**Musical Instrument Retal Management System**

The domain of a Musical Instrument Rental Management System involves the creation and maintenance of a software platform or system that facilitates the management of musical instrument rentals. This system encompasses various components and functionalities to effectively handle user information, customer data, instrument details, rental fares, instrument categories, rent types, and rental issuance and return information.

**Relevance of the System:**

1. Efficient Management: A dedicated system streamlines the process of handling instrument rentals, ensuring organized data management and easy accessibility to relevant information. It simplifies tasks such as rental issuance, returns, tracking inventory, and managing customer details.

2. Enhanced Customer Service: By maintaining customer profiles and rental history, the system can provide personalized services, recommend instruments based on past preferences, and simplify the rental process for customers.

3. Inventory Control: Keeping track of instruments, their availability, condition, and history of rentals enables better inventory management, reducing the chances of overbooking or discrepancies.

4. Financial Tracking: The system can aid in financial tracking by recording rental transactions, calculating revenue generated, and providing insights into the most popular instruments or rental periods, assisting in decision-making for business growth.

**DATABASE CREATION**

**User Table**

Description: Stores user information for system access, including a unique User\_ID, username, and password.

|  |  |  |
| --- | --- | --- |
| **Attribute** | **Datatype** | **Constraint** |
| User\_ID | BigInt | Primary Key, Auto Increment |
| User\_name | Varchar | Not NULL, Unique |
| Password | Varchar | Not NULL |

**Customer Table**

Description: Contains details of customers such as Customer\_ID, name, address, and phone number for rental registration purposes.

|  |  |  |
| --- | --- | --- |
| **Attribute** | **Datatype** | **Constraint** |
| Customer\_ID | BigInt | Primary Key, Auto Increment |
| Customer\_name | Varchar | Not NULL |
| Address | Varchar | Not NULL |
| Phone\_number | Varchar | Not NULL |

**Instruments Table**

Description: Maintains a record of various instruments available for rent, including Instrument\_ID, name, and brand.

|  |  |  |
| --- | --- | --- |
| **Attribute** | **Datatype** | **Constraint** |
| Instrument\_ID | BigInt | Primary Key, Auto Increment |
| Instrument\_name | Varchar | Not NULL, Unique |
| Brand | Varchar | Not NULL |

**Category Table**

Description: Holds categories to classify different types of instruments, with a Category\_ID and Instrument\_category field.

|  |  |  |
| --- | --- | --- |
| **Attribute** | **Datatype** | **Constraint** |
| Category\_ID | BigInt | Primary Key, Auto Increment |
| Instrument\_category | Varchar | Not NULL |

**Rent Table**

Description: Stores information about different rental types available, identified by Rent\_ID and including Rent\_Type.

|  |  |  |
| --- | --- | --- |
| **Attribute** | **Datatype** | **Constraint** |
| Rent\_ID | BigInt | Primary Key, Auto Increment |
| Rent\_Type | Varchar | Not NULL |

**Fare Table**

Description: Manages fare details associated with instrument rentals, including a Fare\_ID and Fare\_amount.

|  |  |  |
| --- | --- | --- |
| **Attribute** | **Datatype** | **Constraint** |
| Fare\_ID | BigInt | Primary Key, Auto Increment |
| Fare\_amount | Decimal | Not NULL |

**Customer-Registration\_Mapping Table**

Description: Maps customers to their registration details with Customer\_Registration\_ID, Customer\_id, Date\_created, and Description fields.

|  |  |  |
| --- | --- | --- |
| **Attribute** | **Datatype** | **Constriant** |
| Customer\_Registration\_ID | BigInt | Primary Key, Auto Increment |
| Customer\_id | BigInt | Foreign Key |
| Date\_created | Date | Not NULL |
| Description | Varchar | NULL |

**Customer-User\_Mapping Table**

Description: Maps each User to a customer using Customer\_User\_ID, Customer\_id, and User\_ID.

|  |  |  |
| --- | --- | --- |
| **Attribute** | **Datatype** | **Constriant** |
| Customer\_User\_ID | BigInt | Primary Key, Auto Increment |
| Customer\_id | BigInt | Foreign Key |
| User\_ID | BigInt | Foreign Key |

**Instrument-Category\_Mapping Table**

Description: Establishes relationships between instruments and their respective categories using Instrument\_Category\_ID, Instrument\_ID, and Category\_ID.

|  |  |  |
| --- | --- | --- |
| **Attribute** | **Datatype** | **Constriant** |
| Instrument\_Category\_ID | BigInt | Primary Key, Auto Increment |
| Instrument\_ID | BigInt | Foreign Key |
| Category\_ID | BigInt | Foreign Key |

**Instrument-Rent\_Mapping Table**

Description: Maps instruments to specific rental types using Instrument\_Rental\_ID, Instrument\_ID, and Rent\_ID.

|  |  |  |
| --- | --- | --- |
| **Attribute** | **Datatype** | **Constriant** |
| Instrument\_Rental\_ID | BigInt | Primary Key, Auto Increment |
| Instrument\_ID | BigInt | Foreign Key |
| Rent\_ID | BigInt | Foreign Key |

**Instrument-Fare\_Mapping Table**

Description: Connects instruments to their corresponding fare details using Instrument\_Fare\_ID, Instrument\_Rental\_ID, and Fare\_ID.

|  |  |  |
| --- | --- | --- |
| **Attribute** | **Datatype** | **Constriant** |
| Instrument\_Fare\_ID | BigInt | Primary Key, Auto Increment |
| Instrument\_Rental\_ID | BigInt | Foreign Key |
| Fare\_ID | BigInt | Foreign Key |

**RentIssued-Customer\_Mapping Table**

Description: Maps rented instruments to customers upon issuance, recording Rent\_issue\_ID, Customer\_ID, Instrument\_Rental\_ID, and Date\_rented.

|  |  |  |
| --- | --- | --- |
| **Attribute** | **Datatype** | **Constriant** |
| Rent\_issue\_ID | BigInt | Primary Key, Auto Increment |
| Customer\_ID | BigInt | Foreign Key |
| Instrument\_Rental\_ID | BigInt | Foreign Key |
| Date\_rented | Date | Not NULL |

**RentReturned-Customer\_Mapping Table**

Description: Records the return of rented instruments, connecting the issuance details to return dates using Rent\_return\_ID, Rent\_issue\_ID, and Date\_returned.

|  |  |  |
| --- | --- | --- |
| **Attribute** | **Datatype** | **Constriant** |
| Rent\_return\_ID | BigInt | Primary Key, Auto Increment |
| Rent\_issue\_ID | BigInt | Foreign Key |
| Date\_returned | Date | Not NULL |