Tribhuvan University

Faculty of Humanities and Social Sciences

"Car Rental System"

A PROJECT REPORT

Submitted to

Department of Computer Application

Lumbini City College

In partial fulfillment of the requirements for the Bachelors in Computer Application

Submitted by

Suraj Thapa

(T.U.Reg.No: 6-2-1134-56-2020)

Santosh Raj Poudel

(T.U.Reg.No: 6-2-1134-61-2020)

Under the Supervision of

Mr. Rahul Shakya

Table of Contents

1. INTRODUCTION **1**

2. PROBLEM STATEMENT **1**

3. OBJECTIVE **1**

4. METHODOLOGY **2**

A. Requirement Identification 2
B. Feasibility Study 2
C. High-Level Design of System 3

5. GANTT CHART **7**

6. EXPECTED OUTCOME **8**

7. REFERENCES **9**

1. Introduction

Car Rental System project is designed to aid the car rental company to enable renting of cars through an online system. It helps the users to search for available cars view profile and book the cars for the time period. It has a user-friendly interface which helps the user to check for cars and rent them for the period specified. They could also make payment online. The rental cars shall be categorized into economy, premium etc. Based on the type of car required by the customer, the user shall be able to make bookings. The use of internet technology has made it easy for the customers to rent a car any time. This Car Rental System makes the bookings easy. It saves time and labor. The tool shall ask the user for information such as the date and time of journey, type of car etc. Also, it will need an identification number. Using these details, the tool shall help the customer to book a car for the journey.

This system enables the company to make their services available to the public through the internet and also keep records about their services. This is a company that rents automobiles for a short period of time for a few days or week. Car rental companies operate by purchasing or leasing a number of a fee. To make this service more popular and accessible to the public it has been transform into a web base system and connected to the internet were everyone can be able to have access to it. To develop a web-based system that will help manage the business transactions of car renting.

2. Problem Statement

i. Systems for renting cars do not incorporate insurance choices, which leads to uncertainty and insufficient protection.
ii. The listing, booking, and payment procedures on many automobiles rental platforms are disjointed, which results in inefficiencies and a bad user experience.
iii. Manual car rental processes are error-prone and inefficient, leading to delays and dissatisfaction.
iv. There is no effective method to assess user satisfaction with car rental systems.

3. Objective

The main objectives of this system are listed below:

i. Its primary goal is to integrate insurance with automobile rental sites.
ii. The car rental system offers full listing and booking and payment gateway features.
iii. To transform the manual process of hiring car to a computerize system.
iv. To validate the Rental car system using user satisfaction test.

4. Methodology

a. Requirement Identification

i. Study of Existing System:

Numerous advantages and potential improvements are found in the analysis of the current vehicle rental systems. These systems usually include functions including fleet management, invoicing and payment processing, reporting and analytics, customer relationship management (CRM), booking and reservation management, and fleet management. Although some systems demonstrate proficiency in offering user-friendly booking interfaces, safe payment gateways, and extensive reporting capabilities, they frequently encounter problems associated with latency, restricted scalability, and inconsistent security and privacy restrictions. These problems can be resolved with upgrades like the incorporation of sophisticated telematics, the application of more effective algorithms, the adoption of cloud-based services, and the imposition of strict encryption guidelines.

Customer satisfaction will also increase with improved user interface design and user experience thanks to cross-platform interoperability and intuitive design. Through a thorough analysis of these factors, we can determine which best practices to use and which holes in our proposed automobile rental system to fill in order to guarantee improved operational efficiency and an improved customer experience.

ii. Literature Review:

The advancement in Information Technology and internet penetration has greatly enhanced various business processes and communication between companies (services provider) and their customers of which the car rental industry is not left out. This Car Rental System is developed to provide the following services: 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 Vehicle Reservation: A tool through which customers can reserve 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 transactions and use the same to offer better and improve services to them.

iii. Requirement Analysis:

For the purpose of the requirement analysis for the vehicle rental project, comprehensive data on user preferences and needs will be gathered using a variety of techniques, including focus groups, questionnaires, and interviews. We can identify the critical aspects of our application, such as secure payment choices, flexible booking options, car availability, and an easy-to-use interface, by learning what features consumers find most important. This procedure guarantees that the finished product will live up to customer expectations and fix any issues with the current generation of car rental software.

b. Feasibility Study

i. Technical Feasibility:

Our project results a very simple and user-friendly outcome. The technical feasibility in the proposed system deals with the technology used in the system. It deals with the hardware and software used in the system whether they are of latest technology or not. It happens that after a system is prepared a new technology arises and the user wants the system based on that technology. This system uses windows platform, PHP, MYSQL making our Car Rental System project technically feasible.

ii. Operational Feasibility:

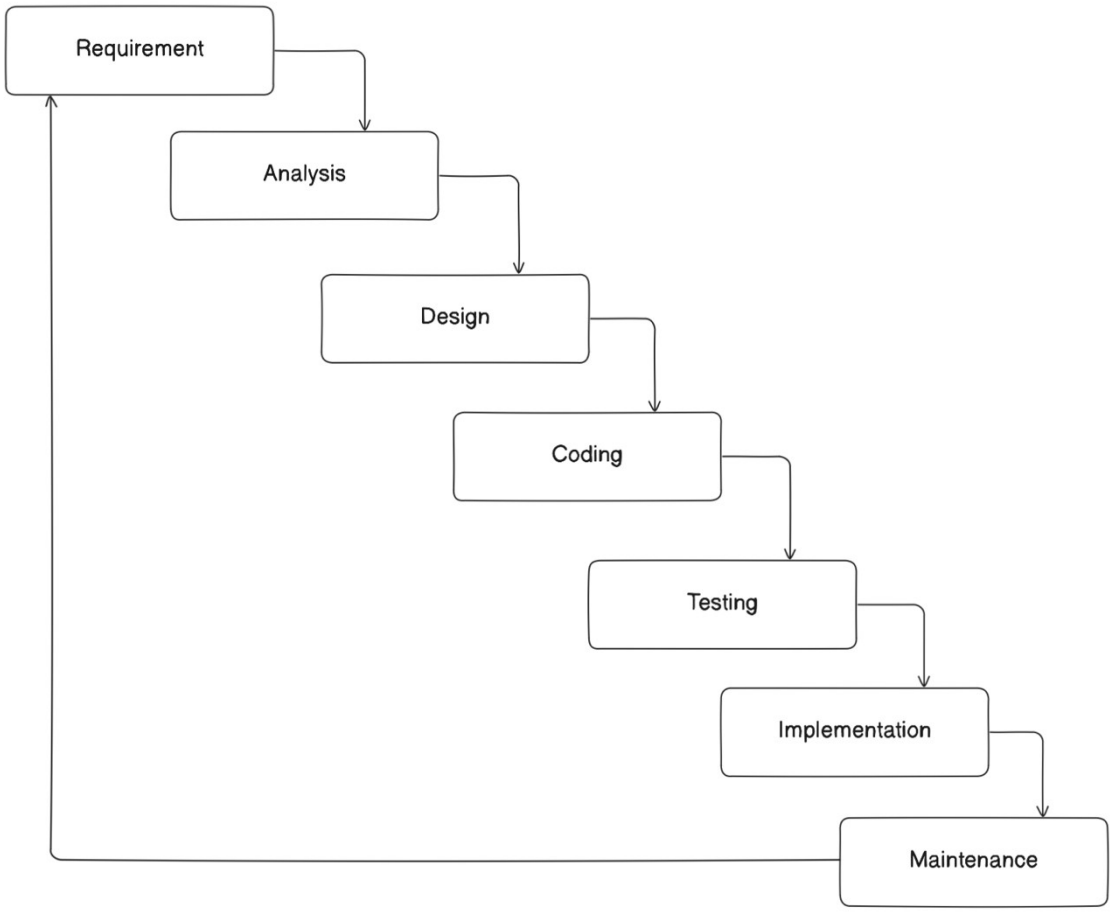
This project is operationally feasible in a sense that this is done in a computer so, data are more secure than before, reduces risk of loss of data and updates in automated manner reduces the error occurring chances. This software is designed to be user-friendly, so even someone with minimal computer skills can operate it without needing technical assistance

iii. Economic Feasibility:

This project is economically feasible in the sense that the money which were invested in purchasing register to keep data during short periods are now to be invested in a computer which do not need to be changed every year. So, a onetime investment in computer reduces expenses of the company. And a project itself is feasible as every software use to make it is easily available in internet.

c. High-Level Design of System

i. Methodology of the Proposed System:



We are going to use the waterfall methodology while building the car rental system. This project has specific documentation, time and requirements, well-understood technology so in order to build this system. Waterfall methodology can be used to build this system.

ii. Flow Chart

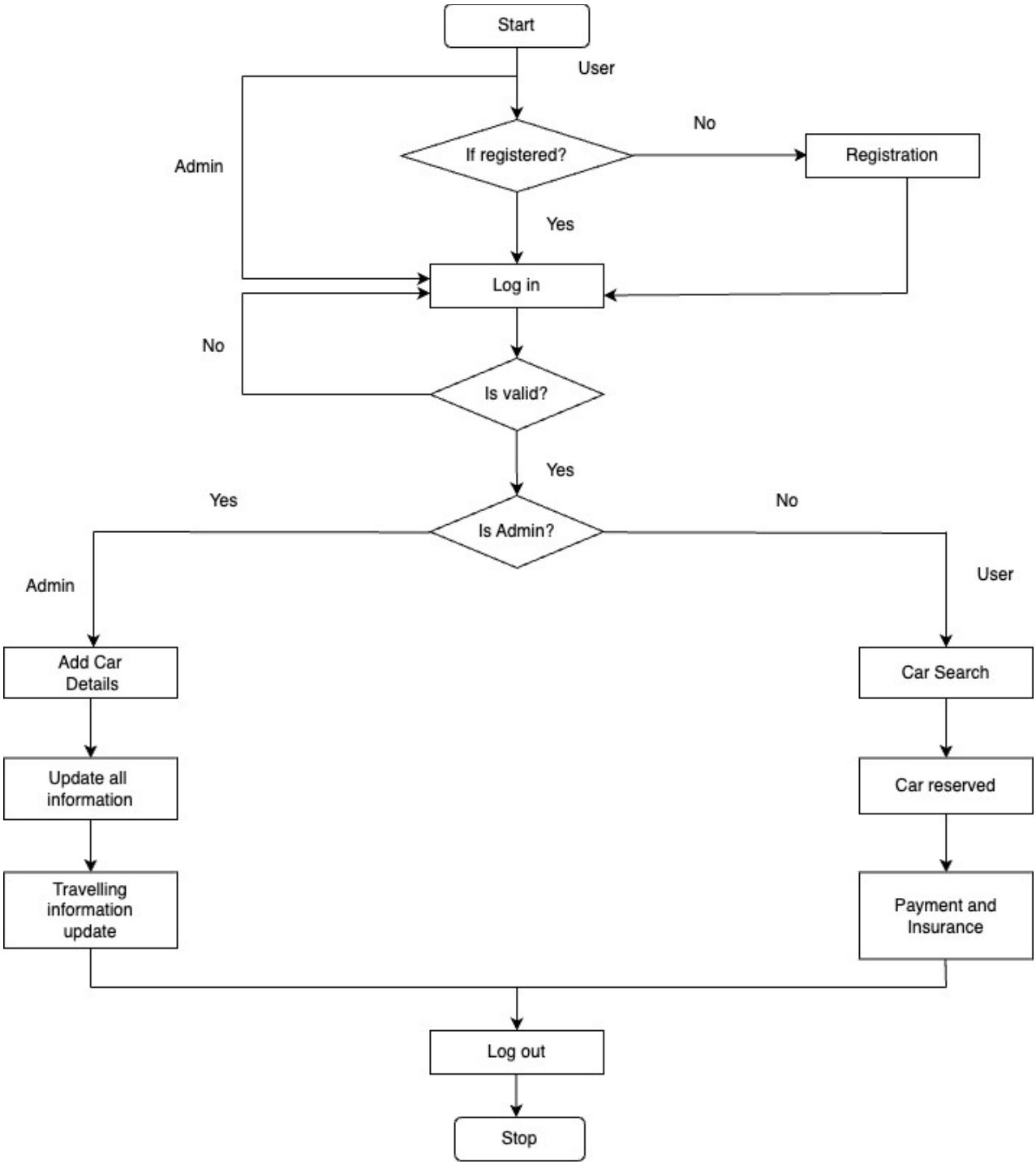


Figure 2: Flowchart

iii. Working Mechanism of Proposed System:

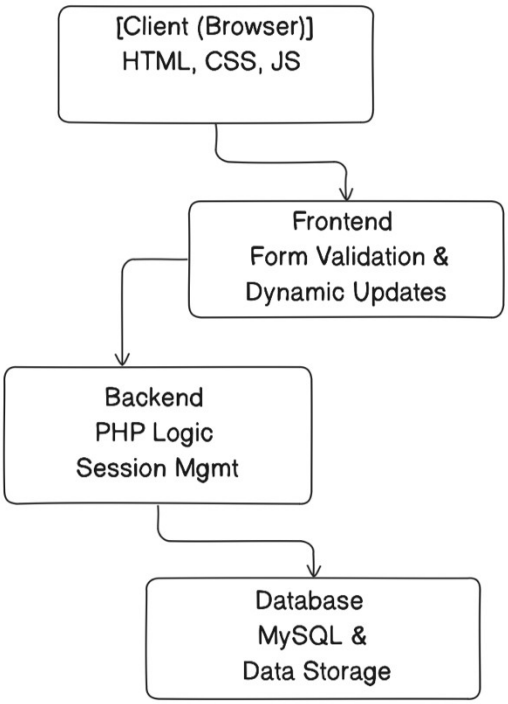


Figure 3: Working Mechanism of System

iv. Description of Algorithms:

- Search Optimization:

  Step 1- Receive Search Query: User enters a search query in the search bar.

  Step 2- Parse Keywords: Break down the search query into individual keywords.

  Step 3- Compare against Database: Match the keywords against product descriptions, tags, and metadata in the My SQL database.

  Step 4- Analyze User Behavior: Consider user preferences and previous search history stored in the database.

  Step 5- Rank Results: Rank the search results based on relevance, using both keyword matching and user behavior data.

  Step 6- Return Results: Display the ranked results to the user on the frontend.

- Shopping Cart and Checkout:

  Step 1- Add/Remove Products: Allow users to add or remove products from the shopping cart.

  Step 2- Calculate Totals: Calculate the total price of items in the cart, including taxes and discounts.

  Step 3- Validate Inventory: Check real-time inventory levels to ensure product availability.

  Step 4- Process Payment: Validate user inputs and process payment information securely using encryption protocols.

  Step 5- Integrate Payment Gateway: Integrate with external payment gateways to handle transactions.

Step 6- Update Order Status: Update the order status and inventory levels in the My SQL database.

Step 7- Confirm Order: Provide order confirmation to the user and send a confirmation email.

- User Authentication:

  Step 1- Register User: Collect and validate user registration details.

  Step 2- Hash Passwords: Use hashing techniques to securely store user passwords in the My SQL database.

  Step 3- Login User: Verify provided credentials against stored hashes during login.

  Step 4- Generate Session Token: Generate a secure session token for authenticated users.

  Step 5- Maintain Session: Manage user login sessions and ensure security.

  Step 6- Account Recovery: Implement account recovery features like email verification and password reset mechanisms.

  Step 7- Logout User: Invalidate the session token when the user logs out

v.

5. Gantt Chart

ID	Name	Start Date	End Date	Duration
1	Requirement	May 29, 2024	Jul 02, 2024	25 days
2	Analysis	Jun 21, 2024	Jul 18, 2024	20 days
3	Design	Jul 10, 2024	Jul 29, 2024	14 days
4	Coding	Jul 22, 2024	Oct 07, 2024	56 days
5	Testing	Sep 30, 2024	Oct 18, 2024	15 days
6	Implementation	Oct 07, 2024	Oct 29, 2024	17 days
7	Documentation	May 29, 2024	Nov 08, 2024	118 days

Figure 4: Gantt Chart

6. Expected Outcome

The car rental system will include easy-to-understand insurance options, making coverage clear for users. It will offer a smooth process for listing cars, booking rentals, and making payments, improving user experience. Switching from manual to computerized processes will reduce errors and delays. User satisfaction tests will ensure the system meets customer needs. Clear documentation will help with system development and maintenance.

7. References

[1] J. Mahilraj, "Design of Car Rental Management System for Organization, Customers and Car Owners," *International Journal of Engineering Trends and Technology,* April 2016.

[2] *Proceedings of The 1stInternational Conference on Information Systems,* 2011.

[3] V. Karad , "Car Rental Management System," *International Journal of Research Publication and Reviews,* vol. 04, April 2023.