

Project Report

Car Rental System

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Created By

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"The computer was born to solve problems that did not exist before."
— *Bill Gates*

Introduction

This project aimed to develop a car rental system database to manage customer information, car details, bookings, and billing. The system allows users to create customer profiles, manage car inventory across different locations, make bookings, and generate bills.

Problem Statement

Traditional car rental systems often rely on manual processes for managing bookings, billing, and customer information. This can lead to inefficiencies, errors, and difficulty in tracking data.

Methodology

This project utilized MySQL, a relational database management system, to design and implement the car rental system. The following steps outline the methodology:

1. **Database Design:** Entity-relationship modeling was used to define the relationships between different entities in the system, such as customers, cars, bookings, and billing details.
2. **Schema Creation:** SQL statements were used to create tables within the database, defining the attributes and data types for each entity.
3. **Data Population:** Sample data was inserted into the tables to represent customers, car categories, locations, insurance options, and existing bookings.
4. **Stored Procedures:** Procedures were created to perform specific tasks within the system, including adding new customers, generating bills for existing bookings, and retrieving information based on customer ID or booking ID.

Technology

- **MySQL:** Relational database management system for data storage and retrieval.
- **SQL:** Structured Query Language for creating, manipulating, and querying data within the database.

Database Schema Design

Tables

- 1. customer_details:** Stores information about customers including their driver's license number, contact details, and membership status.
- 2. car_category:** Contains details of different car categories such as compact, SUV, luxury, van, and convertible.
- 3. location_details:** Stores information about rental locations including address details.
- 4. discount_details:** Contains information about available discounts for customers.
- 5. rental_car_insurance:** Stores details of different rental car insurance options.
- 6. car:** Stores information about individual cars available for rent, including their registration number, model details, and availability status.
- 7. booking_details:** Records details of each booking made by customers, including pickup and drop-off locations, rental period, insurance, and discounts applied.
- 8. billing_details:** Stores billing information for each booking, including total amount, discounts, taxes, and late fees.

Relationships

- Customer details and booking details: One-to-many relationship, as a customer can make multiple bookings.
- car and booking details: One-to-many relationship, as a car can be booked for multiple rentals.
- Car category & car: One-to-many relationship, as multiple cars can belong to the same category.
- Location details and car: One-to-many relationship, as a location can have multiple cars available for rent.

Code Repository

The complete code for the project schema and stored procedures can be found in the following Git repository: [Click Here](#) to access the project source code and related files. This repository allows you to view the code structure, understand the database design, and explore the functionalities implemented using stored procedures.

Results and Conclusion:

The project successfully developed a functional car rental system database. The system can efficiently manage customer information, car inventory, bookings, and billing. Stored procedures automate specific tasks, improving data manipulation and retrieval.

Further Development

- Implement a user interface for the system to facilitate interaction with the database.
- Integrate functionalities for online booking and payment processing.
- Develop reports to analyze rental trends and customer behavior.

Video Link

A video demonstrating the project creation process and functionalities is uploaded on youtube and [linked here](#).

ER Diagram:

