
Software Requirements Specification

for

Rental Car Service System

Version 1.0 approved

Prepared by Prashant Ramnani and Prakhar Bindal

Indian Institute of Technology, Kharagpur

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Table of Contents

Table of Contents.....	ii
Revision History.....	ii
1. Introduction.....	1
1.1 Purpose.....	1
1.2 Document Conventions.....	1
1.3 Intended Audience and Reading Suggestions.....	1
1.4 Product Scope.....	1
1.5 References.....	1
2. Overall Description.....	2
2.1 Product Perspective.....	2
2.2 Product Functions.....	2
2.3 User Classes and Characteristics.....	2
2.4 Operating Environment.....	2
2.5 Design and Implementation Constraints.....	2
2.6 User Documentation.....	2
2.7 Assumptions and Dependencies.....	3
3. External Interface Requirements.....	3
3.1 User Interfaces.....	3
3.2 Hardware Interfaces.....	3
3.3 Software Interfaces.....	3
3.4 Communications Interfaces.....	3
4. System Features.....	4
4.1 System Feature 1.....	4
4.2 System Feature 2 (and so on).....	4
5. Other Nonfunctional Requirements.....	4
5.1 Performance Requirements.....	4
5.2 Safety Requirements.....	5
5.3 Security Requirements.....	5
5.4 Software Quality Attributes.....	5
5.5 Business Rules.....	5

Revision History

Name	Date	Reason For Changes	Version

1. Introduction

Transport facility is a matter of headache for those people who do not have any personal transport. On occasions like Wedding, Vacation, house shifting and on many other situations they feel the necessity of a vehicle to sort out the problems. So if it is possible to design or develop a web based application for availing transport whenever and wherever possible, then it will be beneficial for both renter and transport provider. Now a days, by some clicks only, we can get whatever you want at home. We already know about the online shopping, e-banking etc. Similarly, The Car Rental System is the online facility to book cars online within few clicks only. Some people can not afford to have a car, for those people this system becomes very helpful. This system includes various cars, as per the customer order and comfort, it places the order and delivers the car as per the location within the area. For traveling a long distance, booking can be done via internet service only.

1.1 Purpose

The system's aim is to provide better business management and customer satisfaction by providing the following services such as:-

- Enhance Business Processes: to be able to use internet technology to project the rental company to the global world instead of limiting their services to their local domain alone and providing services 24/7, thus increase their return on investment (ROI).
- Online Vehicle Reservation: A tool through which customers can browse the catalog of the business online and reserve available cars online prior to their expected pick-up date or time.
The customer Can also choose home delivery of his choice of vehicle at an additional fee.
- Customers Registration: A registration portal to hold customer's details, monitor their transaction and uses the same to offer better and improved services to them. The customer will have to provide payment details such as credit card to complete the reservation.
- Driver and Vehicle Registration: A registration portal to hold driver's and their vehicle's details, monitor their rides and ratings.
- An in-built GPS for tracking the real time position of the cab.
- Management Module through which an admin of the System can add, edit, update and delete different categories of cars and their corresponding information, driver information as well as customer information.
- A rating system through which customers can leave their feedback of their rides and as well the performance of the drivers and the vehicles which they rented.
- Data Security by keeping company data in a secured database and controlling access levels to the customers and drivers.

- GitHub Repository : <https://github.com/prashantramnani/Rental-Car-Service-System>

1.2 Document Conventions

Term	Definition
Ride Records	Collection of information regarding the customers and details of the rides.
Customers	Anyone booking cab from the web page
Stakeholder	Any person with an interest in project who is not a developer.
GPS	Global Positioning System

1.3 Intended Audience and Reading Suggestions

This project is a prototype for the rental car service system and this has been implemented under the guidance of college professors. This project is useful for the rental car management team and as well as to the passengers.

This Software Requirements document is intended for:

- Developers who can review project's capabilities and more easily understand where their efforts should be targeted to improve or add more features to it (design and code the application – it sets the guidelines for future development).
- Project testers can use this document as a base for their testing strategy as some bugs are easier to find using a requirements document. This way testing becomes more methodically organized.
- End users of this application who wish to read about what this project can do.

1.4 Product Scope

This project traverses a lot of areas ranging from business concepts to computing fields, and requires to perform several researches to be able to achieve the project objectives.

The project includes :

- Car rental industry: This includes study on how the car rental business is being done, process involved and opportunity that exist for Improvement.
- Technology such as PHP, Java, MySQL used for the development of the application.
- General customers as well as the company's staff will be able to use the system effectively.

- Web-platform means that the system will be available for access 24/7 except when there is a temporary server issue which is expected to be minimal.

1.5 References

<https://ieeexplore.ieee.org/>

2. Overall Description

2.1 Product Perspective

2.1.1 Existing system function:

A cab is a vehicle that can be used for transportation with a fee. Booking a cab assists people to get around even when they do not have access to their own personal vehicle or don't own a vehicle at all. The individual who want to book a cab must first access the web page of the company. This has to be done online. At this point, this person has to supply some information such as; time of travel, destination and pickup location and type of car. After these details are worked out, the customer is assigned a suitable cab that will take him to the destination. Most companies throughout the industry make a profit based on the type of cabs that are booked and the distance a customer chooses to travel. The rental cars are categorized into economy, compact, compact premium, premium and luxury. And customers are free to choose any car of their choice based on their purse and availability of such car at the time of booking. Car Rental System gives cab booking service for both foreign and local customers. The organization uses a software system for booking, register and to keep record of all the rental activities, customer and driver information. The detailed existing system functions are listed as follows -

- During cab booking the customers books a vehicle by logging in his profile , providing the details of journey and payment method .
- Customer's will be able to get the real time global position of the cab during the ride and as well as when booking it.
- The cab booking web page is available 24X7 and therefore customers can avail the cab facilities at any time of the day.
- The system makes a general report about the customer's booking records to provide discounts and also a report about the feedback of drivers and their vehicles .

2.2 Product Functions

Car Rental System provides the features for booking a car online. It includes several functionalities described as below:

2.2.1 Driver Registration and Car Allocation:

It provides the facility for the drivers to register on the company website. The details of drivers are thoroughly verified, a photo ID proof is collected and all other details of the driver are stored in the driver database of the company. If the driver has his own car then the details of the car are registered into the company database otherwise the company provides a car to the driver on incentive basis.

2.2.2 Customer Registration:

Before being able to book the cab the customer must be register in the company website. For the purpose of registration customers details are verified and a photo id proof is collected. After the customer has registered on the website and provided all the necessary details then only he will able to book a cab according to his requirements.

2.2.3 Cab Booking Management:

It provides cab booking facility online. Customer can visit the website and check for various cars. If they are feasible with requirement, then booking can be done.

2.2.4 Checking For Availability:

The cabs are usually available 24X7. If a cab is not available according to the requirements of the customer then an appropriate message is displayed.

2.2.5 GPS:

Customer's can view the location of the cab as in when they are traveling or when booking the cab to know the location of it.

2.2.6 Payment system:

Administrator/owner of the application is responsible for payment of the customer. Order cancellation, order finalize, these all activities are done by the administrator of the application.

2.2.7 Maintenance:

If any car requires maintenance like repair or replacement of any parts, then the driver is fully responsible for that. In case the driver didn't had a car before and the company has provided the car, then in that case the cost of maintenance will be taken care off by the company.

2.3 User Classes and Characteristics

2.3.1 Customer:

- Customer can register to the system.
- Customer can login to the system.
- Specify the requirements of the journey
- Book the cab accordingly
- Finalize the order
- Make payment
- Cancel the order.
- Can view the detailed history of his previous rides

- Give feedback about the driver

2.3.2 Admin:

- Admin can login to the system.
- Verify the user and driver information database.
- Generate price strategy.
- Handle the payment system.
- Finalize the order.
- Cancel the order.

2.3.3 Driver:

- Can register to the system.
- Can login to the system.
- Give information to the system about the car.
- Can see his previous rides history and their ratings.

2.3.4 Maintenance Manager:

- It checks for the maintenance.
- Give to the maintenance.
- Give information to the admin.
- Update the database.

2.4 Operating Environment

2.4.1 Server Side:

Processor: Intel® Xeon® processor 3500 series
HDD: Minimum 500GB Disk Space
RAM: Minimum 16GB
OS: Windows 8.1, Linux, CentOS
Database: SQL Server 2014 (SQL14)
Application: XAAMP, phpmyadmin

2.4.2 Client Side (minimum requirement):

No specific system requirement is there as long as the customer is able to access the web page of the car rental service.

2.5 Design and Implementation Constraints

- The application will use PHP, Java, MySQL database and css as main web technologies.
- HTTP and FTP protocols are used as communication protocols. FTP is used to upload the web application in live domain and the client can access it via HTTP protocol.
- Since Car Booking system is a web-based application, internet connection must be established.

- The Car Booking System will be used on PCs and will function via internet or intranet in any web browser.

2.6 User Documentation

There will be no user manuals, tutorials as it is made as simple as web beginners can also use it easily with best web GUI functionality.

There will be a “ How To? “ section on the web page giving the steps to customer's for booking the cab and for the driver's for them to get registered to the system.

2.7 Assumptions and Dependencies

- If the driver owns the car then the driver is fully responsible for the maintenance of the car including damage and everything
- If the car belongs to the company then the company is responsible for the maintenance of the car and the driver has to pay monthly incentives for owing the car of the company.
- It is assumed that the customer has an internet access for booking the cabs.
- Administrator has the authority to add/delete employee accounts.
- Administrator has the authority to delete client.

3. External Interface Requirements

3.1 User Interfaces

- The user interface for the software shall be compatible to any browser such as Internet Explorer, Mozilla or Netscape Navigator by which user can access to the web page.
- The web page will provide the GUI which will easy to understand and through which the customer can book the cab.
- There will be radio buttons on the web page through which the customer and drivers can navigate through different options available on the web page.
- The web page will take the input from the mouse and keyboard.
- Mouse shall be used for navigation through the web page and the keyboard shall be used for entering information to the web page.

3.2 Hardware Interfaces

- External servers will be required to host the Web Site and handle the traffic.
- Servers will be required to store the data about customers and drivers.

- The customer's hardware should be able to access the internet for accessing the web page which can include wifi, LAN or any other connectivity.
- External servers should be capable enough to handle unusual high traffic.

3.3 Software Interfaces

- Web server software
- Server side scripting tools: PHP
- Database tools: MySQL
- Compatible operating system: Linux, Windows
- Client side software
- Web browser supporting JavaScript, refer Browser Compatibility 2.3.1
- Google geolocation API for GPS

3.4 Communications Interfaces

This project supports all type of web browsers and the cab booking webpage shall use the HTTP Protocol for communication over the internet and the intranet communication will be through TCP/IP protocol suite.

4. System Features

4.1 Driver Registration

4.1.1 Description and Priority

This feature will enable the people to register themselves as the drivers for the company with proper identity validation irrespective of them having a car or not. If they don't have a car then the car will be provided by the company.

4.1.2 Stimulus/Response Sequences

- *First the person who wants to register as a driver will have to open the web page of the cab booking system.*
- At the first page there'll be options asking about his motivation to come to the web page, where he needs to select the driver registration option.

- Clicking on the driver registration option will take him to another page where he'll have to fill detail information about himself and also if he has a car or not.
- After filling the required information he'll be directed to another web page where he'll be asked to upload proper documents as proof of his identity.
- After this he'll be directed to another page and there he'll be asked that if wants to use a personal car for the job. If someone wants to use then he'll be asked to enter the details with proof about the vehicle they'll use.
- After uploading the documents the person would be given a confirmation message of completing the process and that he'll be contacted within few days after the verification is complete.
- After this is complete the driver will be given a unique Id and password through which they can login to their profile.

4.1.3 Functional Requirements

- REQ-1: First the web page would need servers to be hosted on, and then people would be able to access the web page through internet.
- REQ-2: Web page would have various links, buttons and option to serve different type of users accessing the web page.
- REQ-3: The web page serves a front end and would be linked to the backend which would have the data base servers based on MySQL to store the information entered by the users.
- REQ-4: The page would have an option for people who want to register themselves as drivers and clicking on that would take them to a different web page through which a procedure will be followed.
- REQ-5: That web page would be able to get the necessary data from the user including soft copies of the valid proofs.
- REQ-6: If the user hasn't entered any detail correctly or not entered, the system won't proceed further and will show an error message to the user accordingly.
- REQ-7: After the document verification is complete and successful then the person would be included in the driver's database and a unique driver id would be generated and given to the person.

4.2 User Registration

4.2.1 Description and Priority

This feature will enable people to register on the cab booking web page for booking cabs after proper verification.

4.2.2 Stimulus/Response Sequences

- First the person who wants to register will have to open the web page of the cab booking system.
- At the first page there'll be options asking about his motivation to come to the web page, where he needs to select the user registration option.
- Clicking on the user registration option will take him to another page where he'll have to fill detail information about himself.
- After filling the required information he'll be directed to another web page where he'll be asked to upload proper documents as proof of his identity.
- After uploading the documents the person would be given a confirmation message of completing the process and that he'll be contacted within few days after the verification is complete.
- After this is complete the user will be a given unique Id and password through which they can login to their profile.

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- REQ-6: If the user hasn't entered any detail correctly or not entered, the system won't proceed further and will show an error message to the user accordingly.
- REQ-7: After the document verification is complete and successful then the person would be included in the user's database and a unique user id would be generated and given to the person.

4.3 Login

4.3.1 Description and Priority

This feature would enable both already registered drivers and users to login to their profile. By logging in users will be able to book cabs and view their previous records for all the rides whereas for drivers logging in would enable them to know about customers and their journey information from which they'll have to select and they can also view their previous ride records.

4.3.2 Stimulus/Response Sequences

- First the person who wants to login will have to open the web page of the cab booking system.
- At the first page there'll be options asking about whether he's a driver or a customer, he needs to select accordingly.
- After entering the appropriate details the user will be redirected to appropriate web page depending on whether he is a driver or a customer.
- If he is a driver then he will be able to see his previous rides history, Ratings and the his current ride details.
- If he is a customer then he will be able to see his previous rides history and available drivers and cars with their prices according to his requirements

4.3.3 Functional Requirements

- REQ-1: The page would have an option for people who want to login themselves and clicking on that would take them to a different web page through which a procedure will be followed.
- REQ-2: If the user hasn't entered any detail correctly or not entered, the system won't proceed further and will show an error message to the user accordingly.
- REQ-3: After the user has entered all the details correctly then the person will be redirected to his personal home page.
- REQ-4: The personal home page of the user will contain various options depending on whether he is a driver or a customer through which they will be able to book cabs, take new rides and see the records of their previous rides.

4.4 Cab Booking

4.4.1 Description and Priority

This feature would enable the user to book a cab according to his requirements. After the user has entered all the required details then the server will search the drivers database and find out which of the nearest driver's is free at that moment and will appropriately connect the user to the appropriate driver.

4.4.2 Stimulus/Response Sequences

- First the person would login into the system as a customer
- Then he would choose the option for booking the cab. Choosing that option will lead him to another web page where he would be asked the details of his journey which will include Pickup point, destination, type of car.

- After entering the appropriate details the user will be redirected to appropriate web page where the user will be connected to nearest driver and the details of the driver will be displayed to the customer and the customer's details will be sent to the driver.

4.4.3 Functional Requirements

REQ-1: This would require the login feature for the customers through which they will access their profiles .

REQ-2: If the user hasn't entered the unique login id or password correctly or not entered, the system won't proceed further and will show an error message to the user accordingly.

REQ-3: After the user has entered all the details correctly then the person will be redirected to his personal home page.

REQ-4: The personal home page of the user will contain various options among which the user will choose the booking cab option. Clicking on this option will lead him to another web page asking him about his journey details.

REQ-5: After entering the journey details the customer will be connected to the appropriate driver and the details of the driver will be shared to the user and similarly the details of the customer will be shared to the driver.

4.5 Feedback and Payment

4.5.1 Description and Priority

This feature would enable the users to make payments for their ride and also give feedback about the driver and to report any issues that they might have faced during the ride.

4.5.2 Stimulus/Response Sequences

- After the ride is complete the customer will have options to make payment for his ride and to provide feedback about his ride.
- After the ride customer will be redirected to a payment gateway where he will have various modes of paying for his ride like credit card, debit card, internet banking or cash.
- After the payment customer will be asked to provide feedback about his ride and any issues that he might have faced during the ride . They will also have options to provide ratings to their driver according to their ride experience with the driver.

4.5.3 Functional Requirements

REQ-1: This would require the payment gateway of the company to be connected to the web page through which the customers can pay for their rides.

REQ-2: After the user has entered all the details correctly and made the payment for his ride then the person will be redirected to a feedback web page.

REQ-3: The feedback page would contain options for providing feedback and rating the driver according to the ride experience of the customer.

REQ-4: After the ride is complete then the ride record of the customer will be updated which can be used in future for availing discounts. Similarly the rating and ride record of the driver will be updated.

4.6 Discount

4.6.1 Description and Priority

This feature would enable the user to avail discounts on his current ride depending on the number of rides taken by the customer. There are two types of discounts:

- The customer would be classified as GOLD member if he has taken an average of 30 or more trips for the last 3 months.
- If a customer has taken the cab 40 or more times in a month, he/she receives a frequent rider number (FRN). Using the FRN, the rider may avail a discount of 10% and 5% on the fare for the first 5 trip in the next month and first 3 trip of the next-to-next month.

4.6.2 Stimulus/Response Sequences

- After the ride of the customer is complete the ride count of the customer will be updated.
- After the updation of ride count of the customer then customer will get appropriate discount on his ride depending on the above mention conditions which will be reflected in the customer's profile.
- After applying the appropriate discount a new amount will be displayed to the customer and the customer would have to pay the new amount .

4.6.3 Functional Requirements

REQ-1: This would require the database for the customer ride records. Based on the ride records the customer will be given the discount.

REQ-2: The discount would be reflected in the bill amount and payment of the bill will require the payment feature.

4.7 GPS Navigation

4.7.1 Description and Priority

This feature would enable the users to track the location of drivers and drivers to track the location of the customers

4.7.2 Stimulus/Response Sequences

- After the booking the cab customers can know the location of the cab assigned to them and how much time it will take to reach their pick up location.
- Drivers will also be able to know the location of the customer assigned to them so that they can reach the pick up point easily and quickly.
- During the ride customers can know the route the driver is following and the location they are at any given point of time and how far the destination is and the expected time to reach there.

4.7.3 Functional Requirements

REQ-1: This would require the Google's geolocation API to be connected to the system so as to display the location in real time.

5. Other Nonfunctional Requirements

5.1 Performance Requirements

- Cab searching algorithm should be fast and accurate so that people don't have to wait much before getting the right cab.
- The overall process over the web page from logging in to booking the cab should be fast, interactive and easy enough to understand.
- Databases should be properly built and maintained properly so that search operations are fast.

5.2 Safety Requirements

- Documents of the drivers should be properly verified so as to hire only legitimate drivers.
- The payment gateway should be fast and secure so that any customer doesn't loses money.
- The cabs should be well maintained so as to avoid any possible accidents.

5.3 Security Requirements

- Databases should be properly secured so as to manage passwords and to be resistant to attacks.

- The web page should be secure enough against hacking.
- Customer's should keep getting the services even if the system get's hacked.

5.4 Software Quality Attributes

- The product should be reliable in terms of privacy and data security.
- The product should be robust in terms of user interfaces and cab scheduling algorithm.
- The product should be flexible enough to add new features as in when required. And the algorithm should be flexible enough in terms of cab booking.
- The product should properly documented and easily maintainable for correct bugs and making changes.
- The product should be easily usable and the user access should be only dependent on the their internet connection/

5.5 Business Rules

- The company is not allowed to sell or use user's information in any way other than what is intended by the software.
- Anyone who knows how to drive with a valid identity proof can become a driver for the company.
- Anyone can avail the cab booking system and there is no restriction on any person booking the cab
- If a user cancels a cab after a specific time from booking then company has the right to apply cancellation charges on the user in the next ride