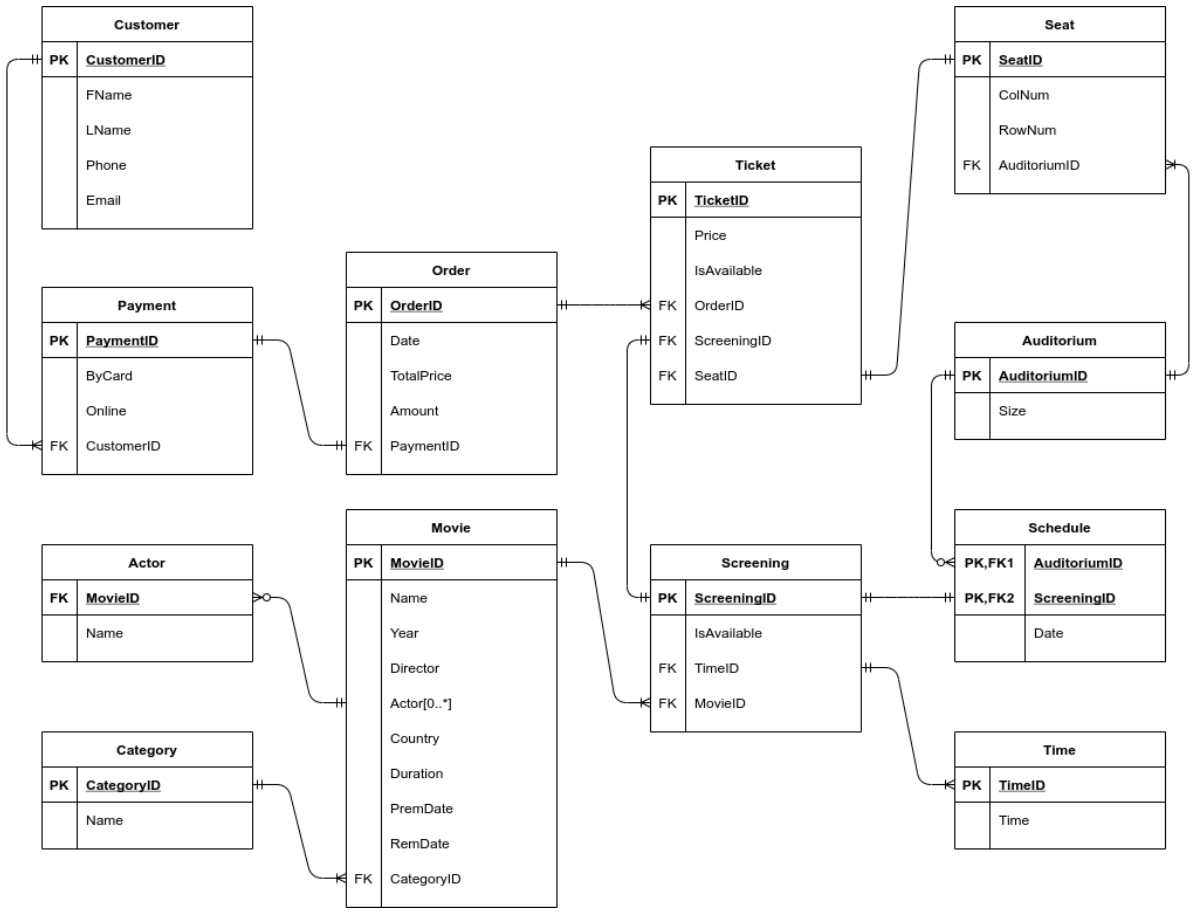
Rules

- There is one cinema with a limited number of auditoriums.
- There are three sizes of auditoriums - small, medium, large.
- Each auditorium has n rows and m columns of seats without gaps.
- Each auditorium has a unique number.
- Each auditorium will have a limited maximum number of screenings per day as time slots.
- Each seat has a unique ID consisting of auditorium number, row, and column.
- The seat can be either available or taken.
- The seat is in one auditorium and each auditorium has its schedule for the day.
- The auditorium can have multiple schedules. Then schedules have different time slots for different movies.
- Each ticket has a unique identifying number.
- Each movie has a name, country, director, category, description, duration.
- Each movie has a limited time (between premiere and removal dates) it is available for screenings.
- Screening can be created only if the time slot for the auditorium is available.
- Customers may purchase multiple tickets for multiple movies for multiple dates and sessions, but each payment is only for one order.
- Customers can choose a date for a session, available movie sessions, and available seats.
- Customers can have multiple orders with multiple tickets but each ticket reserves only one seat.
- There is a unique customer ID for cashiers.
- Only one customer can place an order.
- Customers must fill in all their information.
- Order can consist of multiple tickets.

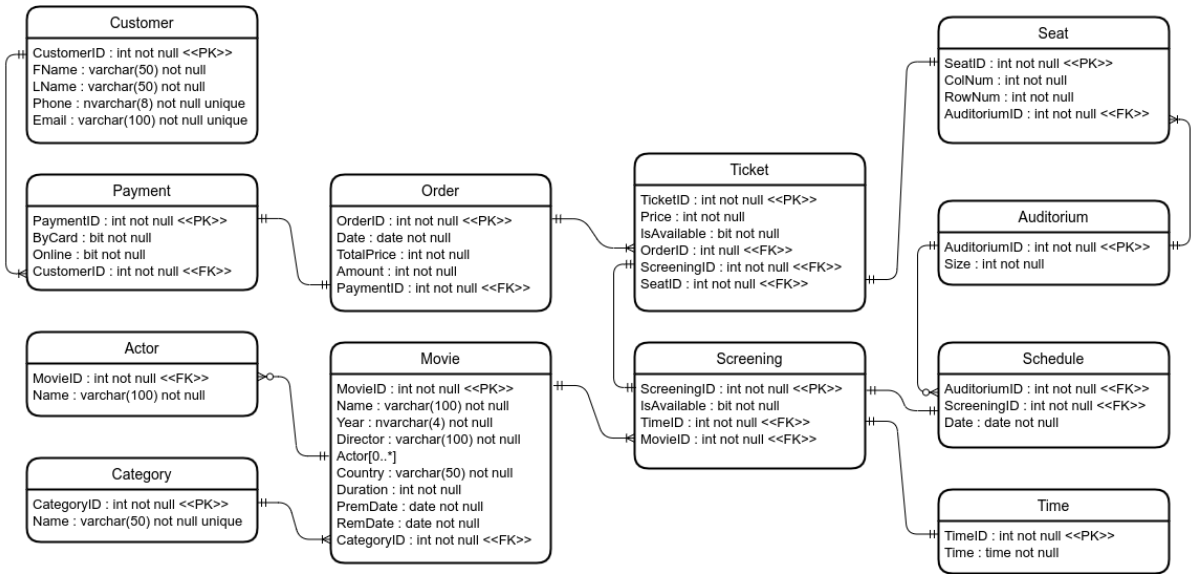
Conceptual model



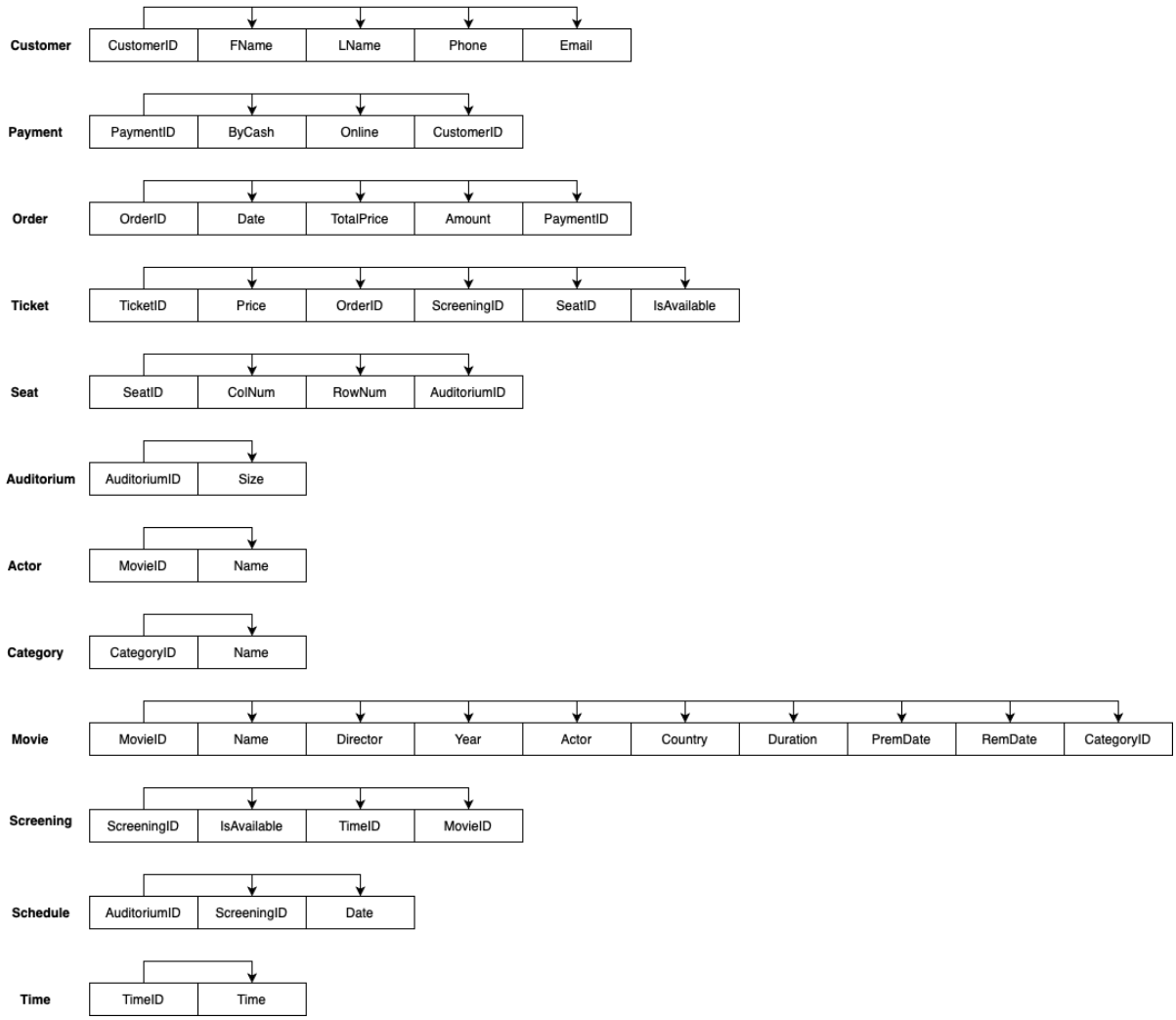
Logical model



Physical model



Functional Dependencies



Normal Forms

All tables are in 1st Normal Form because all fields are atomic.

All tables have primary keys (for Actor combination of both fields, for Schedule combination of both foreign keys), thus, all tables are in 2nd Normal Form.

All tables are in BCNF because all functional dependencies begin from full primary or potential key.

SQL Script

Github link below:

https://github.com/iirtrtrt/CinDB