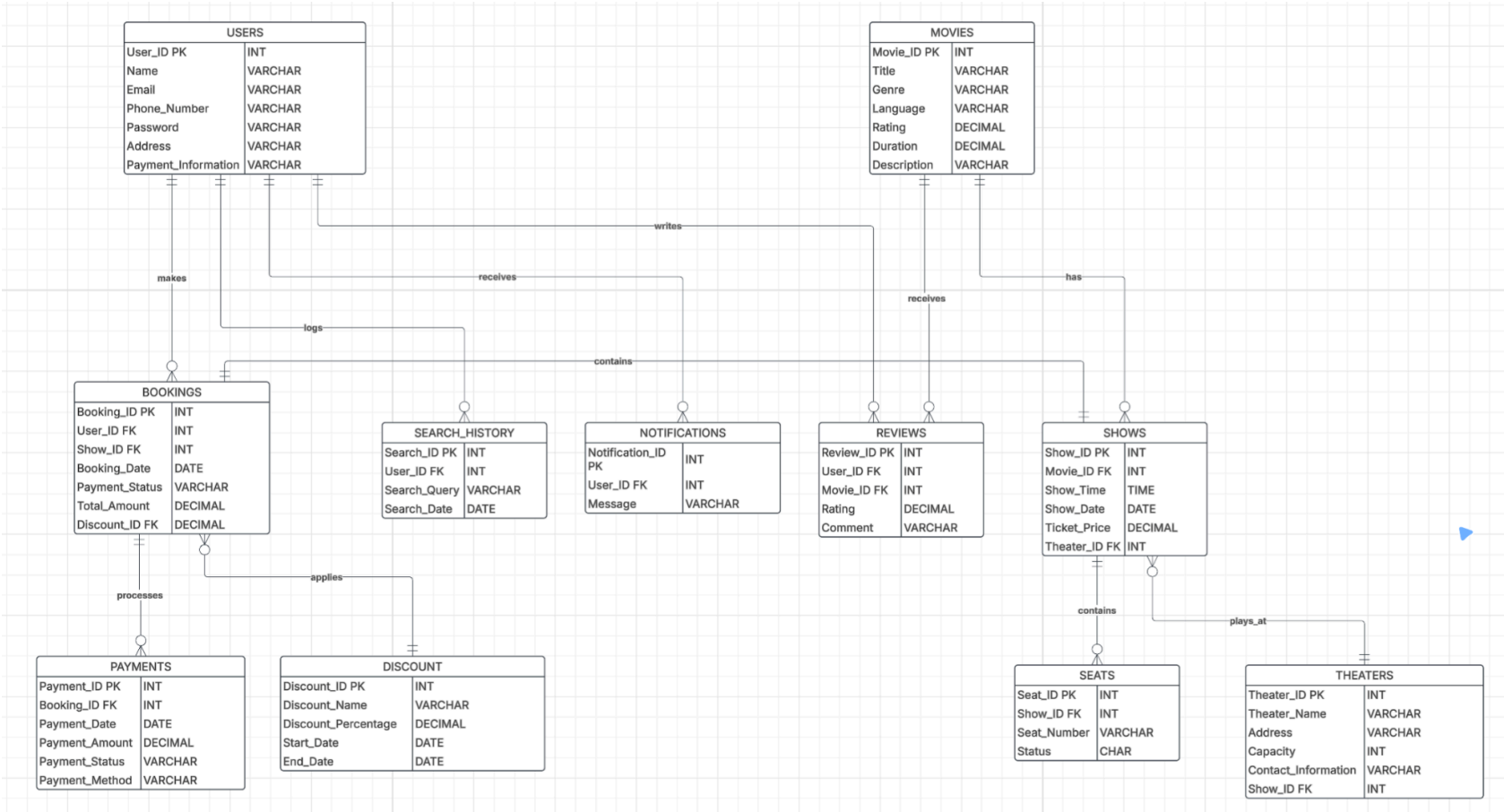
USERS
User_ID PK INT
Name VARCHAR
Email VARCHAR
Phone_Number VARCHAR
Password VARCHAR
Address VARCHAR
Payment_Information VARCHAR
MOVIES
Movie_ID PK INT
Title VARCHAR
Genre VARCHAR
Language VARCHAR
Rating DECIMAL
Duration DECIMAL
Description VARCHAR
writes
makes
receives
receives
has
logs
contains
BOOKINGS
Booking_ID PK INT
User_ID FK INT
Show_ID FK INT
Booking_Date DATE
Payment_Status VARCHAR
Total_Amount DECIMAL
Discount_ID FK DECIMAL
SEARCH_HISTORY
Search_ID PK INT
User_ID FK INT
Search_Query VARCHAR
Search_Date DATE
NOTIFICATIONS
Notification_ID PK INT
User_ID FK INT
Message VARCHAR
REVIEWS
Review_ID PK INT
User_ID FK INT
Movie_ID FK INT
Rating DECIMAL
Comment VARCHAR
SHOWS
Show_ID PK INT
Movie_ID FK INT
Show_Time TIME
Show_Date DATE
Ticket_Price DECIMAL
Theater_ID FK INT
processes
applies
contains
plays_at
PAYMENTS
Payment_ID PK INT
Booking_ID FK INT
Payment_Date DATE
Payment_Amount DECIMAL
Payment_Status VARCHAR
Payment_Method VARCHAR
DISCOUNT
Discount_ID PK INT
Discount_Name VARCHAR
Discount_Percentage DECIMAL
Start_Date DATE
End_Date DATE
SEATS
Seat_ID PK INT
Show_ID FK INT
Seat_Number VARCHAR
Status CHAR
THEATERS
Theater_ID PK INT
Theater_Name VARCHAR
Address VARCHAR
Capacity INT
Contact_Information VARCHAR
Show_ID FK INT

Changes Made to the Initial ERD

Normalization to Third Normal Form (3NF)

- Eliminated multivalued and composite attributes for a more structured database design.
- Ensured that all non-key attributes fully depend on the primary key, reducing redundancy and improving data integrity.

Resolution of Many-to-Many Relationships

- Converted many-to-many relationships into associative tables with appropriate foreign keys to maintain relational consistency.

Primary Key Implementation for Every Entity

- Assigned a primary key (PK) to each table, ensuring unique identification of records.

Foreign Key (FK) Integration for Relationship Enforcement

- Incorporated foreign keys (FK) to uphold referential integrity between entities.
- Example: The **BOOKINGS** table references the **USERS** and **SHOWS** tables through foreign keys, establishing a well-structured relationship.

Optimization of Attribute Data Types

- Refined attribute types to align with expected data values (e.g., **DECIMAL** for monetary fields, **DATE/TIME** for timestamps) to enhance data accuracy.

Ensuring Data Integrity and Consistency

- Applied constraints, such as **NOT NULL**, on essential fields to enforce data integrity and prevent incomplete records.

The revised ERD now reflects a well-structured logical data model that adheres to 3NF principles, ensuring efficiency, consistency, and clarity.