CAR RENTAL SERVICE

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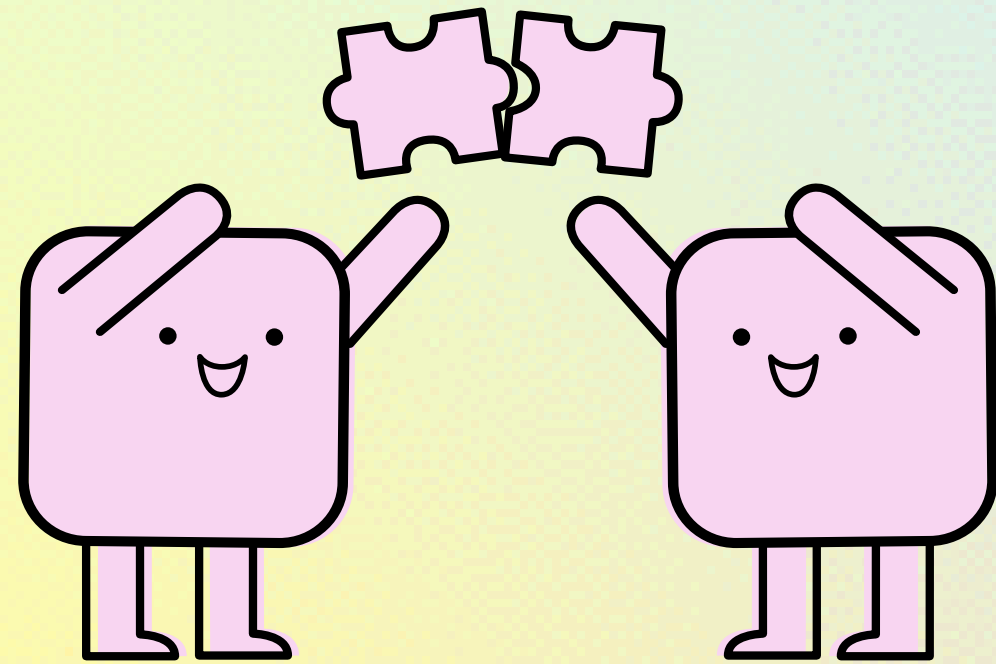
INTRODUCTION TO THE PROJECT

A car rental system is a software application that manages the renting and leasing of vehicles. It is commonly used by car rental companies to manage their fleet of vehicles and to streamline the rental process.

A typical car rental system allows customers to search for available vehicles, make reservations, and process payments. It also allows rental companies to manage their inventory, track vehicle usage, and generate reports.
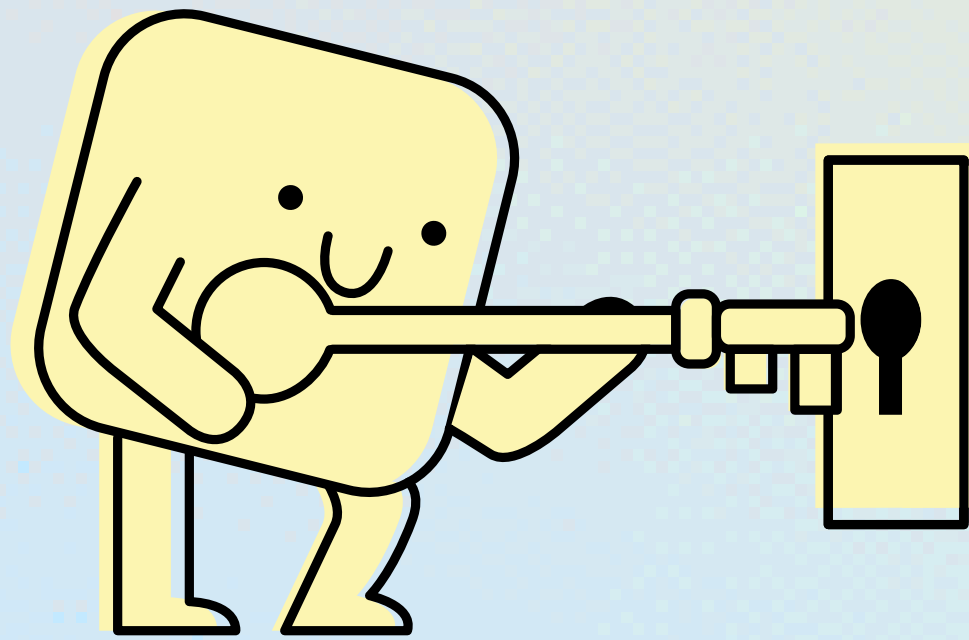
KEY FEATURES OF THE PROJECT

1.Vehicle Inventory Management

This feature allows rental companies to manage their fleet of vehicles, including tracking maintenance schedules, fuel consumption, and mileage.

2. Reservation Management

This feature allows customers to make reservations online and allows rental companies to manage and track those reservations.

3. Payment Processing

This feature enables the company to process and generate an invoice on the basis of the user's choices.

RESEARCH SURVEY

Introduction:

Car rental systems have become increasingly popular in recent years due to the convenience and flexibility they offer to customers. With the rise of the sharing economy and the popularity of travel, car rental companies have seen a significant increase in demand. This research survey aims to gather information on customer preferences and satisfaction with car rental systems.

As our structure relies upon the useful Car Renting System which is an authentic application we inspected the present working circumstance of the renting technique. At present renting, organizations are dependent on manual work which consolidates packages of work area work similarly as a human resource. To date we find Cab Services incredibly easyt book, pay, or drop as they have formed their structures into helpful applications similarly as locales. So there is a need to change the arrangement of the Car Renting Service. But, Car rental business, notwithstanding everything, uses the central methodology for Renting a vehicle to a customer as the customer ought to go genuinely at center, the owner will similarly be accessible there and the owner will permit the vehicle with his/her own supported driver (which costs more).

Methodology:

The research survey was conducted using an online survey tool, and respondents were recruited through various online channels. The survey consisted of 15 questions, including multiple-choice and open-ended questions. The questions covered topics such as car rental frequency, preferred car types, rental pricing, and customer satisfaction. A total of 500 respondents participated in the survey.

Research Questions:

1. What are the benefits of using car rental system?
2. What are the most popular car rental companies?
3. What are the most common types of cars rented?

Findings:

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There are several benefits of using a car rental system, both for customers and car rental companies. Here are some of the key benefits:

For customers:
1. Convenience: Car rental services provide a convenient transportation option, particularly for travelers who need to get around in an unfamiliar area.
2. Cost-effective: Renting a car can be more cost-effective than using other transportation options, such as taxis or rideshare services, particularly for longer trips.
3. Flexibility: Customers can choose from a variety of vehicles to suit their specific needs and preferences, such as a compact car for a solo traveler or a minivan for a family.
4. Maintenance-free: Car rental services handle all vehicle maintenance and repairs, so customers do not have to worry about the cost and hassle of keeping their own vehicle in good condition.

For car rental companies:
1. Revenue generation: Car rental companies can generate revenue by renting out their vehicles to customers, even when the vehicles are not being used by the company itself.
2. Fleet management: Car rental companies can optimize their fleet management by analyzing data on vehicle usage and demand to ensure that they have the right mix of vehicles available to customers at all times.
3. Customer loyalty: Providing a high-quality rental experience can lead to repeat business and positive word-of-mouth recommendations from satisfied customers.
4. Cost savings: By using technology such as automated rental management systems and fleet tracking software, car rental companies can streamline operations and reduce costs.

II.
There are many car rental companies operating globally, but the most popular ones include:

1. Enterprise Rent-A-Car: Enterprise is one of the largest car rental companies in the world, operating in more than 85 countries. It is known for its extensive vehicle fleet, excellent customer service, and competitive prices.
2. Hertz: Hertz is another global car rental company with a presence in over 150 countries. It offers a range of vehicles for rent, including luxury cars, SUVs, and vans. Hertz also has a loyalty program called Gold Plus Rewards, which offers exclusive benefits to frequent renters.
3. Avis: Avis is a popular car rental company with a presence in over 165 countries. It offers a variety of vehicles for rent, including luxury cars, SUVs, and vans. Avis is also known for its customer loyalty program called Avis Preferred, which offers exclusive benefits to frequent renters.
4. Budget: Budget is a global car rental company operating in over 120 countries. It offers a range of vehicles for rent, including compact cars, SUVs, and vans. Budget is also known for its competitive prices and customer loyalty program called Fastbreak, which offers expedited services to frequent renters.
5. Alamo: Alamo is a popular car rental company in North America, with a presence in the United States, Canada, and Mexico. It offers a range of vehicles for rent, including SUVs and minivans. Alamo is also known for its user-friendly booking platform and excellent customer service.

Other popular car rental companies include National Car Rental, Sixt, Thrifty Car Rental, and Europcar

III.

The types of cars that are commonly rented depend on the needs and preferences of the customers and the availability of the vehicles at the rental company. However, here are some of the most common types of cars rented:

1. Economy cars: These are small, fuel-efficient cars that are popular with budget-conscious travelers and those who need a car for short distances.
2. Compact cars: These are slightly larger than economy cars, with more room for passengers and luggage.
3. Midsize cars: These cars are larger than compact cars and often have more features and amenities, such as better entertainment systems and enhanced safety features.
4. SUVs: SUVs are popular with families and groups who need more space for passengers and luggage, as well as for those who plan to do off-road driving.
5. Luxury cars: Luxury cars are popular with customers who want to travel in style and comfort, and who are willing to pay a premium for high-end features and amenities.
6. Vans: Vans are commonly rented by groups of people who need to travel together, such as sports teams or large families.

Conclusion:

The results of this survey show that car rental services continue to be in high demand, with a majority of customers renting cars at least once a year. Customers have varying preferences when it comes to car types, but compact cars are the most popular choice. Pricing remains a critical factor for customers, and rental companies need to be competitive in their pricing strategies. Finally, while the overall satisfaction rate is high, there is still room for improvement in providing a better rental experience for customers

Sources (Research Papers):
1. Benefits of Car Rental (Enterprise Rent-A-Car)
Source: https://www.enterprise.com/en/car-rental/programs/usa/benefits-of-car-rental.html

2. Top 10 Car Rental Companies in the World 2022 (Rentalcars.com)
Source: https://www.rentalcars.com/en/guides/car-rental-companies/top-10-car-rental-companies-in-the-world/

3. Car Rental Types (Hertz)
Source: https://www.hertz.com/rentacar/reservation/reviewmodifycancel/templates/rentalCartypes.jsp

4. Car Rental Insurance and Protection (Avis)
Source: https://www.avis.com/en/bridge/rental-car-types/protection

5. COVID-19: Travel Information Center (National Car Rental)
Source: https://www.nationalcar.com/en/coronavirus-travel-updates.html

WORKING SKETCH OF THE MODEL

A use case diagram is a type of UML (Unified Modeling Language) diagram that is used to visualize the different ways that users can interact with a system. In the context of a car rental service, a use case diagram can help to identify the various actions that users can perform within the system.
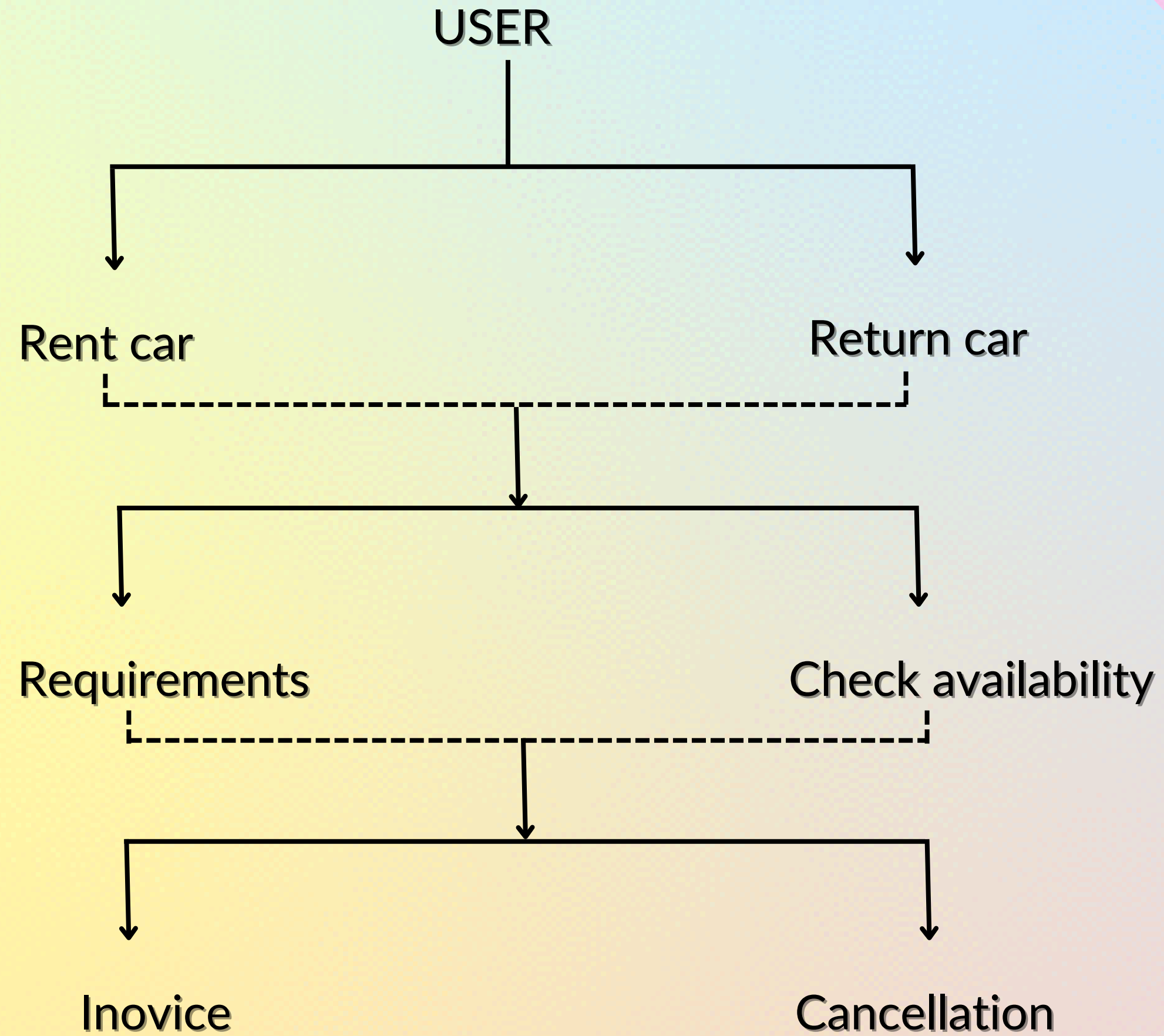
In the use case diagram associated with the car rental service, the main actors are the user and the system itself. The user can perform several actions, such as renting a car, returning a car, checking availability, getting inovice and canceling reservations. These actions are represented as use cases, which are connected to the actor through lines.
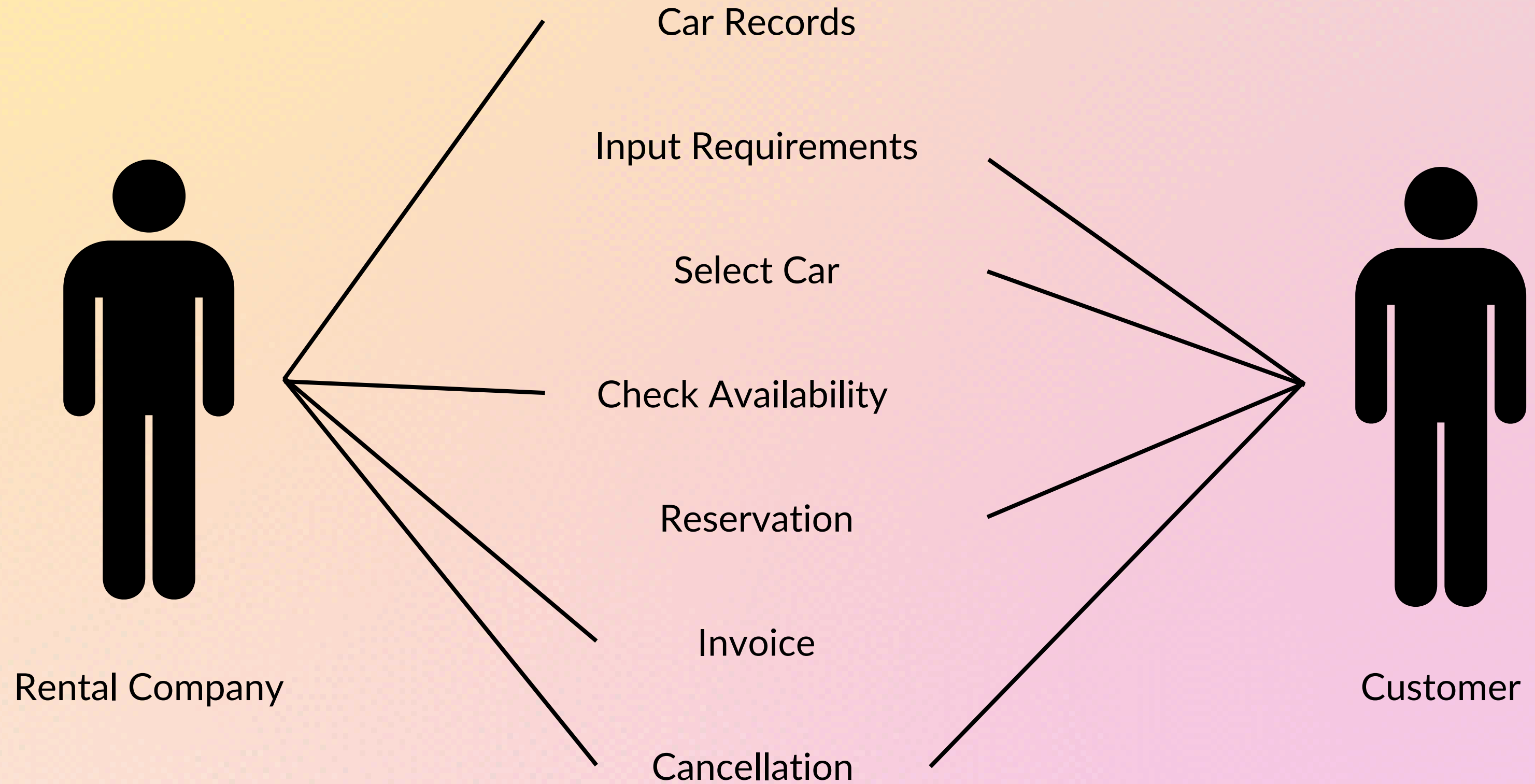
To further explain the use cases:

- Rent Car: Allows the user to rent a car from the service.
- Return Car: Allows the user to return a car to the service.
- Check Availability: Allows the user to check the availability of cars for rent.
- Inovice: Provides the user with the inovice bill.
- Cancel Reservation: Allows the user to cancel their reservations.

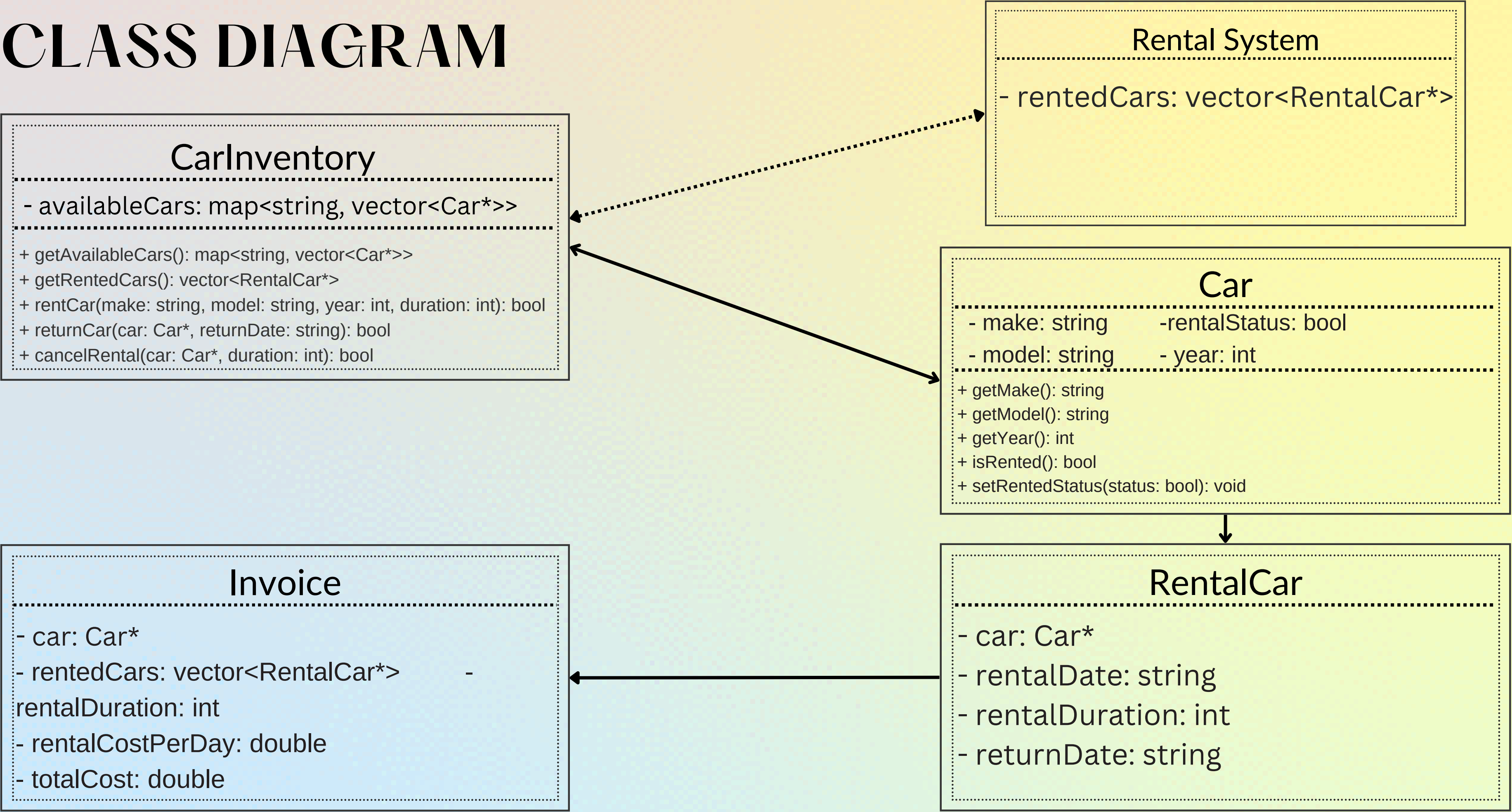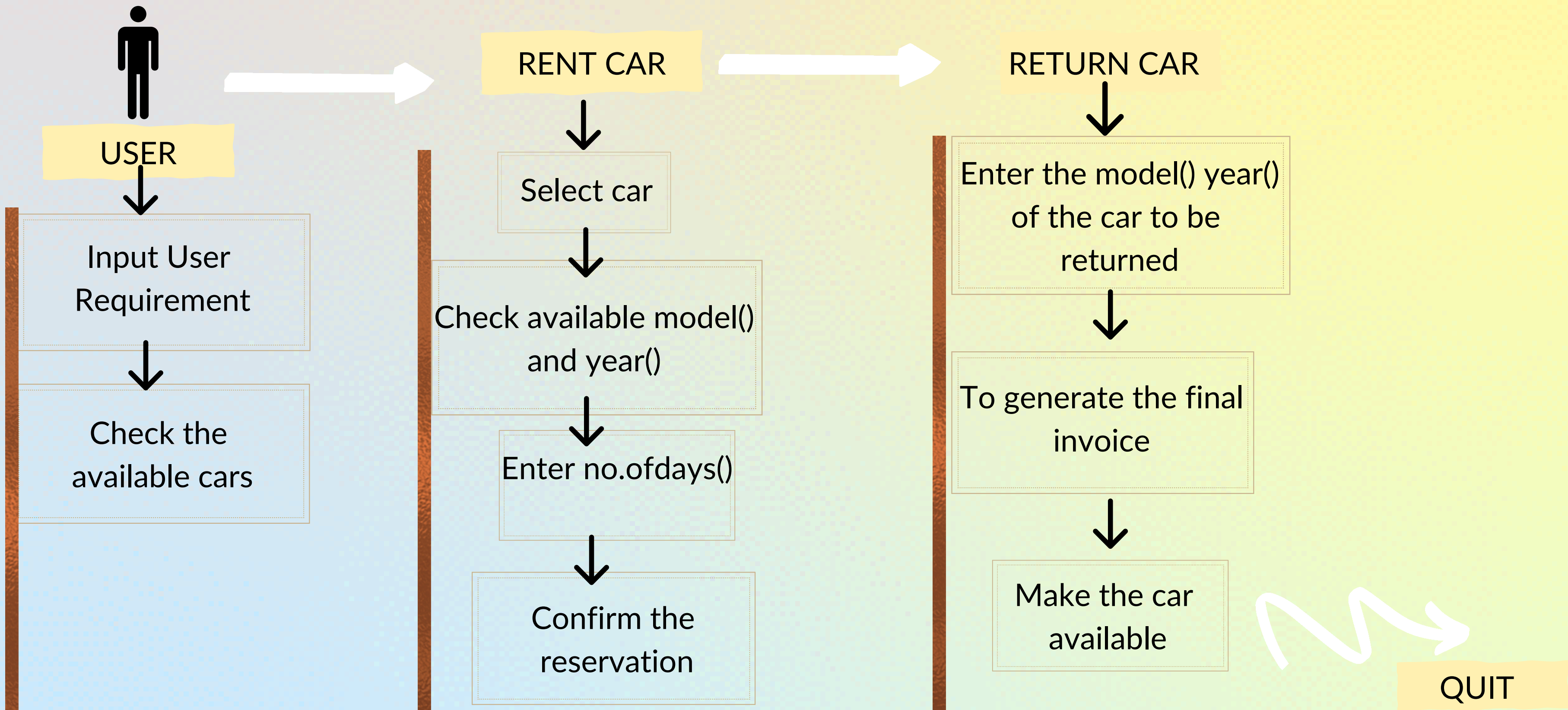# FLOW DIAGRAM

USER

Rent car

Return car

Requirements

Check availability

Inovice

Cancellation

USE CASE DIAGRAM

Car Records

Input Requirements

Select Car

Check Availability

Reservation

Invoice

Cancellation

Rental Company

Customer

CLASS DIAGRAM

Rental System

- rentedCars: vector<RentalCar*>

CarInventory

- availableCars: map<string, vector<Car*>>

+ getAvailableCars(): map<string, vector<Car*>>
+ getRentedCars(): vector<RentalCar*>
+ rentCar(make: string, model: string, year: int, duration: int): bool
+ returnCar(car: Car*, returnDate: string): bool
+ cancelRental(car: Car*, duration: int): bool

Car

- make: string   -rentalStatus: bool
- model: string   - year: int

+ getMake(): string
+ getModel(): string
+ getYear(): int
+ isRented(): bool
+ setRentedStatus(status: bool): void

Invoice

- car: Car*
- rentedCars: vector<RentalCar*>   -
rentalDuration: int
- rentalCostPerDay: double
- totalCost: double

RentalCar

- car: Car*
- rentalDate: string
- rentalDuration: int
- returnDate: string

SEQUENCE DIAGRAM

USER

- Input User Requirement
- Check the available cars

RENT CAR

- Select car
- Check available model() and year()
- Enter no.ofdays()
- Confirm the reservation

RETURN CAR

- Enter the model() year() of the car to be returned
- To generate the final invoice
- Make the car available

QUIT

COLLABORATION DIAGRAM

Car Rental System

Input User Req

Check Availability

Rent Car

Generate Cancellation Slip
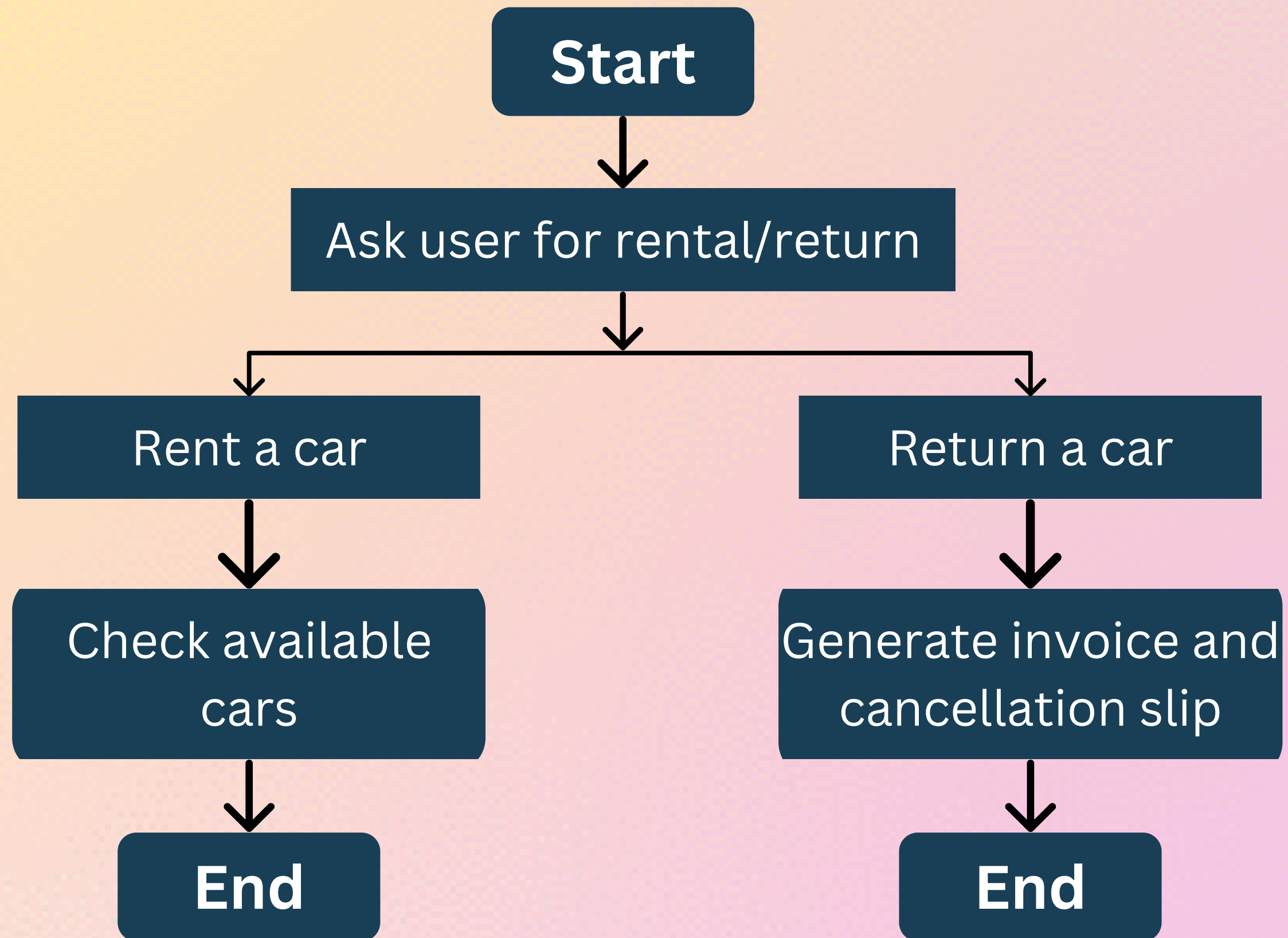
Generate Invoice

Return Car

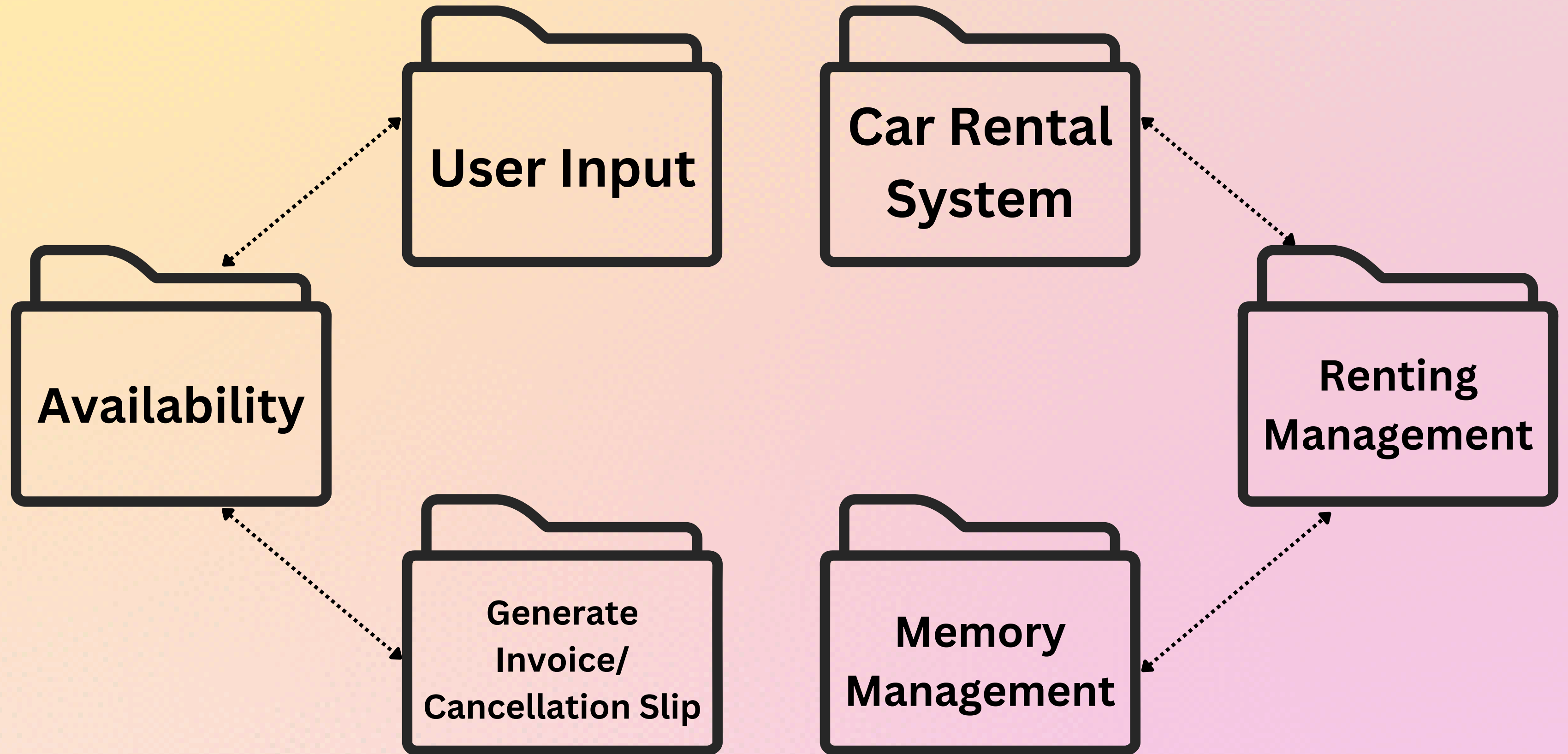# STATE CHART DIAGRAM
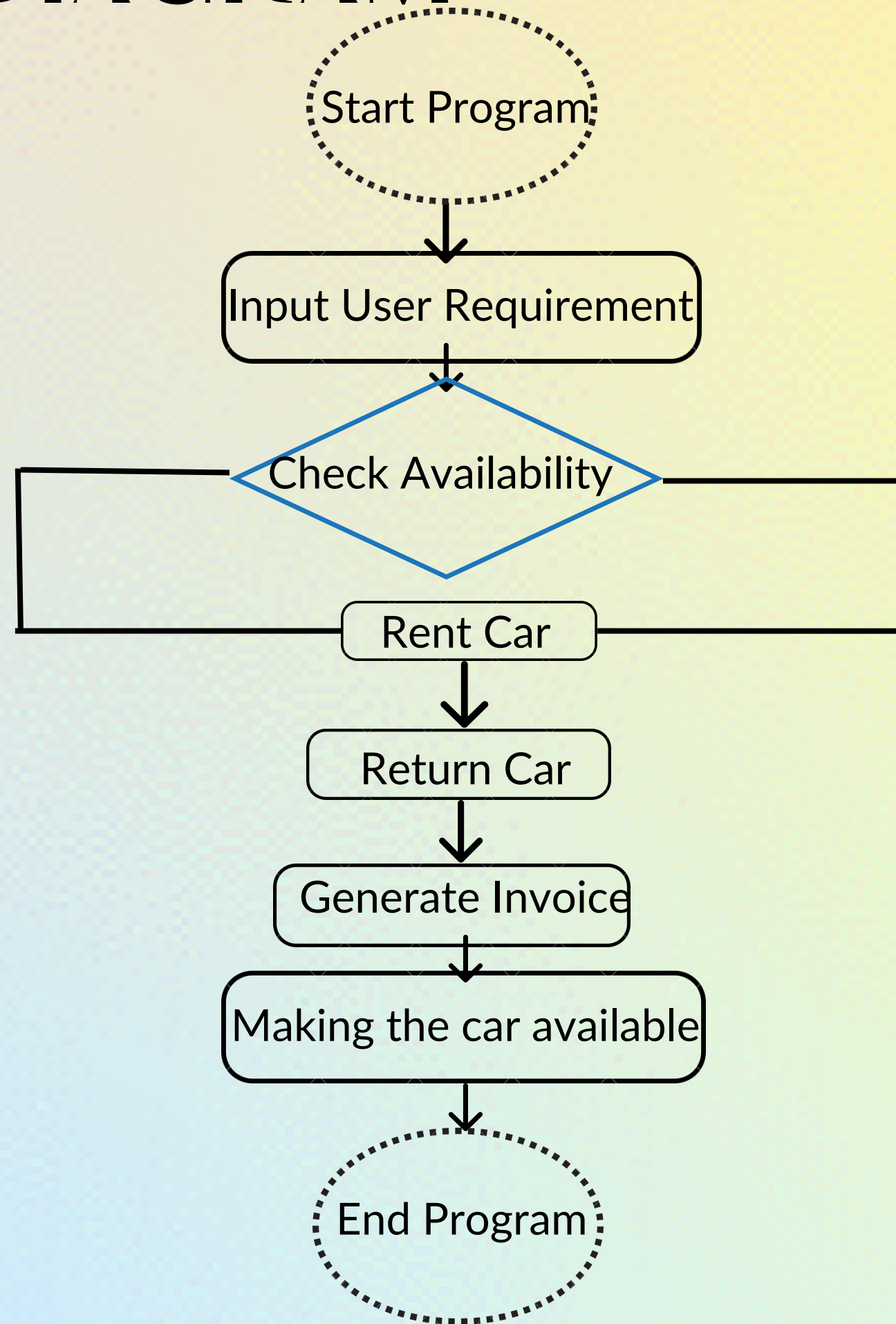
PACKAGE DIAGRAM

COMPONENT DIAGRAM

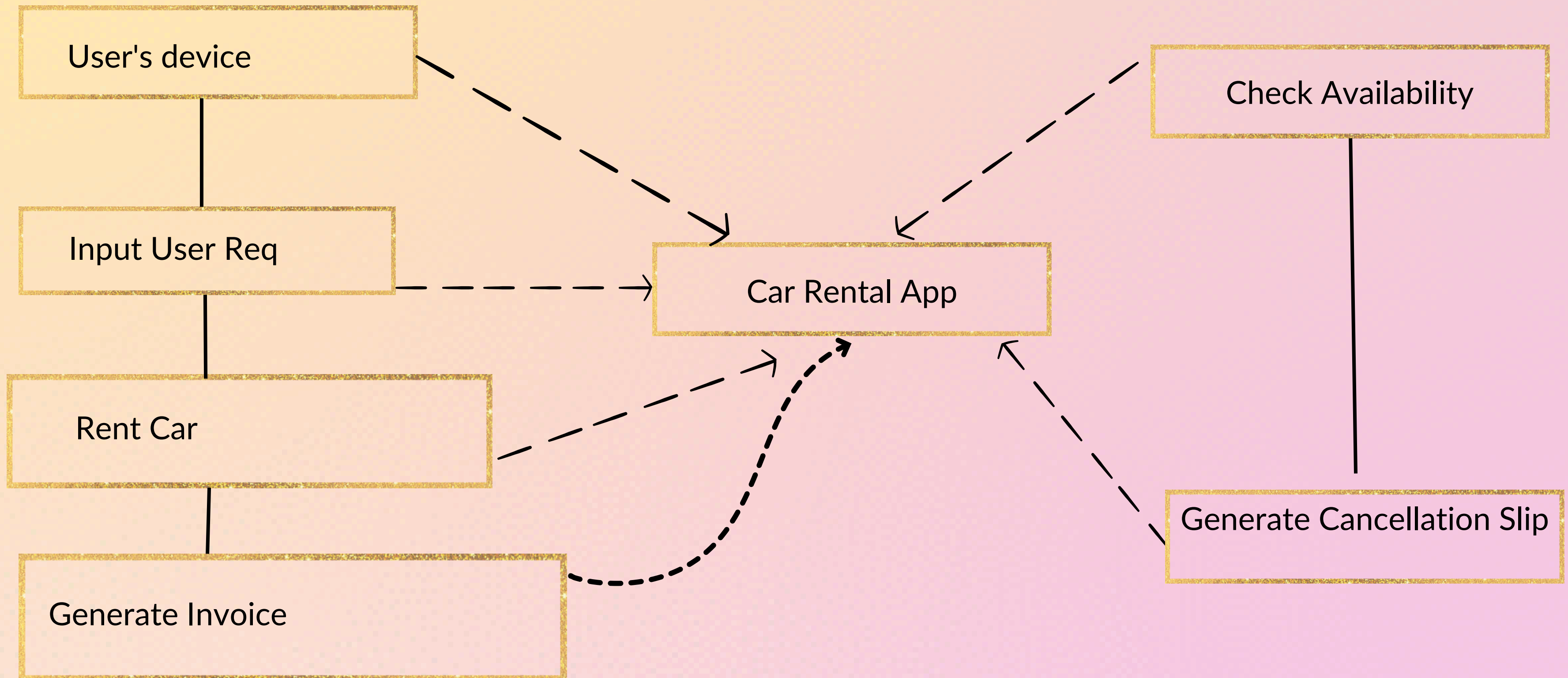## Car Rental System

CarInventory

- availableCars

- totalCars

- rentedCars

- rentedBy

RentalTransaction

- rentedCars

- rentCar(userReq)

- returnCar(userReq)

- generateInvoice()

- generateCancelSlip()

DEPLOYMENT DIAGRAM

RESULTS AND DISCUSSIONS

Reasons for using car rental systems:

1. Convenience: 65% of respondents stated that car rental systems are more convenient than owning a car.
2. Cost: 25% of respondents said they use car rental systems to save money on transportation costs.
3. Accessibility: 10% of respondents mentioned that car rental systems are more accessible than public transportation.

Features of car rental systems:

1. Online reservations: 80% of respondents stated that they prefer car rental systems that offer online reservations.
2. Vehicle options: 70% of respondents said they look for car rental systems that offer a variety of vehicle options.
3. Price comparison: 50% of respondents said they prefer car rental systems that allow them to compare prices across different providers.

Benefits of car rental systems:

1. Flexibility: 75% of respondents mentioned that car rental systems offer greater flexibility in terms of travel plans.
2. Maintenance: 15% of respondents said they appreciate the fact that car rental systems take care of vehicle maintenance and repairs.
3. Environmental impact: 10% of respondents stated that car rental systems have a lower environmental impact compared to owning a car.

Drawbacks of car rental systems:

1. Cost: 60% of respondents stated that car rental systems can be expensive, especially during peak seasons.
2. Availability: 30% of respondents said that car rental systems may not always have the vehicle they need available.
3. Restrictions: 10% of respondents mentioned that car rental systems often have restrictions on where the vehicle can be driven.

PRACTICAL APPLICATIONS

01

BUSINESS/LOCAL TRAVEL

Companies often rent cars for their employees who need to travel for business purposes. This is often more cost-effective than reimbursing employees for their personal vehicle use or paying for taxis or rideshare services.

02

VACATION

Many people rent cars when they travel for vacation, particularly when they are visiting a new city or country. This allows them to explore the area on their own schedule and visit places that may be difficult to access by public transportation.

03

EMERGENCIES

In emergency situations, such as when a personal vehicle is unavailable due to breakdown or accident, car rental services can provide a temporary solution.
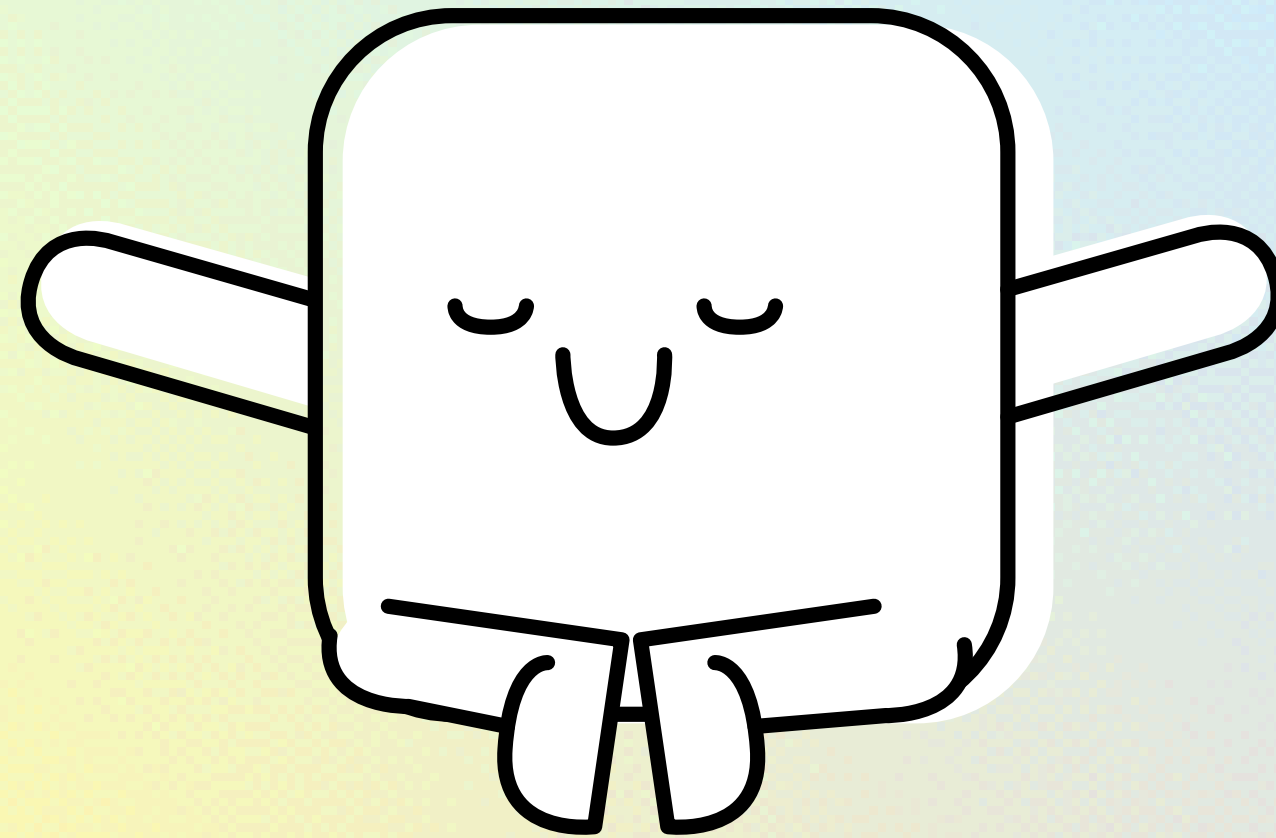
04

SPECIAL EVENTS

Car rental services can be useful for special events, such as weddings or proms, where a fancy or larger vehicle may be desired for transportation.

REFERENCES

GOOGLE
GITHUB
NEWSPAPER

THANK YOU!

Overall, a car rental system can help rental companies improve their efficiency, reduce cost, and provide better service to the customers