**DOCUMENTATION**

## Introduction

The Car Rental System is an application designed to manage car rentals, customer data, and rental transactions. It encapsulates data and behaviors for each entity to ensure a flexible and efficient system.

**System Architecture**

The system is built using Object-Oriented Programming (OOP) principles, with each entity represented as a class. The system architecture is designed to be modular, allowing for easy addition or modification of features

**Classes**

**Car**

The Car class represents the cars available for rental. It encapsulates data such as:

* Car ID
* Car Model
* Car Make
* Rental Status

And behaviors such as:

* Rent Car
* Return Car

**Customer**

The Customer class represents the customers who rent cars. It encapsulates data such as:

* Customer ID
* Name
* Contact Information
* Rental History

And behaviors such as:

* Rent Car
* Return Car
* View Rental History

**RentalAgency**

The RentalAgency class represents the rental agency. It encapsulates data such as:

* Agency ID
* Agency Name
* Inventory (List of Cars)
* Customer Database

And behaviors such as:

* Add Car
* Remove Car
* Add Customer
* Remove Customer
* Process Rental Transaction

**Functionalities**

**Car Rental**

The system allows customers to rent available cars. The rental process updates the car's rental status and adds the rental transaction to the customer's rental history.

**Customer Management**

The system allows the rental agency to add and remove customers from their database. It also allows the agency to view a customer's rental history.

**Rental Transactions**

The system allows the rental agency to process rental transactions. This includes updating the car's rental status, adding the transaction to the customer's rental history, and calculating the rental cost

**Error Handling**

The system includes error handling for scenarios such as attempting to rent an unavailable car, adding a non-existent car or customer, and processing a rental transaction for a non-existent customer.

**CONCLUSION**

The Car Rental System is a modular application designed to manage car rentals, customer data, and rental transactions. It encapsulates data and behaviors for each entity to ensure a flexible and efficient system.