Tribhuvan University

Faculty of Humanities and Social Sciences

Durbar Parking (Easy Parking)
A PROJECT REPORT

Submitted to:

Department of Computer Application

Kathmandu Bernhardt College

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

Submitted by:

Aman Bhandari

Registration no:

6-2-461-53-2018

Under the supervision of

Anil Verma

ABSTRACT

Durbar parking system is a Parking Management System for managing the records of the incoming and outgoing vehicles in a parking space of durbarmarg area. It's an easy for Admin to retrieve the data if the vehicle has been visited through number, he can get that data. It aims at solving problems like collision and congestion of vehicles by designing a web-based system that will enable the customers to make a reservation of available parking space at a designated area.

To this end, most sectors used traditional method of parking. In the traditional parking system, they are completely reliant on guards as they are completely manual and require someone to close and open the barriers at all times. This method is time consuming, deterrent to Security as the vehicle details are not properly recorded. Hence the need for a smart parking management system that is faster, secure, has effective management of visitors and reduces the long wait time for customers. The system was achieved by developing a durbar parking using the three-tier software architectural model. The System is implemented using web-based technologies which include CSS, JS, HTML, MySQL, Laravel framework and runs on Windows operating system. Algorithms is also implemented onto the system as it plays a very vital role for giving the nearest empty parking lot. The overall functionality of the system shows that it works satisfactory and the result obtained shows that the system is error free, faster and allows customers to securely park their vehicles.

Keywords: Parking, Vehicle, Laravel, HTML, MySQL.

ACKNOWLEDGEMENT

TABLE OF CONTENTS

LIST OF ABBREVIATIONS

OOP   Object Oriented Programming

SQL   Structured Query Language

HTML   Hypertext Markup Language

CSS   Cascading Style Sheet

UML   Unified Modeling Language

UI   User Interface

VPS   Vehicle Parking System

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1 :

INTRODUCTION

1.1 INTRODUCTION

The world is growing at a very fast pace with high level of technological advancements. Globalization is now reaching to almost every corner of the world at a very rapid rate. Parking of vehicle is one of the basic necessities required in a city.

Durbar Parking is used for managing the records of the incoming and outgoing vehicles in a parking lot. It's easy for Admin to retrieve the data as every vehicle have unique vehicle number. Admin also search the vehicle details by the help of vehicle number.

The objective of this project is to build a Parking management system that enables the time management and control of vehicles in a systematic order. It is a system that will track the entry and exit of cars, maintain a listing of cars within the parking lot, and determine if the parking lot is full or not. It will determine the cost of per vehicle according to their time consumption. The customers can login or register to the system, can search for a parking area available near him/her, reserve a parking area and check invoice bill in the system.

In addition, once the admin logs in to the system, he/she can view the parking report of the customers.

This system has used front-end tools like HTML, CSS, JavaScript, Bootstrap and backend tools like Laravel PHP Framework, and MySQL to develop the system. Thus, in the modern age of technology, there is need for a smart parking management system that is faster, secure, has effective management of visitors and reduces the long wait time for customers.

1.2 PROBLEM STATEMENT

In the current context, People are more focused on living a smart life. Manual parking of vehicle possesses a lot of challenge like time taken and the hassle factor of locating an available parking space. Not being able to accurately direct a driver to an available space has creates traffic jam on the road and creates noise pollution. The inability for someone to locate a parking space may result in influencing him or her to park at alternative locations and walk a lot of distance.

With the introduction of web-based Durbar Parking, the drawbacks of manual parking can be solved in effective way. When a driver knows exactly where they need to go; it reduces idling and unnecessary driving – therefore optimizes traffic flows and low consumption of petrol to drivers in built-up areas.

1.3 OBJECTIVE

1. To maintain records in a short period of time.

2. To track the entry and exit of cars.

3. To determine if the parking lot is full or not.

4. To search for available parking space using scheduling algorithm.

1.4 SCOPE AND LIMITATION

1.4.1. SCOPE

1. It can be utilized in durbarmarg area to make the parking hassle free and less time consuming.

2. With the help of this system, people can easily find the parking space in durbarmag area and book the parking lot from home.

1.4.2. LIMITATION

1. If the parking lot is full then the system does not recommend nearest parking area.

1.5 DEVELOPMENT METHODOLOGY

A software development methodology or system development methodology is a framework that is used to structure, plan and control the process of developing a system.

The Iterative Model is used in our system because the initial requirements are already clearly defined and more features are added to the base software product with the ongoing iterations until the final system is created.

At each iteration, design modifications are made and new functional capabilities are added. The basic idea behind this method is to develop a system through repeated cycles (iterative) and in smaller portions at a time (incremental).

Figure 1.1. Iterative Model

Unlike the more traditional waterfall model, which focuses on a stringent step-by-step process of development stages, the iterative model is best thought of as a cyclical process.

1. Planning & Requirements

As with most any development project, the first step is go through an initial planning stage to map out the specification documents, establish software or hardware requirements, and generally prepare for the upcoming stages of the cycle.

2. Design & Development

Once planning is complete, the design stage occurs here, establishing any technical requirements (languages, data layers, services, etc.) designing software by the different diagrams like Data Flow diagram, activity diagram, class diagram, state transition diagram, etc.

3. Coding

With the planning and analysis out of the way, the actual implementation and coding process can now begin. All planning, specification, and design docs up to this point are coded and implemented into this initial iteration of the project.

4. Testing

After completing the coding stage, software testing starts using different test methods. There are many test methods, but the most common are white box, black box, and grey box test methods.

5. Implementation and Evaluation

In the implementation stage, requirements are written in the coding language and transformed into software. It is time for a thorough evaluation of development up to this stage once all prior stages have been completed. This allows the entire team, as well as clients or other outside parties, to examine where the project is at, where it needs to be, what can or should change, and so on.

1.6 REPORT ORGANIZATION

The report on 'Durbar Parking' consists of five chapters. The report starts with the introductory chapter which discusses the need of a easy parking along with the problem statement and objectives of the project. Here, we have introduced why our system is built and the tools used in making the system. Chapter 2 analyses the existing system along with background study and literature review of other systems. Chapter 3 summarizes the keynote on system analysis and design where description of use case diagram, performance and reliability, different feasibility analysis, diagrams, database as well as architectural design are set out. Chapter 4 explains the tools that are used on our project's front end, back end, and purpose. The modules and the development model used are also explained. The unit testing and system testing along with the test cases performed is also explained in this part. Chapter 5 discusses the conclusion of how the project is accomplished, its findings, and many more. We also discuss the recommendation for future enhancements of the project. In conclusion, this chapter overview's purpose of doing this project including its scopes and objectives.

CHAPTER 2 :

BACKGROUND STUDY AND LITERATURE REVIEW

2.1 BACKGROUND STUDY

Parking is the action of moving a vehicle into a place in a car park or by the side of the road where it can be left. Parking facilities can be divided into public parking and private parking. Public parking is managed by local government authorities and available for all members of the public to drive to and park in. Private parking is owned by a private entity. It is usually a time consuming and frustrating process that a lot of citizens have to go through. Therefore, there is need of an easy and smart parking management system in this modern time. Smart Parking is a parking solution that can include in-ground Smart Parking sensors, cameras or counting sensors. These devices are usually embedded into parking spots or positioned next to them to detect whether parking bays are free or occupied.

Parking Management System is a system that helps people, companies, and organizations to manage their parking spaces. Using a parking management system can help reduce a business's administrative overhead on parking and reduce the impact of their parking space on their local community. A Smart Parking Management System improve the occupancy rate of the car park, have a better view of the number of vehicles already present and therefore the number of spaces available, manage the profiles of the users and give different access rights.

2.2 LITERATURE REVIEW

MANTRA Mantra is ready to cater to tomorrow's markets, and to serve evolving customer needs through cutting-edge solutions. Mantra's focus is to provide innovative products and solutions with a set of innovation. Mantra emphasizes to promote intellectual qualities in an individual and amongst the team to provide the best solutions before various clients in a cost-effective manner. The system helps an individual to pre-book the parking spot from the distant area, reducing traffic congestion and allowing a user to know the availability of parking space in advance. **[1]**

METRO INFRASYS

Metro Infrasys has set its service, integration and development center as per the international standards at IMT Manesar, Gurgaon (Haryana). The company has made state-of–art mock lane through which it demonstrates various technologies for tolling, traffic management and parking. The facility is also being used for simulation, testing, innovation, and training. Metro Infrasys offers its advance parking management system designed and built from the drawing board to the final delivery. Our technologically streamlined parking solutions are as unique as our projects and capable of withstanding the parking challenges in a city. The speed at which the number of vehicles is increasing has put the authorities in a fix. The ever-growing parking issue needs instant and innovative approach to deal with. [2]

PHUDINAWALA, HASAN & MALUSARE, OMKAR & MAHADIK, RUSHIKESH. (2022). Vehicle Parking Management System. International Journal of Advanced Research in Science, Communication and Technology. The aim of the paper is to develop application for vehicle parking management. As you can see lot of increase in number of vehicles which is the major problem for traffic control and below standard parking management. Another issue to vehicle owner is to get availability of space to park vehicle. So we intent to create an application that user can book or pre-book parking slot for their vehicle at parking areas. The user can use the application by signing up and then selecting the space or slot for vehicle according to vehicle type at parking area. This application can be applicable in big multi-national companies, shopping centers, airports and event at large public parking areas etc. **[3]**

6

SOWNDHARYA, V & S, HEBZIBA & D, SUSMITHA. (2019)

Implementation of Smart Vehicle Parking System. In today's era one of the most common problems which the world is facing is an exponential increase in population. This has indirectly increased a lot of other issues; one of them being the quantity of vehicles on the road. The increased number of vehicles results in shortage of parking areas. This project aims to present an intelligent parking system for vehicles that identifies the parking slot automatically through sensors and displays it without making the drivers to circle around the parking area. The availability of parking slots will be displayed to the drivers at the entrance. It also captures the number plate of vehicles by using camera and recognises the number using image processing and stores it in the server at the entrance and also at the exit of parking area for ease of payment purposes. [4]

Bharathi, V. (2021) Smart Parking System. International Journal for Research in Applied Science and Engineering Technology. In the modern age, many people have vehicles. Vehicle is now a primary need. Every place is under process of urbanization. There are many supermarkets and shopping centers etc. There are many creative places where people used to go for refreshing and relaxation. All these places are full of with people so they need a parking space where people can park their vehicles safely and easily. Every parking area needs a website or system that records the detail of vehicles to give the parking facility. With the help of iot based system we can deliver a good service to users/people who wants to park their vehicles into organization's premises. Present days in parking areas they just maintain the vehicles just with tokens and they have records of vehicle details in books so that during some critical situations like police enquiry of terrorist car or vehicle missing that case it is difficult to find the details of particular vehicle. But with our parking management system it is easy to find within 1 to 2 seconds. By parking the vehicle in public place, the vehicle can be claimed by other person but in this case, there is no such problem and no need to give fine for anything we can park our vehicle with securely. [5]

CHAPTER 3 :

SYSTEM ANALYSIS AND DESIGN

3.1 SYSTEM ANALYSIS

System analysis is a process of gathering and interpreting facts, diagnosing problems and the information about the durbar parking. It is a problem-solving activity that requires intensive communication between the system users and system developers. It is an important phase of any system development process. The system is studied to the minutest detail and analyzed. The system analyst plays the role of the interrogator and dwells deep into the working of the present system. The system is viewed as a whole and the input to the system is identified. The outputs from the organizations are traced to the various processes. System analysis is concerned with becoming aware of the problem, identifying the relevant and decisional variables, analyzing and synthesizing the various factors and determining an optimal or at least a satisfactory solution or program of action. A detailed study of the process must be made by various techniques like interviews, questionnaires etc. The data collected by these sources must be scrutinized to arrive at a conclusion. The conclusion is an understanding of how the system functions. This system is called the existing system. Now the existing system is subjected to close study and problem areas are identified.

3.1.1. REQUIREMENT ANALYSIS

i. Functional requirement

1. Register: One customer has to register on this interface with his/her user credentials and then press enter to be saved in the database. Further, move on to login

2. Login: The customer inputs its secure user email and password and enters the system. The user can enter their own personal account.

3. Add, Update and delete: The customer can add parking/vehicle details, update the vehicle details and parking details and delete parking details.

4. Search Parking Space: Users can search if nearest parking space is available or not.

5. Payment Gateway: The System uses eSewa Payment Gateway and COD for the payment transaction.

6. Search user data: The admin can search for all the registered vehicles and also the reserved vehicles available for parking.

7. Logout: In the end, the user can logout the system to release the resources held for the purpose of anything else.

Figure 3.1. USE CASE Diagram

ii. Non-functional requirement

1. Usability: Efficiency to use because many task users can complete without any help. Simple to understand the interface.

2. Scalability: This system can further be modified in future.

3. Security: The admin can only view the number of users and the vehicle details.

3.1.2. FEASIBILITY ANALYSIS

After doing the project 'Durbar Parking', study and analyze all the existing or required functionalities of the system, the next task is to do the feasibility study for the project. All projects are feasible if given unlimited resources and infinite time.

Feasibility study includes consideration of all the possible ways to provide a solution to the given problem. The proposed solution should satisfy all the user requirements and should be flexible enough so that future changes can be easily done based on the future upcoming requirements.

i. Economic feasibility

It is economically feasible because it will be developed using open-source tools. No any paid version of software and professional developers are used to build the project. No any other hardware resources will be required except PC.

ii. Technical Feasibility

The website will be technically feasible in terms of many factors. It will be within the limit of current technology. The system requirement for this system is not so much. The system will be developed using existing development tools and technologies.

Table: 3.1 Hardware Requirements

PROCESSOR TYPE	I3 Processor or above for optimum performance.
SYSTEM RAM	1.00GB and above
INPUT DEVICE	BASIC KEYBOARD AND TOUCH PAD
OUTPUT DEVICE	STANDARD COLOR MONITOR

Table: 3.2 Software Requirements

OPERATING SYSTEM	WINDOWS 7,8,10,11
FRONT END	HTML, CSS, JavaScript
BACK END	Laravel, JavaScript
DATABASE	My SQL, Xampp Server
SOFTWARE	Visual Studio Code

iii. Operational Feasibility

Operational Feasibility is the measure of how well a proposed system solves the problems and takes advantage of the opportunities identified during the scope definition. It includes everyone who creates, operates, or uses the system. Programs that reduce costs without reducing the quality of a product are an example of operational feasibility.

The essential questions that help in testing the operational feasibility of a system include the following:

1. Does the current mode of operation provide adequate throughput and response time?
2. Will it reduce the time (operation) considerably?
3. If the system is developed, will it be used?

iv. Schedule Feasibility

The project to be completed, realistic, and achievable under a deadline according to a strategy that is known as schedule feasibility study. It is developed within the time limit. Hence, it is feasible in the respective schedule. The below Gantt chart will show the mandatory deadlines that are expected to be achieved.

Weeks	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th
Planning	■	■														
Requirement Analysis			■	■	■	■										
System Design							■	■	■	■						
Implementation											■	■	■	■		
Testing														■	■	■
Documentation	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

Figure 3.2. GANTT Chart

3.1.3. OBJECT MODELLING: CLASS DIAGRAM

Class diagram represents the static view of an application. Class diagram describes the attributes and operations of a class and also the constraints imposed on the system. It shows a collection of classes, interfaces, associations, collaborations, and constraints.
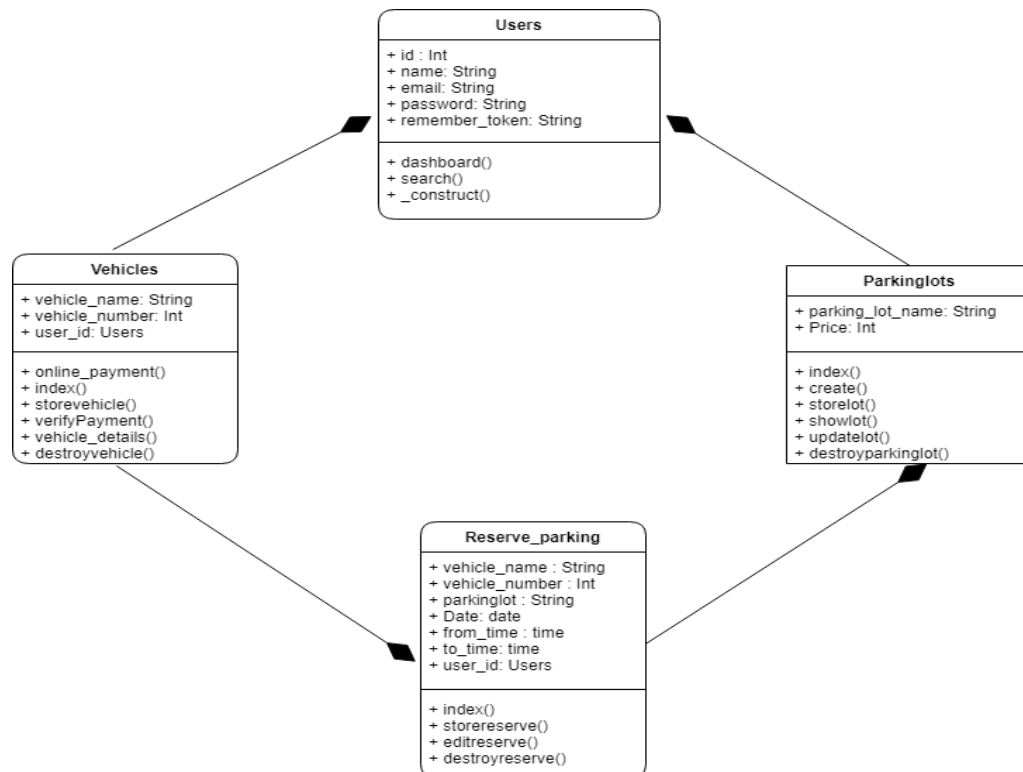
Figure 3.3. Class diagram

12

3.1.4. DYNAMIC MODELLING: STATE & SEQUENCE DIAGRAM

Sequence Diagrams are interaction diagrams that detail how operations are carried out.

It describes interactions among classes in terms of an exchange of messages over time.
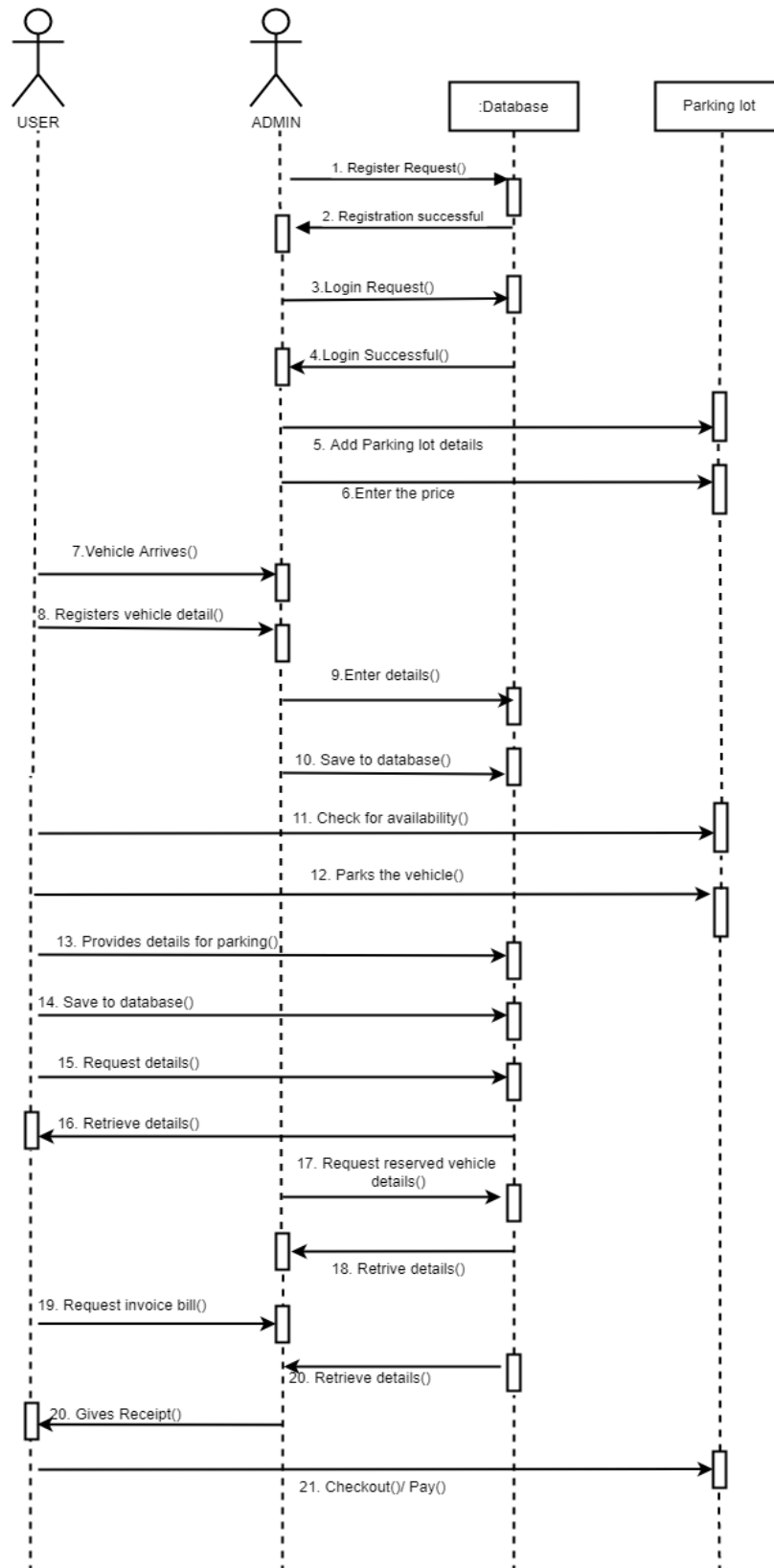
Figure 3.4. **Sequence Diagram of the System**

13

3.1.5 PROCESS MODELLING: ACTIVITY DIAGRAM

The activity diagram is a flowchart to represent the flow of control among the activities in a system. It is another important diagram in UML to describe the dynamic aspects of the system. The activity can be described as an operation of the system.

It consists of activities that are made up of smaller actions. It is an advancement of a flowchart that contains some unique capabilities.
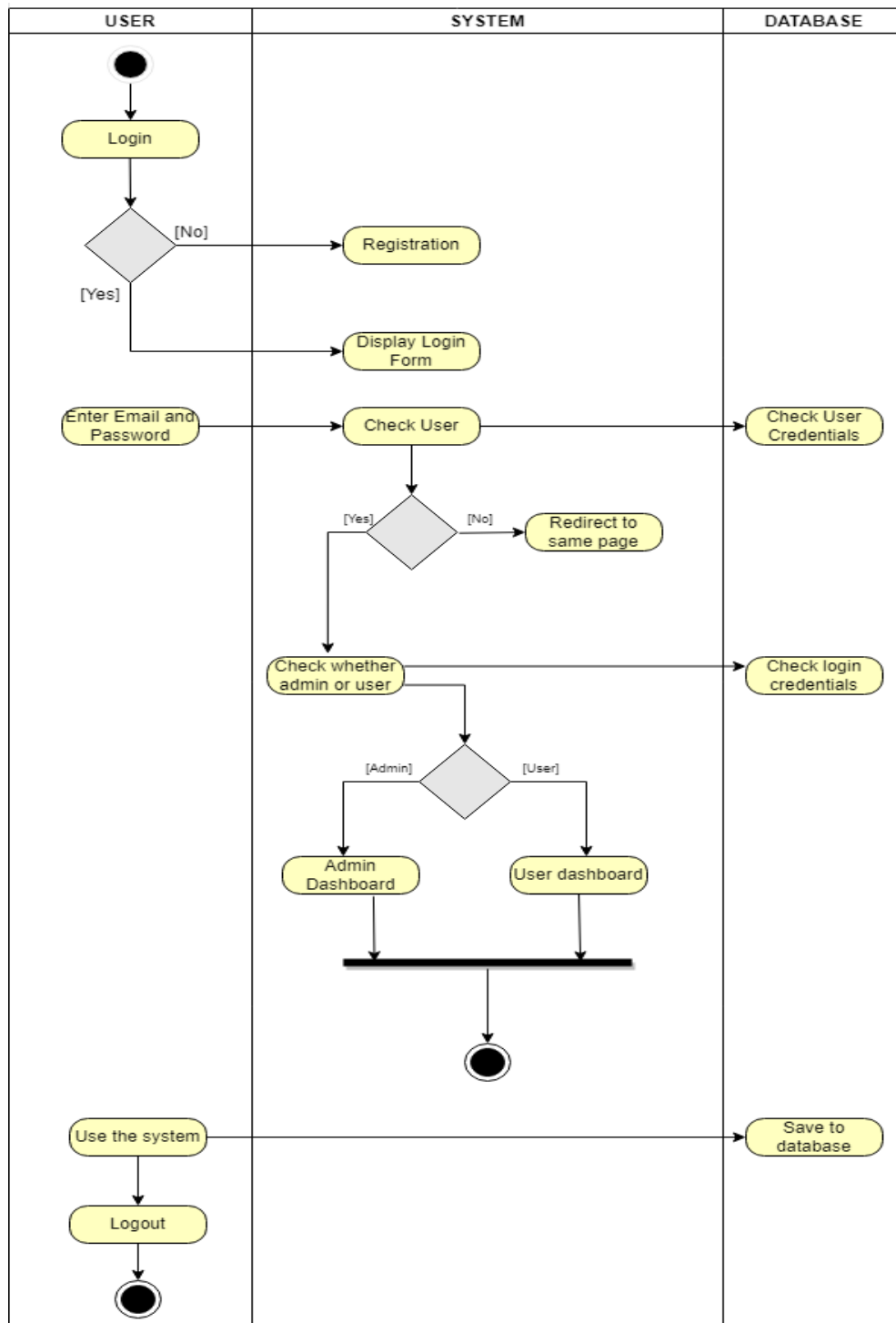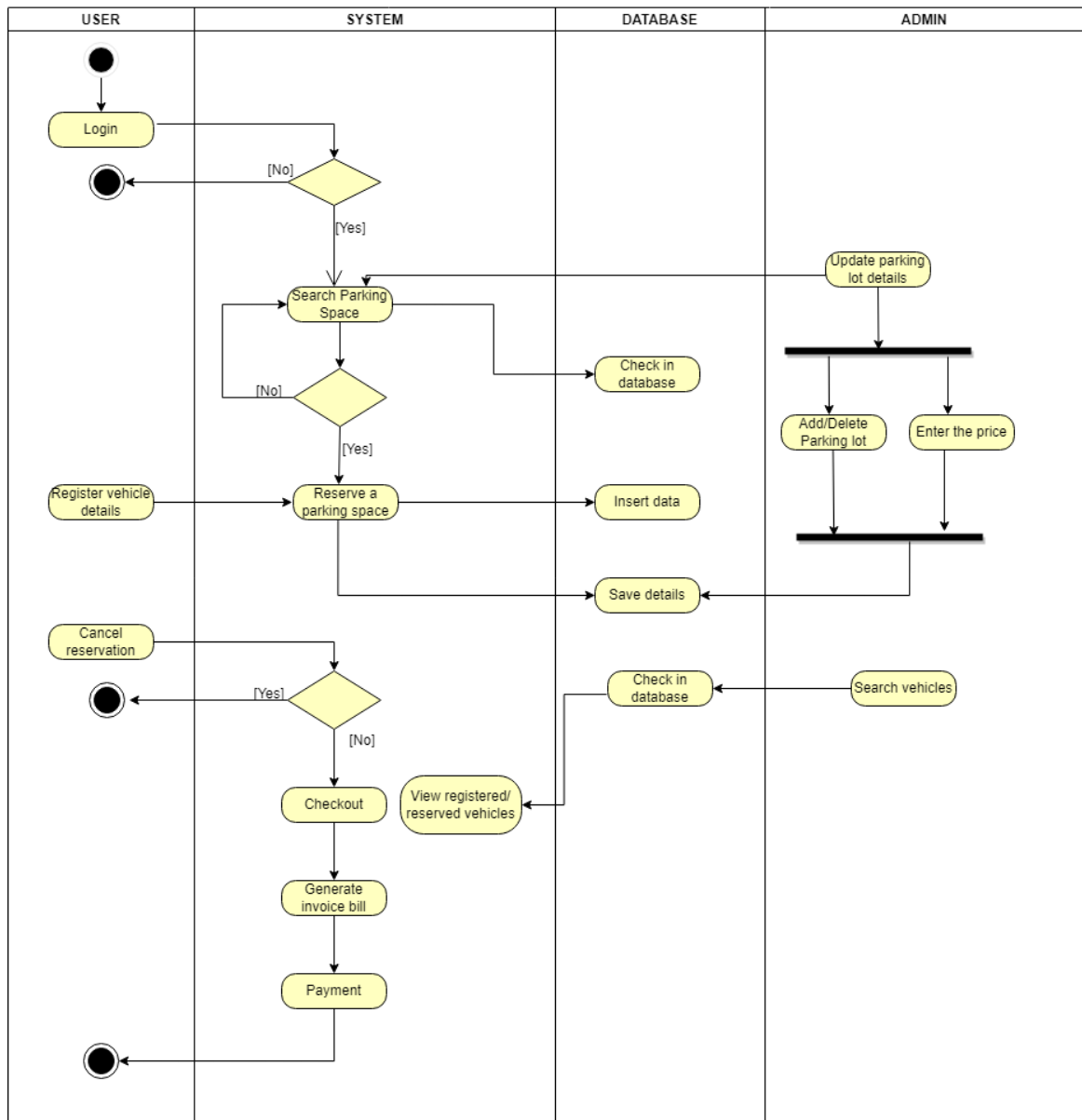

Figure 3.5. Activity diagram for User Authentication

14

Figure 3.6. Activity diagram for System Use

3.2 SYSTEM DESIGN

3.2.1. REFINEMENT OF CLASSES AND OBJECT

Large and complicated UML models are not useful, because they are difficult to understand. This problem can be solved by using several diagrams of the same system at different levels of abstraction. Diagram refinement is intuitive, and applicable to several kinds of UML diagrams. The refinements will help in further process smoothing and enhance the workflow.
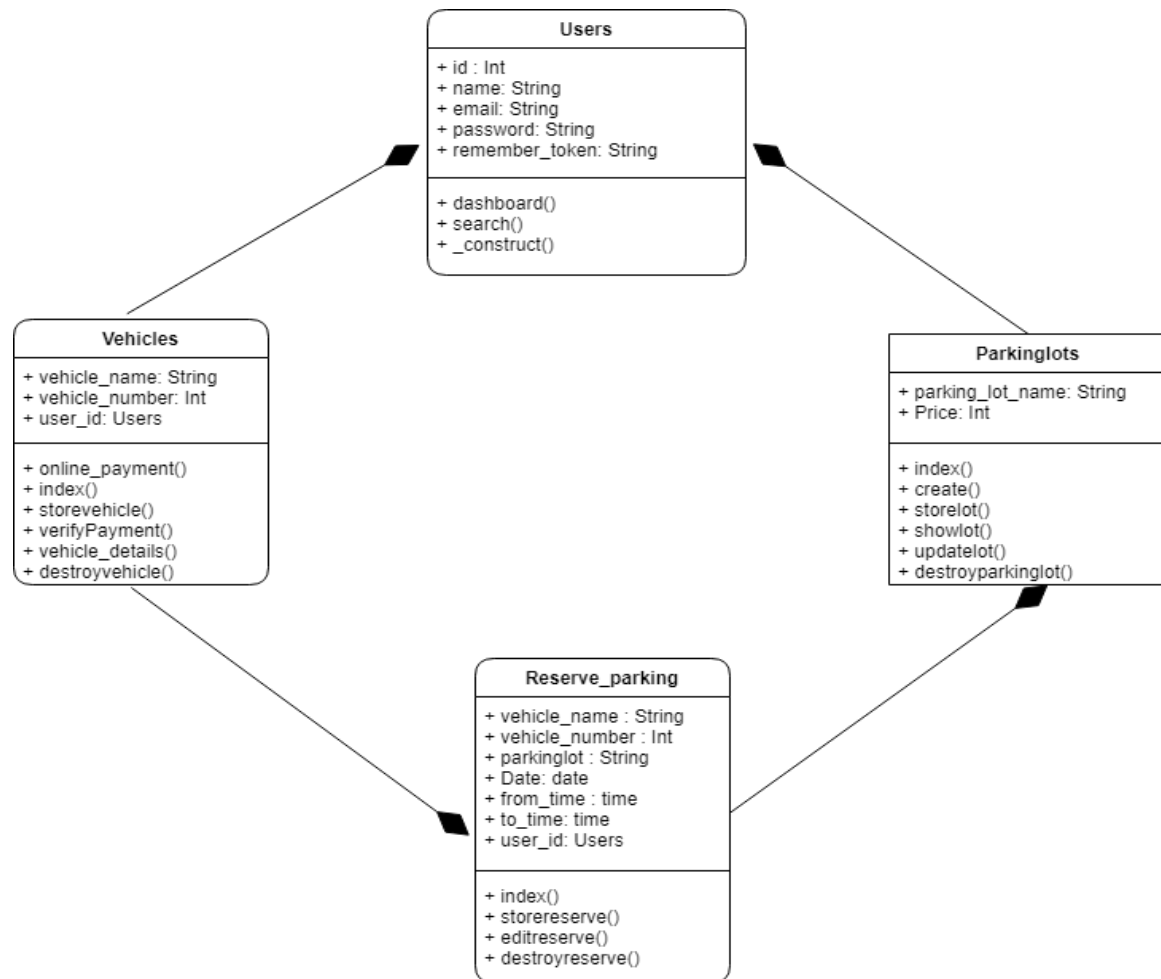
Figure 3.7. **Refinement of classes and object**
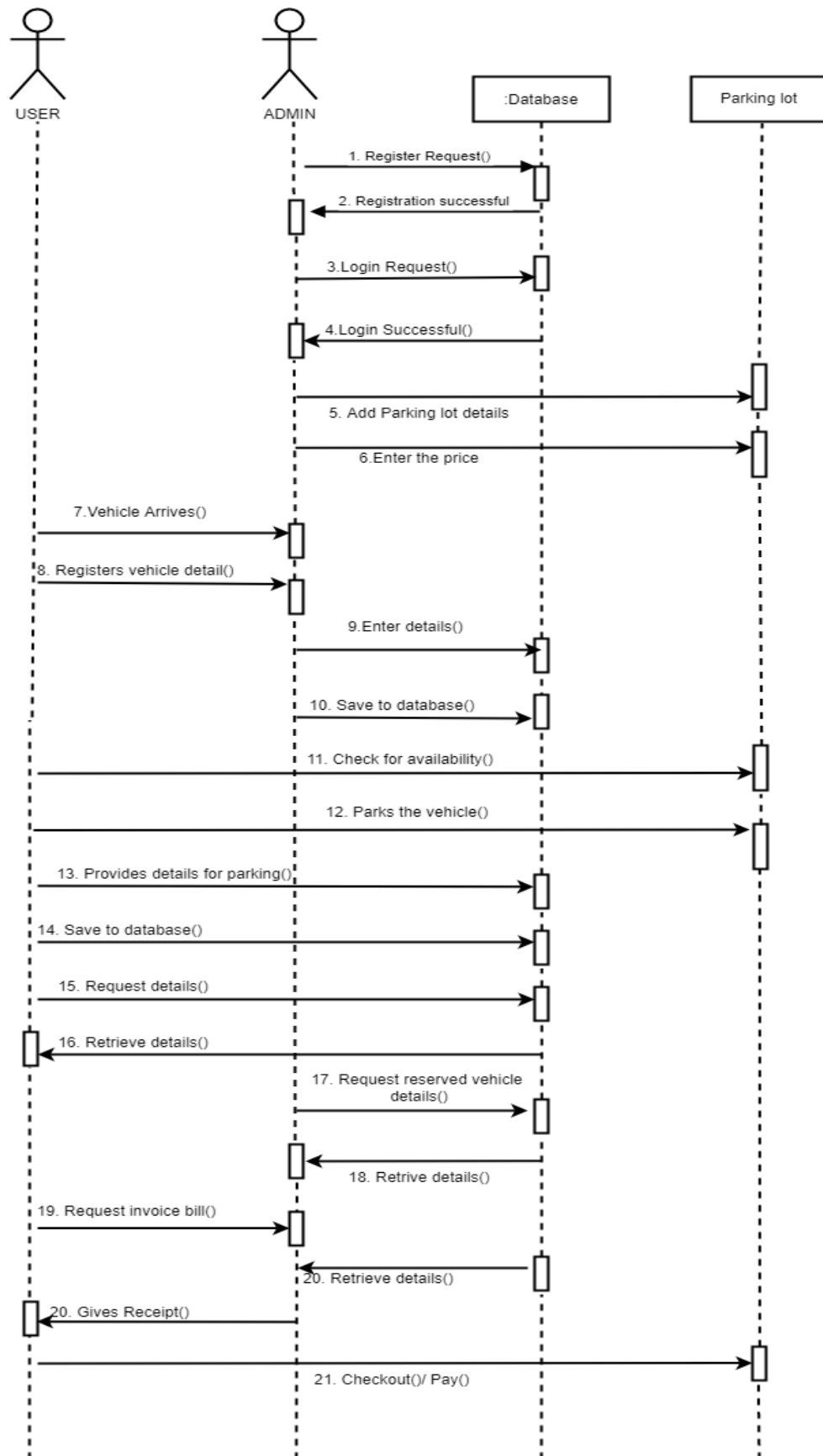
Figure: Sequence diagram of the System

Figure: Activity Diagram for User Authentication
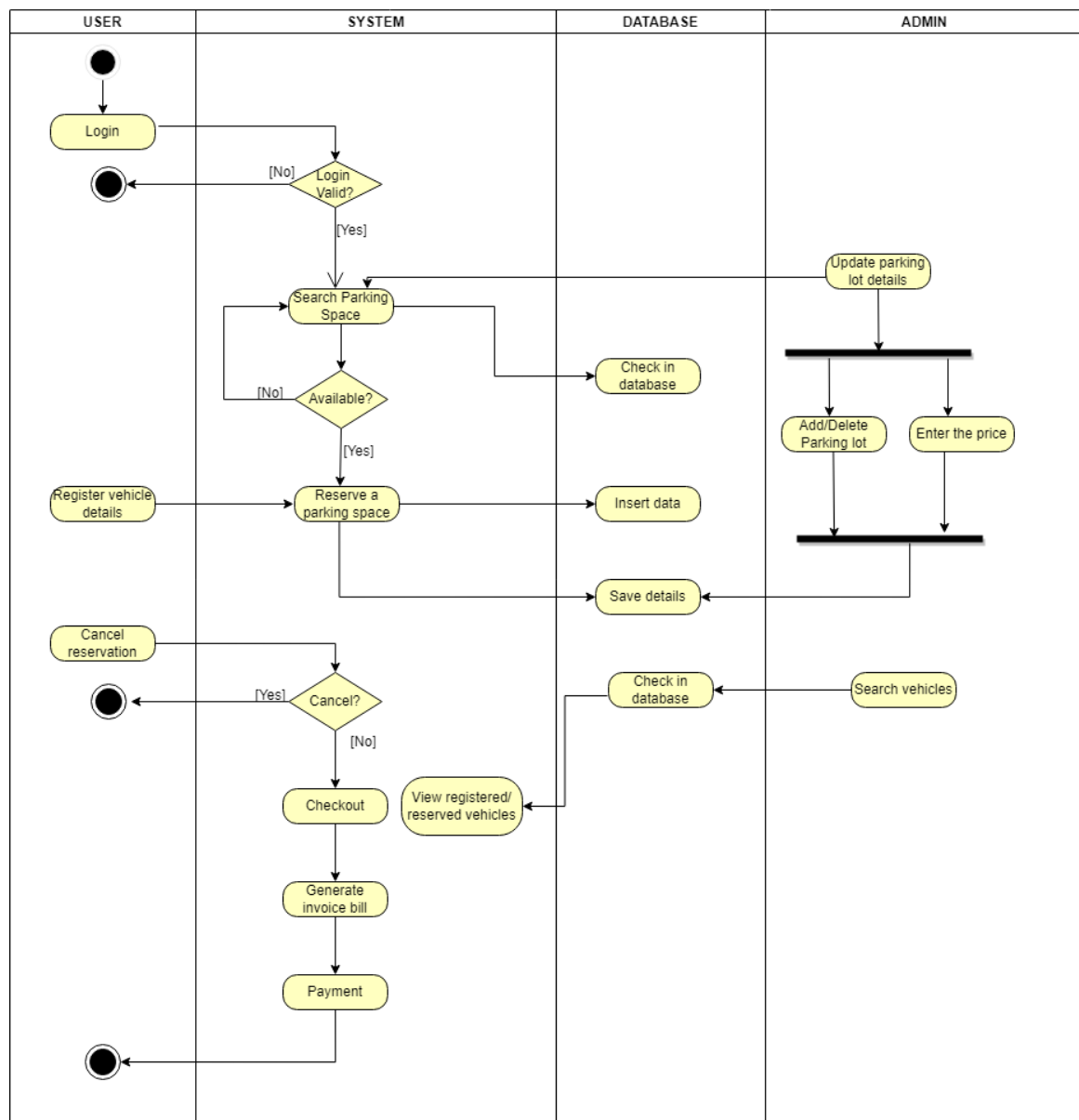
Figure: Activity diagram for System Use

3.2.2. COMPONENT DIAGRAM

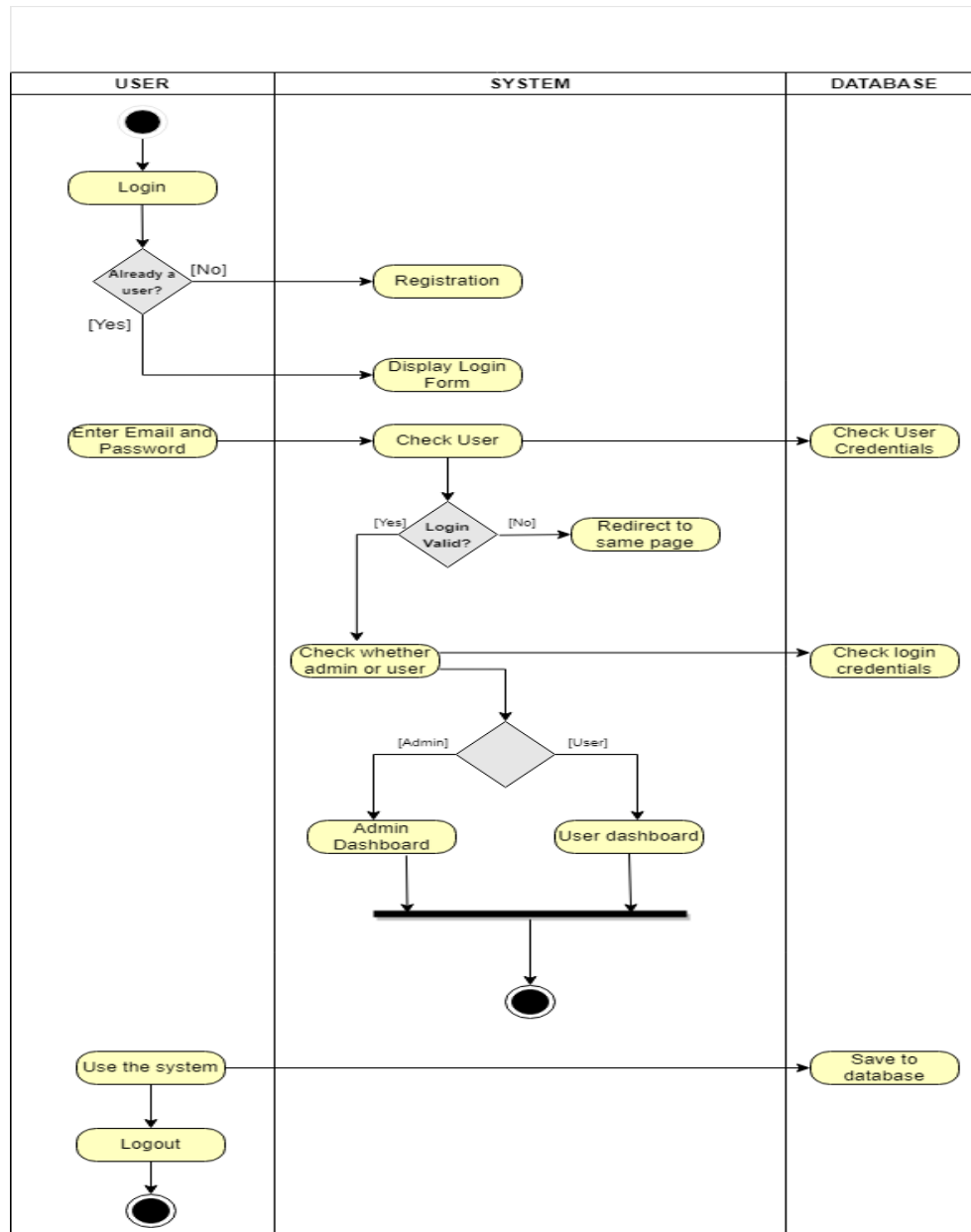Component diagram can be described as a special kind of diagram in UML as it shows static implementation view of a system. They are used to visualize the organization and relationships among components in a system. The purpose of the component diagram is to construct executables by using forward and reverse engineering. And, they are used during the implementation phase of an application.
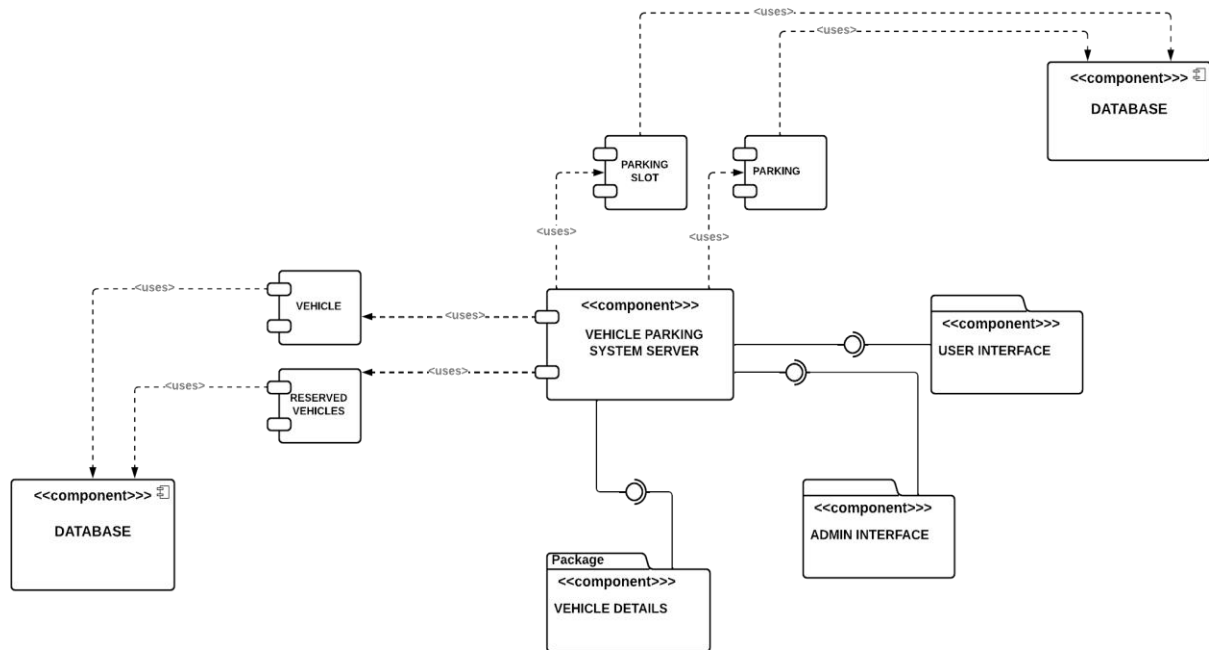
Figure 3.8. **Component diagram**

3.2.3. DEPLOYMENT DIAGRAM

In the context of Unified Modeling Language, A deployment diagram is a diagram that shows the execution architecture of a system, including nodes such as hardware or software execution environments, and the middleware connecting them. Deployment diagrams are typically used to visualize the physical hardware and software of a system. It consists of nodes and their relationships.
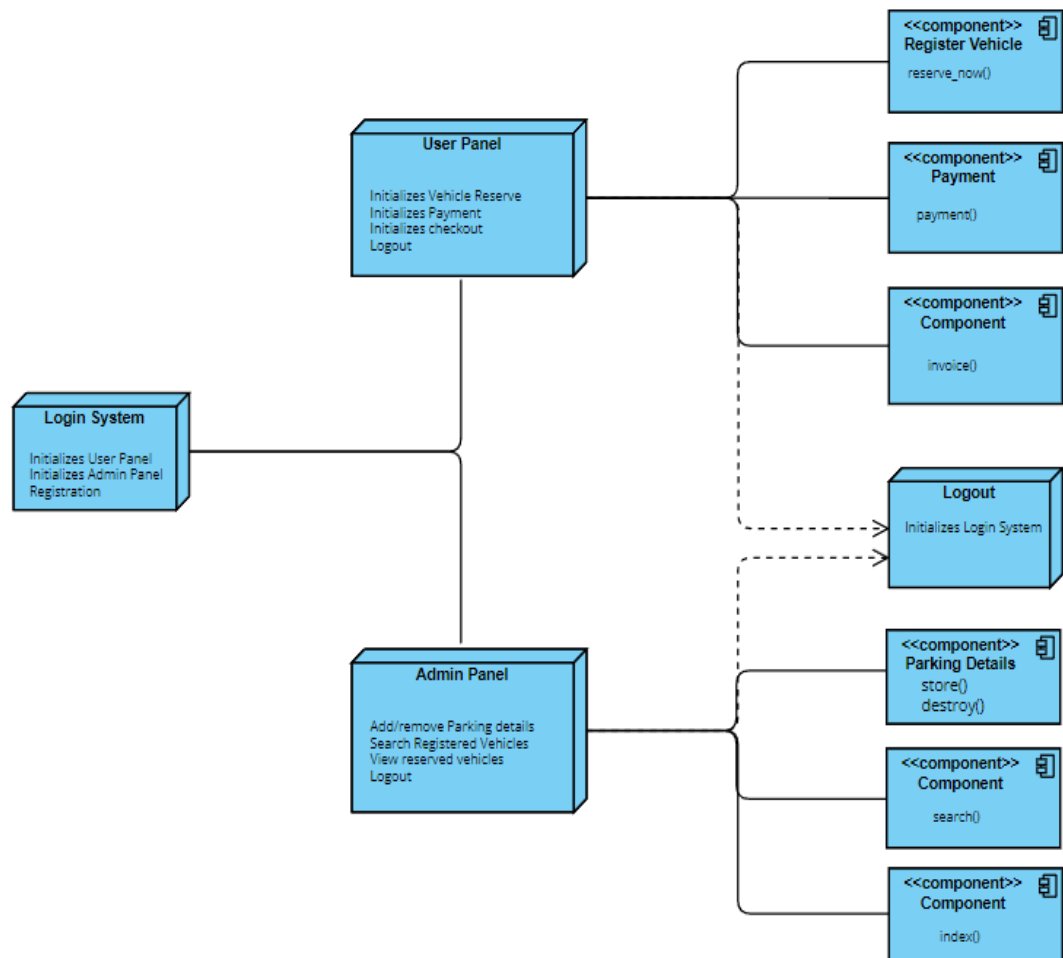
Figure 3.9. Deployment diagram

3.3 ALGORITHM DETAILS

In Durbar Parking, the algorithms play a very vital role for giving the nearest empty parking lot, traffic management at a time of entry and exit, Load balancing at each entrance of very large and complex parking area. The algorithms that can be in smart vehicle parking system are:

1. FCFS (Queue Allocation for vehicle)
2. Linear Searching Algorithm

1. First Come First Serve (FCFS)

It is an operating system scheduling algorithm that automatically executes queued requests and processes in order of their arrival. It is the easiest and simplest scheduling algorithm. This is managed with a FIFO queue. It is easy to implement and use. The customer can search for available parking space according to FCFS algorithm. It searches up the available parking detail from database and sends response if the parking space is available or already booked.
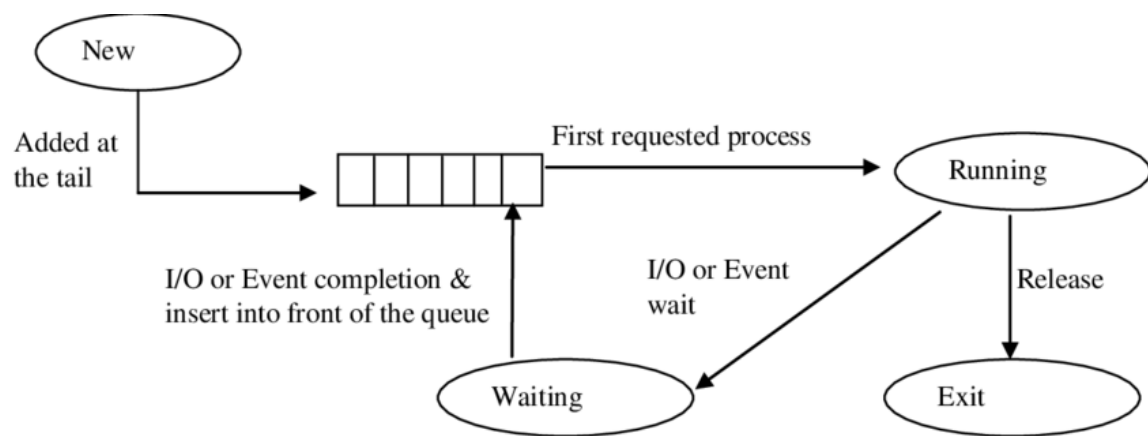
2. Linear Searching Algorithm

Searching Algorithms are designed to check f or an element or retrieve an element from any data structure where it is stored. Based on the type of search operation, these algorithms are generally classified into two categories:

- Linear Search (Sequential Search)
- Interval Search

Linear Search is the algorithm I have implemented in this system. A linear search is the simplest approach employed to search for an element in a data set. It examines each element until it finds a match, starting at the beginning of the data set, until the end. The admin can search for all the registered vehicles and reserved vehicles for parking.

The procedures for implementing linear search are as follows:

1. First, read the search element (Target element) in the array.
2. Compare the search element with the first element in the array.
3. If both are matched, display "Target element is found" and terminate the Linear Search function.
4. If both are not matched, compare the search element with the next element in the array.
5. In this step, repeat steps 3 and 4 until the search (Target) element is compared with the last element of the array.
6. If the last element in the list does not match, the Linear Search Function will be terminated, and the message "Element is not found" will be displayed.

CHAPTER 4 :

IMPLEMENTATION AND TESTING

4.1 IMPLEMENTATION

4.1.1. TOOLS USED

i. Front End

1. HTML

Hypertext Markup Language (HTML) is the standard markup language for documents designed to be displayed in a web browser. HTML is used as a frontend tool for this project. Entire code is done in HTML.

2. CSS

Cascading Style Sheets (CSS) is a stylesheet language used to describe the presentation of a document written in HTML. Bootstrap is a free and open-source CSS framework directed at responsive, mobile-first front-end web development. For designing purposes and the user interface of the project, CSS and bootstrap are used.

3. JavaScript

JavaScript (JS) is a scripting language, primarily used on the Web. It is used to enhance HTML pages and is commonly found embedded in HTML code. JS is used as both frontend and backend tool for the project. Various functions and actions are done through JavaScript.

ii. Back End

1. Laravel

Laravel is a web application framework with expressive, elegant syntax. It is the PHP Framework for Web Artisans. Laravel is a back-end PHP-based and open-source framework used for building a wide range of custom web applications. It's an entirely server-side framework that manages data with the help of Model-View-Controller (MVC) design which breaks an application back-end architecture into logical parts. For the backend, Laravel PHP Framework is used.

24

2. MYSQL

MySQL is an Oracle-backed open-source relational database management system (RDBMS) based on Structured Query Language (SQL). MySQL runs on virtually all platforms, including Linux, UNIX and Windows. Although it can be used in a wide range of applications, MySQL is most often associated with web applications and online publishing. XAMPP server is used for databases. For various database queries, MySQL is used.

4.1.2 Implementation Details of Modules (Description of procedures)

a) Records Module

User Records: - This record helps for the authorization for using Durbar Parking. It Provides the Username and Password for the User (staff). It also includes the level of authority that means it separates the normal users and administrator.

Vehicle Records: - This most important record which focuses in our Durbar Parking. It stores the essential Vehicle records like:
-Vehicle Number
-Vehicle Entry Time
-Vehicle Exit Time

b) Reports Modules

Vehicle Parking Detail: This report is very essential in this system. This report provides a brief summary of vehicle activities. It shows the overall Entry and Exit time. It shows the User at time of Entry and Exit. It also provides the facility for examining the total vehicle details according to date wise.

Invoice Detail: This report will show the Transaction between the customer and the System. It shows the cost of the vehicle after using the facility of parking. It will show the number of transactions by date wise. It will also have User at time of the Transaction.

4.2 TESTING

4.2.1. TEST CASES FOR UNIT TESTING

Each module is considered independently. It focuses on each unit of software as implemented in the source code. It is white box testing.

Table 4.1 User registration

S.N	Function	Input	Expected Outcome	Result	Status
1.	Start Laravel development server	Command: php artisan serve http://127.0.0.1:8000	Home Page	Home Page	True
2.	Launch Register Page	http://127.0.0.1:8000 /register	Register Page	Register Page	True
3.	Register without filling all details	Null	Please fill out this field	Redirect to same page	True
4.	Register using valid credentials	Name: Aman Bhandari Email:amanbhandari 188@gmail.com Password:12345678 9	Redirection to the user dashboard	Redirected to the user dashboard	True

Table 4.2 User login

S.N	Function	Input	Expected Outcome	Result	Status
1.	Start Laravel development server	Command: php artisan serve http://127.0.0.1:8000	Home Page	Home Page	True
2.	Launch Login Page	http://127.0.0.1:8000/login	Login Page	Login Page	True
3.	Login without filling all details	Null	Please fill out this field	Redirect to same page	True
4.	Login using valid credentials	Email: amanbhandari188@gmail.com Password: 123456789	Redirection to the user dashboard	Redirected to the user dashboard	True
5.	Login using invalid credentials	Email: amanbhandari188@gmail.com Password: 2172162a	Please use correct details	Redirect to the same page	True

Table 4.3 Admin login

S.N	Function	Input	Expected Outcome	Result	Status
1.	Launch Login Page	http://127.0.0.1:8000/login	Login Page	Login Page	True
2	Login without filling all details	Null	Please fill out this field	Redirect to same page	True
3.	Login using valid credentials	Email: admin@gmail.com Password: 123456789	Redirection to the admin dashboard	Redirected to the admin dashboard	True
4.	Login using invalid credentials	Email: admin@gmail.com Password: 2172162a	Please use correct details	Redirect to the same page	True

Table 4.4 User Testing

S.N	Function	Input	Expected Outcome	Result	Status
1.	Register Vehicle details	Input his/her vehicle name and vehicle number	Vehicle registered successfully	Registered vehicle displayed	True
2.	Edit/delete Vehicle details	Click on edit/delete to update details	Details edited/deleted	Vehicles details updated	
3.	Reserve Parking Space	Input vehicle details: Vehicle Name: BMW Vehicle Number: BA 4 PA 4563 Parking lot((P): P14 Date: 10 Aug, 2022 Check In: 6:00 pm Check Out: 7:00 pm	Reserved Successfully	Redirected to the parking details page	True
4.	Invoice bill after CheckOut	Choose CheckOut option on Reserved Parking details	Invoice bill Displayed	Invoice bill displayed successfully	True
5.	Payment	Choose a payment method: Cash on delivery or eSewa	Payment Made Successfully	Payment made successfully and redirected to the same page	True

4.2.2. TEST CASES FOR SYSTEM TESTING

It is executing programs to check logical changes made in it with the intention of finding errors. a system is tested for online response, volume of transaction, recovery from failure etc. System testing is done to ensure that the system satisfies all the user requirements.

Table 4.5 System Testing in User Interface

S.N	Function	Input	Expected Outcome	Result	Status
1.	Launch register page	http://127.0.0.1:8000/register	Register Page	Register Page	True
2.	Register new user	Name: Nischal Adhikari Email: nishadhikari111@gmail.com Password: nish1234	Successfully registered new user	Redirected to the user dashboard	True
3.	Login using same credentials	Email: nishadhikari111@gmail.com Password: nish1234	Successfully Logged in	Redirected to the user dashboard	True
4.	Register Vehicle details	Input his/her vehicle name and vehicle number	Vehicle registered successfully	Registered vehicle displayed	True
5.	Edit/delete Vehicle details	Click on edit/delete to update details	Details edited/deleted	Vehicles details updated	
6.	Reserve Parking Space	Input vehicle details: Vehicle Name: BMW	Reserved Successfully	Redirected to the parking details page	True

S.N	Function	Input	Expected Outcome	Result	Status
		Vehicle Number: BA 4 PA 4563 Parking lot((P): P12 Date: 10 Aug, 2022 Check In: 6:00 pm Check Out: 7:00 pm			
7.	Invoice bill after Check Out	Choose Check Out option on Reserved Parking details	Invoice bill Displayed	Invoice bill displayed successfully	True
8.	Payment	Choose a payment method: Khalti Wallet or Mobile Banking	Payment Made Successfully	Payment made successfully and redirected to the same page	True

Table 4.6 System Testing in Admin Interface

S.N	Function	Input	Expected Outcome	Result	Status
1.	Launch Login Page	http://127.0.0.1: 8000/login	Login Page	Login Page	True
2.	Login using admin credentials	Email: amanbhandari188@gmail.com Password:123456789	Successfully logged in	Redirected to the admin dashboard	True

		View or search	Vehicle	Registered	
3.	View/Search all registered vehicles	vehicles according to the vehicle number	Searched successfully	vehicles viewed successfully	True
4.	Check the parking lot details	Choose the parking details on the admin dashboard	All the parking lot details and price displayed	Parking lot name and price displayed successfully	True
5.	Edit/delete Parking lot details	Parking lot name: P1 Price: Rs 50 -Edit -Delete	Parking lot details updated successfully	Parking lot details successfully updated/del eted.	True
6.	View/Search all reserved vehicles for parking	View or search vehicles according to their vehicle number	Reserved vehicles for parking displayed successfully	Reserved vehicles displayed successfully	True

CHAPTER 5 :

CONCLUSION AND FUTURE RECOMMENDATION

5.1 LESSON LEARNT / OUTCOMES

There have been several improvements in our programming language and writing skills as well as our time management skills while doing this project. I conclude that this project has helped me gain more knowledge about the topic that we are indulged ourselves into "PHP Framework Laravel". A lot was learned about proper time management as the project had to be submitted before the deadline along with the documentation
Due to time constraints, I could not add more facilities to it. Although it is expectedly good, some new features to this system could be added in the upcoming days to make it more user friendly and efficient.

5.2 CONCLUSION

This Project is minimizing the task of parking a vehicle by paying and saying some details about customer and vehicle to save data. In this the vehicle is parked as a safe and secure. This project is done as Efficient as possible. The description of the background and the context of the project was thoroughly researched by the author.

The purpose, scope, applicability, and requirement specifications of the system have been accurately explained. The author has included features and operations in detail including screen layouts and the limitations on which the project is being developed. Finally, the system is implemented and tested according to test cases. After the development of the system finally, it was tested and the views about results were exchanged. After testing, the limitations of the existing system were discussed.

In conclusion, frontend tools like HTML, CSS, Laravel and backend tools like Laravel, MySQL and JavaScript were used in the development of my system. I would be glad to enhance and promote this project if given chance and help ourselves and society in the near future
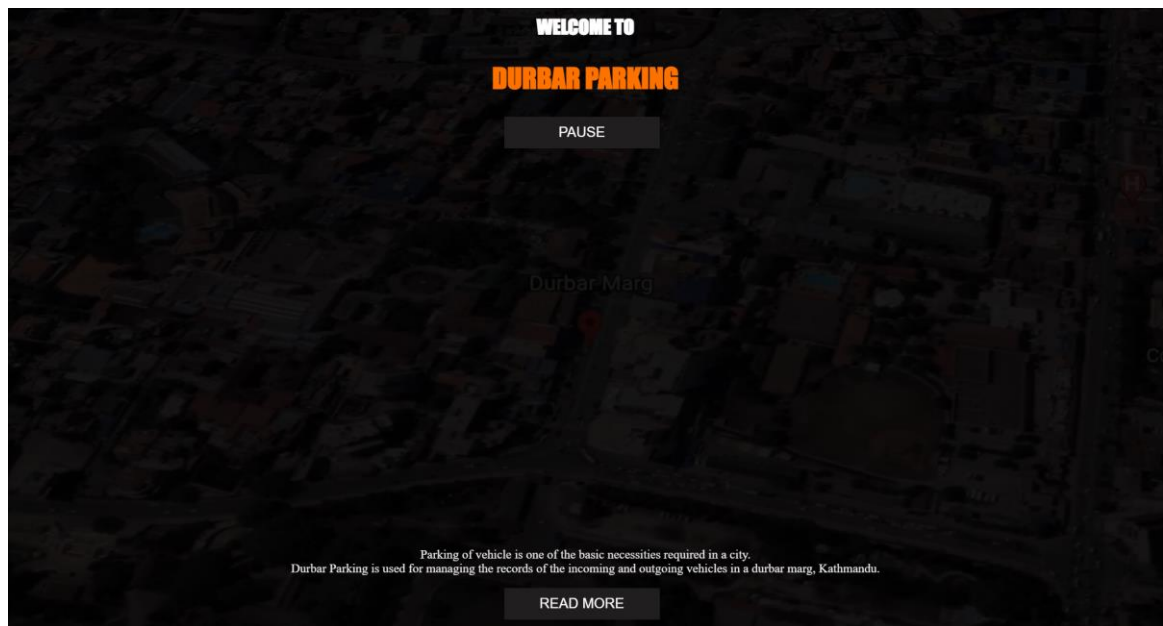
5.3 FUTURE RECOMMENDATIONS

The applicability and usage of this project can be increased by enhancing the system based on the limitations. Vehicle is now a basic need. Every place is under the process of urbanization. There are many places which needs a parking space where people can park their vehicles safely and easily. So, with the help of a computerized system we can deliver a good service to customer who wants to park their vehicle into the any organization's premises. This helps to uplift the productivity of the system. New effectives modules can be also added from time to time.

In future, a sensor can be implemented such that when a vehicle enters into the parking area, the user can easily identify from outside that the parking is full or empty or space is allocated.
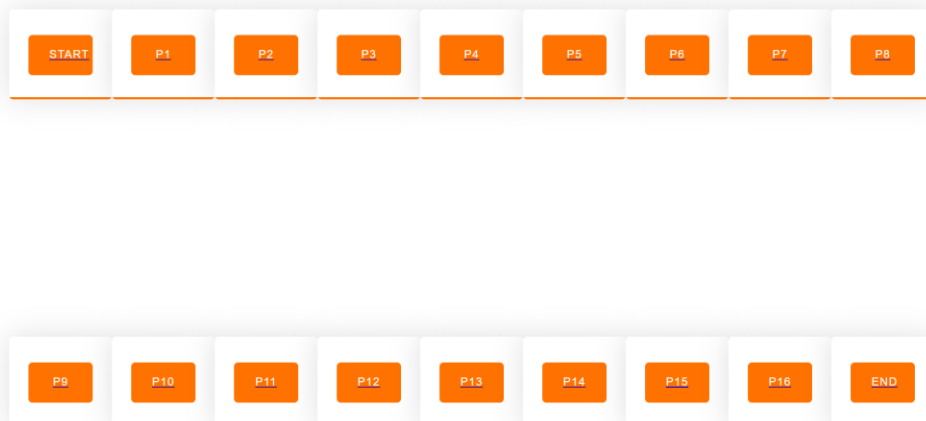
References

- [1] Mantra Softech India Private Limited, "Innovation that counts", 2006. [Online] Available:https://www.mantratec.com/Solutions/Parking-Management-System [Accessed on: March 05 2022,]

- [2] S. Bhatia & R.Choudhary, "Parking Management System" 2019.[Online] Available: https://www.metroinfrasys.com/parking-management-system/ [Accessed on: April 01,2022]

- [3] Phudinawala, Hasan & Malusare, Omkar & Mahadik, Rushikesh, *International Journal of Advanced Research in Science, Communication and Technology.* Vol. 10 p. 556-559 March 03 2022. [Online] Available: https://www.researchgate.net/publication/359568444_Vehicle_Parking_Management_System [Accessed on: April 22, 2022]

- [4] Sowndharya, V & S, Hebziba & D, Susmitha, *International Research Journal of Multidisciplinary Technovation.* Vol. 1, p. 18 March 2019. [Online] Available:https://www.researchgate.net/publication/349527243_Implementation_of_Smart_Vehicle_Parking_System [Accessed on: April 19,2022.]

- [5] Bhairathi, V. "Smart Parking System", *International Journal for Research in Applied Science and Engineering Technology,* Vol. 9, p. 1823 July 2021, [Online] Available:https://www.researchgate.net/publication/353423423_Smart_Parking_System [Accessed on: April 20,2022]

APPENDICES

Figure: Welcome Page

Home Page