NETAJI SUBHAS UNIVERSITY OF TECHNOLOGY

PROJECT FILE

CDCSC05 : Database Management System

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RAILWAY MANAGEMENT SYSTEM

Relational Model

1. Bookings (Train_No, Passenger_Name, Mobile_No, Passenger_Adhaar, Date_Of_Booking, Booking_ID, Class)

```
[mysql> desc bookings;
+------------------+-------------+------+-----+---------+-------+
| Field            | Type        | Null | Key | Default | Extra |
+------------------+-------------+------+-----+---------+-------+
| Train_No         | int         | NO   |     | NULL    |       |
| Passenger_Name   | varchar(30) | NO   |     | NULL    |       |
| Mobile_No        | varchar(10) | NO   |     | NULL    |       |
| Passenger_Adhaar | varchar(12) | NO   |     | NULL    |       |
| Date_Of_Booking  | varchar(20) | NO   |     | NULL    |       |
| Booking_ID       | int         | NO   |     | NULL    |       |
| Class            | varchar(20) | NO   |     | NULL    |       |
+------------------+-------------+------+-----+---------+-------+
```

2. Train_info (Train_No, Station_Code, Station_Name, Arrival_Time, Departure_Time, Distance, Source_Station_Code, Source_Station_Name, Destination_Station_Code, Destination_Station_Name)

```
[mysql> desc train_info;
+--------------------------+-------------+------+-----+---------+-------+
| Field                    | Type        | Null | Key | Default | Extra |
+--------------------------+-------------+------+-----+---------+-------+
| Train_No                 | varchar(10) | NO   |     | NULL    |       |
| Station_Code             | varchar(20) | NO   |     | NULL    |       |
| Station_Name             | varchar(30) | NO   |     | NULL    |       |
| Arrival_Time             | varchar(20) | NO   |     | NULL    |       |
| Departure_Time           | varchar(20) | NO   |     | NULL    |       |
| Distance                 | varchar(10) | NO   |     | NULL    |       |
| Source_Station_Code      | varchar(20) | NO   |     | NULL    |       |
| Source_Station_Name      | varchar(70) | NO   |     | NULL    |       |
| Destination_Station_Code | varchar(20) | NO   |     | NULL    |       |
| Destination_Station_Name | varchar(60) | NO   |     | NULL    |       |
+--------------------------+-------------+------+-----+---------+-------+
```

Integrity Constraints Implemented

1. Domain constraints

- Domain constraints can be defined as the definition of a valid set of values for an attribute.
- The data type of domain includes string, character, integer, time, date, currency, etc. The value of the attribute must be available in the corresponding domain.

```
[mysql> select * from bookings;
+----------+----------------+------------+------------------+-----------------+------------+---------+
| Train_No | Passenger_Name | Mobile_No  | Passenger_Adhaar | Date_Of_Booking | Booking_ID | Class   |
+----------+----------------+------------+------------------+-----------------+------------+---------+
|      123 | versha         | 9891048899 | 123456789101     | 20-11-22        |       2453 | Sleeper |
+----------+----------------+------------+------------------+-----------------+------------+---------+
1 row in set (0.00 sec)
```

Only certain types of values can be inserted in the attribute.

2. Entity integrity constraints

- The entity integrity constraint states that primary key value can't be null.
- This is because the primary key value is used to identify individual rows in relation and if the primary key has a null value, then we can't identify those rows.
- A table can contain a null value other than the primary key field.

3. Key constraints

- Keys are the entity set that is used to identify an entity within its entity set uniquely.
- An entity set can have multiple keys, but out of which one key will be the primary key. A primary key can contain a unique and null value in the relational table.

SQL QUERIES

```python
# This Module has the Functions to Insert the Data in the MySQL Tables

# Importing Required Modules

import csv
import mysql.connector as con

# Functions
YOUR_USERNAME="root"
YOUR_PASSWORD="@1234567"

def InsertDataTrain():
    """
    InsertDataTrain() -> Inserts all the Train details in the train_info Table

    Parameters -> None
    """

    mn = con.connect(host="localhost",
                     user=YOUR_USERNAME,
                     password=YOUR_PASSWORD,
                     database="railway")

    cur = mn.cursor()

    # Iterating through all the values and insert's them in the table
    # Replace the path below with the absolute path of the file on your computer
    try:
        with open("Train_details.csv") as csv_data:
            csv_reader = csv.reader(csv_data, delimiter=",")
            for row in csv_reader:
                print(row)
                cur.execute(
                    'INSERT INTO train_info VALUES(%s,%s,%s,%s,%s,%s,%s,%s,%s,%s)', row)
    except FileNotFoundError:
        print("Please check whether the file is in the correct Folder or not and try changing"
              + "the Location in InsertData.py")
    finally:
        mn.commit()  # Important: Committing the Changes
        cur.close()
        mn.close()

#InsertDataTrain()
```

```python
def CancelBooking():
    """
    CancelBooking() -> Allows a User to Cancel Booking

    Parameters -> None
    """

    mn = mysql.connector.connect(host="localhost", user=YOUR_USERNAME,
                                 password=YOUR_PASSWORD, database="railway")
    cur = mn.cursor()

    print("Please use the Show my Bookings Option\n to get the Unique ID of the Booking you want to Cancel!")

    while True:
        try:
            unique_id = int(input("Enter the Unique ID: "))
        except ValueError:
            print("Please Enter a Valid ID!")
        else:
            if len(str(unique_id)) == 0:
                print("Invalid ID!")
            elif unique_id < 1:
                print("ID Out of Range!")
            elif unique_id > 10000:
                print("ID Out of Range!")
            elif len(str(unique_id)) != 0 and unique_id >= 1 and unique_id <= 10000:
                cur.execute(
                    "SELECT * FROM bookings WHERE Booking_ID={}".format(unique_id))
                result = cur.fetchall()
                if len(result) == 0:
                    print("No Records Found!")
                    break
                print(["Train_No", "Passenger_Name", "Mobile_No",
                       "Passenger_Adhaar", "Time_Of_Booking", "Booking_ID"])
                for x in result:
                    print(x)
                while True:
                    ask = input("Are you Sure you want to Cancel this(Y/N): ")
                    if ask in ["Y", "y"]:
                        cur.execute(
                            "DELETE FROM bookings WHERE Booking_ID={}".format(unique_id))
                        print("Deleted!")
                        mn.commit()
                        cur.close()
                        mn.close()
                        break
                    elif ask in ["N", "n"]:
                        break
                    else:
                        print("Please Enter either Y (Yes) or N (No)!")
                break
            else:
                print("Please Enter a Valid ID!")
```

OUTPUT

```
Python 3.11.0 (v3.11.0:deaf509e8f, Oct 24 2022, 14:43:23) [Clang 13.0.0 (clang-1300.0.29.30)] on darwin
Type "help", "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: /Users/vershabasor/Desktop/Railway Management System/Main.py ====
Checking the Connection to the MySQL Server..
Connected to MySQL Server Version 8.0.31
Checking Database Requirements..
Database exists!
Clearing..
  WELCOME TO RAILWAY RESERVATION SYSTEM
1. Book a Ticket
2. Cancel a Booking
3. Check Fares
4. Show my Bookings
5. Show Available Trains
6. Clear Screen
7. Menu
8. About
9. Exit
Choose an Option Number: 1
Train Number: 156
Enter your Name: versha
Enter your Mobile Number: 9891048899
Enter you Adhaar Number: 123456789101
['Sleeper', 'AC-1', 'AC-2', 'AC-3']
Please Enter a Class from the one's given above: AC-1
Are you Sure you want to Book(Y/N): y
Booking...
Successfully Booked!
Choose an Option Number: 4
Please Enter your 10 Digit Mobile Number: 9891048899
['Train_No', 'Passenger_Name', 'Mobile_No', 'Passenger_Adhaar', 'Time_Of_Booking', 'Booking_ID', 'Class']
BOOKING NO 1 : (123, 'versha', '9891048899', '123456789101', '20-11-22', 2453, 'Sleeper')

BOOKING NO 2 : (156, 'versha', '9891048899', '123456789101', '20-11-22', 669, 'AC-1')

Choose an Option Number: 2
Please use the Show my Bookings Option
 to get the Unique ID of the Booking you want to Cancel!
Enter the Unique ID: 669
['Train_No', 'Passenger_Name', 'Mobile_No', 'Passenger_Adhaar', 'Time_Of_Booking', 'Booking_ID']
(156, 'versha', '9891048899', '123456789101', '20-11-22', 669, 'AC-1')
Are you Sure you want to Cancel this(Y/N): y
Deleted!
Choose an Option Number: 4
Please Enter your 10 Digit Mobile Number: 9891048899
['Train_No', 'Passenger_Name', 'Mobile_No', 'Passenger_Adhaar', 'Time_Of_Booking', 'Booking_ID', 'Class']
BOOKING NO 1 : (123, 'versha', '9891048899', '123456789101', '20-11-22', 2453, 'Sleeper')

Choose an Option Number: 9
Closing all Connections..
Thank You!
>>>
```