SOMAIYA VIDYAVIHAR UNIVERSITY
K J Somaiya College of Engineering

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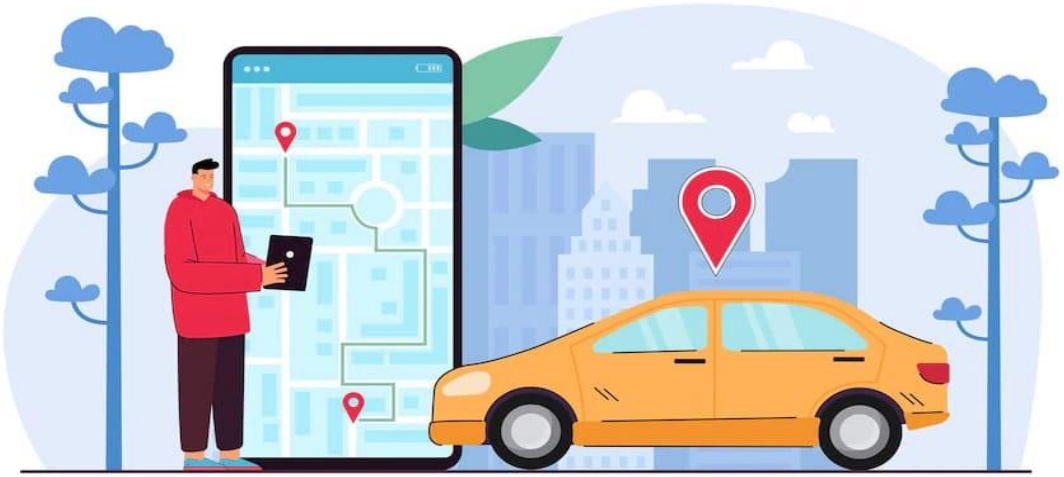
CAR RENTAL SYSTEM

A java-based Mini Project



Group A1_5 EXCP

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INTRODUCTION

In today's fast-paced world, car rental services play a vital role in providing convenient transportation options for individuals and businesses alike. This Car Rental System code, implemented in Java, serves as a foundational model for managing the rental process of various cars, streamlining the interaction between customers and the rental service.

The **objective** of this project is to automate the car rental process by managing inventory, customer details, bookings, and payments efficiently. Our system allows customers to rent different types of cars—like Hatchbacks, Sedans, and SUVs—for various durations. The goal is to streamline the process while applying Object-Oriented Programming principles.

OOP PRINCIPLES APPLIED

Inheritance: Abstract **Car** class with subclasses for **Hatchback, Sedan,** and **SUV.**

Encapsulation: Protecting data like car registration numbers and customer details.

Polymorphism: Different car types using the same **rent()** and **returnItem()** methods with customized behavior.

Interface Implementation: Rentable interface for ensuring consistent behavior across car types.

CODE FLOW- HOW CODE IS WORKING?

❑ **Main Components:**

•GUI: User interface for interaction.

•Backend: Handles car inventory, customer data, and rental processes.

❑ **Flow of Operations:**

•Initialize cars and customers.

•Handle renting, returning, and payment through user input.

CHALLENGES AND SOLUTIONS

❑ Exception Handling:

Solution: Implemented robust exception handling in methods like **handleRent()** and **handleReturn()** to manage errors gracefully, providing informative error messages to users and preventing application crashes.

❑ Data Persistence:

Solution: Designed a simple data storage solution using **file I/O** methods to ensure **customer** and **car data** are saved and loaded correctly, maintaining data consistency and availability across sessions.

FUTURE ENHANCEMENTS

- **Enhanced GUI**: Improve the graphical user interface for better user experience and interaction.

- **Client-Based Features**: Implement a client-based system that allows users to manage their rentals more efficiently.

- **Database Integration**: Add a database to store and manage customer and rental data for better data persistence and retrieval.

CONCLUSION

our **Car Rental System** effectively automates the rental process, managing inventory, customer details, bookings, and payments through Object-Oriented Programming principles. The system enhances user experience with features for renting and returning cars, as well as handling payments. Future enhancements will include integrating a database, improving the GUI, and developing a client-based system for better customer engagement. These upgrades will further enhance our system's functionality and user satisfaction.

Thank you!!