

ATMIYA UNIVERSITY
RAJKOT



A
Report On
CAR RENTAL SYSTEM

Under subject of
MAJOR PROJECT
B.TECH, Semester – VII
(Computer Engineering)

Submitted by:

- | | |
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Academic Year
(2022-23)

CANDIDATE'S DECLARATION

We hereby declare that the work presented in this project entitled “**CAR RENTAL SYSTEM**” submitted towards completion of project in **7th Semester** of B. Tech. (Computer Engineering) is an authentic record of our original work carried out under the guidance of “**Prof. Nirali Borad**”.

We have not submitted the matter embodied in this project for the award of any other degree.

Semester: 7th

Place: Rajkot

Signature:

Shrey Parekh (190002075)

Parth Shah (190002106)

**ATMIYA UNIVERSITY
RAJKOT**



CERTIFICATE

Date:

This is to certify that the “**CAR RENTAL SYSTEM**” has been carried out by **SHREY PAREKH** under my guidance in fulfillment of the subject Major Project in **COMPUTER ENGINEERING (7th Semester)** of Atmiya University, Rajkot during the academic year 2022.

Prof. Nirali Borad

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Prof. Tosal M. Bhalodia

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**ATMIYA UNIVERSITY
RAJKOT**



CERTIFICATE

Date:

This is to certify that the “**CAR RENTAL SYSTEM**” has been carried out by **PARTH SHAH** under my guidance in fulfillment of the subject Major Project in **COMPUTER ENGINEERING (7th Semester)** of Atmiya University, Rajkot during the academic year 2022.

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Shrey Parekh (190002075)

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ABSTRACT

The Car Rental System is being developed for customers so that they can book their cars from any part of the world. This application takes information from the customers through filling their details. A customer being registered in the website has the facility to book a Car which he requires. The proposed system is completely integrated online systems. It automates manual procedure in an effective and efficient way. This automated system facilitates customer and provides to fill up the details according to their requirements. It includes type of car they are trying to hire and location. The purpose of this system is to develop a web site for the people who can book their Car along with requirements from any part of the world. Car rental system provide Car to User in their location on short time.

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CHAPTER – 1

INTRODUCTION

1.1 Introduction To Online Car Rental System

This project is designed so as to be used by Car Rental Company specializing in renting cars to customers. It is an online system through which customers can view available cars, register, view profile and book car. Here, User has to Login to book a car. The user can search for cars easily and book. For bookings, the user has to provide information such as Booking Dates and Text Message. All car details are provided and it also includes Car's feature and Overview. The user can also post their Testimonials and the user can update their Profile as well as passwords anytime they want from the site. Admin can Add/Manage car brands, manage cars, bookings, testimonial, pages and many more. It's easy to operate and understand by users. This site makes customers easy for car rental. The design is pretty simple and the user won't find it difficult to understand, use and navigate.

1.2 Reason for the Project

- **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, thus increase their return on investment (ROI).
- **Online Car Reservation:** A tools through which customers can Booking available cars online prior to their expected pick-up date or time.
- **Customer's registration:** A registration portal to hold customer's details, monitor their transaction and used same to offer better and improve services to them.
- **Group Booking/Event Management:** Allows the customer to book space for a group in the case of weddings or corporate meetings.

1.3 Problem Statement

A car rental is a car that can be used temporarily for a fee during a specified Period. Getting a rental car helps people get around despite the fact they do not have access to their own personal car or don't own a car at all. The individual who needs a car must contact a rental car company and contract out for a car. This system increases customer retention and simplify car and staff management.

1.4 Aims & Objective

- To produce a web-based system that allow customer to register and booking car online and for the company to effectively manage their car rental business.
- To ease customer's task whenever they need to rent a car.

1.5 Scope

This project traverses a lot of areas ranging from business concept to computing field, and required to perform several researches to be able to achieve the project objectives.

The area covers include:

- **Carrental industry:** This includes study on how the car rental business is being done, process involved and opportunity that exist for improvement.
- PHP Technology 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.

1.6 Summary

The main objective of this Car Rental System project will enable the user to rent a car. The user shall login to the system and check for availability of cars. The user specifies a type of car and the journey date and time. The Car Rental System shall check for the availability of the car and rent the car to the customer. All the data regarding the rental cars are stored in MySQL database. The user has to enter his name, address, phone details and check for the cars available for rent. The UI is very simple and the connectivity to back end is robust. The main advantage is that the user shall be able to choose a car depending on his budget.

1.7 TECHNOLOGY AND TOOLS

1. HTML:

- Hypertext Markup Language (HTML) is the main markup language for creating Web pages and other information that can be displayed in a web browser. HTML is written in the form of HTML elements consisting of tags enclosed in angle brackets (like `<html>`), within the web page content. HTML tags most commonly come in pairs like `<h1>` and `</h1>`, although some tags represent empty elements and so are unpaired, for example ``.
- The first tag in a pair is the start tag, and the second tag is the end tag (they are also called Opening tags and closing tags). In between these tags' web designers can add text, further tags, Comments and other types of text-based content.
- The purpose of a web browser is to read HTML documents and compose them into visible or Audible web pages. The browser does not display the HTML tags, but uses the tags to interpret the Content of the page.

2. CSS:

- Cascading Style Sheets (CSS) is a style sheet language used for describing the presentation Semantics (the look and formatting) of a document written in a markup language. Its most common Application is to style web pages written in HTML and XHTML, but the language can also be Applied to any kind of XML document, including plain XML, SVG and XUL. CSS is designed Primarily to enable the separation of document content from document presentation, including elements such as layout, colors, fonts.
- This separation can improve content accessibility, provide more flexibility and control in the Specification of presentation characteristics, enable multiple pages to share formatting, and reduce Complexity and repetition in the structural content (such as by allowing for table less web design).
- CSS specifies a priority scheme to determine which style rules apply if more than one rule Matches against a particular element. In this so-called cascade, priorities or weights are calculated And assigned to rules, so that the results are predictable.
- The CSS specifications are maintained by the World Wide Web Consortium (W3C). Internet Media type (MIME type) text/CSS is

registered for use with CSS by RFC 2318 (March 1998), and they Also operate a free CSS validation service.

3. JAVASCRIPT :

JavaScript(JS) is a dynamic computer programming language. It is Most commonly used as part of web browsers, whose implementations allow client-Side scripts to interact with the user, control the browser, communicate Asynchronously, and alter the document content that is displayed. It is also being Used in server-side programming, game development and the creation of desktop and Mobile applications. JavaScript is a prototype-based scripting language with Dynamic typing and has first-class functions. Its syntax was influenced by C.

JavaScript copies many names and naming conventions from Java, but the two Languages are otherwise unrelated and have very different semantics. The key design Principles within JavaScript are taken from The Self and Scheme programming languages. It is a multi-Paradigm language, supporting object-oriented, imperative, And functional programming styles. The application of JavaScript to use outside Of web pages—for example, in PDF documents, site-specific browsers, and Desktop widgets—is also significant. Newer and faster JavaScript VMs and Platforms built upon them (notably Node.js) have also increased the popularity Of JavaScript for server-side web applications. On the client side, JavaScript Was traditionally implemented as an interpreted language but just-in-time Compilation is now performed by recent (post-2012) browsers.

BACKEND :

PHP :

PHP is a server-side scripting language designed for web development but also used as a general-purpose programming language. PHP is now installed on more than 244 million websites and 2.1 million web servers. Originally created by Rasmus Lerdorf in 1995, the reference implementation of PHP is now produced by The PHP Group. While PHP originally stood for Personal Home Page, it now stands for PHP: HypertextPreprocessor, a recursive backronym. PHP code is interpreted by a webserver with a PHP processor module, which generates the resulting web page: PHP commands can be embedded directly into an HTML source document rather than calling an external file to process data. It has also evolved to include a command-line interface capability and can be used In

standalone graphical applications. PHP is free software released under the PHP License. PHP can be deployed on most web servers and also as a standalone shell On almost every operating system and platform, free of charge.

MYSQL :

MySQL("My S-Q-L", officially, but also called "My Sequel") is (as of July 2013) the world's second most widely used open-source relational database management system (RDBMS). It is named after co-founder Michael Widenius daughter, My. The SQL phrase stands for Structured Query Language. The MySQL development project has made its source code available under the terms of the GNU General Public License, as well as under a variety Of proprietary agreements. MySQL was owned and sponsored by a single for-profit firm, the Swedish company MySQL AB, now owned by Oracle Corporation. MySQL is a popular choice of database for use in web applications, and is a central component of the widely used LAMP open source web application software stack (and other 'AMP' stacks). LAMP is an acronym for "Linux, Apache, MySQL, Perl/PHP/Python." Free-software-open source projects that require a full-featured database management system often use MySQL. For commercial use, several paid editions are available, and offer additional functionality. Applications which use MySQL databases

Include: TYPO3, MODx, Joomla, WordPress, phpBB, MyBB, Drupal and other software. MySQL is also used in many high-profile, large-scale websites, including Wikipedia, Google (though not for searches), Facebook, Twitter, Flickr, and YouTube.

CHAPTER – 2

PROJECT MANAGEMENT

2.1 Project Planning:

Project Planning is concerned with identifying and measuring the activities, milestones and deliverables produced by the project. Project planning is undertaken and completed sometimes even before any development activity starts. Project planning consists of following essential activities:

- Scheduling manpower and other resources needed to develop the system.
- Staff organization and staffing plans.
- Risk identification, analysis, and accurate planning.
- Estimating some of the basic attributes of the project like cost, duration and efforts. The effectiveness of the subsequent planning activities is based on the accuracy of these estimations.
- Miscellaneous plans like quality assurance plan, configuration management plan, etc. Project management involves planning, monitoring and control of the people, process, and the events that occurs as the software evolves from a preliminary concept to an operational implementation. Cost estimation is a relative activity that is concerned with the resources required to accomplish the project plan.

2.2 Project Scheduling:

The scheduling is the peak of a planning activity, a primary component of software project management. When combined with estimation methods and risk analysis, scheduling establishes a roadmap for project management. The characteristics of the project are used to adapt an appropriate task set for doing work.

2.3 Risk Management:

Risk management consists of a series of steps that help a software development team to understand and manage uncertain problems that may arise during the course of software development and can plague a software project. Risks are the dangerous conditions or potential problems for the system which may damage the system functionalities to very high level which would not be acceptable at any cost. So in order to make our system stable and give its 100% performance we

must have identify Risks, analyze their occurrences and effects on our system and must prevent them to occur.

2.3.1 Risk Identification:

Risk identification is a first systematic attempt to specify risks to project plan, Scheduling resources, project development. It may be carried out as a team process using Brainstorming approach.

Technology risk:

Technical risks concern implementation, potential design, Interfacing, testing, and Maintenance problems

- Database Corruptness
- Garbage Collection

People Risks:

These risks are concerns with the team and its members who are taking part in developing the system.

- Leaking an important data.
- Failure of the administration.
- Lack of knowledge .
- Lack of clear product vision.
- Technical staff conflict.
- Poor communication between people.

Tools Risks:

These are more concerned with tools used to develop the system

- Tools containing virus.

General Risks:

General Risks are the risks, which are concerned with the mentality and resources.

- Lack of resources can cause great harm to efficiency and timely productivity.
- Rapidly changing requirements.

- Changes in requirements can cause a great harm to implementation, designing and schedule of developing the system.
- Insufficient planning and task identification.

2.3.2 Risk Analysis:

“Risk analysis = risk assessment + risk management + risk communication.”

Risk analysis is employed in its broadest sense to include:

Risk assessment:

Involves identifying sources of potential harm, assessing the likelihood that harm will occur and the consequences if harm does occur.

For this project It might be :-

- System Crash.

Risk management:

Evaluates which risks identified in the risk assessment process require management and selects and implements the plans or actions that are required to ensure that those risks are controlled.

Precautions taken to make risks minimal are as under:-

- Periodical backups are taken to avoid major loss in case of system crash.

Risk communication:

Involves an interactive dialogue between stakeholders and risk assessors and risk managers which actively informs the other processes.

Steps taken for risk communication is as under:-

- Probability of certain risks is negotiated with client.
- All the possible risks are listed out during communication and project is developed taking care of that risks.

CHAPTER-3

SYSTEM REQUIREMENTS STUDY

3.1 Hardware and Software Requirement

This shows minimum requirements to carry on to run this system efficiently.

3.1.1 Hardware Requirements

Server side Hardware Requirement:

Devices	Description
Processor	Intel Core Duo 2.0 GHz or more
RAM	1 GB or more
Hard Disk	10 GB or more

Table 3.1.1.1 Server side Hardware Requirement

3.1.2 Software Requirements

For which	Software
Operating System	Windows7/8/10, Linux
Front End	HTML, CSS, JS
Back End	MySQL Database

Table 3.1.2.1 Software Requirements

3.1.3 Client side Requirements

For which	Requirement
Browser	Any Compatible browser device

Table 3.1.3.1 client side Requirements

3.2 Constraints

3.2.1 Hardware Limitations

The major hardware limitations faced by the system are as follows:

-If the appropriate hardware is not there like processor, RAM, hard disks

-The problem in processing requests of client

-If appropriate storage is not there our whole database will crash due to less storage because our main requirement is large storage.

3.2.2 Reliability Requirements

Since many users can access the server simultaneously, load on the server becomes very high. Hence, the server should be of enough high configurations. There should be high back up storage and management of huge data for overall ideas, videos , images, multiple countries, multiple user profile.

The Reliability requirements are the validations used to protect the system against one or more incorrect activities. Without proper validation of the system, the failure possibilities of it grow higher so it is must to understand the proper validation of the system and must implement them. All the required validator controls spend very good role to keep the system secure from any unauthorized or incorrect information. In all these validation actions if system found one or more entries violating validation rules then user will be warned by proper error messages and the details of the record is not going to be saved until corrections are made to them.

3.2.3 Safety and security Consideration

Safety - The source of this software will be kept at more than one place with user ID, password and also in CD ROM in case of server failure.

Security – Security in this software provide to different user in different ways by giving different user ID. If user is admin, he has all the privileges and constraints. He can access the entire database. He can change or delete database from other user's accounts. HR department have limited access according to their role. Because of limited privileges one of them cannot update the details of the candidate.

CHAPTER-4

SYSTEM ANALYSIS

4.1 Study Current System

Implementation is the stage where the theoretical design is turned into a working system. The most crucial stage in achieving a new successful system and in giving confidence on the new system for the users that it will work efficiently and effectively.

The system can be implemented only after thorough testing is done and if it is found to work according to the specification.

It involves careful planning, investigation of the current system and its constraints on implementation, design of methods to achieve the change over and an evaluation of change over methods a part from planning. Two major tasks of preparing the implementation are education and training of the users and testing of the system.

The more complex the system being implemented, the more involved will be the systems analysis and design effort required just for implementation.

The implementation phase comprises of several activities. The required hardware and software acquisition is carried out. The system may require some software to be developed. For this, programs are written and tested. The user then changes over to his new fully tested system and the old system is discontinued.

4.2 Problem and weakness of current system

- Inconsistency in data entry and generate errors
- System is fully dependent on skilled individuals
- Time consuming and costly to produce reports
- Entry of false information
- Lack of security
- Duplication of data entry

4.3 Requirements of New System

4.3.1 User Requirements:

The user requirement for this system is to make the system fast, flexible, less prone to error, reduce expenses and save the time.

4.3.2 System Requirements:

- **FUNCTIONAL SYSTEM REQUIREMENTS:**

Requirement analysis is a software engineering technique that is composed of the various tasks that determine the needs or conditions that are to be met for a new or altered product, taking into consideration the possible conflicting requirements of the various users.

Functional requirements are those requirements that are used to illustrate the internal working nature of the system, the description of the system, and explanation of each subsystem. It consists of what task the system should perform, the processes involved, which data should the system holds and the interfaces with the user. The functional requirements identified are:

- **Customer's registration:** The system should allow new users to register online and generate membership card.
- **Online reservation of cars:** Customers should be able to use the system to make booking and online reservation.
- **Automatic update to database once reservation is made or new customer registered:** Whenever there's new reservation or new registration, the system should be able update the database without any additional effort from the admin.

- **NON – FUNCTIONAL REQUIREMENTS:**

It describes aspects of the system that are concerned with how the system provides the functional requirements. They are:

- **Security:** 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 users with valid password and username can login to view user's page.
- **Availability:** This system should always be available for access at 24 hours, 7 days a week. Also in the occurrence of any major system malfunctioning, the system should be available in 1 to 2 working days, so that the business process is not severely affected.
- **Ease of use:** Considered the level of knowledge possessed by the users of this system, a simple but quality user interface should be developed to make it easy to understand and required less training.

4.4 Feasibility Study

The feasibility study of any system is mainly intended to study and analyse the proposed system and to decide whether the system under consideration will be viable or not after implementation. That is it determines the usability of the project after deployment. To come to result a set of query is answered keeping the efficiency of the software and its impact on the domain for which it was developed.

Technical Feasibility:

In technical feasibility, we study all technical issues regarding the proposed system. It is mainly concerned with the specifications of the equipment's and the software, which successfully satisfies the end-user's requirement. The technical needs of the system may vary accordingly but include:

- ☒ The feasibility to produce outputs in a given time.
- ☒ Response time under certain conditions.
- ☒ Ability to process a certain volume of the transaction at a particular speed.
- ☒ Facility to communicate data.

4.5 Selection of Hardware and Software and Justification

The configuration of the existing systems is:

Processor : Intel core i3

Memory : 128 MB (or above)

Secondary storage : 10 GB (or above)

For Software there are following alternatives:

Operating System : Windows 7,8,10

Development tools : HTML,CSS,PHP

Database :MY SQL

Documentation tool : MS-Word

CHAPTER – 5

SYSTEM DESIGN

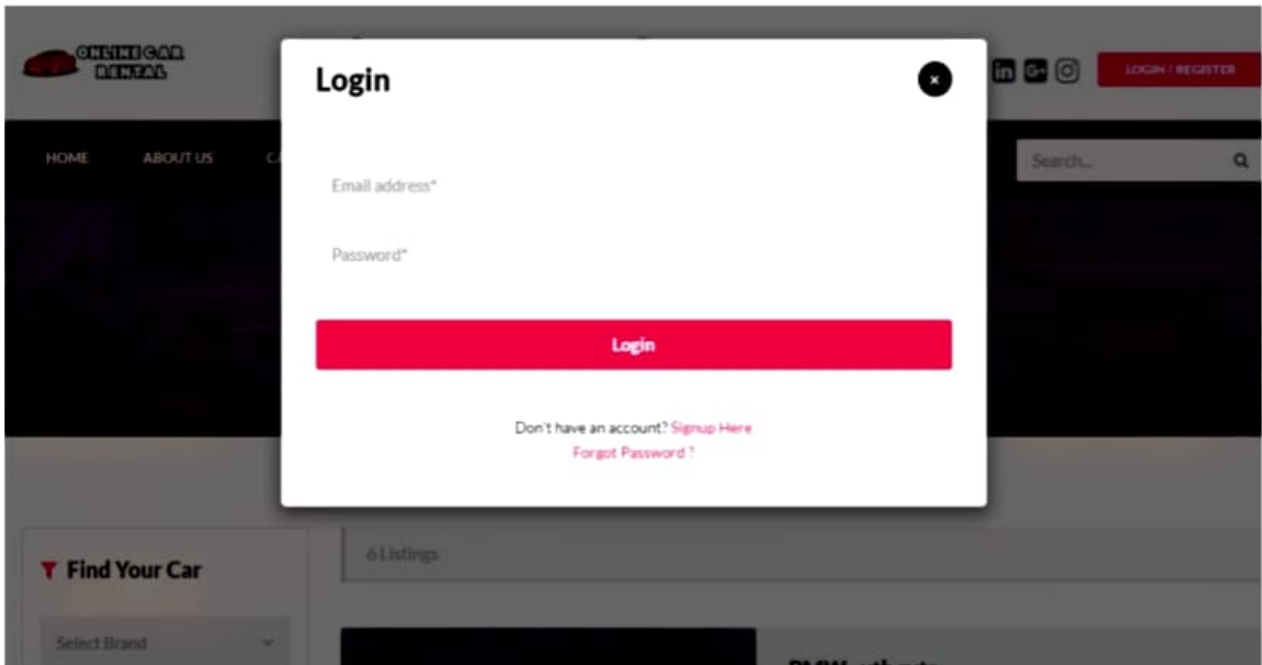
5.1 INPUT/ OUTPUT INTERFACE

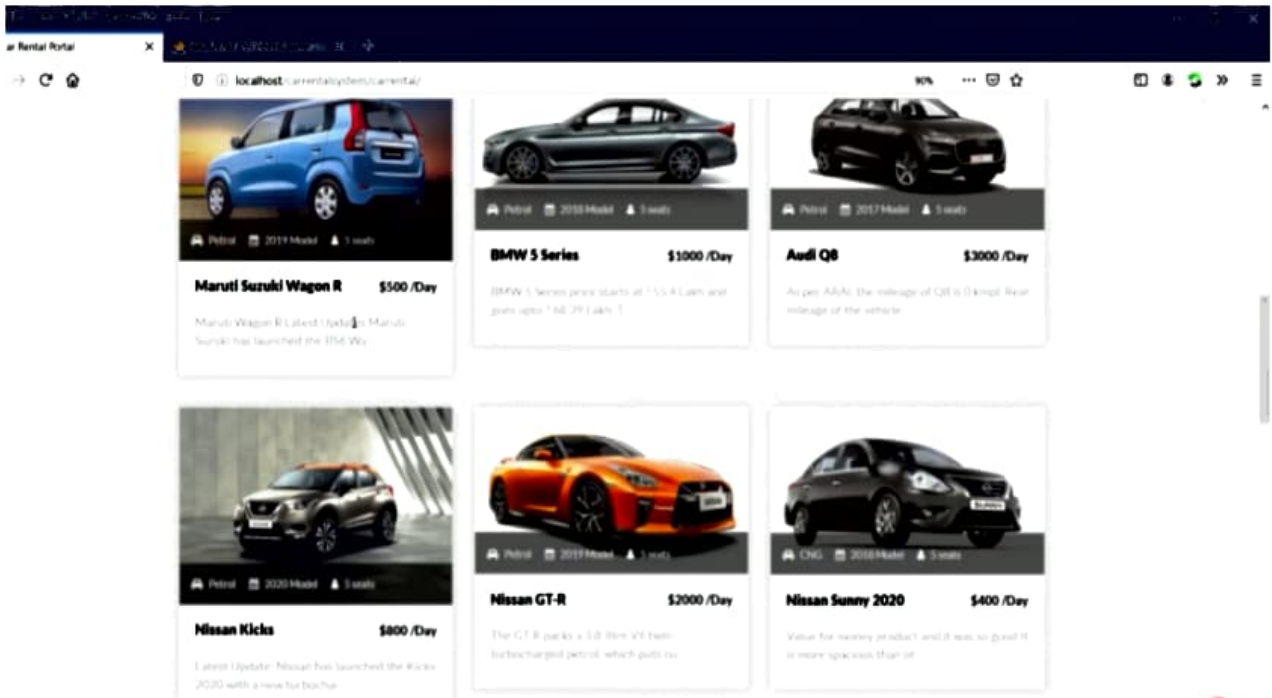
➤ Home page



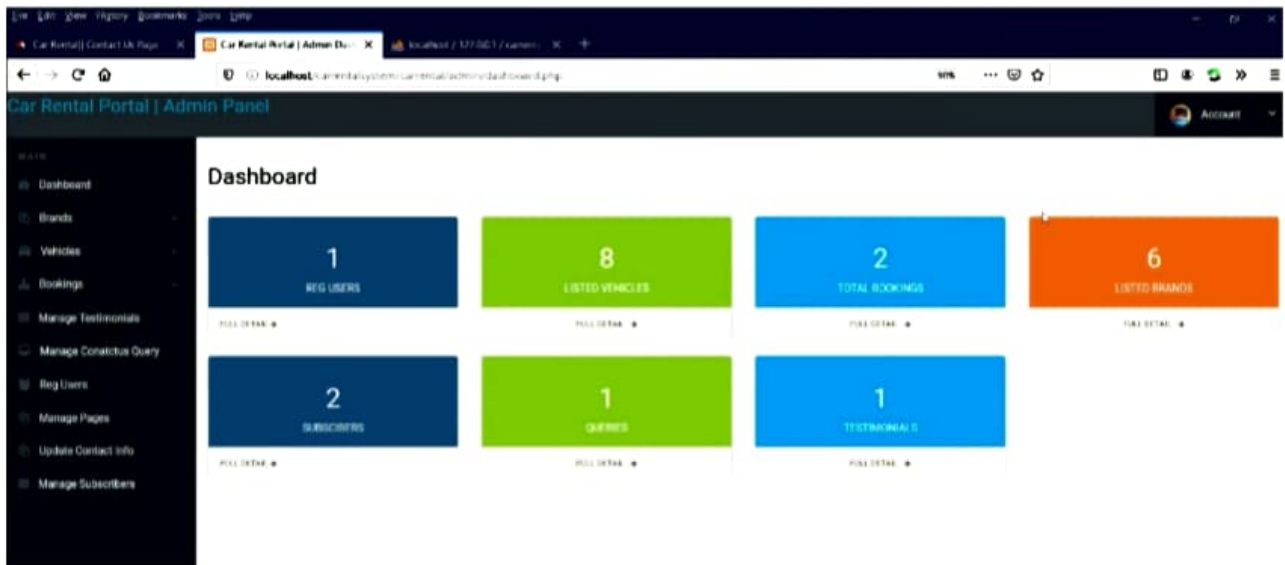
Find the Best CarForYou

➤ Login page





➤ Admin Dashboard



➤ Manage Vehicles

Manage Vehicles

VEHICLE DETAILS

Show 10 entries

#	Vehicle Title	Brand	Price Per day	Fuel Type	Model Year	Action
1	Maruti Suzuki Wagon R	Maruti	500	Petrol	2019	Edit Delete
2	BMW 5 Series	BMW	1000	Petrol	2018	Edit Delete
3	Audi Q8	Audi	3000	Petrol	2017	Edit Delete
4	Nissan Kicks	Nissan	800	Petrol	2020	Edit Delete
5	Nissan GT R	Nissan	2000	Petrol	2019	Edit Delete
6	Nissan Sunny 2020	Nissan	400	CNG	2018	Edit Delete
7	Toyota Fortuner	Toyota	3000	Petrol	2020	Edit Delete
8	Maruti Suzuki Vitara Brezza	Maruti	600	Petrol	2019	Edit Delete
#	Vehicle Title	Brand	Price Per day	Fuel Type	Model Year	Action

Showing 1 to 8 of 8 entries

➤ Post a vehicle

Post A Vehicle

BASIC INFO

Vehicle Title*

Select Brand*

Vehicle Overview*

Price Per Day (in USD)*

Model Year*

Select Fuel Type*

Seating Capacity*

Upload images

Image 1* No file selected

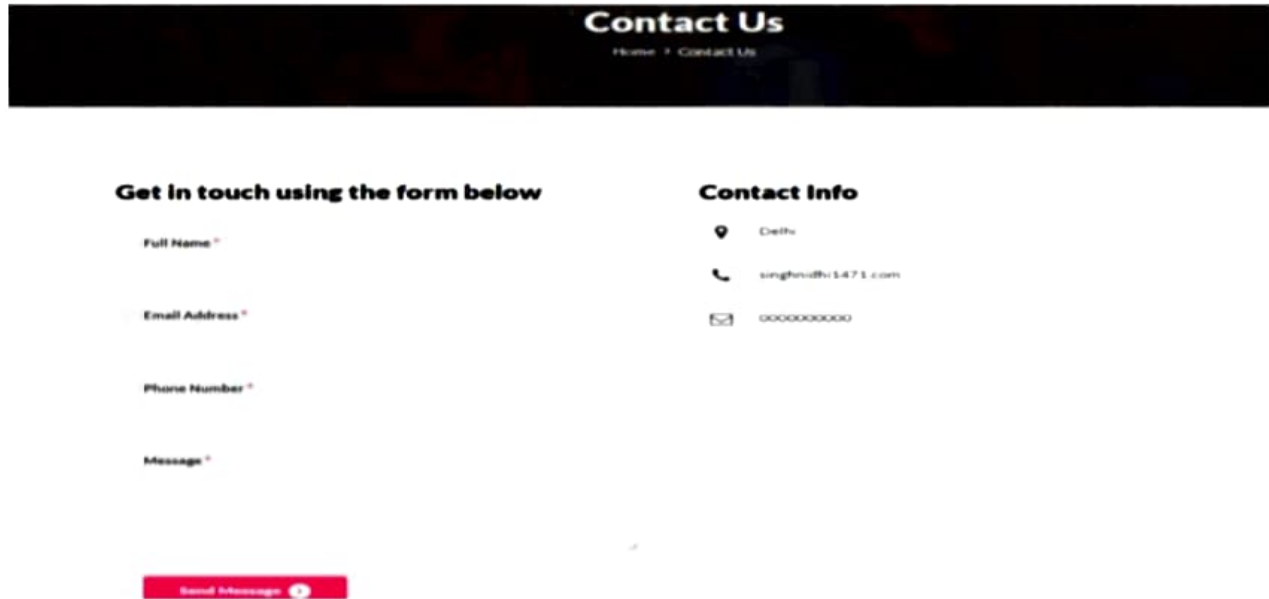
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Image 3* No file selected

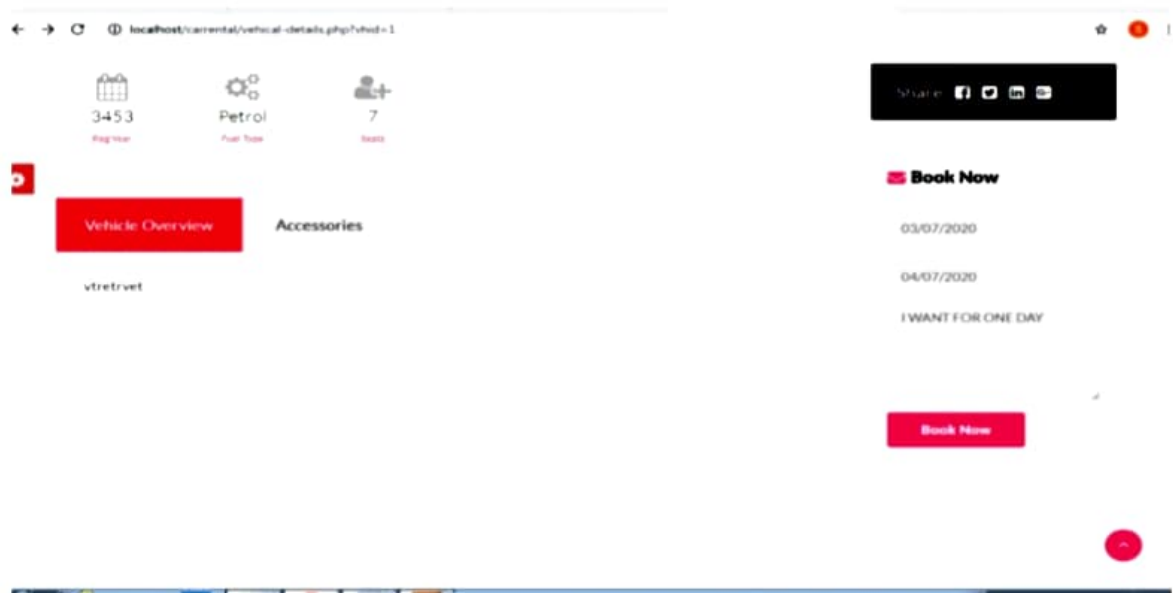
Image 4* No file selected

Image 5* No file selected

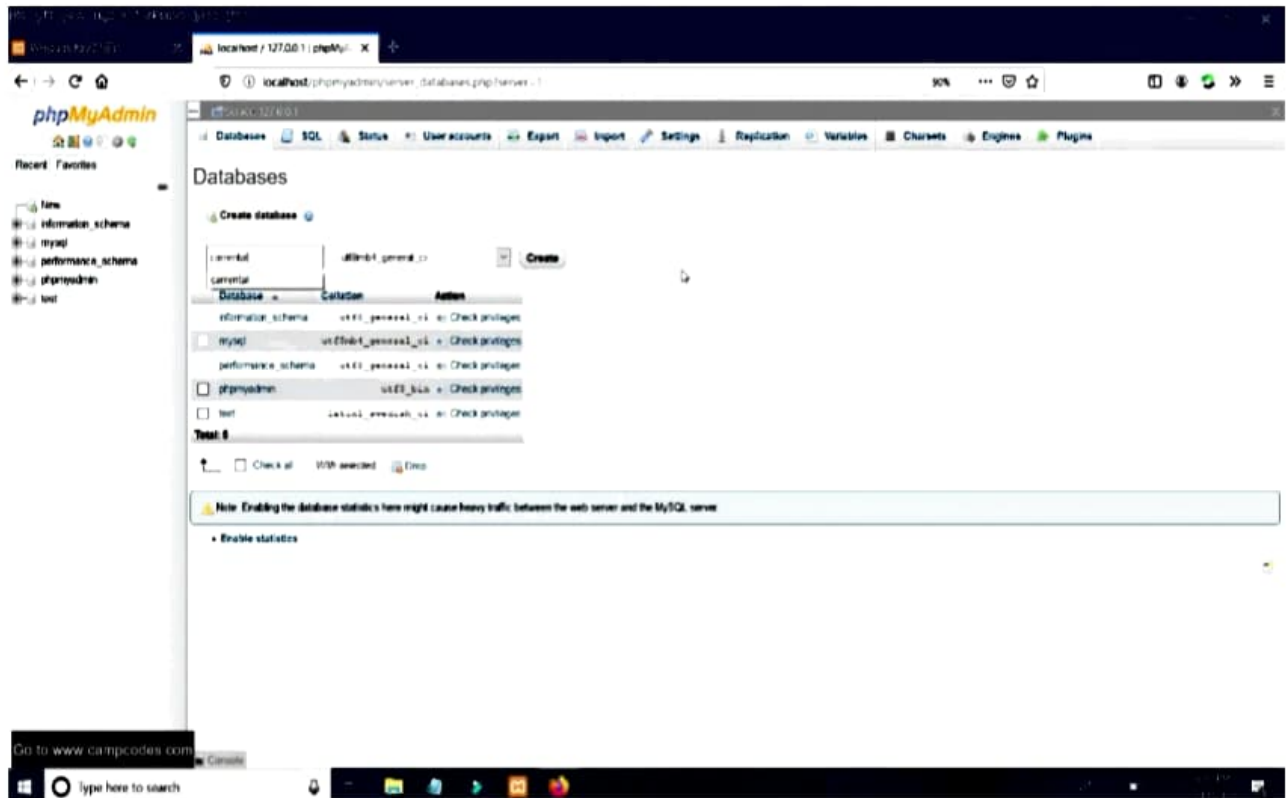
➤ Contact us page



➤ Booking page

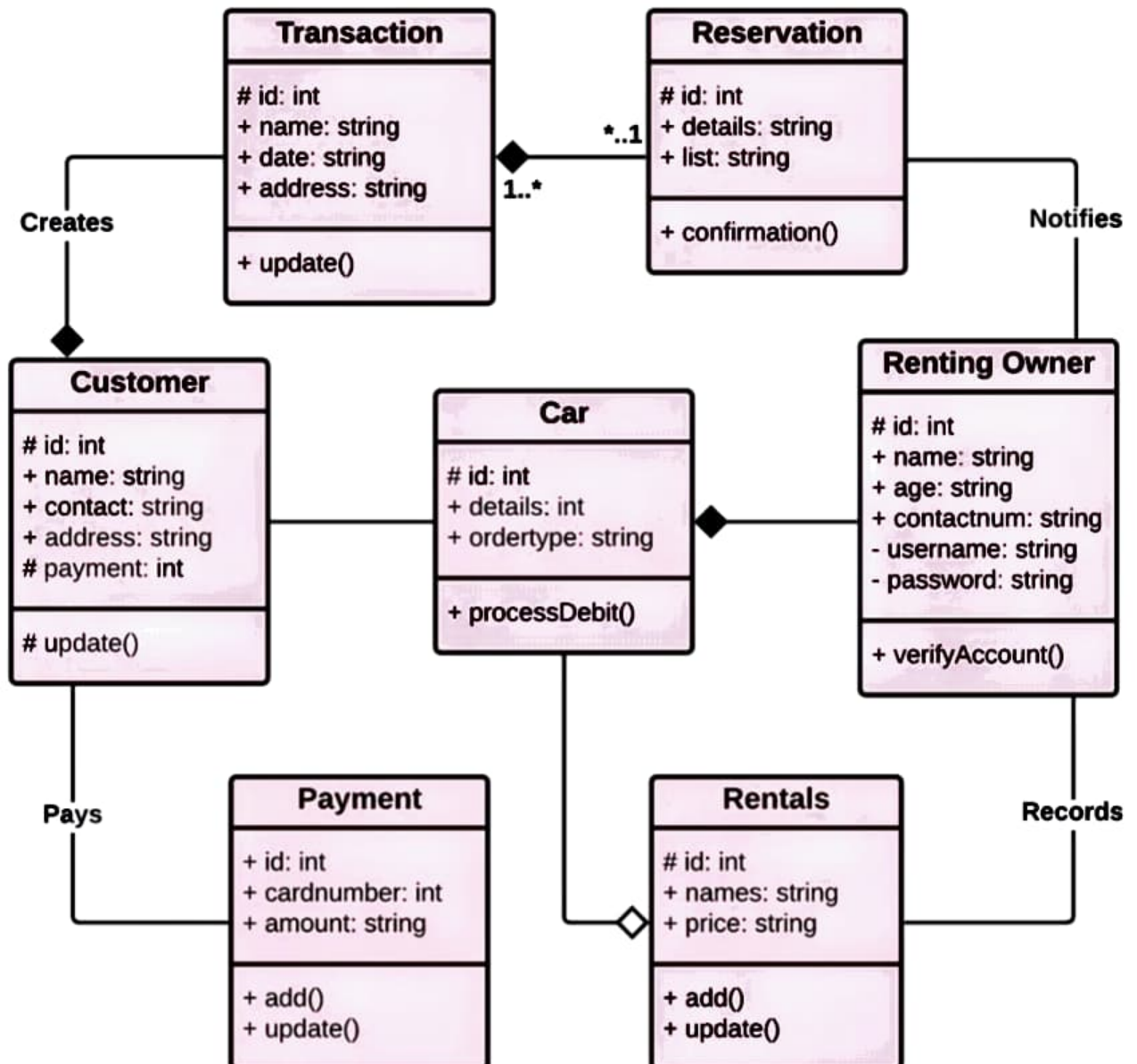


➤ Database

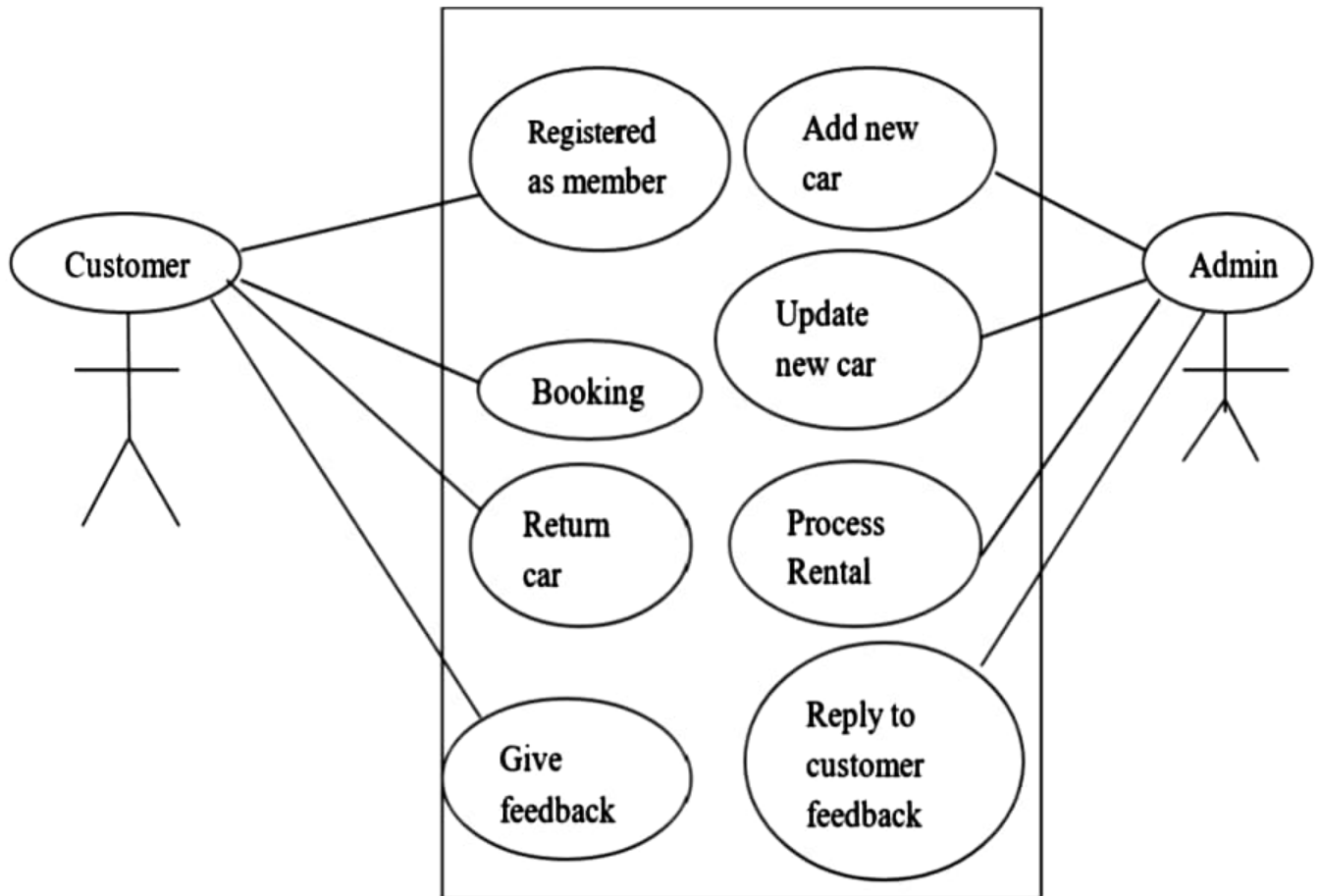


5.2 Interface Design

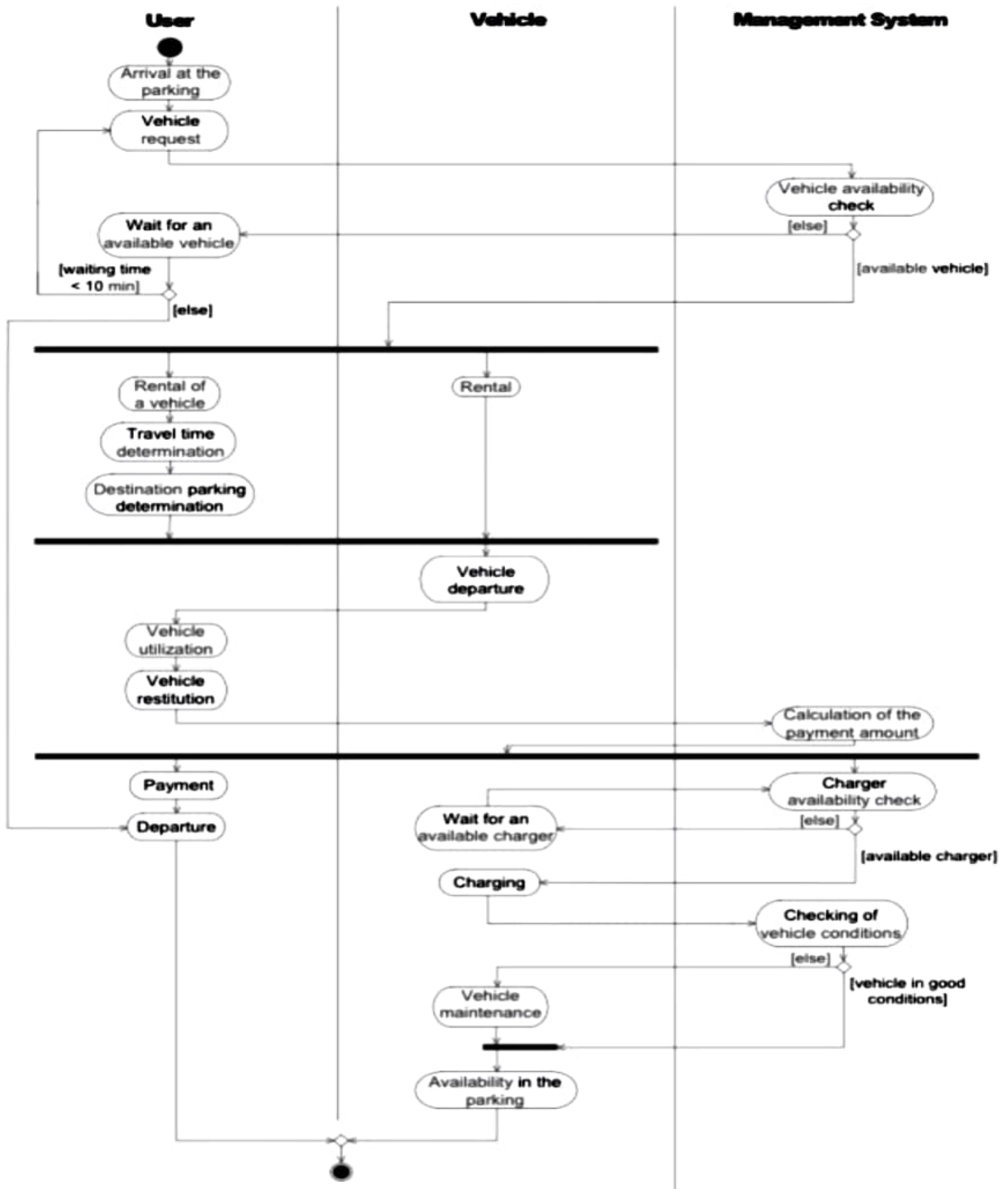
5.2.1 class diagram



5.2.2 Use case diagram



5.2.3 Activity Diagram



5.2.4 Data flow diagram

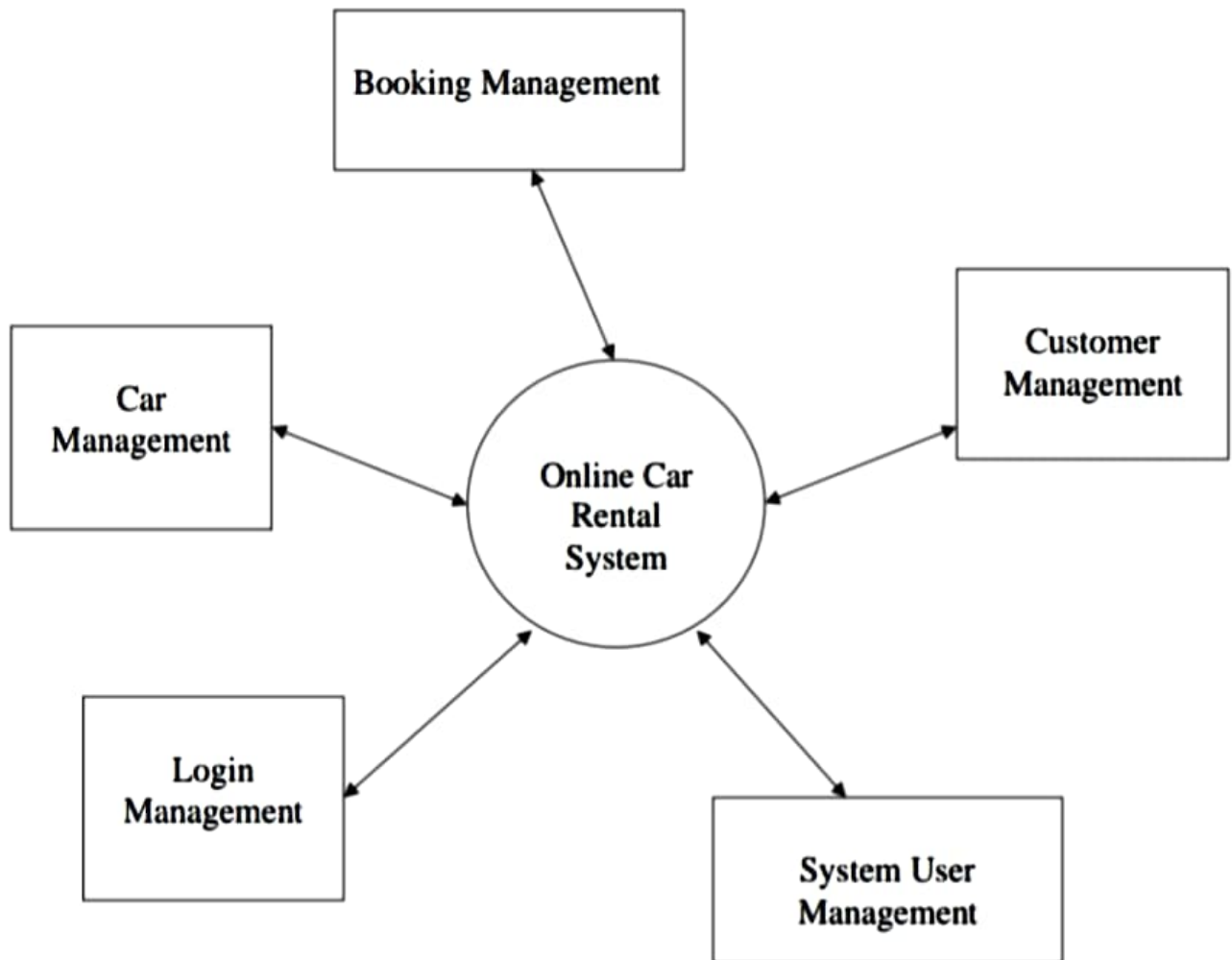


Figure 1: Zero level DFD

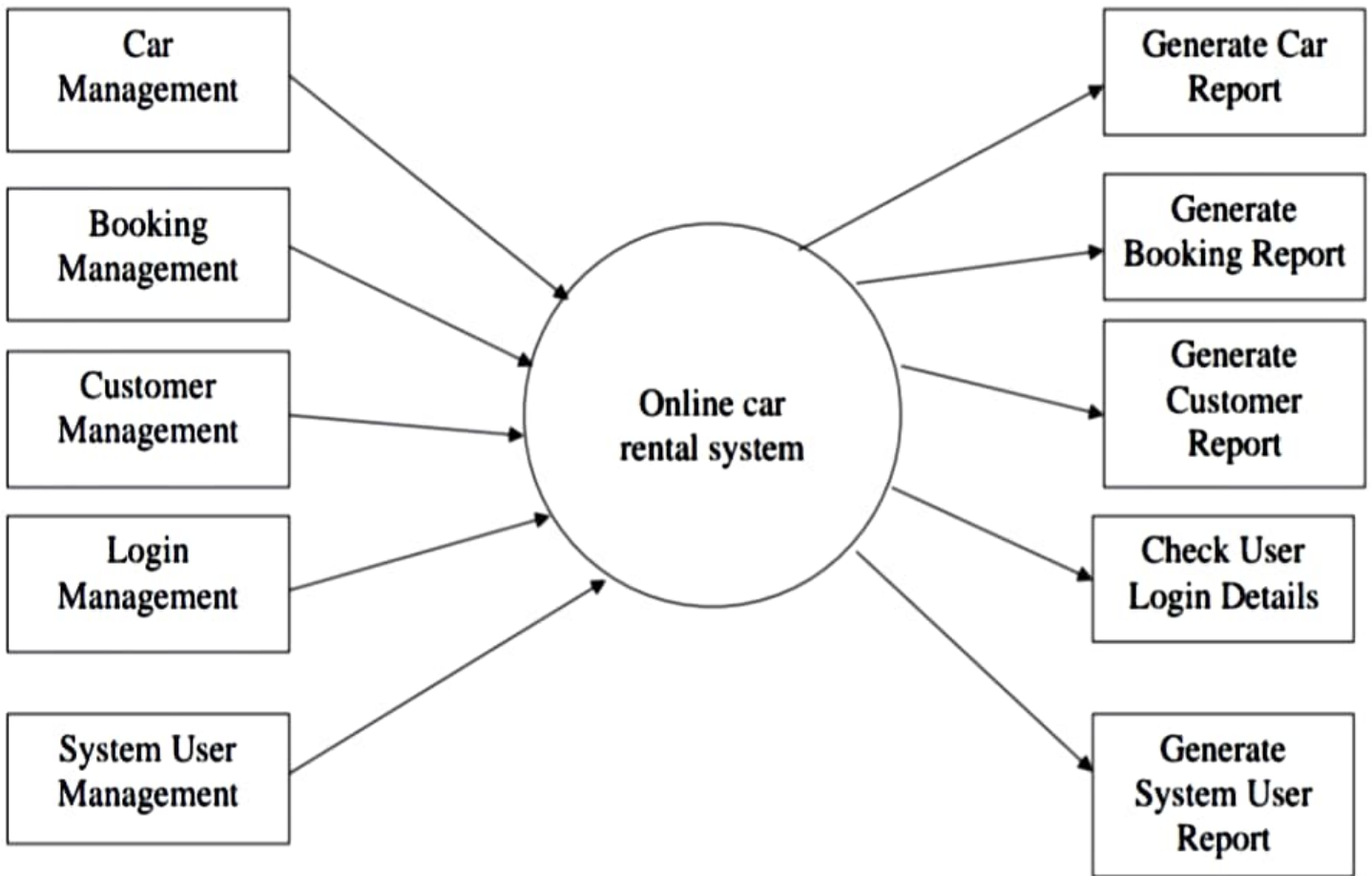


Figure 2: 1st level DFD

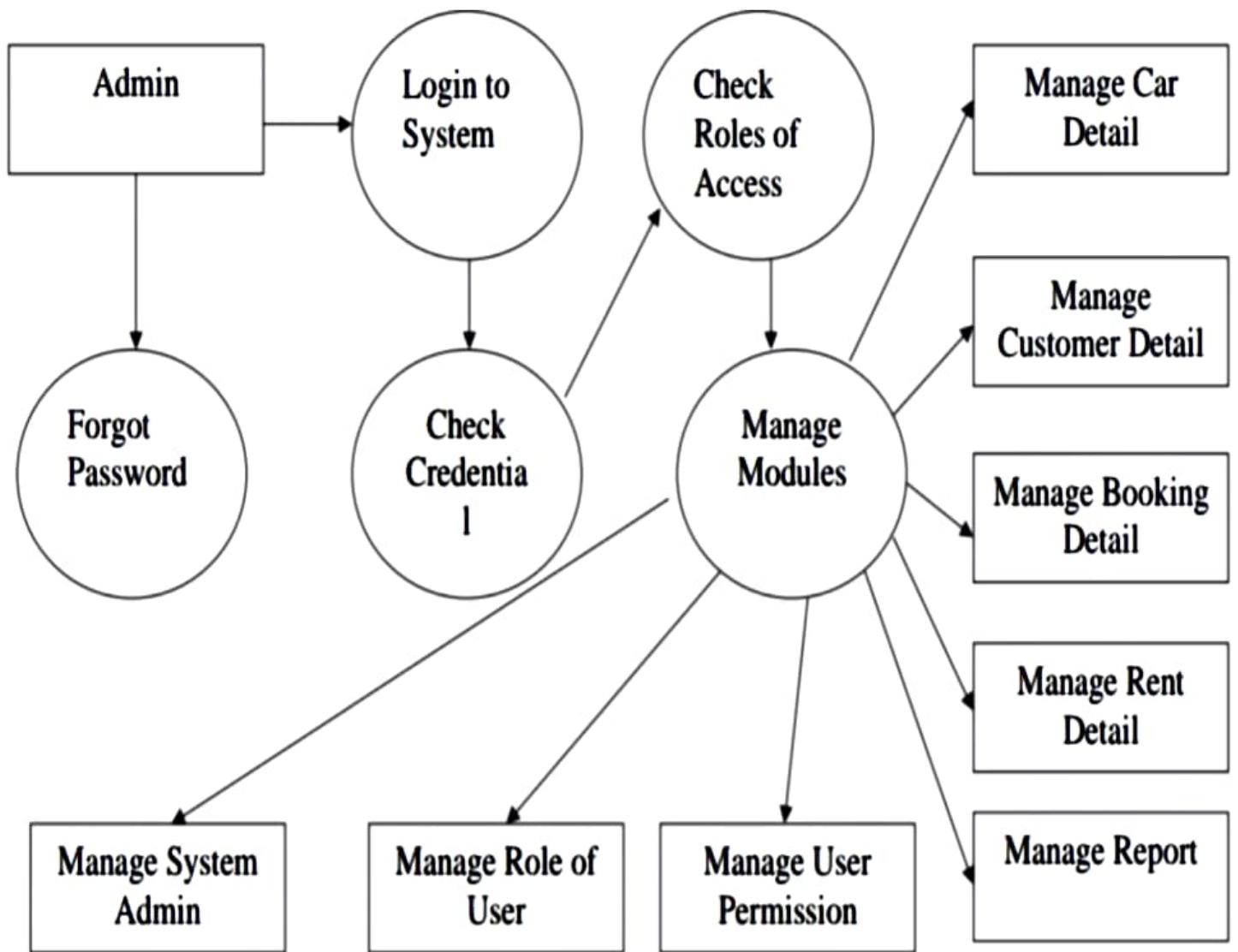


Figure 3: 2nd level DFD

CHAPTER-6

CODE IMPLEMENTATION

6.1 Implementation Environment

Challenges identified for successful design and implementation of this project are dominated by:

- Complexity, reliability/availability, transparent data access. The project was a result of a group consensus. The team was having two members. The team was guided by project guide. The team structure depends on the management style of the organization, the no. of people in the team, their skill levels and the problem difficulty.

6.2 Program/Module Specification

- System GUI must be as simple and user friendly as anyone can use it. At front side we implemented login form to access the system.
- A Session is maintained throughout the system when a particular user enters into the system. The Session is regularly checked whenever it is required.
- Proper validation is placed as and when it is required.

6.3 Coding Standards

- Normally, good software development organization requires their programmers to maintain some well-defined and standard style of coding called coding standard.

6.3.1 Comment Standards:

- The comment should describe what is happening, how it is being done, what parameters mean, which global are used and which are modified, and any registration or bugs.

The standards I have followed are:

- Comment may also be used in the body of the Cascading style sheets to explain individual sections or lines of codes to easily get access and easily review or manage the classes or properties for the pages.
- Inline comments should be made with the `//`. Comment style and should be indented at the same level as the code described.
- For multiple line comments we write between `/* */`.

CHAPTER-7

TESTING

7.1 Testing Strategy

A strategy for software testing integrates software test case design method into a well-planned series of steps that result in the successful construction of the software. The strategy provides the roadmap that describes the steps to be conducted as a part of testing, then these steps are planned and then undertaken, and how much effort, time and resource will be required.

7.2 Testing Method

7.2.1 Unit Testing

The unit testing is meant for testing smallest unit of software. There are two approaches namely bottom-up and top-down. In bottom up approach the last module is tested and then moving towards the first module while top down approach reverses the action. In present work we opt for the first one. The bottom up approach for the current project is carried out as shown in.

7.2.2 Validation Testing

After the integration testing software is completely assembled as a package, interfacing error have been uncovered and corrected, and then validation testing may begin. Validation can be defined in many ways but a simple definition is what a validation succeeds when software functions in a manner that can be reasonably accepted by the user.

7.2.3 Integration Testing

The integration testing is meant to test all the modules simultaneously because it is possible that all the modules may function correctly when tested individually. But they may not work altogether and may lead to unexpected outcome.

CHAPTER-8

LIMITATIONS AND FUTURE

ENHANCEMENT

8.1 Limitations

- The data stored is prone to cyber hacks. Opting for a reliable online system eliminates the risk.
- Costly and Expensive.
- Complicated to operate.
- Online Systems require high-speed internet connectivity.
- Risk of computer virus.
- The automation feature is not available in offline/ open source systems thus, requires manual action to perform operations.
- Unlike online systems that utilize cloud computing, Open-source systems store data on computer hard drive. This increases the risk of data loss.

8.2 Future Enhancement

> It is not possible to develop a system that makes all the requirements of the user. User requirements keep changing as the system is being used. Some of the future enhancements that can be done to this system are: As the technology emerges, it is possible to upgrade the system and can be adaptable to desired environment. Based on the future security issues, security can be improved using emerging technologies. Sub admin module can be added.

CHAPTER – 9

CONCLUSION

Car rental business has emerged with a new goodies compared to the past experience where every activity concerning car rental business is limited to a physical location only. Even though the physical location has not been totally eradicated; the nature of functions and how these functions are achieved has been reshaped by the power of internet. Nowadays, customers can Booking cars online, rent car online, and have the car brought to their door step once the customer is a registered member or go to the office to pick the car. The web based car rental system has offered an advantage to both customers as well as Car Rental Company to efficiently and effectively manage the business and satisfies customers' need at the click of a button.

The goals that are achieved by the Software are:

- Optimum utilization of resources.
- Efficient management of records.
- Simplification of the operations.
- Less processing time and getting required information.
- User friendly.
- Portable and flexible for further enhancement.

CHAPTER – 10

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