Cababa: A Cab Booking System

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1.1 Database Schema

The tables have been created using the CREATE TABLE command in MySQL using the existing ER Diagram of the entities.
The following tables have been created:

1. Users: To maintain the data and credentials of the users who log in/sign up into the system.

Field	Type	Null	Key	Default
user_email	varchar(255)	NO	PRI	NULL
first_name	varchar(255)	NO		NULL
last_name	varchar(255)	YES		NULL
phno	bigint	NO	UNI	NULL
pswd	varchar(50)	NO		NULL
current_status	varchar(50)	YES		IDLE

2. Drivers: Consists of the data and credentials of the drivers who use the application.

Field	Type	Null	Key	Default
first_name	varchar(255)	NO		NULL
last_name	varchar(255)	YES		NULL
driver_email	varchar(255)	NO	PRI	NULL
phone_number	bigint	NO	UNI	NULL
passkey	varchar(50)	NO		NULL
current_status	varchar(50)	YES		AVAILABLE
total_trips	int	YES		0
rated_trips	int	YES		0
net_rating_sum	int	YES		5
final_rating	float	YES		5

3. Administrators: Consists of the data and credentials of the administrators who register drivers, vehicles and vehicle types.

Field	Type	Null	Key
admin_email	varchar(255)	NO	PRI
admin_passkey	varchar(50)	NO	
username	varchar(255)	NO	

4. Rides: Consists of the previous ride history of the users.

Field	Type	Null	Key	Default
receipt_no	varchar(255)	NO	PRI	NULL
pickup_time	datetime	NO		NULL
pickup_loc	varchar(255)	NO		NULL
drop_time	datetime	NO		NULL
drop_loc	varchar(255)	NO		NULL
vehicle_no	varchar(20)	NO	MUL	NULL
d_email	varchar(255)	NO	MUL	NULL
u_email	varchar(255)	NO	MUL	NULL
distance	float	NO		NULL
fare	int	NO		NULL
rating	int	YES		0
ongoing	int	YES		NULL

5. Vehicles: Consists of the database of all the available vehicles registered on the application.

Field	Type	Null	Key	Default
reg_no	varchar(20)	NO	PRI	NULL
vname	varchar(50)	NO		NULL
type_id	int	NO	MUL	NULL

6. Vehicle Types: Consists of the vehicle types the application offers the users to book.

Field	Type	Null	Key	Default	Extra
type_id	int	NO	PRI	NULL	auto_increment
vehicle_type	varchar(255)	NO		NULL	
seating	int	NO		NULL	
fuel_type	varchar(50)	NO		NULL	
total_vehicle_units	int	NO		20	
available_vehicle_units	int	YES		20	

1.2 Integrity Constraints

1. Users
    a. The user's email address is the primary key.
    b. The following attributes of the user cannot be NULL:
        i. First Name
        ii. Phone number
        iii. Password
    c. The user's phone number has to be unique.
    d. The user's password must be hashed to be stored so that it cannot be leaked or viewed by the administrators.

   e. The default status of every user is IDLE.
   f. The phone number of every user has to be a ten-digit number.
2. Drivers
   a. The driver's email address is the primary key.
   b. The following attributes of the driver cannot be NULL:
      i. First Name
      ii. Email Address
      iii. Phone number
      iv. Password
   c. The phone number needs to be unique.
   d. The default status of every driver is AVAILABLE.
   e. The default rating of every driver is 5 (max).
   f. The phone number needs to be ten-digit in length.
   g. The status of the driver can either be AVAILABLE or UNAVAILABLE.
3. Administrators
   a. The administrator's email address is the primary key.
   b. The following attributes cannot be NULL:
      i. Administrator email
      ii. Administrator passkey
      iii. Administrator username
4. Rides
   a. The receipt number is the primary key.
   b. The following attributes cannot be NULL:
      i. Pickup time
      ii. Pickup location
      iii. Drop-off time
      iv. Drop-off location
      v. Vehicle Number (foreign key that references the vehicle registration number for that particular ride)
      vi. Driver Email (foreign key that references the driver for that particular ride)
      vii. User Email (foreign key that references the user for that particular ride)
      viii. The distance between the pickup and drop-off location
      ix. The fare of the ride
   c. There can only be unique tuples when the ride is ongoing which is denoted by ongoing status of 1. In case the ride is completed the status is set to NULL.
5. Vehicles
   a. The vehicle's registration number is the primary key.
   b. The following attributes cannot be NULL:

        i. The ID of the type it is associated with (the foreign key which maps it to a vehicle type).
        ii. The name of the vehicle.
6. Vehicle Types
    a. The ID of the type is the primary key here.
    b. The following attributes cannot be NULL:
        i. The ID of the vehicle type.
        ii. The type name of the vehicle.
        iii. The seating capacity of the vehicle.
        iv. The fuel type of the vehicle.
        v. The number of total vehicle units of each type.
    c. The Type ID is automatically incremented with the addition of a new type
    d. The fuel type of the vehicle can only be one of the following:
        i. DIESEL
        ii. PETROL
        iii. ELECTRIC
        iv. CNG
    e. The default number of units of each type of vehicle is 20.
    f. The default number of AVAILABLE units of each type of vehicle is 20.

1.3 Data Insertion

The data has been generated using online data generators, and the corresponding queries to insert data have been automated through manually written Python scripts.
The following resources have been used to generate data:

1. https://randommer.io/random-email-address
2. https://www.coolgenerator.com/username-generator
3. https://www.random.org/strings/
4. https://fossbytes.com/tools/random-name-generator