PROJECT REPORT ON

VEHICLE PARKING MANAGEMENT SYSTEM

at

U. V. Patel College of Engineering

Internal Guide:
Prof. Rachana V. Modi

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(Computer Engineering)
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U.V. PATEL COLLEGE OF ENGINEERING

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॥ विद्यया समाजोत्कर्षः ॥

26/11/2022

C E R T I F I C A T E

TO WHOM SO EVER IT MAY CONCERN

This is to certify that Ms.**Vidhi Trivedi Trusharbhai** is a student of **B. Tech. Semester VII (Computer Engineering)** has completed his/her full semester on site project work titled "**Vehicle Parking Management System**" satisfactorily in partial fulfillment of the requirement of Bachelor of Technology degree of Computer Engineering of Ganpat University, Kherva, Mehsana in the year 2022-23.

Prof. Rachana V. Modi
College Project Guide

Dr. Paresh M. Solanki
Head, Computer Engineering

U.V. PATEL COLLEGE
OF
ENGINEERING

26/11/2022

C E R T I F I C A T E

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This is to certify that Mrs.**Maurya Sweta Jayprakash** is a student of **B.Tech. Semester VII (Computer Engineering)** has completed his/her full semester on site project work titled "**Vehicle Parking Management System**" satisfactorily in partial fulfillment of the requirement of Bachelor of Technology degree of Computer Engineering of Ganpat University, Kherva, Mehsana in the year 2022-23.

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ACKNOWLEDGEMENT

This satisfaction that successful completion of any task would be incomplete without the mention of people whose ceaseless cooperation made it possible, whose constant guidance and encouragement crown all efforts with success. We are grateful to our guide **Prof. Rachna Modi** for the guidance, inspiration and constructive suggestions that helpful us in the preparation of this project. We also thank our colleagues who have helped in successful completion of the project.

ABSTRACT

Vehicle Parking Managemnet System system for managing the records of the incoming and outgoing vehicles in a parking area.

It's easy for Admin to retrieve the data if the vehicle has been visited through a number he/she can get that data **.**

Nowadays in many public places such as malls, multiplex systems, hospitals, offices, market areas there is a crucial problem of vehicle parking. The vehicle parking area has many lanes/slots for vehicle parking. So to park a vehicle one has to look for all the lanes. Moreover this involves a lot of manual labor and investment. Instead of a vehicle caught in towing the vehicle can park safely and security with low cost.

This system has been generated in such a way that it is filled with many secure devices such as, parking control gates, toll gates, time and attendance machine, car counting system etc. These features are hereby very necessary nowadays to secure your car and also to evaluate the fee structure for every vehicle's entry and exit.

The 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.

INDEX

CHAPTER 1: INTRODUCTION

1.1 PURPOSE

- The manual parking System occupies more space to park vehicles because of improper parking. So, in this parking system it is possible to park a number of vehicles with the least space possible.
- Manual parking systems can not identify the free slots for parking a vehicle and Because of availability it will be easy to find the Free Slots so it is easy for Drivers to find empty Slots.
- It is highly feasible for extremely small sites that are unable to accommodate a conventional ramped parking structure.
- It is a time saving system. In the Manual parking system it is too hard to find out empty slot for parking, it is very much time consuming. Sometimes it causes late meetings or other important work.

1.2 PROBLEM STATEMENT

- Now a days in parking like valet parking they maintain just with the tokens and they have records the vehicle details in books so that during some critical situations like police enquiry of terrorist car or vehicle stealing that case it is difficult to find the details of particular vehicle but in this case is easy to find in 1 to 2 seconds
- By parking the vehicle in a public place the vehicle can be claimed by the towing person but in this case there are no towing problems and no need to give a fine for anything we can park our vehicle with securely.

1.3 OBJECTIVE

We can park our vehicle in our own slot by booking

- Because of that there are no towing problems.
- And our vehicle has been parked as a secure condition.
- There is no risk for the vehicle owner for parking the car.
- In case of any damages and problems of the vehicle that will be claimed by parking management.
- As the world is facing many threads daily, robberies are done easily with no track to trace, bomb blasts occur with the use of vehicle, so if a proper system is adopted each and every record can be saved and anyone can be track easily therefore mainly is to make a better and fast software, most important user-friendly
- Maintain records in a short time of period.
- Determines the parking area is full or not.
- Enhances the visitor’s experience.

1.4 TOOLS AND TECHNOLOGY

- Visual Studio Code
- Node JS
- React JS
- My SQL

1.5 PROJECT SCOPE

- Can be easily used in public parking lots.
- The congestion and collision of vehicle due to previous manual method will be little to no longer exist.

CHAPTER 2: FEASIBILITY ANALYSIS

2.1 TECHNICAL FEASIBILITY

- This assessment focuses on the technical resources available to the organization to help organizations determine whether the technical resources meet capacity and whether the technical team is capable of converting the ideas into working systems.
- Technical feasibility also involves evaluation of the hardware, software, and other technical requirements of the proposed system.

2.2 TIME SCHEDULE FEASIBILITY

- Time Schedule Feasibility means that the project can be completed on time
- The project has a deadline but according to the proposed system the development process is on schedule and therefore it is feasible.

2.3 OPERATIONAL FEASIBILITY

- This assessment involves undertaking a study to analyze and determine whether and how well the organization's needs can be met by completing the project.
- Operational feasibility studies also examine how a project plan satisfies the requirements identified in the requirements analysis phase of system development.

2.4 ECONOMIC FEASIBILITY

- This assessment typically involves a cost/ benefits analysis of the project, helping organizations determine the viability, cost, and benefits associated with a project before financial resources are allocated.
- It also serves as an independent project assessment and enhances project credibility helping decision-makers determine the positive economic benefits to the organization that the proposed project will provide.

2.5 SOFTWARE REQUIREMENT STUDY

USER REQUIREMENT

- Need for an application that makes communicating easy and comfortable.
- An application that enables users to park a vehicle safely and secure.
- Need for an application that is easy to use and widely available and hence a web application
- Handling all functions done with organization in a computerized manner.
- Allowing the user to park the vehicle directly.

FUNCTIONAL REQUIREMENT

- Admin needs to enter all details for registration.
- Admin needs to insert all details about the customer and vehicle.
- Admin needs to save all the details of the customer and vehicle.
- Admin can retrieve the details of customers.
- Admin must generate a report for payment.

NON FUNCTIONAL REQUIREMENT

- **Usability:** These websites have appropriate user interface and adequate information to guide the user in order to use the website.
- **Portability:** The website is portable as it is online website running across the net
- **Flexibility**: It is very flexible
- **Security:** This website provide user and authentication so that only the legitimate user are allowed to use the website
- **Maintainability:**This website is capable of securing the data and easily retrieving the data.
- **Scalability:** These systems can be further modified in future.

DATA RECORDS

- **Staff records:** It helps to provide details of staff that use the Vehicle parking management System. It provides the descriptions of staffs like**:-**
    - Name
    - Address
    - Contact Number
    - Gender
- **User Records:**This record helps for the authorization for using Vehicle Parking Management System. 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 on our Vehicle Parking Management System. It stores the essential Vehicle records like**:-**
    - Vehicle Number
    - Vehicle Type
    -

- Vehicle EntryTime
- Vehicle Exit Time

REPORTS

- **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.

2.6 PROCESS MODEL

- The Agile model believes that every project needs to be handled differently and the existing methods need to be tailored to best suit the project requirements. In Agile, the tasks are divided to time boxes (small time frames) to deliver specific features for a release.

[Figure 6.1 Process Model]

Advantages of Agile model:

- Is a very realistic approach to software development.
- Functionality can be developed rapidly and demonstrated.
- Resource requirements are minimum.
- Reduce development time
- Delivers early partial working solutions.
- Good model for environments that change steadily.
- Minimal rules, documentation easily employed.
- Little or no planning require

Disadvantages of Agile Model:

- Not suitable for handling complex dependencies.
- More risk of sustainability, maintainability and extensibility.
- There is a very high individual dependency, since there is minimum documentation generated.

2.7 PROJECT PLANNING

Project planning is a procedural step in project management, where required documentation is created to ensure successful project completion. Documentation includes all actions required to define, prepare, integrate and coordinate additional plans. The project plan clearly defines how the project is executed, monitored, controlled and closed.

Project planning requires an in-depth analysis and structuring of the following activities:

- Setting project goals
- Identifying project deliverables
- Creating project schedules
- Creating supporting plans

2.8 SOFTWARE AND HARDWARE REQUIREMENTS

Hardware	Description
WINDOWS	**7 or above**
RAM	**2GB or above**
PROCESSOR	**i3 or above**
DISK SPACE	**10GB or above**

TABLE 2.8.1 HARDWARE REQUIREMENTS

Software	Description
FRONTEND	**React JS**
BACKEND	**Node**
DATABASE	**My SQL**
DISK SPACE	**10GB or above**

TABLE 2.8.2 HARDWARE REQUIREMENTS

CHAPTER 3: SYSTEM DESIGN

3.1 ACTIVITY DIAGRAM

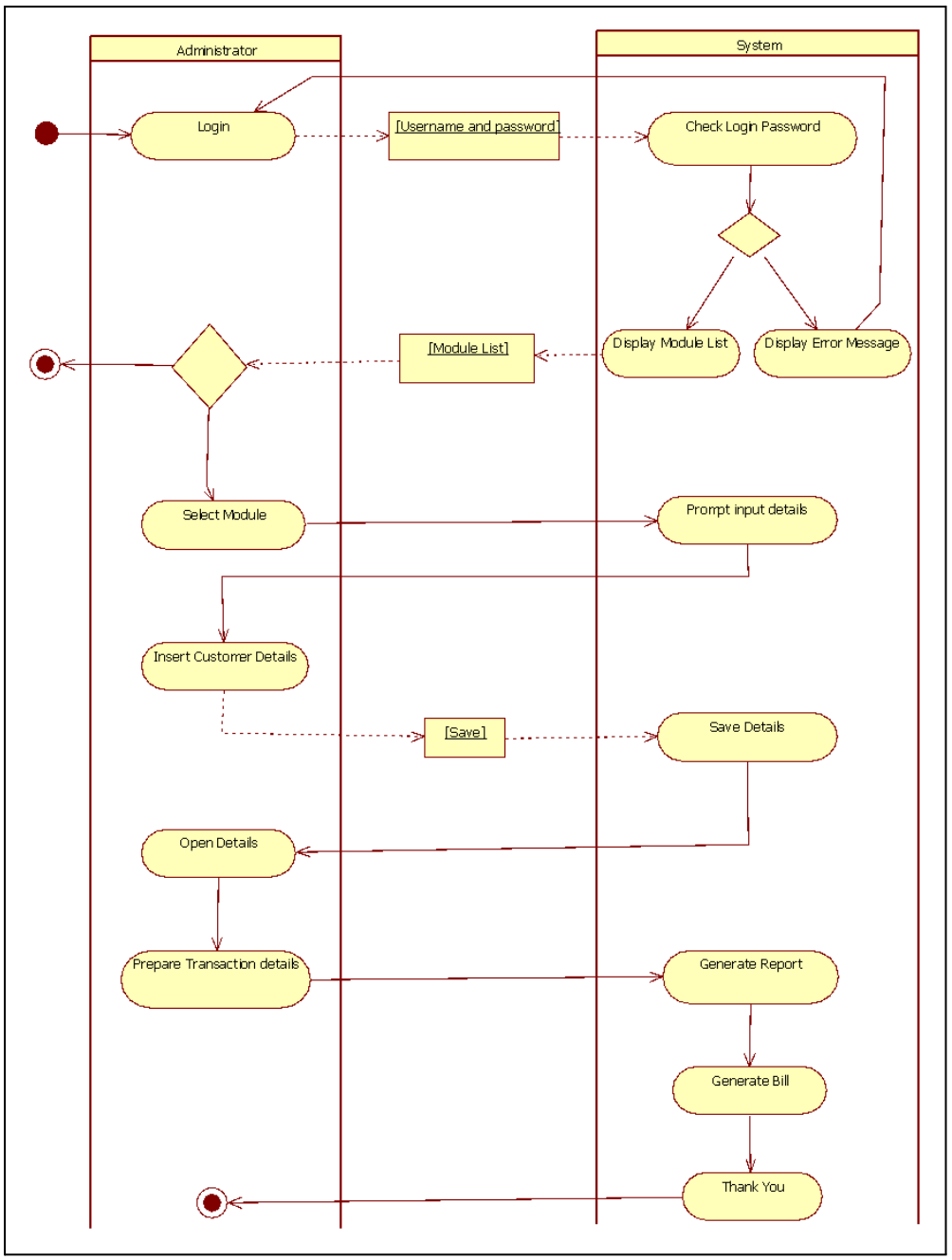


FIGURE 3.1 ACTIVITY DIAGRAM

3.2 SEQUENCE DIAGRAM

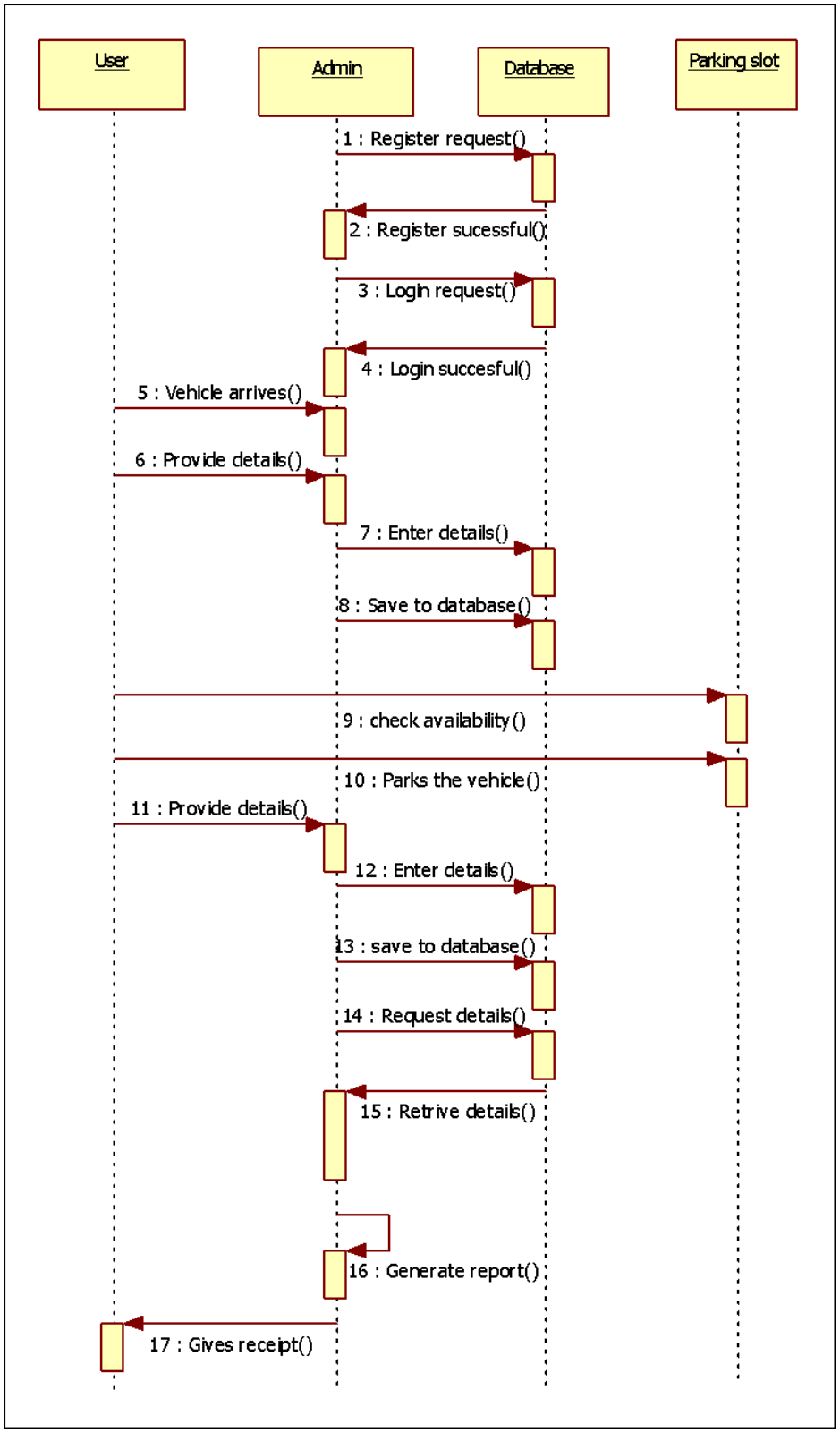


FIGURE 3.2 SEQUENCE DIAGRAM

3.3 USE CASE DIAGRAMS

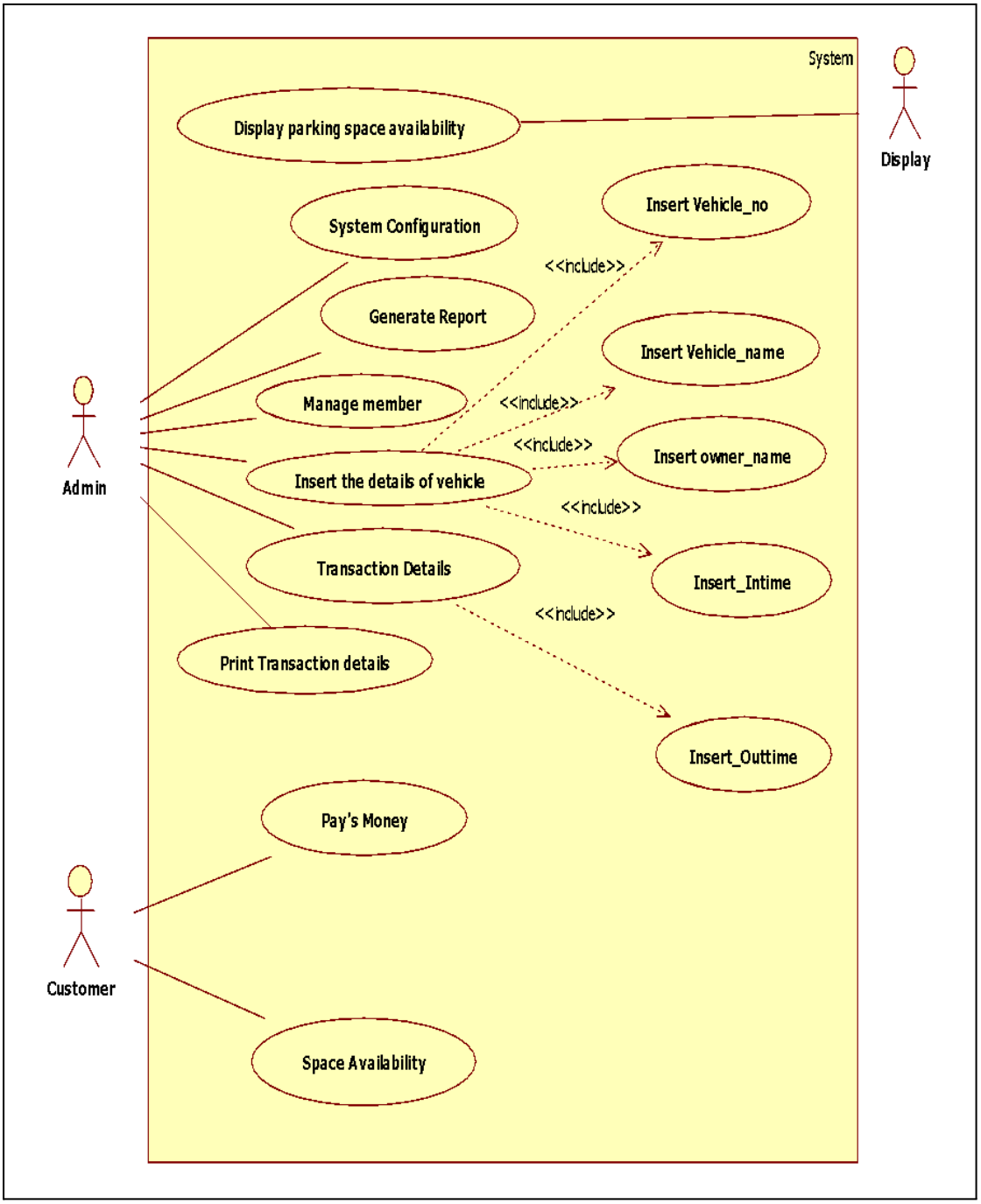


FIGURE 3.3 USE CASE DIAGRAM

3.4 CLASS DIAGRAM

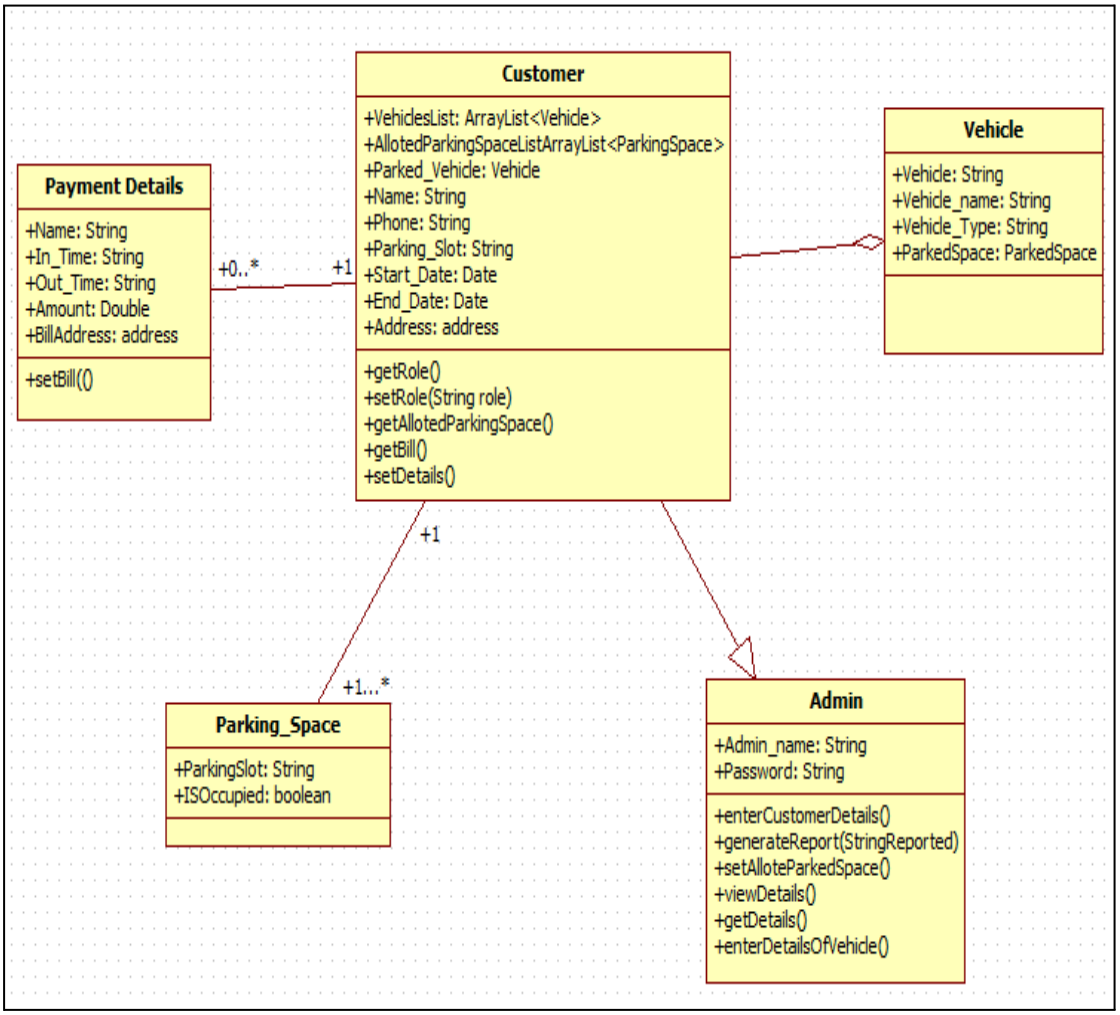


FIGURE 3.4 CLASS DIAGRAM

3.5 ER DIAGRAM

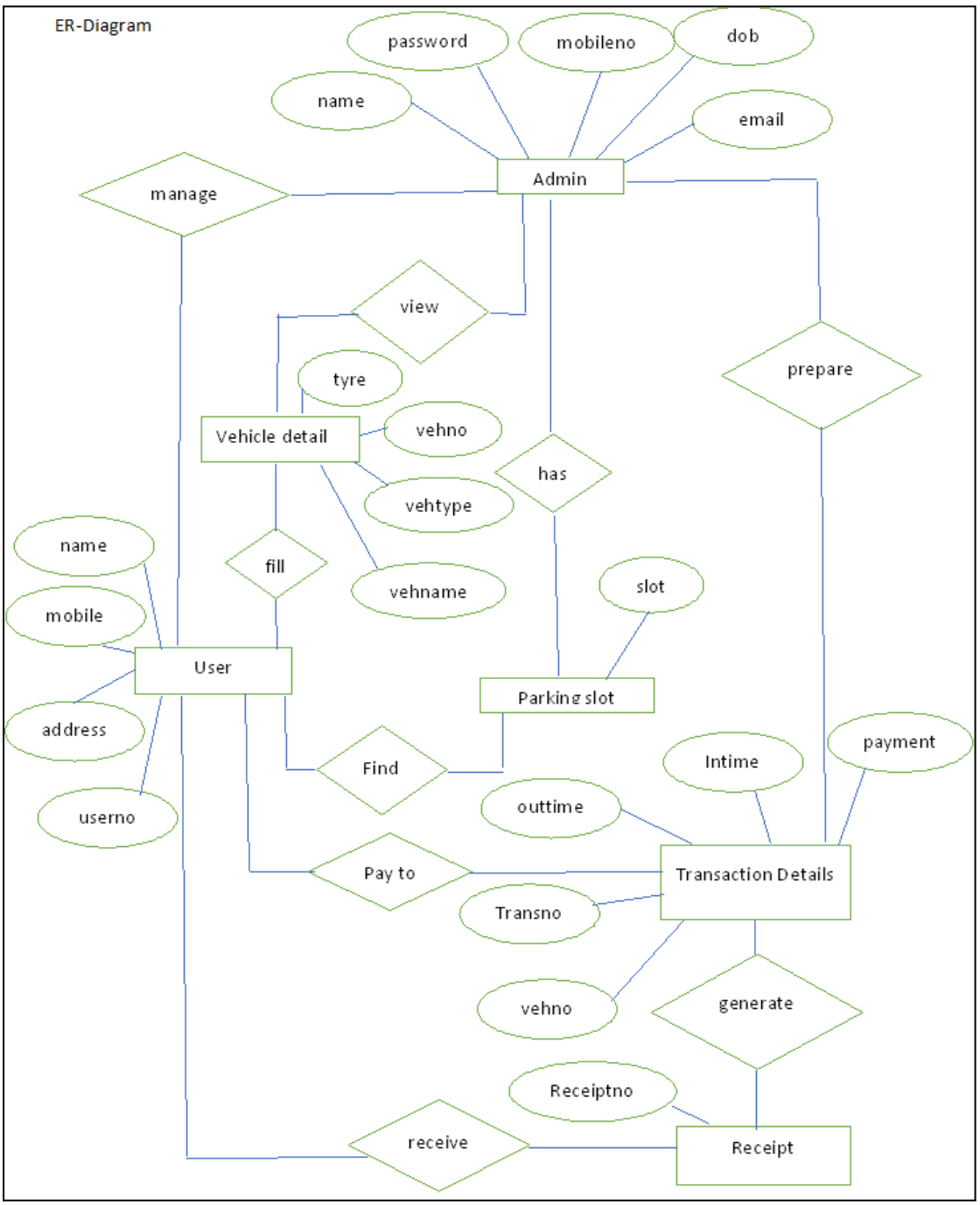


FIGURE 3.5 ER DIAGRAM

3.6 DATA FLOW DIAGRAM

LEVEL 0

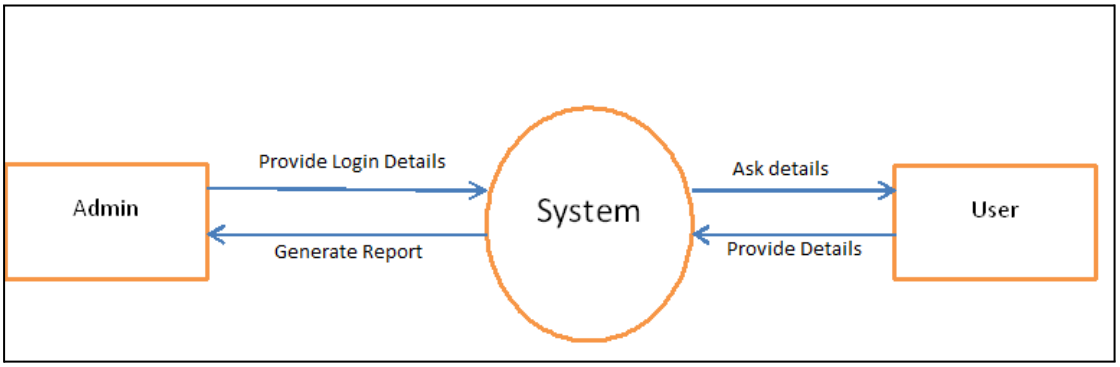


FIGURE 3.6.1 DATA FLOW DIAGRAM

LEVEL 1

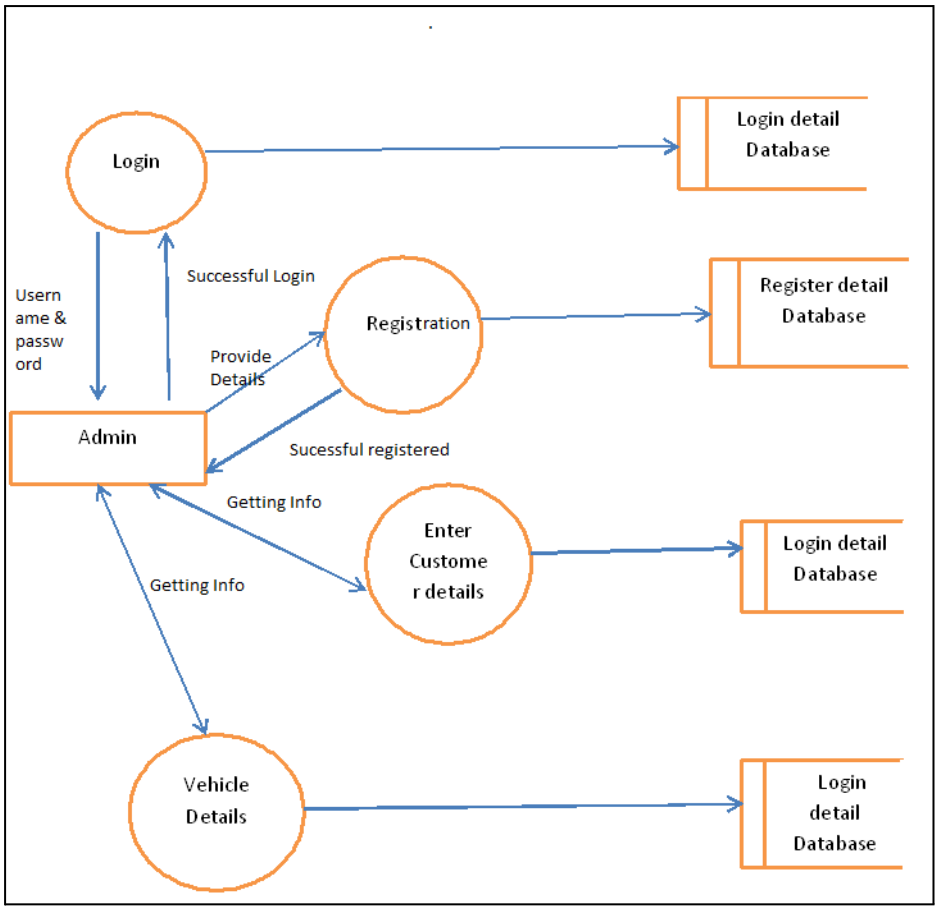


FIGURE 3.6.2 DATA FLOW DIAGRAM

LEVEL 2

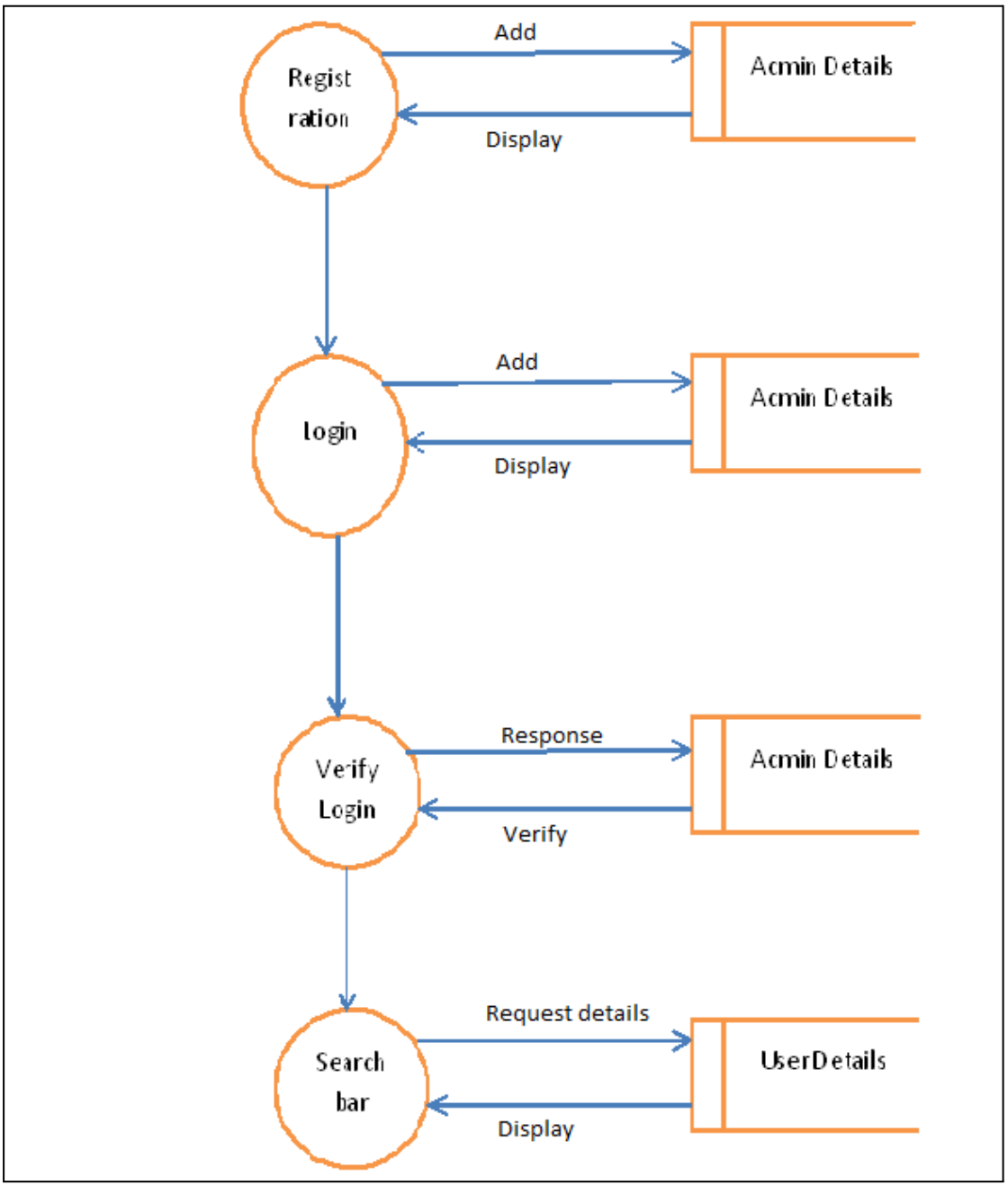


FIGURE 3.6.3 DATA FLOW DIAGRAM

CHAPTER 4 :TESTING

User Login:

Sr. No.	Test Case Description	Test Data	Expected Output	Actual Output	Status
1.	This page contains two fields user email and password and login button to submit the information.	Email, Password	Home page should open after successful login.	Home page is opened after successful login.	Passed
2.	If either user email or password is filled incorrect or left blank	Email, Password	An error message should be displayed and user should be asked to fill information again.	When wrong info is entered by the user then an error message is displayed.	Passed

TABLE 4.1 TESTING CASE

Registration:

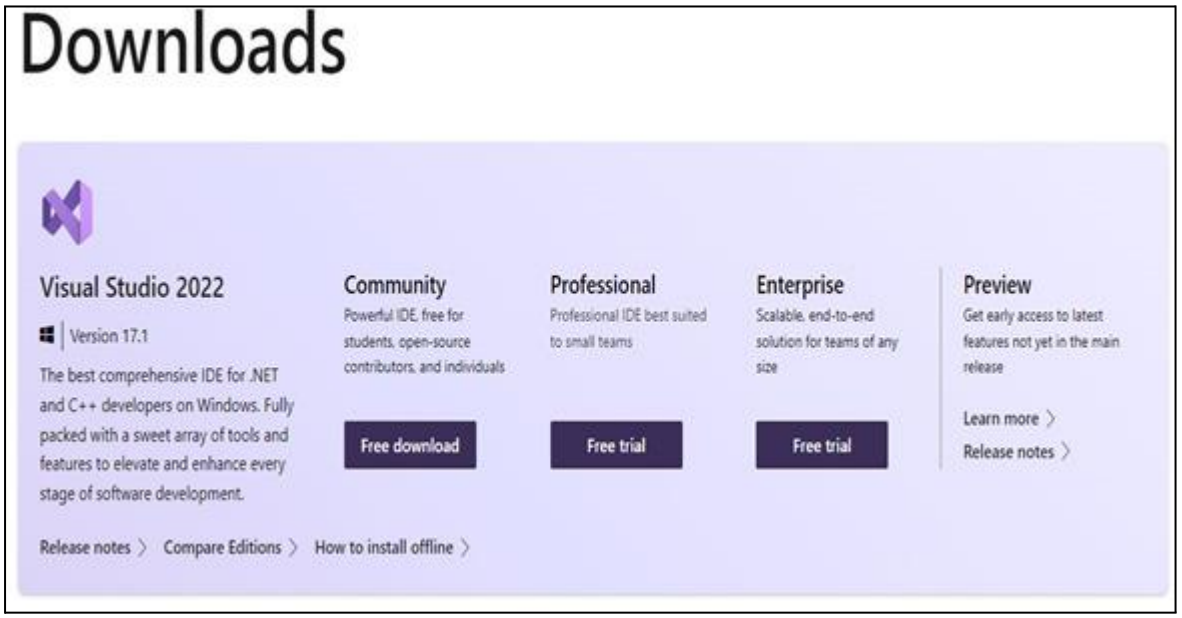
Sr. No.	Test Case Description	Test Data	Expected Output	Actual Output	Status
1.	This page contains various fields user's personal info such as Aadhar card, contact details.	Name, Email, Role, Contact, City	After registration user have to login with email and password	Login button successfully authenticate the user	Passed
2.	If the user keeps any field blank, or incorrect information is entered.	Name, Email, Role, Contact, City	An error message should be displayed and user should be asked to fill information again.	When wrong info is entered by the user then an error message is displayed.	Passed

TABLE 4.2 TESTING CASE

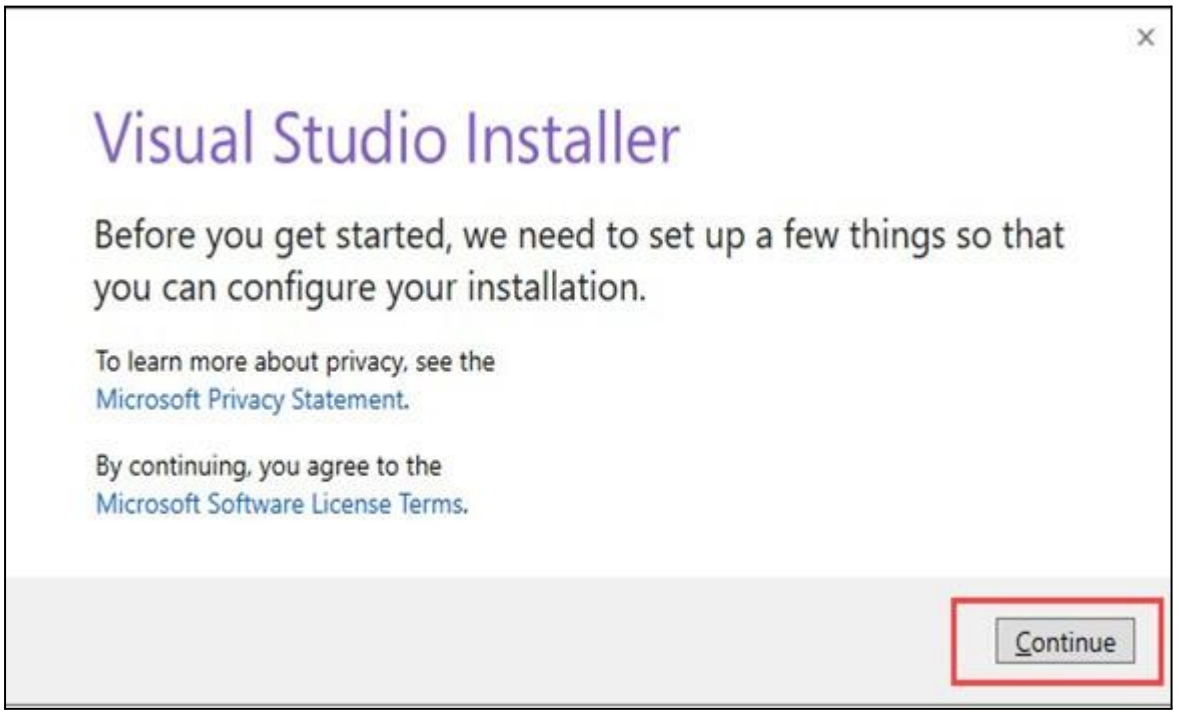
CHAPTER 5: USER MANUAL

VISUAL STUDIO CODE INSTALLATION

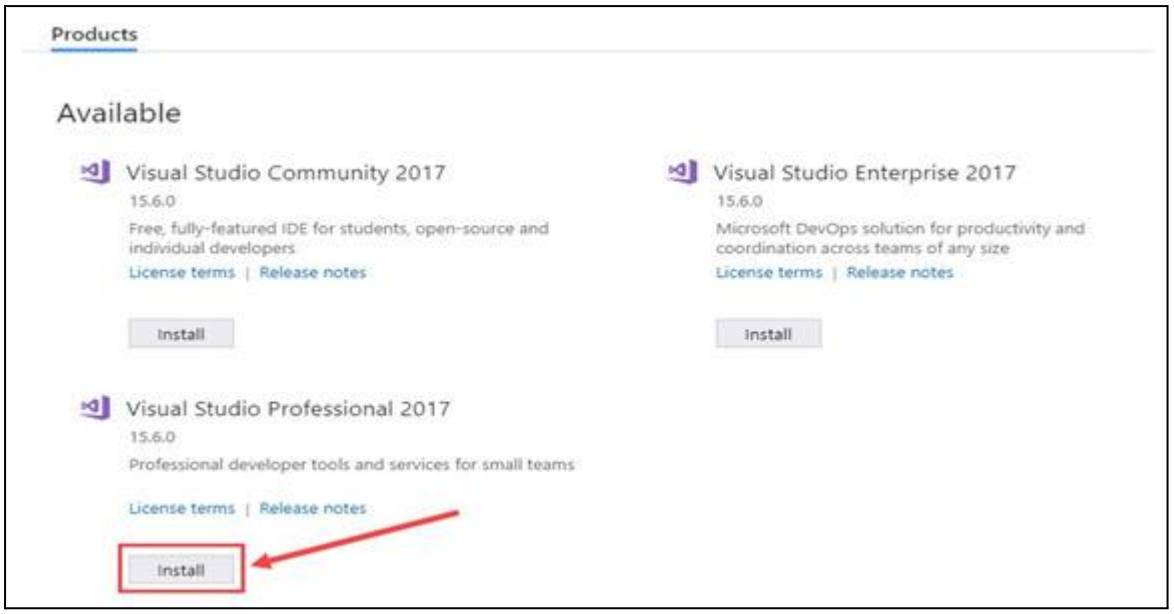
STEP 1:



STEP 2:

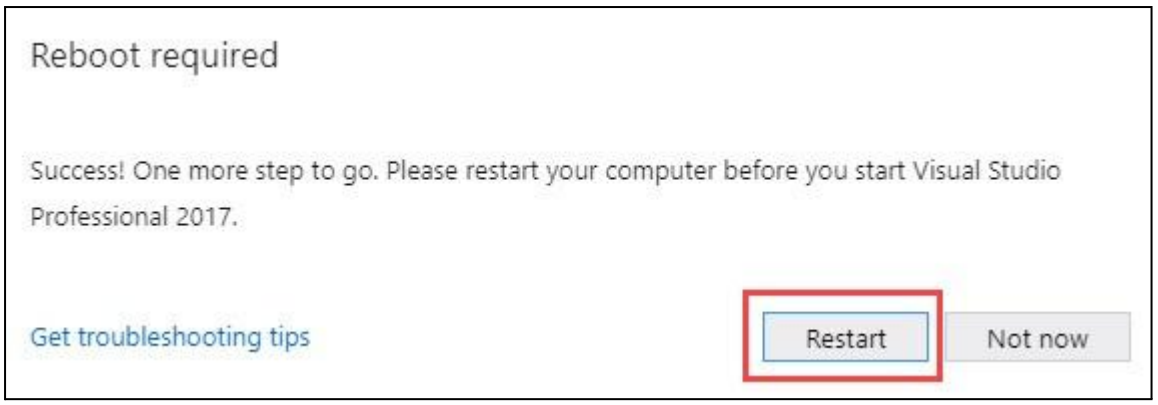


STEP 3:

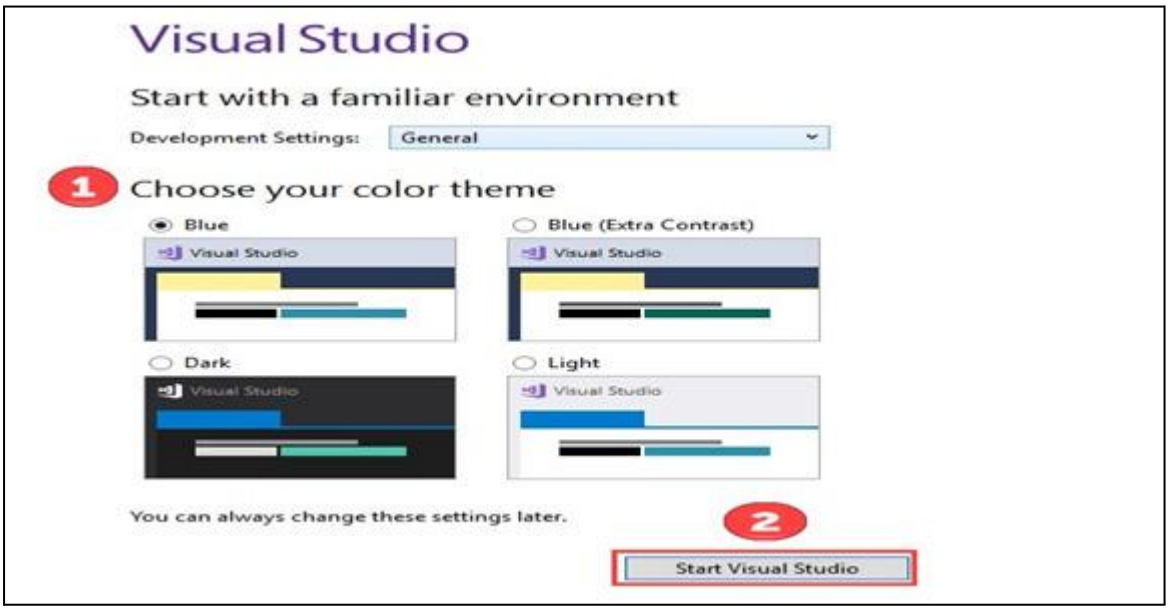


STEP 4:

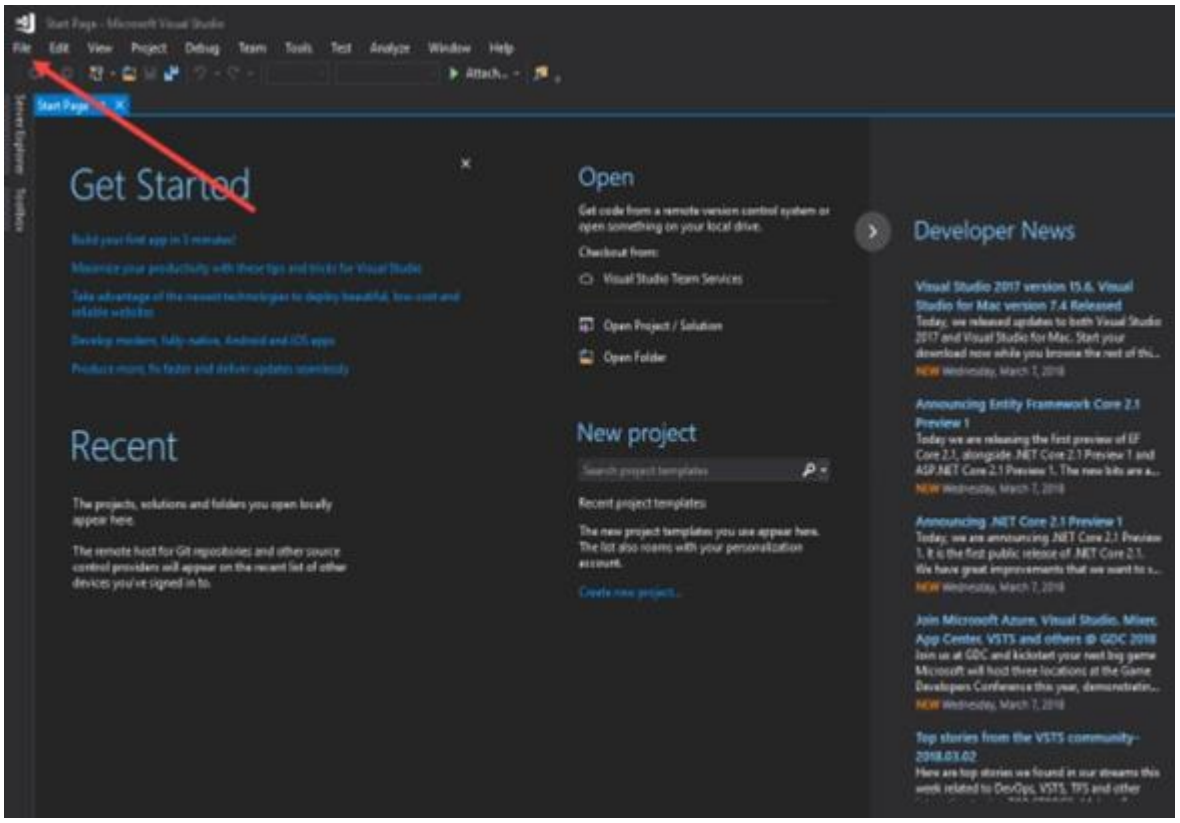
STEP: 5


Reboot required
Success! One more step to go. Please restart your computer before you start Visual Studio Professional 2017.
Get troubleshooting tips
Restart
Not now

STEP: 6


Visual Studio
Start with a familiar environment
Development Settings:
General
1
Choose your color theme
Blue
Blue (Extra Contrast)
Dark
Light
Visual Studio
You can always change these settings later.
2
Start Visual Studio

STEP:7



5.2 USER INTERFACE

LOGIN

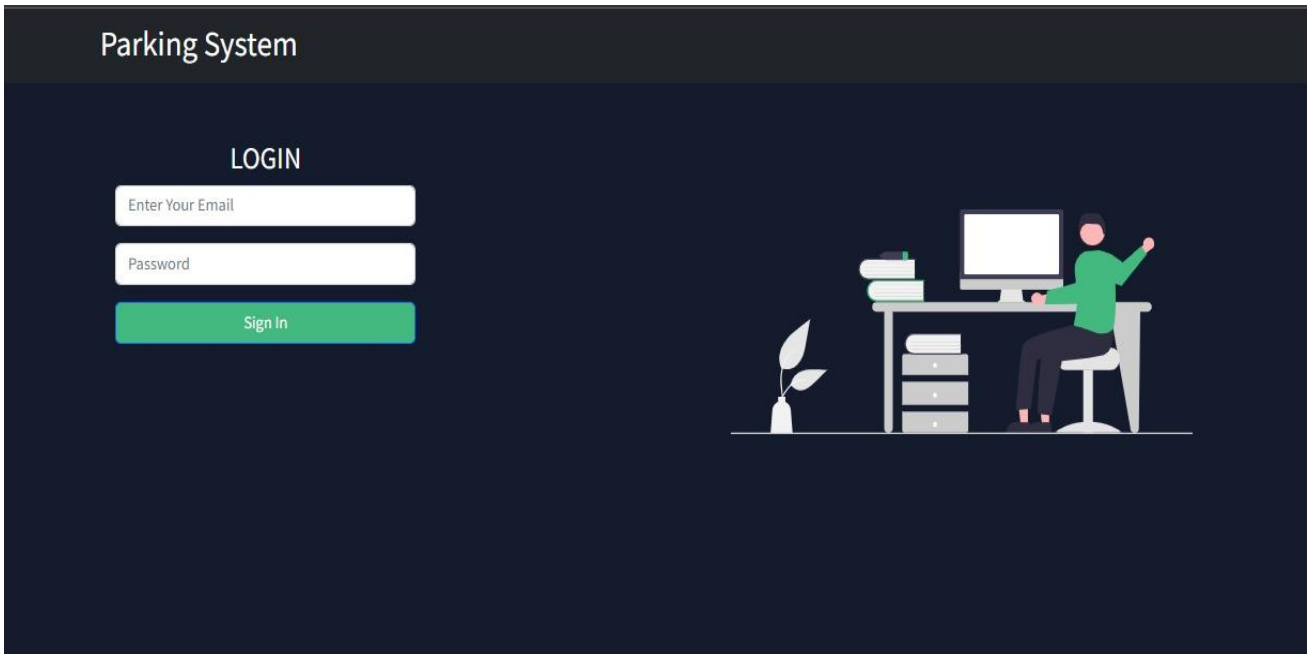


IMAGE 5.2.1 LOGIN

SIGN UP

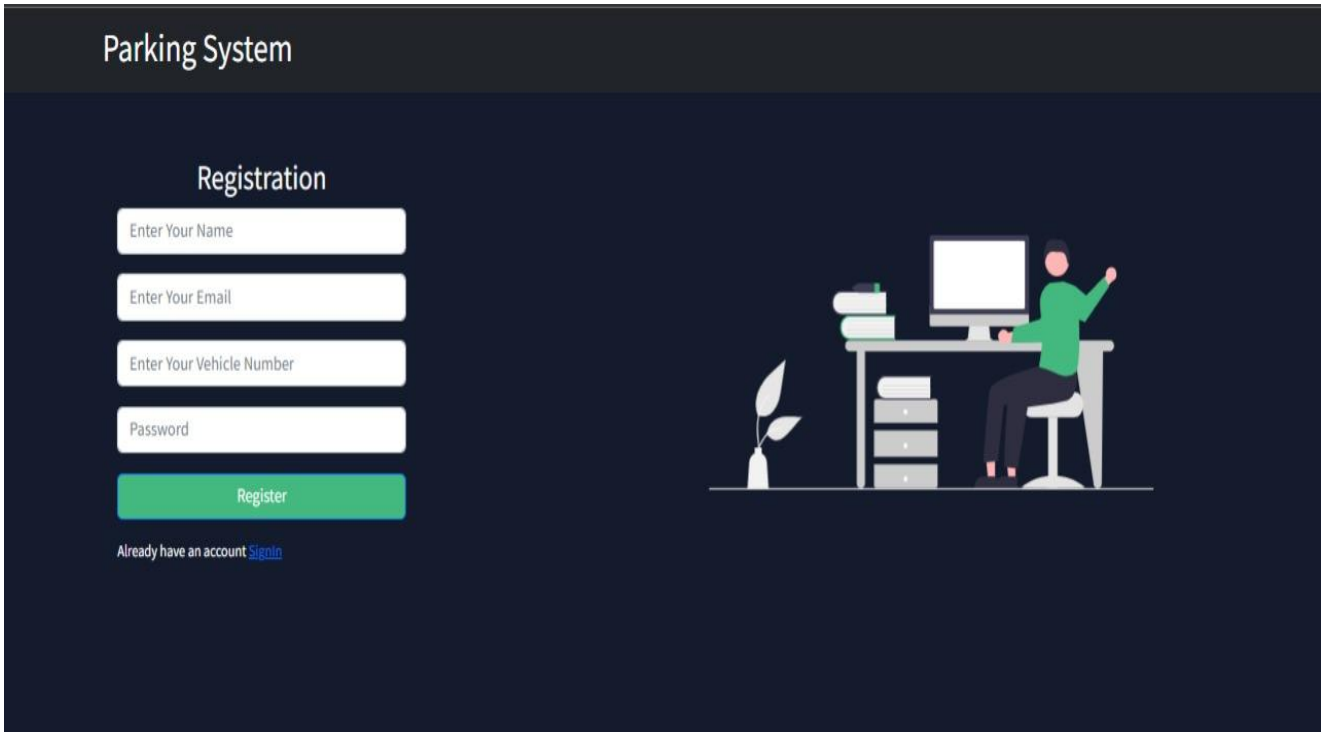


IMAGE 5.2.2 SIGN UP

ADMIN DASHBOARD

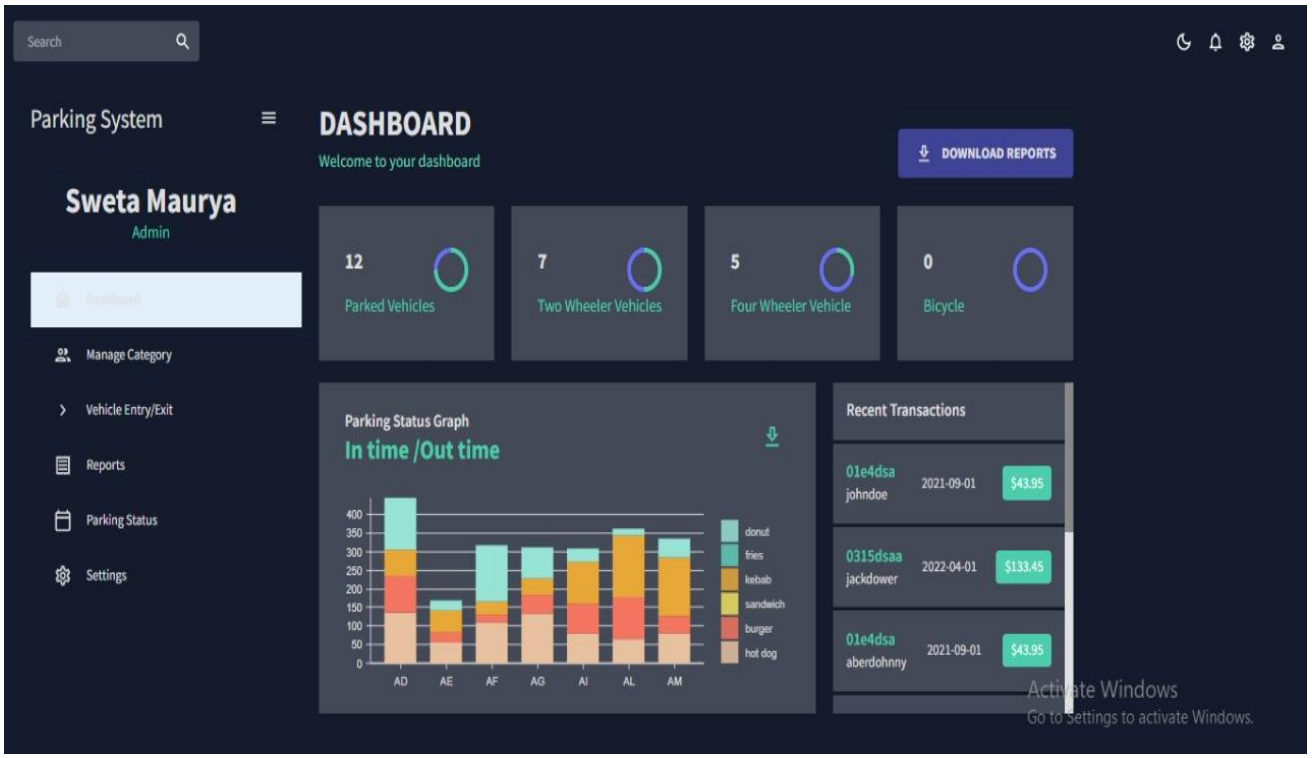


IMAGE 5.2.3 ADMIN DASHBOARD

USER DASHBOARD

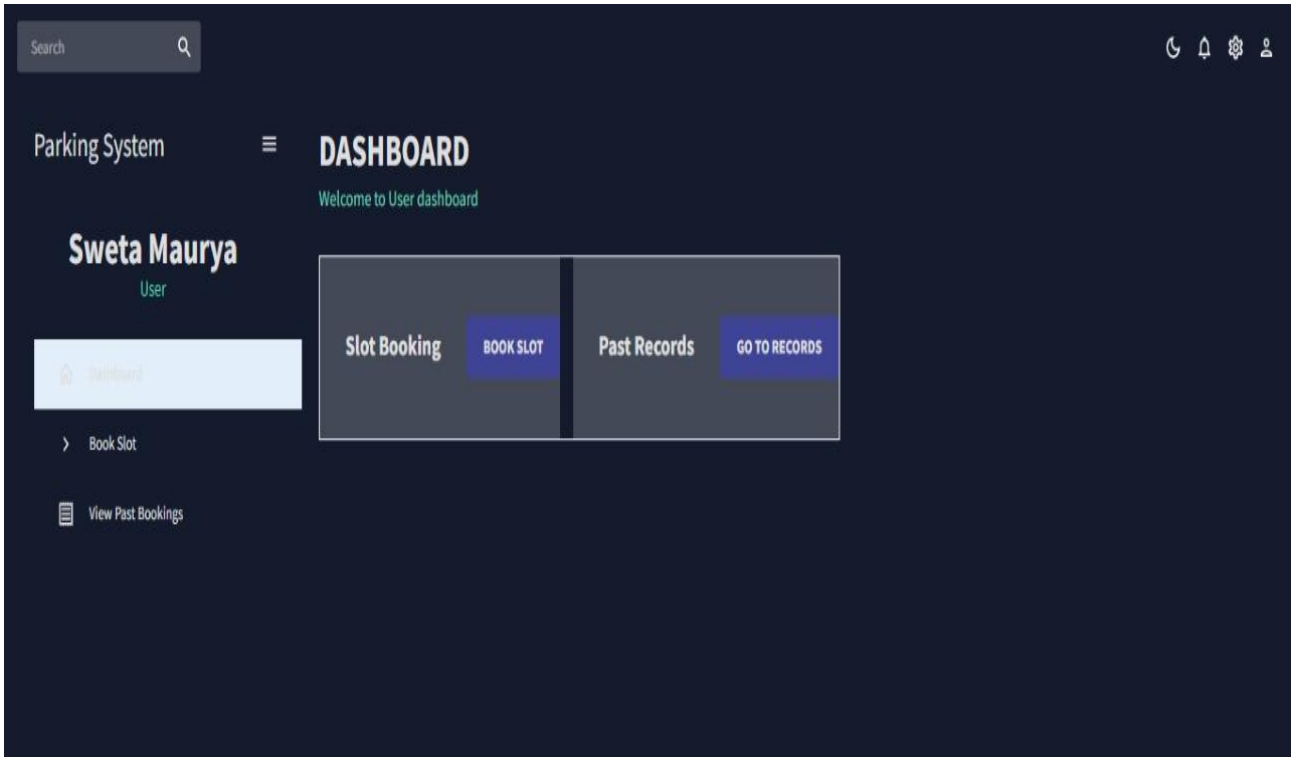


IMAGE 5.2.4 USER DASHBOARD

BOOK SLOTS

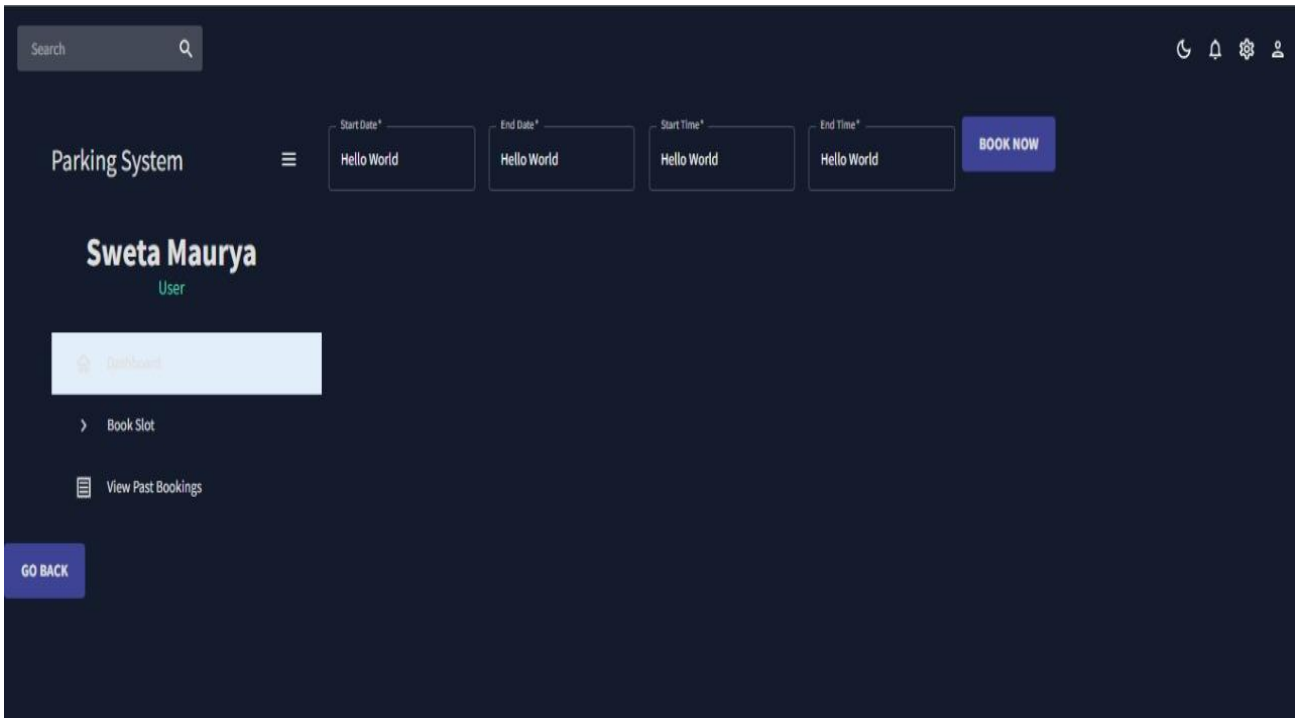


IMAGE 5.2.6 BOOK SLOTS

VIEW SLOTS

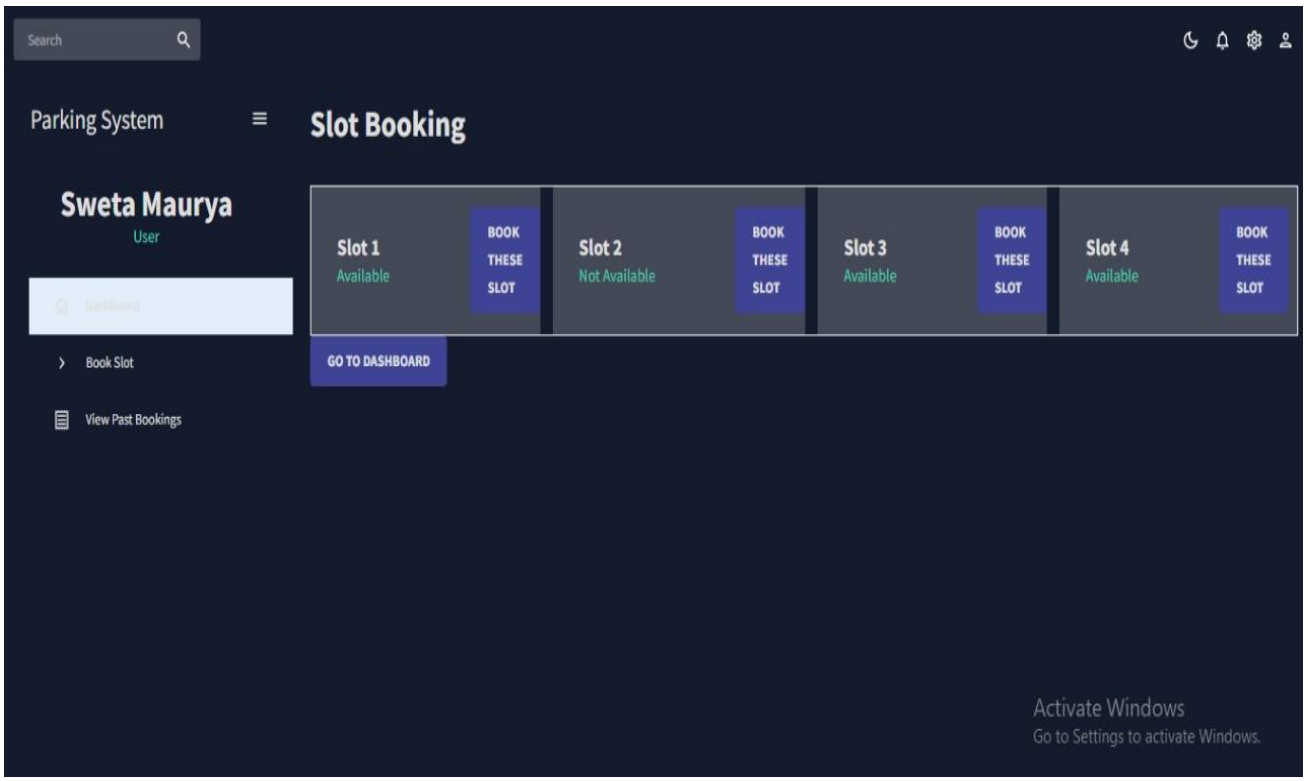


IMAGE 5.2.7 VIEW SLOTS

ADMIN REPORTS

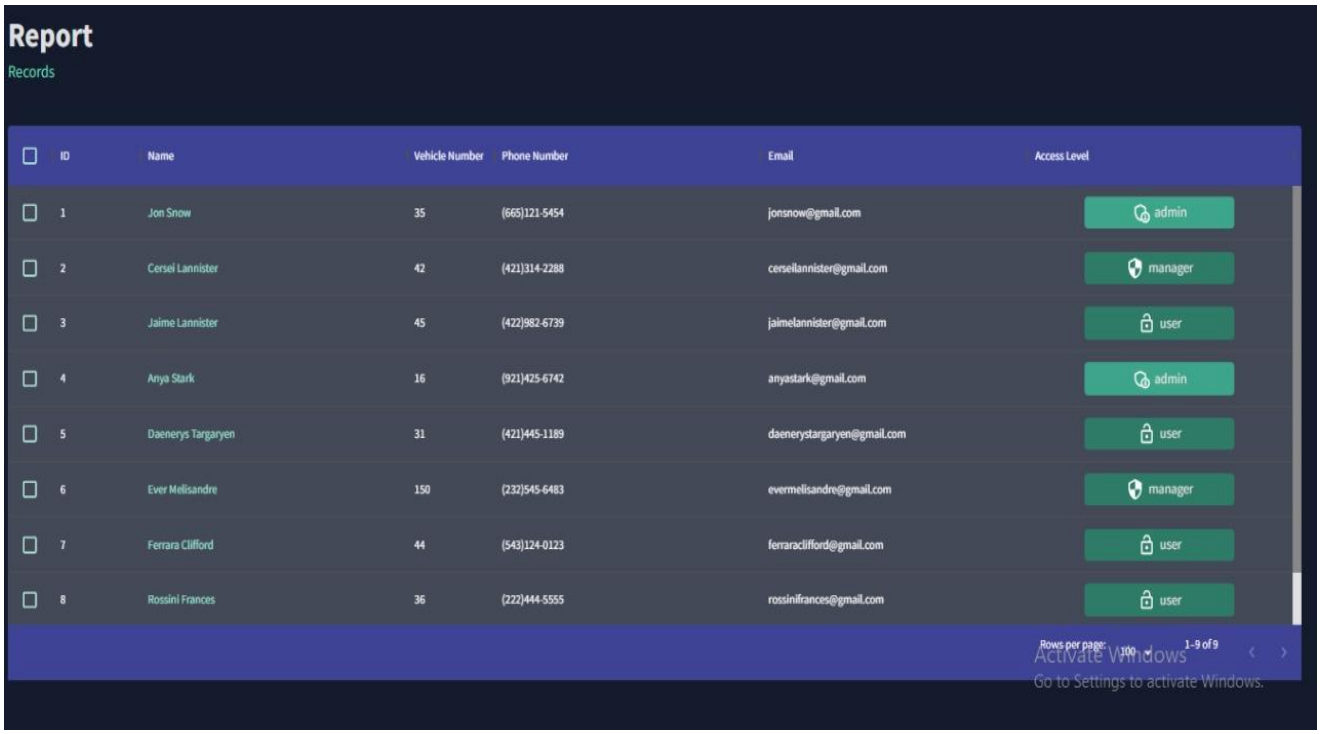


IMAGE 5.2.8 ADMIN REPORTS

PAST RECORD OF USER

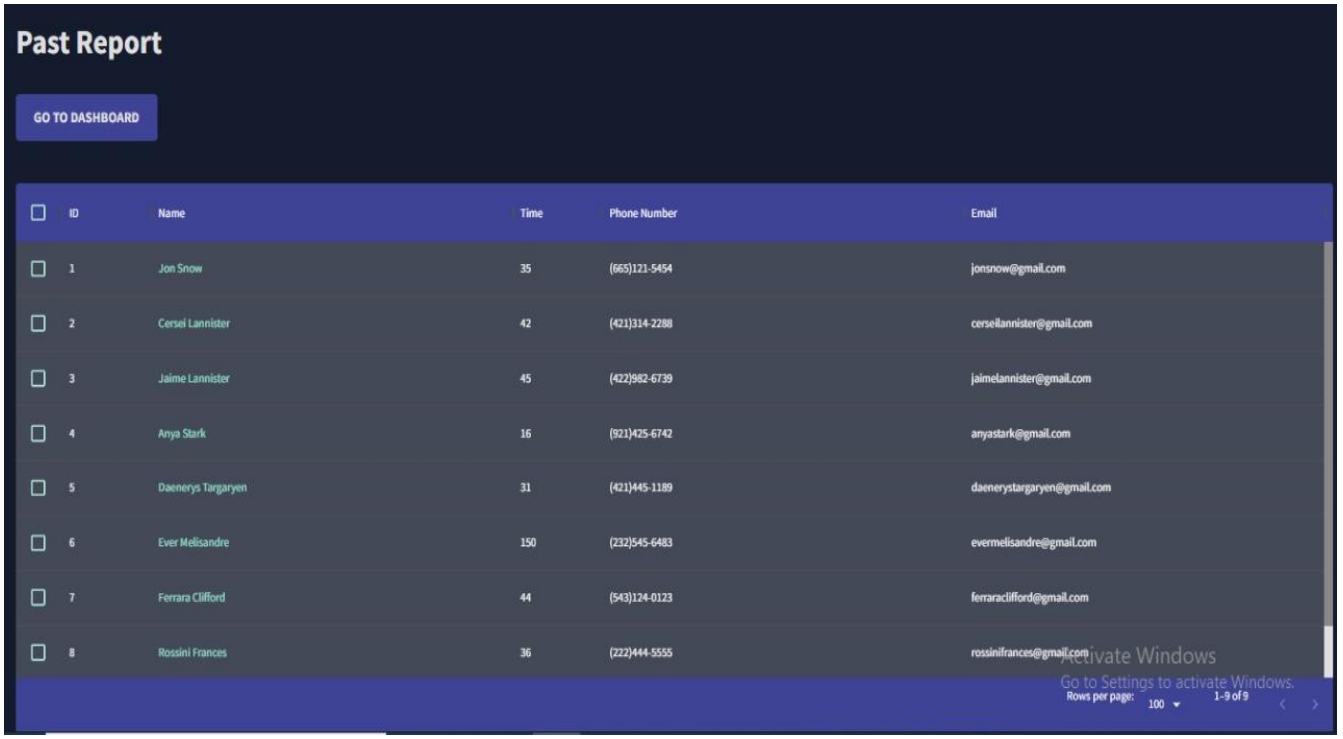


IMAGE 5.2.9 PAST RECORD OF USER

VEHICLE ENTRY AND EXIT

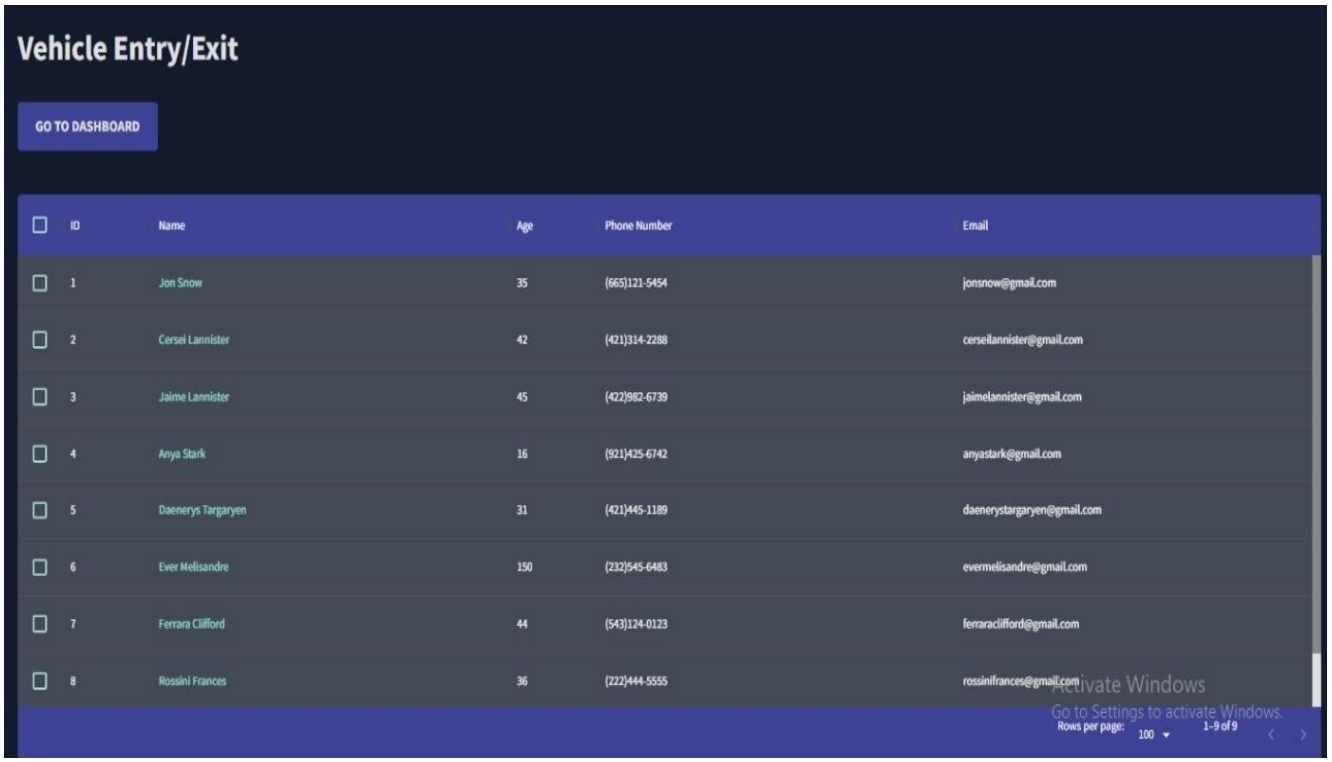


IMAGE 5.2.10 VEHICLE ENTRY/EXIT

PARKING STATUS

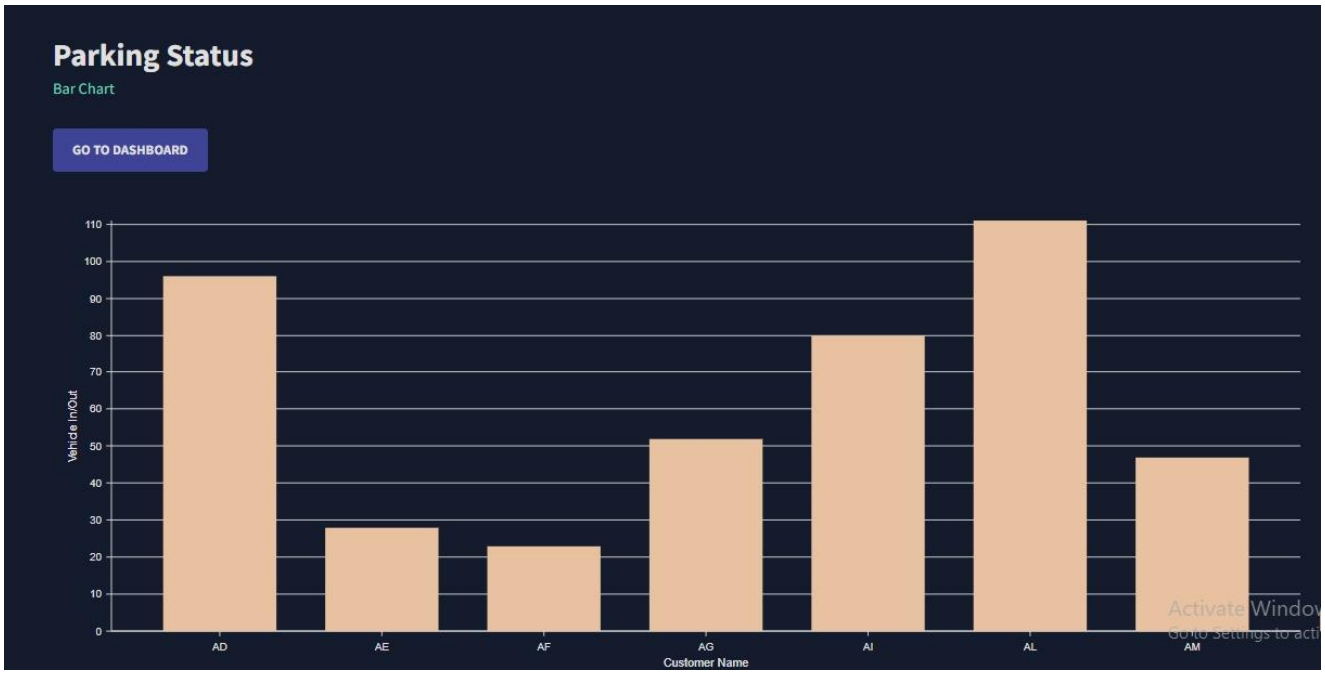


IMAGE 5.2.11 PARKING STATUS

CHAPTER 6: CONCLUSION

This project was developed using React Js and Node Js based on the requirement specification of the user and the analysis of the existing system, with flexibility for future enhancement. VEHICLE PARKING MANAGEMENT SYSTEM is very useful for clients and drivers as they can book parking space from home and admin can manage them. In big city areas finding a parking place for vehicles has been almost impossible and everything was done manually requiring many laborers so this project will help a lot in those areas as it requires only a few people to run it.

This particular project deals with the problems of managing a parking space and avoids the problems which occur when carried manually. Identification of the drawbacks of the existing system leads to the designing of a computerized system that will be compatible with the existing system with the system which is more user- friendly and more GUI oriented.

CHAPTER 7 : REFERENCES

1. https://www.cleverciti.com/en/smart-parking
2. Car parking application using React, Node, express and Mongo based on IOT
3. https://www.mantratec.com/Solutions/Parking-Management-System
4. https://www.sourcecodester.com/php/14415/vehicle-parking-management-system-project-phpmysql-full-source-code.html

CHAPTER 8 :FUTURE WORK

Our System Vehicle Parking Management System is mainly used in big cities where now finding parking space can cause a lot of traffic problems to other vehicles and can take much time. So, this version of computerized programs will now help in those fields. It can only be managed by one person efficiently.

Although we have achieved many of our thoughts for this project, there are still some which we need to work on. In the future we would now like to improve financial transactions in computerized methods according to time.

We will be thankful for your honest review of this software so we can make it even more efficient and update with new features.

CHAPTER 9: ANNEXURE

Tools and Technology:

NODE JS:

Node.js is a very powerful JavaScript-based platform built on Google Chrome's JavaScript V8 Engine. It is used to develop I/O intensive web applications like video streaming sites, single-page applications, and other web applications. Node.js is open source, completely free, and used by thousands of developers around the world.
Before proceeding with this tutorial, you should have a basic understanding of JavaScript. As we are going to develop web-based applications using Node.js, it will be good if you have some understanding of other web technologies such as HTML, CSS, AJAX, etc.

Link:tutorialspoint.com/node js/index.html

REACT JS:

The ReactJS tutorial provides basic and advanced concepts of ReactJS. Currently, ReactJS is one of the most popular JavaScript front-end libraries which has a strong foundation and a large community.

ReactJS is a declarative, efficient, and flexible JavaScript library for building reusable UI components. It is an open-source, component-based front end library which is responsible only for the view layer of the application. It was initially developed and maintained by Facebook and later used in its products like WhatsApp & Instagram.

Our ReactJS tutorial includes all the topics which help to learn ReactJS. These are ReactJS Introduction, ReactJS Features, ReactJS Installation, Pros and Cons of ReactJS, ReactJS JSX, ReactJS Components, ReactJS State, ReactJS Props, ReactJS Forms, ReactJS Events, ReactJS Animation and many more.

Link :https://tutorialspoint.com/reactjs/index.htm

About College

Our spirituous efforts are directed towards leading our student community to such an acme of technical excellence that can satisfy the requisition of the industry, the nation and the globe at large. The generation of an entirely different community of students aiming at attaining technical expertise and utilizing the technical know-how in the service of mankind is at the root of our efforts. We have the following aims before us.

- To offer guidance, motivation and inspiration for full growth of hidden traits
- To impart technical and need-based education by conducting elaborated training programs.
- To shape and mold the personality of future generation
- To construct fertile ground for resting dire challenges
- To cultivate the feeling of belongingness amongst the faction of engineers

Establishment:

U. V. Patel College of engineering (UVPCE) situated in Ganpat vidyanagar campus was established in september-1997 under the aegis of Mehsana District Education Foundation with a view of educating and training young talented students of Gujarat at the field of engineering and technology to meet the needs of industries in Gujarat and beyond for the growth of the industries.

The College is named after Shri Ugarchandbhai Varanasibhai Patel, a leading industrialist of Gujarat, for his generous support. It is a self-financed institute approved by All India Council for Technical Education (AICTE), New Delhi, the Government of Gujarat and now it became the constituent college of Ganpat University.

The College is spread over 25 acres of land and is a part of Ganpat vidyanagar Campus. It has two ultra- modern buildings of architectural splendor measuring 6100 sqm. and 2700 sqm., for housing class rooms, tutorial rooms, seminar hall, offices, drawing hall, workshop, library, well equipped different departmental laboratories, several computer labs with internet connectivity through 1 Gbps Fiber link, satellite link education center with two-way audio and one-way video link with Gandhinagar etc.

Placement plays a key role in shaping the future of the students, and keeping this in mind; the institute has forged healthy relations with the prominent industries. These tie-ups are mutually beneficial. The industries get a chance to employ the resources of the institute for their R & D. In turn they extend every possible help to the institute especially with regard to providing hands-on training to the students. As part of this initiative, Incubation Centre/Start-up activities have also been developed.

Ganpat University and the township of Ganpat Vidyanagar, a high-tech education campus is a joint initiative, purely philanthropic in nature, by a large number of industrialists and technocrats, noble farmers, and affluent businessmen for the mission of “Social Upliftment

through Education". The University was established by the State Government by the enactment of Act No.19/2005 on 12 April 2005. In consideration of its contribution to the Education in a short period of time, the University has been given Permanent Membership of Association of Indian Universities (AIU), New Delhi besides having membership from the Association of Commonwealth Universities (ACU), UK, and International Association of Universities (IAU), France.

Ganpat University offers various unique, quality, industry-linked, and sector-focused Diploma, Undergraduate, Postgraduate, and Research level programs (Professional and Non-professional) in the

field of Engineering, Management, Computer Applications, Pharmacy, Sciences, Commerce & Social Science, Architecture, Design & Planning, Maritime Studies, Law, etc.