

# Car Rental System Writeup

## Introduction

The Car Rental System is a simple Python project that facilitates the management of car rentals for customers. The system is built using a modular approach, with a separate module named **CarRentalModule.py** and a main project file named **CarRentalProject.ipynb**. The project utilizes the built-in **DateTime** module for handling rental time and billing.

## Module Structure - CarRentalModule.py

### CarRental Class

- The **CarRental** class is responsible for managing the inventory of cars, tracking rentals, and generating bills.
- **Constructor**: Initializes the total number of cars, available cars, rented cars, and an inventory dictionary.
- **Display Available Cars**: Displays the current number of available cars.
- **Renting Methods**: Provides methods for renting cars on an hourly, daily, or weekly basis.
- **Return Cars Method**: Handles the return of cars, updates the inventory, calculates rental period, and generates the final bill.

### Customer Class

- The **Customer** class represents a customer who can request and return cars.
- **Constructor**: Takes the customer's name as a parameter.
- **Request Cars Method**: Allows the customer to request a specific number of cars for a specified rental mode (hourly, daily, weekly).
- **Return Cars Method**: Enables the customer to return rented cars.

# Main Project File - CarRentalProject.ipynb

## Main Functionality

- The main project file contains the main function that orchestrates the car rental system.
- Creates instances of the **CarRental** and **Customer** classes.
- Utilizes a loop for user interaction, allowing customers to display available cars, rent cars, return cars, or exit the system.

## User Interaction

- **Display Available Cars:** Shows the current number of available cars to the user.
- **Rent Cars:** Prompts the user to enter the number of cars and the desired rental mode (hourly, daily, weekly). Displays relevant messages based on the success or failure of the rental request.
- **Return Cars:** Asks the user to enter the number of cars to return. Provides feedback on the success or failure of the return process.
- **Exit:** Allows the user to exit the car rental system.

## Note

- The project uses a Jupyter Notebook (**.ipynb**) for interactive execution.
- The rental system includes basic validation checks to ensure the correctness of user inputs and the availability of cars for rent.

## Conclusion

The Car Rental System provides a foundation for managing car rentals, offering modularity, user interaction, and efficient handling of rental processes. Users can easily check available cars, rent them, return them, and receive accurate bills based on the rental duration and mode. This project serves as a starting point for further enhancements and adaptations in the realm of car rental systems.