Software Requirements Specification

Online Car Rental Management System

Version 1.0 approved

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Revision History

Name	Date	Reason For Changes	Version

1. Introduction

1.1 Purpose

The purpose of the car rental system is to design a Client friendly system that enables clients to check for availability of vehicle and book/reserve a vehicle online. System that enables clients to pay their car rent online and develop a system that stores bookings and reservation information as well as payment history to help the organization keep track of transactions. The individual who needs a car must contact a rental car company and contract out for a vehicle. This system increases customer retention and simplifies vehicle and staff management.

1.2 Intended Audience

This project is intended to serve the Client that allow them to rent a car despite the fact that they don't have access to their own vehicle or don't own a vehicle at all. Allows the customer to book space for a group in the case of weddings or corporate meetings. Helps managing staff to maintain database and control transactions. The staff also repairs cars and ace all the parts and monitor for proper functioning and give a smooth experience to the customer.

1.3 Product Scope

This project traverses a lot of areas ranging from business concept to computing field, and requires several researchers to be able to achieve the project objectives. The area covers include:

- Car rental industry: This includes study on how the car rental business is being done, process involved and opportunity that exist for improvement.
- General Client and company’s staff will be able to use the system effectively.
- The system can be accessed 24/7 in a Client-friendly manner.
- Java programming language is incorporated for the development of the application.

1.4 References

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2. Overall Description

2.1 Product Perspective

Car rental systems are used temporarily for a period of time with a fee.This system serves both foreign and local Client with the rental cars categorized as economy, compact, premium and luxury. This organization uses a manual system for reserving, renting, registering and to keep record of all the rental activities and customer information. The detailed existing functions are listed as follows:

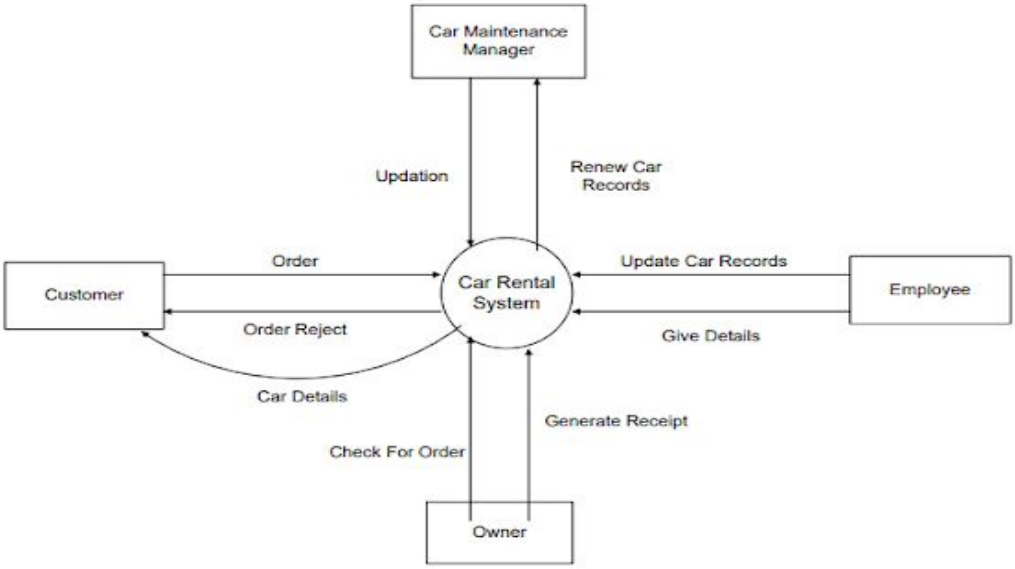
- Car reservations can be made through customer accounts on the application.
- During renting a car the customer's personal information, payments status and rent agreements are filled in order to hold legal contact between the customer and organization for renting the vehicle.
- The organisation offers flexibility to their clients in terms of the duration of renting a car of their choice.
- The organisation makes a general report about the rented cars once at the end of the month and generates a report that is passed on to the admin.

2.2 Product Functions

- Car rental management: It provides car reservation facilities online. Client can visit the website and choose a car of their choice and booking can be done if it is feasible to their requirement.
- Payment system: Order cancellation, order finalize, these are all done and maintained by the admin/owner of the company.
- Staff: These people maintain the data about the repair or replacement of any parts of the car required.

2.3 Client Classes and Characteristics

- **Admin**
    1. Admin can login to the system.
    2. Verify the car information database.
    3. Generate price strategy.
- **Staff**
    1. It updates the database.
    2. Provides the alternatives.
    3. Maintain contacts.
    4. It checks for the maintenance.
    5. Give to the maintenance.
    6. Give information to the admin.
    7. Update the database.
    8. Handle Payments
- **Customer**
    1. Client can login to the system.
    2. Visit the website.
    3. Place/cancel the order



2.4 Operating Environment

Processor: Intel Core i7
HDD: Minimum 500GB Disk Space
RAM: Minimum 16GB
OS: Windows 10
Application: Java, xml

2.5 Design and Implementation Constraints

- The application will use xml, sql as main web technologies and Java as programming language to code and execute programs.
- Since the Car Rental system is a web-based application, internet connection must be established.
- The Car Rental System will be used on PCs and will function via internet or intranet in any web browser.
- System should satisfy the requirement and have all the software installed to run efficiently and smoothly.

2.6 Assumptions and Dependencies

1) Regulatory Policies: Each center Client has an account created and authenticated by admin once the registration is complete. This application can be accessible within the company's intranet. Each Client has to first login and this will be done automatically. No Client can share their Clientname and password to each other.

2) Hardware Limitations: There is no limitation in the operating system in which the Car Rental System will work. However, the system needs to meet the requirements to run a Java program and required software to code and run them.
3) There will be no Client manuals, online help or tutorials as it is made as simple as web beginners can also use it easily with best web GUI functionality.

We have made the following assumptions to the development of the CRS:

- We assume that the development team has all the software's and tools that will be required to complete this project on time.
- We assume that at the time of the system deployment, the branches will have computers with the minimum system requirements as per required by the software for efficient runtime.
- We assume that our project team has been finalized and no new member will be added nor a present member will leave the group in the middle of the project.
- We assume that all the requirements we get from our sources are correct and achievable.

These are a few dependencies we have for the system

- The system has efficient runtime on Windows platform.
- The system is dependent on banks for processing payments on time.

3. External Interface Requirements

3.1 Client Interfaces

There are three Client Interfaces in this system, Customer Interface, Staff Interface and Admin Interface

3.1.1 Client Interface:

This is the interface that will be provided to all Clients on their systems. The elements included are:

1. Register as a member -The customer is initially given an option to either choose to register as a new member or log in.
2. Login - If the customer already has an account, they can log in using their registered credentials and be able to access the application, and make use of the features.
3. Make reservation - The cars available at that instance are displayed along with respective details. After placing an order and completing the payment, complete order details and ETP (Estimated time for Pickup) are displayed.
4. Return a car - If the customer is done making use of the car they rented, this tab of the application helps them return a car in a way that simultaneously helps update records.

5. Feedback - Once the car has been returned, Clients can rate their experience with the service and facility.

3.1.2 Staff Interface:

This is the interface at the backend (agency) which prepares the bookings and reservations. All the car reservations are sent to the staff and managed accordingly.

The elements included are:
1. Add a new car - New cars can be added to the list as an when there is an addition to the agency's inventory.
2. Update - The staff has the option to remove or modify pre-existing car details.
3. Process Rental - Once a car is returned, this element will take care of all the simultaneous updates that need to happen at the backend to make the car available for renting again.
4. Reply to feedback - Most important part of an Organisation is to connect with its Client and this feature allows the staff to directly communicate with the feedback provided by their Client.

3.1.3 Admin Interface

This interface allows the admin to have an overall view of all the records along with necessary statistics to give an insight to the agency's sales, service and growth. This can help the administration take necessary decisions in the benefit of the agency.

3.2 Software Interfaces

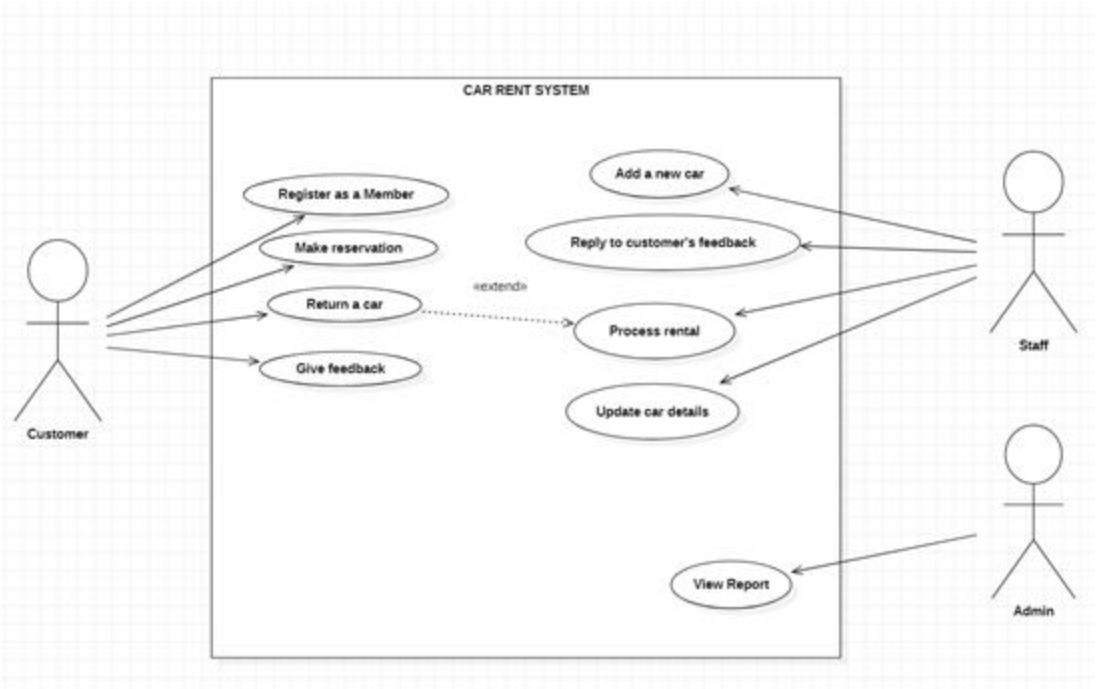
The Client interface will be simple, using terminology commonly understood by intended Clients of the system. The system will have a simple interface, consistent with standard interface, to eliminate the need for Client training of infrequent Clients.

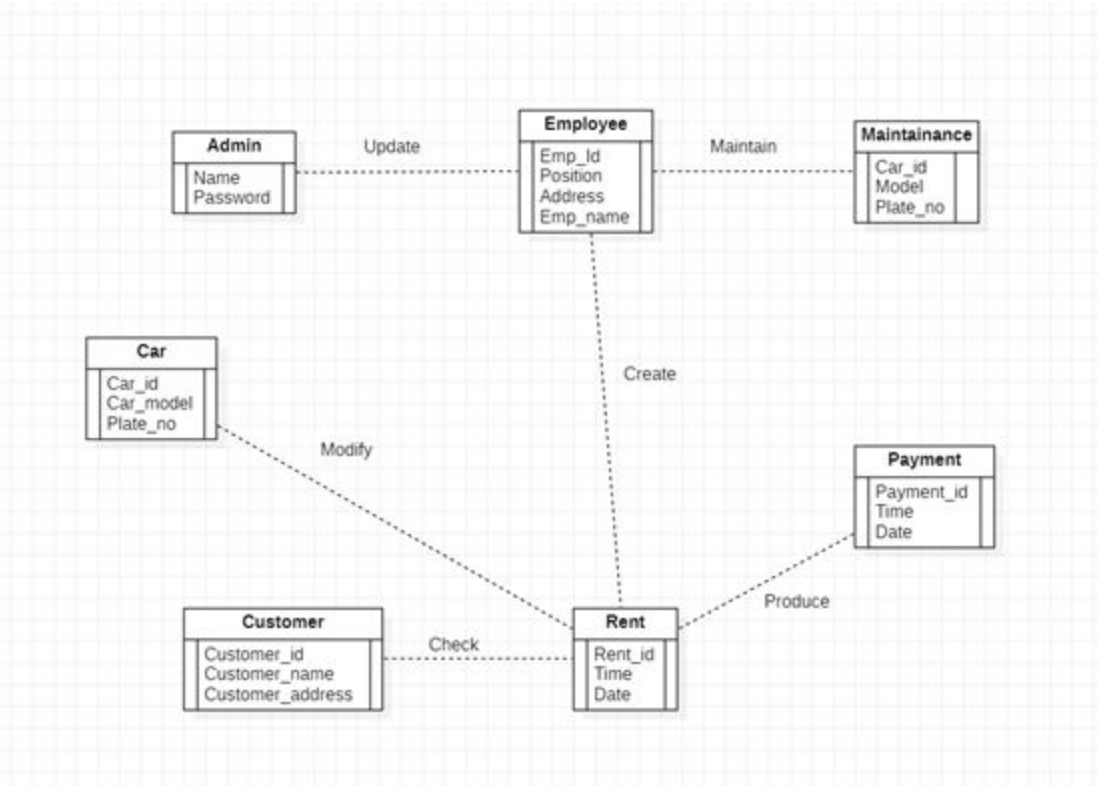
The software consists of the following technologies:
1. The Java application
2. The PostgreSQL database
3. The database should remain consistent at all times in case of an error.

3.3 Communications Interfaces

1. This application will be enabled to the Clients through web browsers and the communication medium with the set standard HTTP.
2. Security will be enforced via encryption on communications involving payments.
3. A Client can make use of the services only if they are a authorised Client (verified by the admin)
4. The client data is secured and not shared with any third party organisations. (Except payments)

4. Analysis Models





5. System Features

5.1 Main Menu Tab

5.1.1 Description and Priority

This feature tab will allow clients to view various cars available on rent, search through applying filters and also view details and reviews on the specific car. This tab is where the Client will spend most of their time while using the application thus making it the highest prioritized component.

5.1.2 Stimulus/Response Sequences

1. The Client clicks on a car option.
2. A tab opens up showing details about the selected car along with a “back” and “make a reservation” option. These are statements of services the system should provide, how the system should react to particular inputs, and how the system should behave in particular situations. It specifies the application functionality that the developers must build into the product to enable Clients to accomplish their tasks.

5.1.3 Functional Requirements

ID	REQUIREMENT
MM1	**The customer should be able to view the menu with a display of all the available cars at that instance when they LOG IN.**
MM2	**The Main Menu Tab must always be updated in real time depending on reservations and when cars are returned.**
MM3	**The staff should be able to explicitly make changes to the cars displayed in this tab.**

5.2 Payments Tab

5.2.1 Description and Priority

This feature tab will appear once a customer is sure about renting a particular car model. When an online payment method is chosen a secure gateway is established and choices between UPI, Netbanking, Card or Cash are given to the Client. This is a high priority feature.

5.2.2 Stimulus/Response Sequences

1. The customer reviews the car details they have chosen and fills in required details related to order and then click on “Pay”
2. An option to choose between Online payment options or COD is given.
3. Upon successful transaction in case of an online payment, the reservation is confirmed.
4. When COD is chosen, the order is confirmed and payment is collected at the time of vehicle pickup.

5.2.3 Functional Requirements

ID	REQUIREMENT
P1	**Payment details shall not be lost under any circumstances.**
P2	**Secure gateways should be established**
P3	**Application shall be capable of interfacing with a register to facilitate the accurate processing of a payment.**

5.3 Reservations

5.3.1 Description and Priority

This feature tab will allow clients to proceed with reserving their car of choice once they have made their mind. This is of medium priority in terms of implementation but of high organisation value as it is what makes up for the organisation’s profit as well as a high priority when it comes to information security.

5.3.2 Stimulus/Response Sequences

1. Client selects make a reservation once they make up their mind for a particular car.
2. The client is required to follow some protocols before getting a confirmation for their reservation. Once that is done, the client is directed to the payments tab.

5.3.3 Functional Requirements

ID	REQUIREMENT
R1	**The system must allow the customer to register for reservation.**
R2	**The system shall allow the customer to view a detailed description of a particular car.**
R3	**The system must allow the customers to select a specific car using a different search category while booking.**
R4	**The system shall allow the employee to view reservations made by customers.**

R5 **The system must be able to provide a unique reservation confirmation number for all successfully committed reservations.**

6. Other Nonfunctional Requirements

6.1 Performance Requirements

- Ability to maintain mass amount of customers on the website at once without crashing
- Speedy performance / transmission of data
- Send any emails immediately
- Being logged in should allow for customers to quickly make payments without reentering information, and allow for any potential registered perks the company may have
- Have a quick recovery time if anything were to go wrong
- Display accurately and efficiently on all devices (responsive view)

6.2 Safety Requirements

The system provides Clientname and password to prevent the system from unauthorized access. The staffs' password must be greater than eight characters. The subsystem should provide a high level of security and integrity of the data held by the system, only authorized personnel of the company can gain access to the company's secured page on the system; and only Clients with valid password and Clientname can login to view Client's page.

6.3 Security Requirements

- Secure any transmissions of private information between the customer and the company
- Prevent any potential threats such as SQL injections through the forms or search boxes.
- Prevent third party Clients at administrative level
- Verify website security certificates (that lock in the address bar)
- Prevent false information from being used as payment
- Prevent false email inputs from being used when registering

6.4 Software Quality Attributes

- Maintain a Client-friendly environment that is visually appealing
- Easy to see and use navigation
- Maintain readable content
- Searching cars should be accessible to people who are and are not logged in

- Selecting and making a payment should be available to customers who are and are not logged in

6.5 Business Rules

- Information stored for each booking includes customer, car, date of hire and date on which the vehicle is to be returned.
- If a vehicle is available, the customer's details are recorded (if not stored already) and a new booking is made.
- Customers must pay for the vehicle at the time of hire.
- An invoice is written at the time of booking for the customer.
- Potential or existing customers can book a vehicle up to 7 days in advance depending on availability.