Documentation for Car Rental System

Overview

This code represents a simple car rental system that includes three main classes: Car, Customer, and RentalAgency. The system allows adding cars and customers, renting cars to customers, and returning cars. The test classes verify the functionality of these components.

Class Car

Description

Represents a car available for rent.

Fields

private String licensePlate: The license plate number of the car.

private String model: The model of the car.

private boolean isRented: Indicates whether the car is currently rented.

Constructor

public Car(String licensePlate, String model): Initializes a new car with the specified license plate and model, and sets isRented to false.

Methods

public String getLicensePlate(): Returns the license plate of the car.

public String getModel(): Returns the model of the car.

public boolean isRented(): Returns true if the car is rented, otherwise false.

public void rent(): Marks the car as rented.

public void returnCar(): Marks the car as not rented.

@Override public String toString(): Returns a string representation of the car.

Class Customer

Description

Represents a customer who can rent cars.

Fields

private String id: The unique identifier of the customer.

private String name: The name of the customer.

Constructor

public Customer(String id, String name): Initializes a new customer with the specified ID and name.

Methods

public String getId(): Returns the ID of the customer.

public String getName(): Returns the name of the customer.

@Override public String toString(): Returns a string representation of the customer.

Class RentalAgency

Description

Manages a collection of cars and customers, and handles car rental operations.

Fields

private List<Car> cars: A list of cars available for rent.

private List<Customer> customers: A list of customers registered with the agency.

Constructor

public RentalAgency(): Initializes the rental agency with empty lists of cars and customers.

Methods

public void addCar(Car car): Adds a car to the agency's list of cars.

public void addCustomer(Customer customer): Adds a customer to the agency's list of customers.

public Car findCarByLicensePlate(String licensePlate): Returns the car with the specified license plate, or null if not found.

public Customer findCustomerById(String id): Returns the customer with the specified ID, or null if not found.

public boolean rentCar(String licensePlate, String customerId): Rents the car with the specified license plate to the customer with the specified ID if the car is available. Returns true if successful, otherwise false.

public boolean returnCar(String licensePlate): Returns the car with the specified license plate if it is currently rented. Returns true if successful, otherwise false.

@Override public String toString(): Returns a string representation of the rental agency, including lists of cars and customers.

Test Classes

Class TestCar

Description

Contains test cases for the Car class.

Methods

public static void main(String[] args): Tests the Car class methods to ensure they work as expected. Asserts that the methods return correct values and change the state appropriately. Outputs "All Car tests passed." if successful.

Class TestCustomer

Description

Contains test cases for the Customer class.

Methods

public static void main(String[] args): Tests the Customer class methods to ensure they work as expected. Asserts that the methods return correct values. Outputs "All Customer tests passed." if successful.

Class TestRentalAgency

Description

Contains test cases for the RentalAgency class.

Methods

public static void main(String[] args): Tests the RentalAgency class methods to ensure they work as expected. Adds cars and customers, checks car and customer retrieval, tests car rental and return functionalities. Asserts that the methods return correct values and change the state appropriately. Outputs "All RentalAgency tests passed." if successful.