

Design and Development of a Rendering System for Vehicle Riding

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Abstract

This paper propounds the design and development of a web-based system for a car rental company. It enables admin to rent a car that can be used by a customer on a payment basis. The car information can be added to the system or existing car information can be edited or deleted too by the administrator. The GSM/GPS based content alert for car rental system making the car available for every common man with a minimum cost and effective use of time, Therefore, this application helps the customers to be comfortable and to have the privacy ride as traveling became the part of life. This system makes processing tasks easier and eliminates the traditional record-keeping process. Hence this system enhances the car and customer management and provides customer satisfaction thereby maintaining customer retention.

Keywords: GSM/GPS Module, Customer Relationship Management, Tracking, Software as a Service.

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1. Introduction

Recently, Online Car Rental System facilitates the business owners in handling the business situations smoothly with the development of various built-in models added to the existing car system in addition to their component details, vehicle check-in and check-out details, vehicle history details, expiration details, insurance registration details, and the vehicle availability timings with the date. Generally, the user should create a profile when they are ready to take a car by paying the rent and the system will provide with the necessary payment mode. Once the registration process had been completed, the user will have a unique id along with their login password provided from the admin side.

Customers have their rights to pick the car of their own choice specified with the brand names. Customers, while selecting a particular type of car could be able to receive the entire details of the vehicle including mileage details (km/hr), rent of the particular car type, cost of the car etc. Users should

offer the system with sufficient information such as the name, address, location of travel, total members accompanying the car, total number of service days etc. The authentic person could be able to receive significant information whenever necessary.

Customers should provide the system with significant details regarding their particular travel location every time so that the admin could track their cars very easily. They could also cancel their booking status anytime and also select the car types based on the particular members they take on-board. They also have the total authority of changing their travel places. Admin system is enabled with the automatic reminder feature through which the customers license, insurance, service and replaced components details could be received based on the particular vehicle.

2. Literature Survey

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In today's market, rental options for cars are flooded for the customers to choose the best based on their preferences. Customers are provided with plenty of choices in making their own innovative services and products based on the rental opinion [1]. Online Car Rental System serves the best in serving several families and working professionals to get to a place. Over the past few years, many shoppers gained advantage from the car rental system in India.

This rental business had made an emerging opportunity for the novice customers as previously the locations were limited only to certain physical distances [2]. Though the remote locations have not been exterminated; the nature of achieving all these possible function is due to the power of internet. At the present situation, users can register their car online by paying the required rent and once the registered customers reach their car at their doorstep they are free to go anywhere. This serves as a major advantage for both the car rental company as well as the customers in managing their business efficiently.

The Web-based car rental management information system [3] helps in improving the efficiency of rental history data transmission. Comparing to the other manual systems, this system promotes shorter time delivery. Data stored in the cloud environment will simplify the process of obtaining data and generating reports.

The rental vehicle's web system [4] is a system created using JavaScript. This application promotes the complete functionality of call center for the web-based car rental broker companies. This process will simplify the problems faced by the travel agencies and the tourists in making reservations online, making payment and comparing the price of the vehicles through which they travel. The administrator could also manage the data in a very short duration. As the system keeps records of the customers, an administrator can manage the customers easily.

In this twenty-first-century user-friendly web-based vehicle rental system is popular in tourism[5]. The web-based system uses server components of distributed applications with HTTP protocol for exchanging data between servers and clients. The administrator can easily manage a secure web-based system. The several features of this system are: customers can enter their details, customers can do vehicle booking with date and time, customers can view all types of vehicles and customers can view the total amount to pay.

Both the car rental company and the customer get a huge benefit with the online rental system that also helps in managing the system effectively by promoting a complete satisfaction to the customers' requirements. This also offers huge advantage to the company owners, business organization sand the customers in getting excellent services.

The authors in [7] proposed an anonymous car rental protocol based on NFC technology. All the personal data regarding the users will be send to the trusted third party (TTP). Through this system, the car hire providers will not receive any information regarding the users (Anonymity) and the rental companies will not assume any link among the users' identity and rental records with the rental history (Unlinkability). Also if there are consumer disputes or accidents, the rental company can request that TTP reveal

users' identity (Traceability) and provides users free choice of their preferred vehicle (Flexibility).

3. Proposed System

3.1 Modules Description

The three important modules are:

1. Registered User
2. Guest User
3. Administrator

Authorized users are said to be the one who had registered their personal details in the registration page of the system. After the successful registration, user can login to their account with the valid email id and the password. If the user forgot their registered email id and password then with the help of their personal information they could be able to get access to their account. Following things could be done by the user after the successful login:

- Car booking
- Know details of car booking
- upload their own profile information
- Update password
- Post testimonial
- View testimonial
- Log out

Guest users can see the website and check out the information about rental cars. Guest users can enquire about the system through contact us page. The administrator is the superuser of a system that can manage everything on the system. The several features are:

- Create Vehicle Brands
- Post Vehicle
- Manage Vehicle Brands(Edit, Delete)
- Control vdehicle Booking
- Upload Testimonials
- Query to Contact the service
- Manage Customers
- Admin Dashboard(Admin can view the count of registration users, total booking, total customers, total queries, etc)
- Logout

3.2 Proposed System Architecture

The web-based car rental system interfaced with the SMS technique serves as a very user-friendly purpose. Customers can be able to make their payments, bookings, SMS and provide their vehicle issues to the employees, which they monitor through the specified system. Administrators can add the new data or edit or delete the existing data. Thus, there will be no delay in the availability of any information. For security enhancement, the customers are asked to create their

own user account prior to their booking. The notifications will be sent to the customers regarding their car reservation through SMS thereby making the customers, administrator and employees effort easier. The architecture of the proposed system is given in Figure 1.

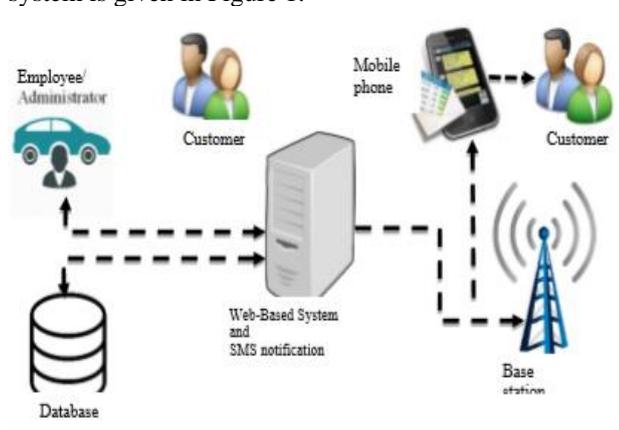


Figure 1. System Architecture

3.3 UML Diagrams

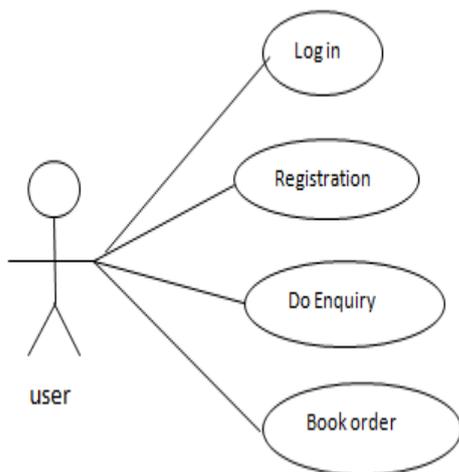


Figure 2. Use Case Diagram

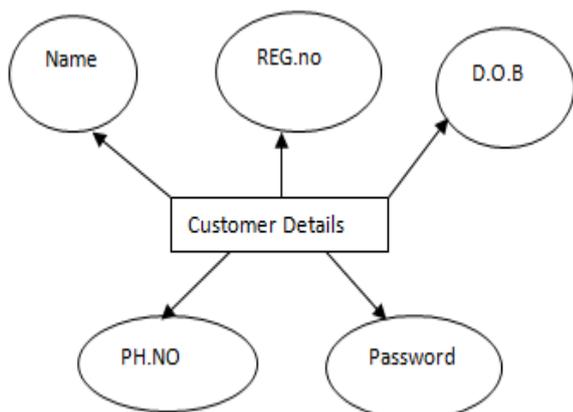


Figure 3. Customer Details

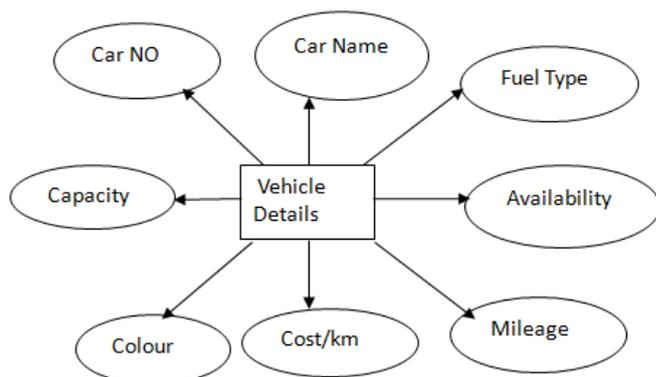


Figure 4. Vehicle Details

4. System Testing

System testing cannot be carried out as a monolithic unit; rather the testing procedure is carried out at several stages with the implementation. Any sort of errors determined in the program components will be identified during the testing procedure. The information from the later process will be fed back to the earlier stages and therefore holds to be repetitive. The level in which testing process is carried out involves a unit with the smallest testable part of the software. It consists of one output with single or many inputs. White box system testing strategy is mainly carried out that involves with the developers considering the internal system mechanism, component or application to check the expected working of source code. This testing strategy involves with the written codes, statements, internal code logic, paths branches etc.

On the other hand, Black box testing strategy involves by testing the software functionality without any internal design reference, algorithm, or program code. The main focus of this testing strategy is to obtain an output for the given input and execution conditions ignoring all the system mechanism and the internal components.

To develop our system we have used the XAMPP server, PHP as front end, HTML CSS and JAVASCRIPT for user interface design and MYSQL for database design.

4.1 ScreenShots

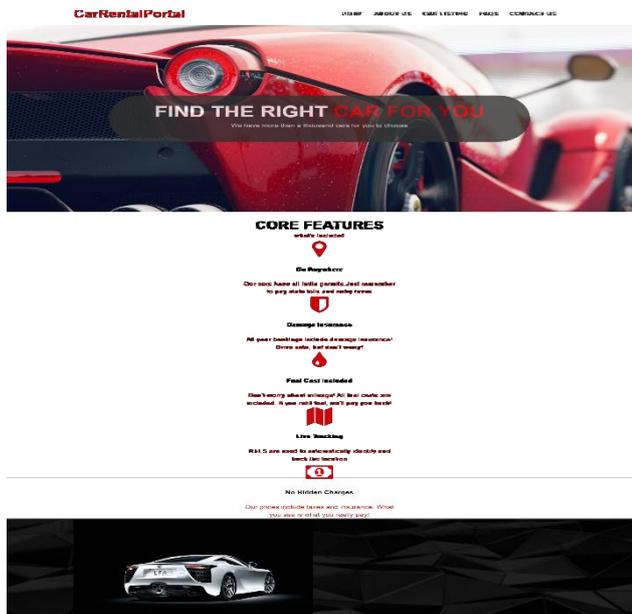


Figure 5. Home Page

Sign Up

Please fill in this form to create an account.

Email
Enter Email

Password
Enter Password

Repeat Password
Repeat Password

Remember me

By creating an account you agree to our [Terms & Privacy](#).

Cancel Sign Up

Figure 6. Customer Registration

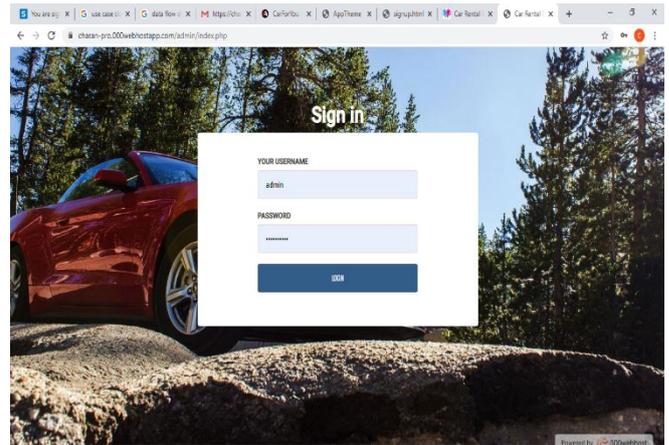


Figure 7. Admin Login

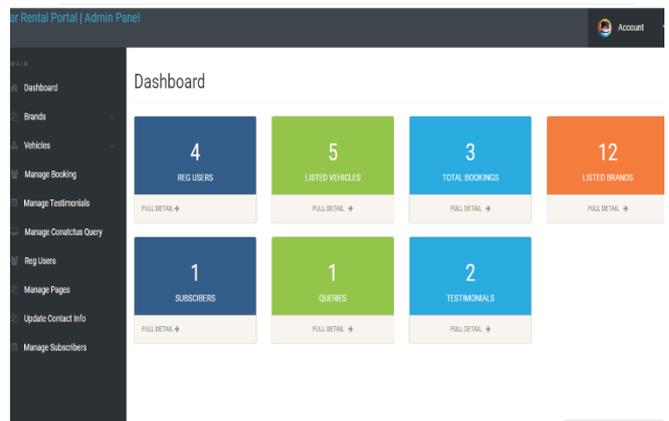


Figure 8. Admin Homepage

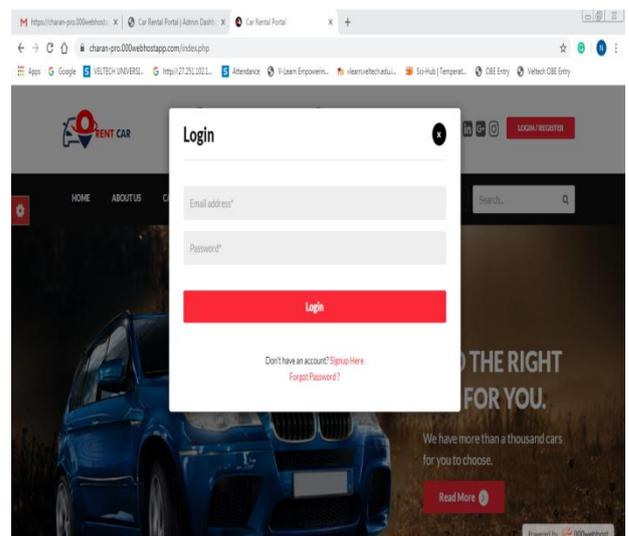


Figure 9. Login Page

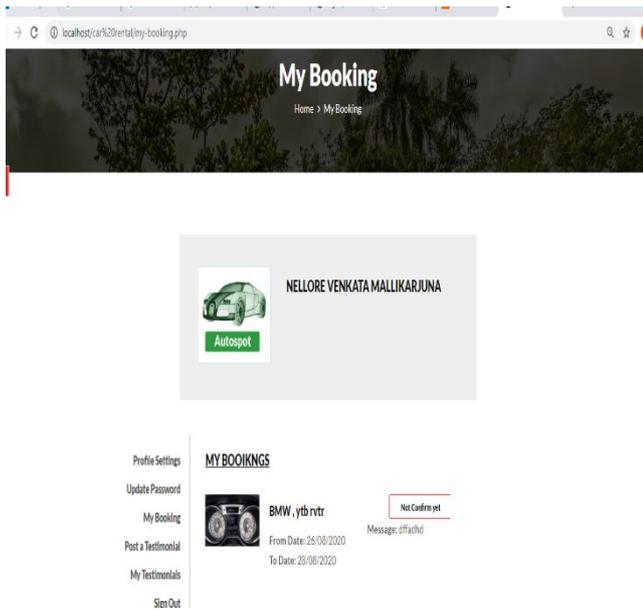


Figure 10. My Bookings

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5. Conclusion

In this paper, we have presented an online rental system which is beneficial to both the customers and the Rental Company to manage the business efficiently and effectively and satisfy the needs of the customers at the click of a button. Using this system saves time for the customer and sorts out the billing problem also. This system is more convenient than bearing the cost of owning and maintaining the vehicle.

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