**EXPERIMENT 3**

**Develop Data Dictionary for a Railway Reservation System**

A **Data Dictionary** for a Railway Reservation System defines the structure of data used in the system. It outlines tables, attributes, relationships, and their characteristics.

A **Data Dictionary** for a Railway Reservation System includes:

**1. User Table**

**Table Name:** Users

| **Attribute** | **Data Type** | **Description** | **Constraints** |
| --- | --- | --- | --- |
| user\_id | INT | Unique identifier for the user. | Primary Key, Auto Increment |
| first\_name | VARCHAR(50) | User's first name. | Not Null |
| last\_name | VARCHAR(50) | User's last name. | Not Null |
| email | VARCHAR(100) | User's email address. | Unique, Not Null |
| phone\_number | VARCHAR(15) | User's phone number. | Not Null |
| password | VARCHAR(255) | User's password (hashed). | Not Null |
| address | TEXT | User's address. | Not Null |
| user\_type | ENUM('Admin', 'Customer') | Type of the user (admin or regular customer). | Not Null |

**2. Train Table**

**Table Name:** Trains

| **Attribute** | **Data Type** | **Description** | **Constraints** |
| --- | --- | --- | --- |
| train\_id | INT | Unique identifier for the train. | Primary Key, Auto Increment |
| train\_name | VARCHAR(100) | Name of the train (e.g., Rajdhani Express). | Not Null |
| train\_type | VARCHAR(50) | Type of train (e.g., Express, Superfast). | Not Null |
| source\_station | VARCHAR(100) | Name of the source station. | Not Null |
| destination\_station | VARCHAR(100) | Name of the destination station. | Not Null |
| departure\_time | DATETIME | Scheduled departure time. | Not Null |
| arrival\_time | DATETIME | Scheduled arrival time. | Not Null |
| total\_seats | INT | Total number of seats available on the train. | Not Null |
| available\_seats | INT | Available seats on the train. | Not Null |

**3. Schedule Table**

**Table Name:** Train\_Schedule

| **Attribute** | **Data Type** | **Description** | **Constraints** |
| --- | --- | --- | --- |
| schedule\_id | INT | Unique identifier for the schedule. | Primary Key, Auto Increment |
| train\_id | INT | Foreign key to Trains table. | Foreign Key |
| source\_station | VARCHAR(100) | Station from where the train departs. | Not Null |
| destination\_station | VARCHAR(100) | Station where the train arrives. | Not Null |
| departure\_time | DATETIME | Scheduled departure time. | Not Null |
| arrival\_time | DATETIME | Scheduled arrival time. | Not Null |

**4. Reservation Table**

**Table Name:** Reservations

| **Attribute** | **Data Type** | **Description** | **Constraints** |
| --- | --- | --- | --- |
| reservation\_id | INT | Unique identifier for the reservation. | Primary Key, Auto Increment |
| user\_id | INT | Foreign key to Users table (customer who made the reservation). | Foreign Key |
| train\_id | INT | Foreign key to Trains table (train for the reservation). | Foreign Key |
| seat\_class | ENUM('Economy', 'First', 'Sleeper') | Class of the seat reserved. | Not Null |
| number\_of\_seats | INT | Number of seats reserved. | Not Null |
| total\_amount | DECIMAL(10, 2) | Total price of the reservation. | Not Null |
| reservation\_date | DATETIME | Date and time when the reservation was made. | Not Null |
| Status | ENUM('Confirmed', 'Pending', 'Cancelled') | Reservation status. | Not Null |

**5. Payment Table**

**Table Name:** Payments

| **Attribute** | **Data Type** | **Description** | **Constraints** |
| --- | --- | --- | --- |
| payment\_id | INT | Unique identifier for the payment. | Primary Key, Auto Increment |
| reservation\_id | INT | Foreign key to Reservations table. | Foreign Key |
| payment\_date | DATETIME | Date and time the payment was made. | Not Null |
| payment\_amount | DECIMAL(10, 2) | Amount paid. | Not Null |
| payment\_status | ENUM('Paid', 'Failed', 'Pending') | Status of the payment. | Not Null |
| payment\_method | ENUM('Credit Card', 'Debit Card', 'UPI', 'Cash') | Mode of payment. | Not Null |

**6. Seat Table**

**Table Name:** Seats

| **Attribute** | **Data Type** | **Description** | **Constraints** |
| --- | --- | --- | --- |
| seat\_id | INT | Unique identifier for the seat. | Primary Key, Auto Increment |
| train\_id | INT | Foreign key to Trains table. | Foreign Key |
| seat\_number | VARCHAR(10) | Seat number (e.g., A1, B5). | Not Null |
| seat\_class | ENUM('Economy', 'First', 'Sleeper') | Class of the seat. | Not Null |
| is\_available | BOOLEAN | Whether the seat is available for booking. | Not Null |

**7. Ticket Table**

**Table Name:** Tickets

| **Attribute** | **Data Type** | **Description** | **Constraints** |
| --- | --- | --- | --- |
| ticket\_id | INT | Unique identifier for the ticket. | Primary Key, Auto Increment |
| reservation\_id | INT | Foreign key to Reservations table. | Foreign Key |
| seat\_id | INT | Foreign key to Seats table (reserved seat). | Foreign Key |
| ticket\_price | DECIMAL(10, 2) | Price of the ticket. | Not Null |
| status | ENUM('Booked', 'Cancelled') | Ticket booking status. | Not Null |

**8. Train Route Table**

**Table Name:** Train\_Routes

| **Attribute** | **Data Type** | **Description** | **Constraints** |
| --- | --- | --- | --- |
| route\_id | INT | Unique identifier for the route. | Primary Key, Auto Increment |
| train\_id | INT | Foreign key to Trains table. | Foreign Key |
| station\_name | VARCHAR(100) | Station in the train's route. | Not Null |
| stop\_time | DATETIME | Time at which the train stops at the station. | Not Null |

This data dictionary covers the essential tables and their attributes that would typically be part of a **Railway Reservation System**. Depending on the system's complexity, additional tables or attributes can be added to support features like discounts, train schedules, seat reservations, and more.