

Car Rental Project

Project Title: Car Rental Management System

1. Introduction:

The Car Rental Management System is designed to facilitate efficient management of car rental operations through a user-friendly command-line interface. This project aims to streamline the process of renting and returning cars, managing customer information, and maintaining an organized inventory of available vehicles, that enables car rental agencies to manage their fleet of vehicles and rental operations seamlessly.

2. Motivation:

The motivation behind creating this Car Rental System is to address the challenges faced by both car rental companies and customers. Traditional methods often involve manual paperwork and time-consuming interactions, leading to inefficiencies and potential errors. By developing a Car Rental System, we can streamline the process of car reservation, rental, and return, enhancing customer satisfaction and optimizing administrative tasks.

3. Objectives:

This project aims to achieve the following objectives:

1. Efficient Car Management:

Develop an intuitive admin panel that allows administrators to easily add new cars to the inventory, view existing cars, and manage their details. This ensures a streamlined process for car updates and maintenance.

2. User-Friendly User Interface:

Create a console-based user-friendly interface that enables users to explore available cars, apply filters based on their preferences (such as price range), rent cars, and view their rental status. This objective aims to enhance user satisfaction.

3. Secure User Management:

Implement a secure user authentication system that ensures user data privacy and allows administrators to manage user accounts efficiently. This objective prioritizes data security.

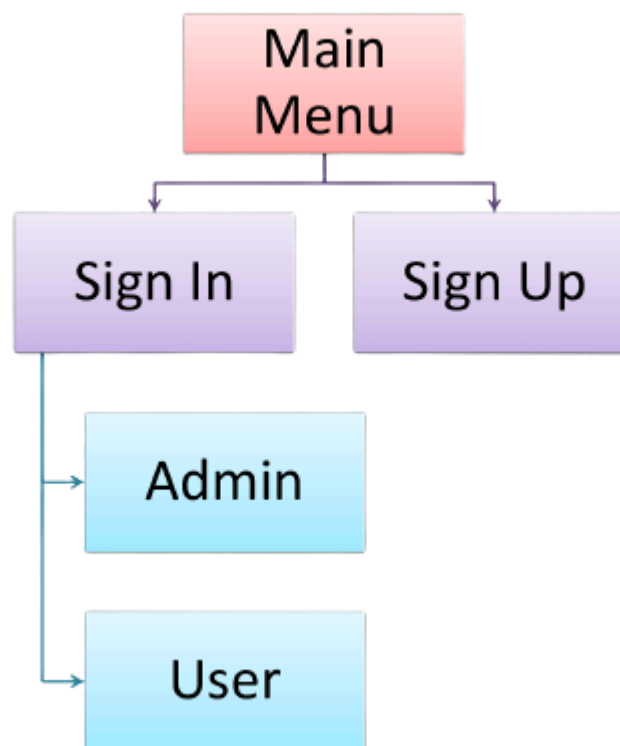
4. Efficient Data Handling:

Utilize file-handling techniques to store and retrieve car, user, and rental data. This ensures the persistence of data even after system shutdowns.

4. Overall Description:

The Car Rental System will consist of two main user roles: admin and user. Admins will have access to an admin panel for managing inventory and user accounts, while users will be able to browse, search, rent, and return cars through a user panel. The system will be built with classes such as Car, User, and Rental, each representing essential entities. File handling will be employed to store and retrieve data, and efficient data structures and algorithms will be used to enhance performance.

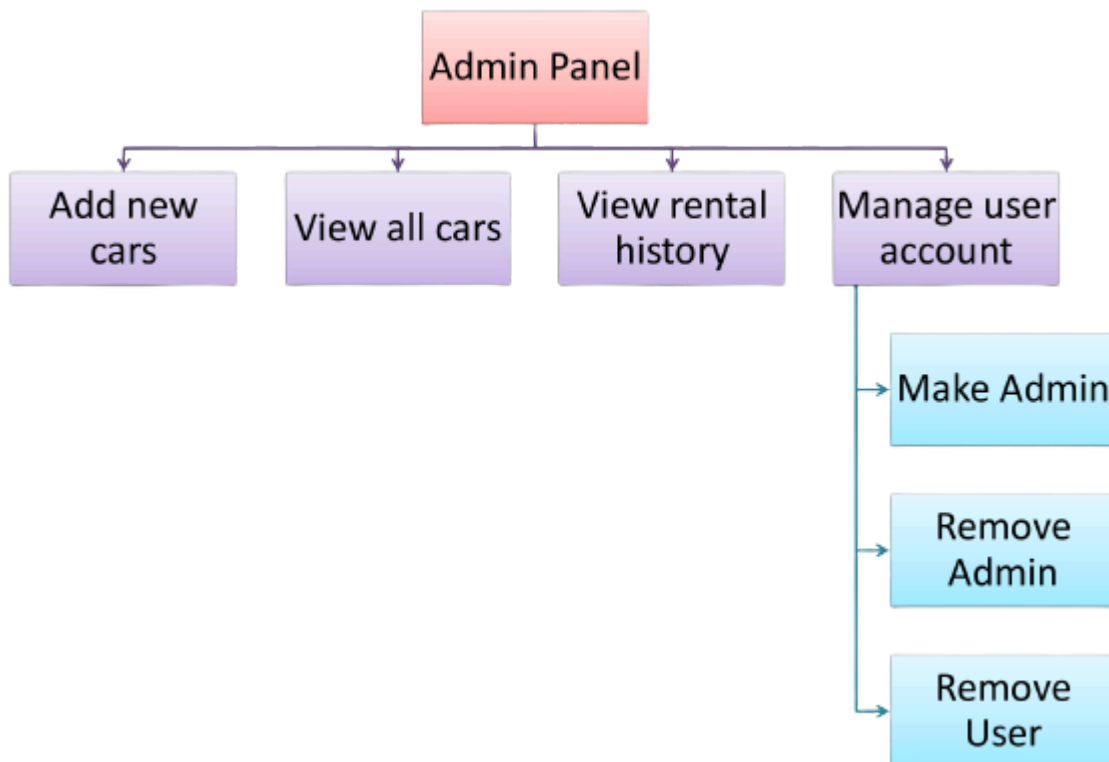
4.1 Main Menu (User authentication):



Sign In	
Variable name	Data types
username	String
password	String

Sign Up	
Variable name	Data types
username	String
password	String

4.2 Admin panel:



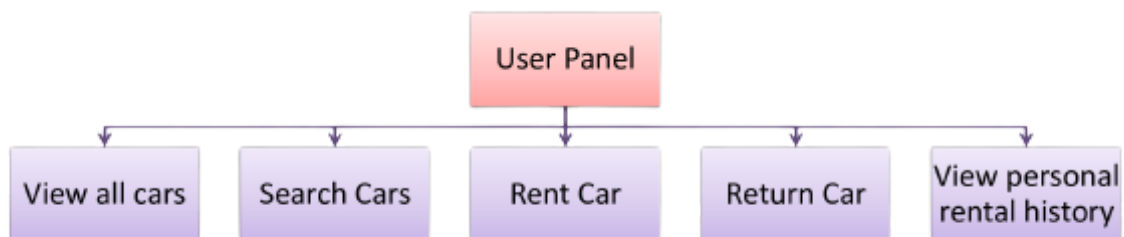
Add new cars	
Variable name	Data types
car-id	Integer
company-name	String
model-name	String
rental-cost	Integer
rental-status	Boolean

View all cars				
Car id	Company name	Model name	Rental cost	Rental status
01	Toyota	Premio	\$150	Not available
02	Mercedes	GLA 250 SUV	\$280	Available

View rental history		
Username	Car id	Model name
shaon	01	Premio
user1	02	Axio

Manage user account		
Task	Variable name	Data types
Make admin	username	String
	make-admin	Boolean
Remove admin	username	String
	remove-admin	Boolean
Remove user	username	String
	remove-user	Boolean

4.3 User Panel:



View all cars				
Car id	Company name	Model name	Rental cost	Rental status
01	Toyota	Premio	\$150	Not available
02	Mercedes	GLA 250 SUV	\$280	Available

Search cars	
Variable name	Data types
car-id	Integer
company-name	String
model-name	String

Rent cars	
Variable name	Data types
car-id	Integer
rent-car	Boolean

Return cars	
Variable name	Data types
car-id	Integer
return-car	Boolean

View personal rental history		
Username	Car id	Model name
shaon	01	Premio

5. Development Tools and Technology:

5.1 Technology:

The project will be developed using the C++ programming language due to its efficiency, versatility, and suitability for system-level programming. The application will have a console-based interface for simplicity and ease of use.

5.2 Development Tools:

The following development tools will be utilized during the project:

1. **Integrated Development Environment (IDE):** A popular C++ IDE, such as Visual Studio or Code::Blocks, will be used to write, compile, and debug code.
2. **C++ Compiler:** Standard C++ compiler (such as GCC/G++ or Visual C++) to write and compile the codebase.

5.3 Requirements:

- C++ programming skills
- Knowledge of file handling in C++
- Understanding of data structures and algorithms
- C++ Compiler and Development Environment

By accomplishing these objectives and adhering to the specified technologies and tools, the Car Rental System will provide an effective solution for managing car rentals, benefiting both rental companies and customers alike.