PROJECT REPORT

On

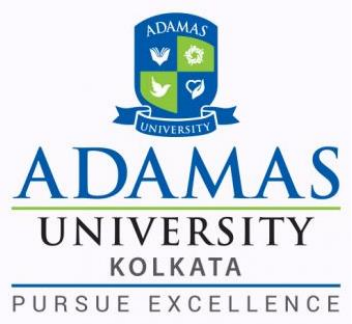
"Cloud Based Vehicle Tracking Management System"

Submitted in partial fulfilment of the requirements for the award of

Bachelor of Technology (B.Tech)

In the department of

Computer Science and Engineering



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Jan 2022 – June 2022

CERTIFICATE

This is to certify that the project report entitled **"Cloud Based Vehicle Tracking Management System"**, submitted to the School of Engineering & Technology (SOET), **ADAMAS UNIVERSITY, KOLKATA** in partial fulfilment for the completion of **Semester – 8th** of the degree of **Bachelor of Technology** in the department of **Computer Science and Engineering**, is a record of bonafide work carried out by **Anindya Nag (UG/02/BTCSE/2018/005), Tanushree Bera (UG/02/BTCSE/2018/015), Taniya Basu (UG/02/BTCSE/2018/030), Anwesha Kar(UG/02/BTCSE/2018/032)** under our guidance.

All help received by us from various sources have been duly acknowledged.

No part of this report has been submitted elsewhere for award of any other degree.

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ACKNOWLEDGEMENT

The satisfaction and euphoria that accompany the successful completion of any task would be incomplete without the mentioning of the people whose constant guidance and encouragement made it possible. We take pleasure in presenting before you, our project, which is the result of a studied blend of both research and knowledge.

We express our earnest gratitude to our **Mrs. Gulfishan Mobin (Assistant Professor)**, **Department of Computer Science and Engineering**, for their constant support, encouragement and guidance. We are grateful for their cooperation and valuable suggestions.

Finally, we express our gratitude to all other members who are involved either directly or indirectly for the completion of this project.

DECLARATION

We, the undersigned, declare that the project entitled "**Cloud Based Vehicle Tracking Management System**", being submitted in partial fulfillment for the award of **Bachelor of Technology** Degree in **Computer Science and Engineering**, affiliated to **ADAMAS University**, is the work carried out by us.

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ABSTRACT

The entire world has now entered a computing era, particularly Cloud Computing, which has been connected with the Internet of Things (IoT). The IoT system functions as a cloud-based universal global neural network that connects various things, objects, and sensors. RFID (Radio Frequency Identification) and wireless sensor network technologies are ready to accept new challenges. As a result, a large amount of data is being generated, acquired, and stored, and that data is being processed into beneficial actions in order to take control over our lives and make our lives far more comfortable and secure. Cloud computing technologies facilitate large data processing and enable quick decision-making using different machine learning techniques. It also addresses the plethora of challenges associated with processing and handling those high volumes of data, as well as storing it in cloud environments. Nowadays every organization demands to update their information in the cloud so that data can be fetched from anywhere. In this regard, in most countries internet access is readily available to people on their systems and their smartphones, so the information transmission can be much easier and more cost-effective through the internet. Biometrics cyber security scanners, traffic and parking management systems, driverless vehicles, and home automation are just a few of the smart applications that use cloud computing and IoT together. The authors of this paper have discussed how data production, data integrity, confidentiality, authentication, and verification have become more essential as cloud computing and IoT-based smart applications have grown latterly.

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CHAPTER 1
INTRODUCTION

1.1 Background

Cloud computing has evolved as a significant computing paradigm, allowing for ubiquitous, on-demand access to a shared pool of programmable computer resources through the Internet. Software (applications, databases, or other data), infrastructure, and computer platforms are commonly employed as data storage, administration, and processing services in this paradigm. They provide a variety of advantages, including lower IT expenses, more flexibility, and decreased space and time complexity. Many concerns, including architectural solutions, performance optimization, resource virtualization, providing dependability and security, maintaining privacy, and so on, must be handled in order to reap the benefits of cloud computing's multiple promises. Another important technology development that is now gaining traction is the Internet of Things (IoT). Intelligent and self-configuring embedded devices and sensors are interconnected in dynamic and global network infrastructure in the Internet of Things, enabling scalability, flexibility, agility, and ubiquity in fields such as massive scale multimedia data processing, storage, access, and communications. IoT is rekindling interest in Big Data, thanks to the massive amounts of fresh data created by sensors and other input devices that must be stored, analysed, and retrieved. Data confidentiality, data verification, authorization, data mining, secure communication, and computation are all difficulties that arise as a result of the requirement to monitor, analyse, and act on these data. Cloud computing provides computing power, database storage, apps, and IT resources on demand. It allows businesses to use a computational resource, such as a virtual machine (VM), rather than developing their own computer infrastructure. Cloud computing has now made its way into mainstream IT and infrastructure. Many internet giants, like Amazon, Alibaba, Google, and Oracle, are developing machine learning tools using cloud technology to provide a wide range of solutions to organizations all over the world. This study attempts to educate scholars on the importance of cloud computing in IoT and why the two are inextricably linked.

1.2 Purpose of the Project

Cloud computing is a concept for providing on-demand network access to a shared pool of configurable computing resources that may be swiftly supplied and released with no administration effort or service provider contact.

This notion encompasses cloud architectures, security, and deployment procedures. The following are five key aspects of cloud computing:

- **Self-service on demand:** A consumer with an immediate need at a specific moment can access computing resources in an automated manner, bypassing the necessity for human interaction with providers of these services.
- **On-demand self-service:** A consumer with an instantaneous need at a particular timeslot can avail computing resources in an automatic fashion without resorting to human interactions with providers of these resources.
- **Large network access:** These computer resources are delivered over a network (e.g., the Internet) and used by a variety of client applications on a variety of platforms at a consumer's location.
- **Resource allocation**: A cloud service provider's computer resources are 'pooled' together to serve several customers using either the multi-tenancy or virtualization models, "with distinct physical and virtual resources dynamically assigned and reassigned according to consumer demand". Two essential elements drive the establishment of such a pool-based computing paradigm: economies of scale and specialization. A pool-based paradigm has the effect of making actual computing resources 'invisible' to consumers, who in general have no influence or knowledge of where, how, or what these resources are created. Consumers, for example, have no way of knowing where their data would be stored in the Cloud.
- **Elasticity:** Computing resources become immediate rather than persistent for consumers: there is no up-front commitment or contract because they can use them to scale up anytime, they choose and release them when they are done scaling down. Furthermore, resource supply appears to them to be boundless, and consumption can swiftly rise to satisfy peak demand at any time.
- **Measured infrastructures:** Despite the fact that computer resources are pooled and used by multiple customers, the cloud infrastructure's metering capabilities allow it to apply proper techniques to quantify resource utilization for each individual consumer.

1.3 Problem Statement

To build a dynamic website to manage vehicle tracking and keep track of all incoming & outgoing vehicles and implement using RFID tag. The data will be tracked on a real-time basis and stored in the cloud.

1.4 Objective

a. When the car is in the parking space, we can check the in-time by reading the RFID card and we can get instantly all the details of the car like the owner's name, car number.
b. Keeping the records of all the registered vehicles within time and out time.
c. If the area has more than one number of gates, in that case also we can get all the information within one website.
d. We can track the vehicle easily by checking the owner name of the vehicle.
e. As all the information are readily available, anyone can access those information from the website.

1.5 Structure of Project

The outline of this project is shown as follows –

- In Chapter 2, Literature Reviews of some of the previous related studies are provided.
- In Chapter 3, Technology used
- In Chapter 4, the methodology of the proposed system will be provided.
- In Chapter 5, the implementation and results will be provided.
- In Chapter 6, the conclusion and recommendation will be provided.

CHAPTER 2
LITERATURE REVIEW

2.1 Literature review some of the previous research papers

Table: 2.1: Literature review

Sl. No.	Paper Title	Authors	Publication Year	Objectives
01.	A literature review on cloud based smart transport system [1]	Gulfishan Mobin et al.	2021	In this paper researchers have used numerous advanced technologies to construct a smart transportation system within and outside of a city in order to kickstart the urban lifestyle. This flow of masses from rural to urban areas is mostly due to the allure of urban and comfortable living, which has generated enormous pressure on urban lifestyles and, in particular, urban transportation systems.
02.	A Real-Time Cloud-Based Intelligent Car Parking System for Smart Cities [2]	Fazel Mohammadi et al.	2019	This paper integrated the collection of on-site data using wireless sensors, as well as real-time and streaming data analytics on IoT data, which are being investigated in order to dynamically check the availability of parking spaces in various parking areas and address the aforementioned challenges.
03.	Intelligent Traffic Control System Based on Cloud	Mu Shengdong et al.	2019	This paper is based on intelligent traffic flow data, where the cloud control management server in the center uses deep

	Computing and Big Data Mining [3]			learning and overrun machine intelligence study methods such as traffic flow data forecasting for training to predict urban road short-term traffic flow and congestion.
04.	An IoT-based E-Parking System for Smart Cities [4]	Pampa Sadhukhan et al.	2017	An E-parking system based on the internet of things is offered as a prototype in this work. In order to address the aforementioned concerns as well as provide smart parking management throughout the city, the proposed E-parking system includes an integrated component known as a parking meter.
05.	Cloud Based Vehicle Parking System for Anonymous Place Using Internet of Things [5]	R.Murugan et al.	2017	The clever halting framework, as well as its application, has been introduced in this paper. From the various situations of the smart stopping framework's implementation, its efficacy in resolving the movement issue that arises, particularly in cities where activity, clogs, and insufficient parking spots are unquestionable.
06.	SVPS: Cloud-Based Smart Vehicle Parking System Over Ubiquitous VANETs [6]	Qamas Gul Khan Safi et al.	2017	This manifesto proposes a cloud-based smart vehicle parking system (SVPS) that operates across ubiquitous VANETs to provide more reliable parking options. We suggested a new cloud-based smart vehicle parking system (SVPS) over ubiquitous VANETs that provides vehicles with smart

				parking assistance while delegating processing to the cloud infrastructure by enabling a cooperative environment between vehicles and the cloud.
07.	Smart Parking With Reservation In Cloud Based Environment [7]	Karthi.M et al.	2016	This paper includes an effective method for checking the availability of parking spaces and reserving a slot. Existing work focuses solely on parking slot availability.
08.	Internet of Things Approach to Cloud-Based Smart Car Parking [8]	Yacine Atif et al.	2016	This is a project in the process to leverage private land properties for parking in order to reduce pressure on public agencies, generate new revenue streams, and engage new entities in the intermediate market. The goal is to shift parking management from a simple physical company to one that turns parking into a computational service.
09.	An Approach to IoT based Car Parking and Reservation system on Cloud [9]	Vaibhav Hans et al.	2015	This paper introduces the idea of employing the Internet of Things (IoT) and cloud-based technology in city parking services. The suggested system is described at a high level.
10.	Integration Challenges of Intelligent Transportation Systems with Connected Vehicle, Cloud Computing,	Juan Antonio Guerrero Ibanez et al.	2015	This manifesto describes and analyzes some of the integration obstacles that must be overcome in order for an intelligent transportation system to handle transportation sector issues such as high fuel prices, high CO2 emissions, increased traffic congestion, and enhanced road

	and Internet of Things Technologies [10]			safety.
11.	A Cloud-Based Smart-Parking System Based on Internet-of-Things Technologies [11]	Thanh Nam Phan et al.	2015	This study focuses on a system that assists users in automatically finding a free parking space at the lowest cost using new performance metrics to determine the user parking cost by taking into account the distance and a total number of free spaces available in each parking zone. The average waiting time for service in each car park is reduced, and the total time spent in each car park is reduced.
12.	Rapid Development of Smart Parking System with Cloud-based Platforms [12]	Zeldi Suryady et al.	2014	This strategy is discussed in order to accelerate the development of smart parking systems. The system is quickly put together using cloud-based platforms (PaaS). The Carriots platform serves as IoT middleware, while the Ducksboard Platform serves as the front-end dashboard.
13.	A Cloud-Based Intelligent Car Parking Services for Smart Cities [13]	Zhanlin Ji et al.	2014	The broad notion of deploying cloud-based intelligent car parking services in smart cities as a key application of the Internet of Things (IoT) paradigm is depicted here. The relevant IoT subsystem consists of a sensor layer, a communication layer, and an application layer.

14.	A Cloud-Based Car Parking Middleware for IoT-Based Smart Cities: Design and Implementation [14]	Zhanlin Ji et al.	2014	This paper describes a cloud-based intelligent car parking system for use on a university campus, along with details on its design, implementation, and operation. The car parking system is composed of three layers: sensor, communication, and application. The operating platform and the system middleware have been detailed.
15.	Cloud Computing for Intelligent Transportation System [15]	Prashant Trivedi et al.	2012	The widespread usage of mobile agents will result in the formation of a complex, powerful organization layer, which will necessitate massive processing and power resources. This is the ultimate idea described here.
16.	Novel Design of Intelligent Internet-of-vehicles Management System Based on Cloud-Computing and Internet-of-things [16]	Ying Leng et al.	2011	In this study, they introduced a unique intelligent internet-of-vehicles administration system with cheap cost, high scalability, environmental friendliness, high compatibility, and ease of update that may replace traditional traffic control systems and greatly enhance road traffic.

CHAPTER 3
TECHNOLOGY USE

3. System Requirements

3.1 Hardware Requirements

3.1.1 RFID tag and RFID Reader: The RFID reader is a network-connected device that can be either portable or fixed. Radio waves are used to transmit the impulses. When the tag is turned on, it sends a wave back to the antenna, which is converted into data. The RFID tag contains the transponder.

3.1.2 Breadboard: A breadboard is a rectangular piece of plastic with multiple little holes in it. These holes make prototyping electronic circuits easy, such as this one with a battery, switch, resistor, and LED (create and test an early version of).

3.1.3 D1 Mini: D1 Mini is a microcontroller development board with wireless 802.11 (WiFi) capabilities. It converts the widely used ESP8266 wireless microcontroller into a complete development board.

3.1.4 USB Cable: USB ports allow USB devices to be connected to one another and digital data to be transferred using USB cables. They can also provide electric power to devices that require it over the cable. The USB standard is available in both wired and wireless forms, with the wired version requiring USB ports and connections.

3.1.5 Connector: Connectors are devices that connect or disconnect circuits electrically. They can be connected and disconnected with their hands or with simple tools, without the need for special tools or processes like soldering.

Table:3.1: Hardware Function

Requirements	Quantity (For one Device)	Function
RFID tag and RFID reader	Min. 1 1	Here RFID readers and tag have been used to track the real time data during parking, most specifically to keep records of tracking.
D1 mini	1	D1 mini works as WiFi module and acts as a web server, allowing any WiFi-connected device to interact with the board and control its pins wirelessly.
Breadboard	1	Breadboards are used to make the internal connection by joining RFID, D1 mini, USB port and connectors together.
USB Cable	1	USB port is used to supply the power.
Connectors	7	Connectors are used to connect the circuit appropriately.

3.2 Website Implementation

3.2.1 Programming language

3.2.1.1 PHP: PHP is a widely used open-source general-purpose scripting language that can be embedded in HTML and is well suited for web development. Whether you're in the middle of a project or at the end, PHP is incredibly versatile. PHP has the ability to be a useful programming language. It is scalable when designing programs and can be used to generate a large number of applications. This is why we use PHP.

3.2.1.2 JavaScript: JavaScript is a computer language that is mostly used by Web browsers to deliver a dynamic and interactive experience for users. The majority of the services and programs that make the Internet so crucial in modern life are written in JavaScript. JavaScript, in particular, is compatible with a variety of programming languages. It is also capable of developing both front-end and back-end apps.

3.2.1.3 CSS: CSS is a language for describing how Web pages are presented, including colors, layout, and fonts. It allows the presentation to be modified for various devices, such as large displays, small screens, and printers. In today's environment, CSS may be used with any XML-based markup language and is not dependent on HTML, users normally only wait a few seconds for a webpage to load. That is why we utilize CSS in this case. CSS reduces the time it takes for a page to load.

3.2.1.4 Bootstrap: Bootstrap is a powerful front-end framework for building modern webpages and web applications. It's open-source and free to use, but it comes with a plethora of HTML and CSS templates for UI elements like buttons and forms. JavaScript extensions are also supported by Bootstrap. It is primarily lightweight and adaptable. jQuery is used by several JavaScript plugins. With Bootstrap, anybody can create a visually appealing landing page. That is why we employ it.

3.2.1.5 MySQL: In the present big data ecosystem, MySQL is one of the most well-known technologies. MySQL is widely recognized as the most safe and dependable database management system, and it is utilized in prominent online applications such as Facebook and Twitter. MySQL offers a wide choice of high availability options, such as customized cluster servers, and is guaranteed to be available 24 hours a day, seven days a week.

3.2.2 Software Requirements

3.2.2.1 VS code: Visual Studio Code is a lightweight code editor that includes features for debugging, task execution, and version management. It seeks to give developers only the tools they need for a rapid code-build-debug cycle, leaving more complex workflows to full-featured IDEs like Visual Studio IDE. Vs code Supports multiple programming languages. It can determine whether any code snippets are missing. It comes with built-in Web application functionality. As a result, web

applications may be created and maintained in VSC. Various projects with multiple files and directories can be opened at the same time. These projects/folders could be related or unrelated to one another.

3.2.2.2 XAMPP: XAMPP is capable of serving web pages on the Internet. The most critical sections of the product are password-protected using a specific tool. XAMPP can also create and manipulate databases in MariaDB and SQLite, among other databases. It is very simple and lightweight to create set up for development, testing, and deployment. It handles many administrative tasks like checking the status and security.

3.2.2.3 ARDUINO: Arduinos contain a number of different parts and interfaces together on a single circuit board. Arduino comes in a complete package form which includes the 5V regulator, a burner, an oscillator, a micro-controller, a serial communication interface, LED, and headers for the connections. Arduino is automatic unit conversion capability.

CHAPTER 4
METHODOLOGY

4.1 Circuit and Pin Configuration:

4.1.1 Circuit

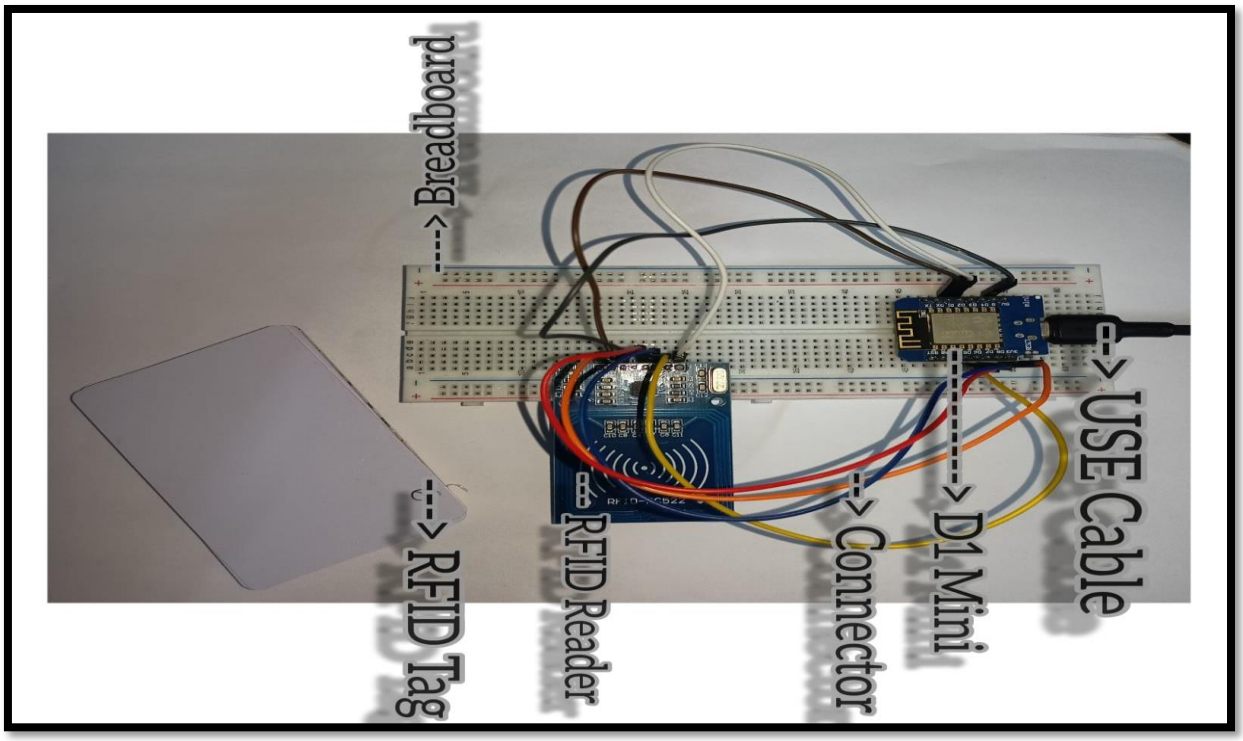


Figure:4.1: Circuit with Remark

For implementing our project, RFID card, Breadboard, Connectors have been used in hardware section and Arduino has been used for software section.

4.1.2 Pin Configuration

RFID Reader	--------->	**D1 mini**
SDA	--------->	D2
SCK	--------->	D5
MOSI	--------->	D7
MISO	--------->	D6
GND	---------->	G
RST	---------->	D1
3V	----------->	3V

4.2 Arduino Code:

Figure:4.2: Some part of Arduino Code

We have made our circuit using those components and used the Arduino code to do the interface successfully between hardware and software. Once one RFID is registered, the record automatically stored in the website by using cloud technology. We can easily keep tracking all the records.

4.3 Flow Control

4.3.1 Login Section:

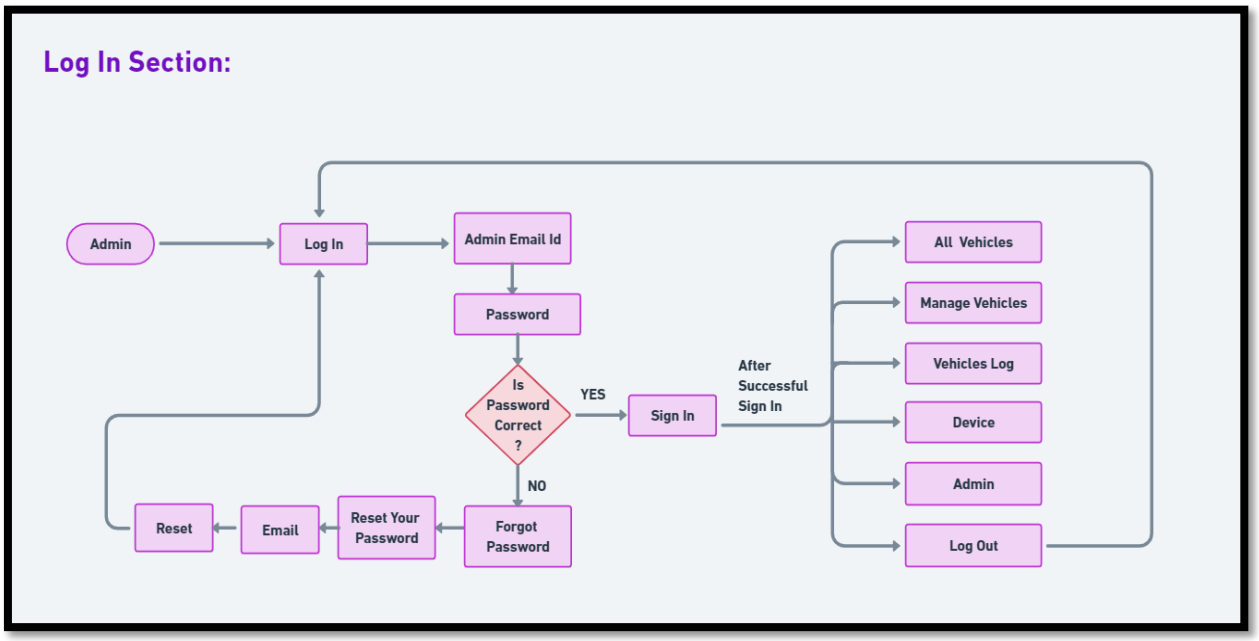


Figure:4.3: Flow control of Login Section

4.3.2 Admin Section:

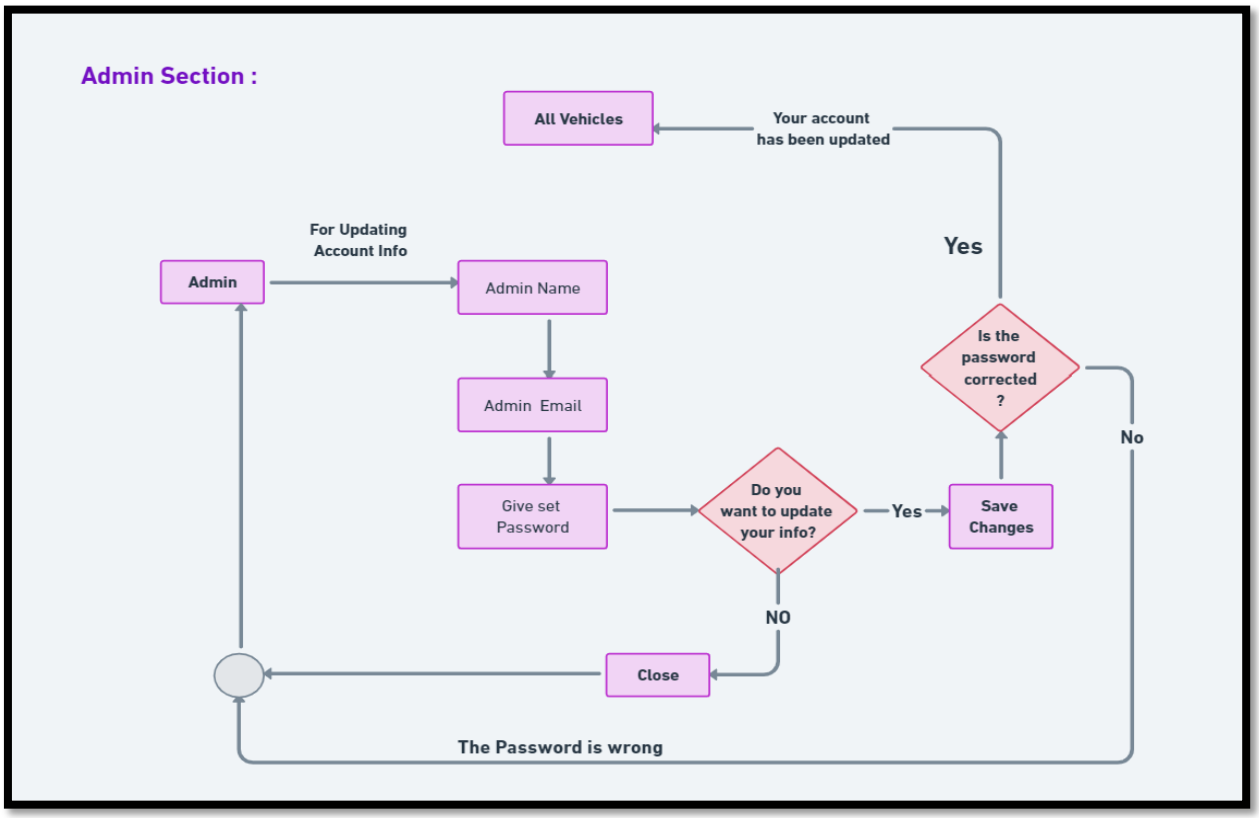


Figure: 4.4: Flow control of Admin Section

4.3.3 Device Section:

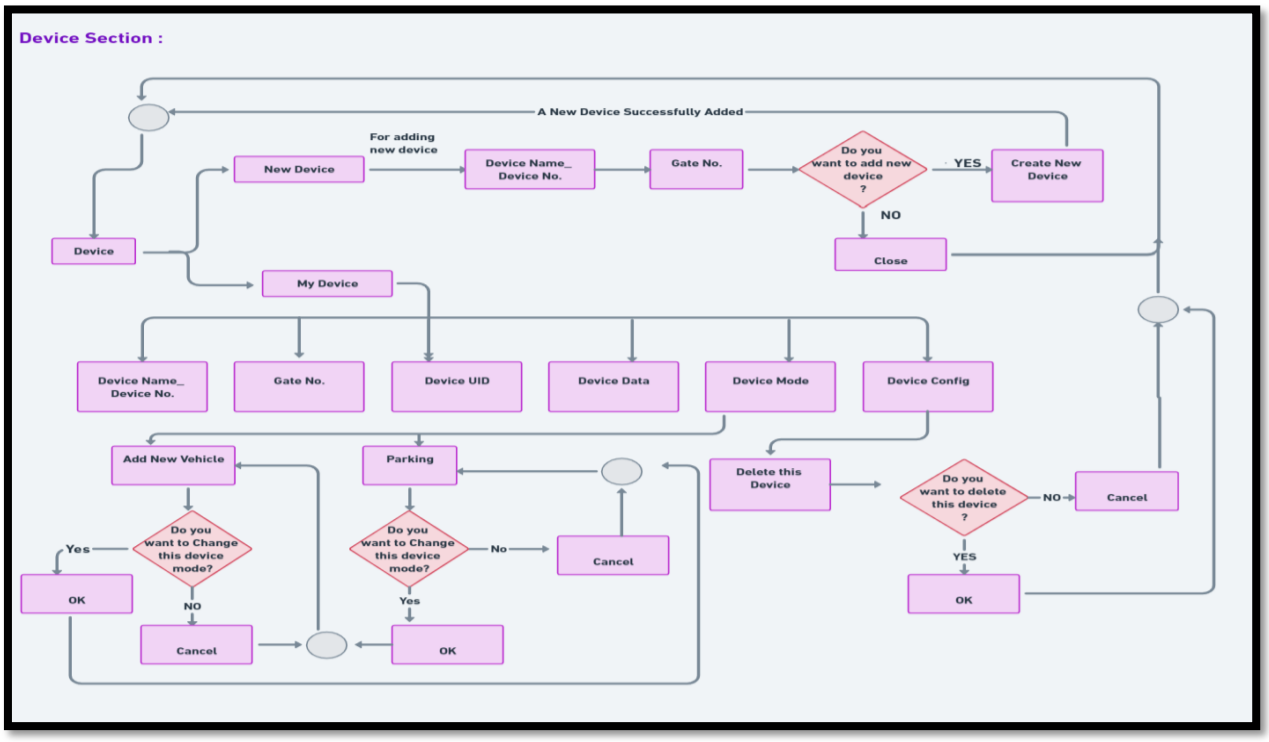


Figure:4.5: Flow control of Device Section

4.3.4 Manage Vehicles Section:

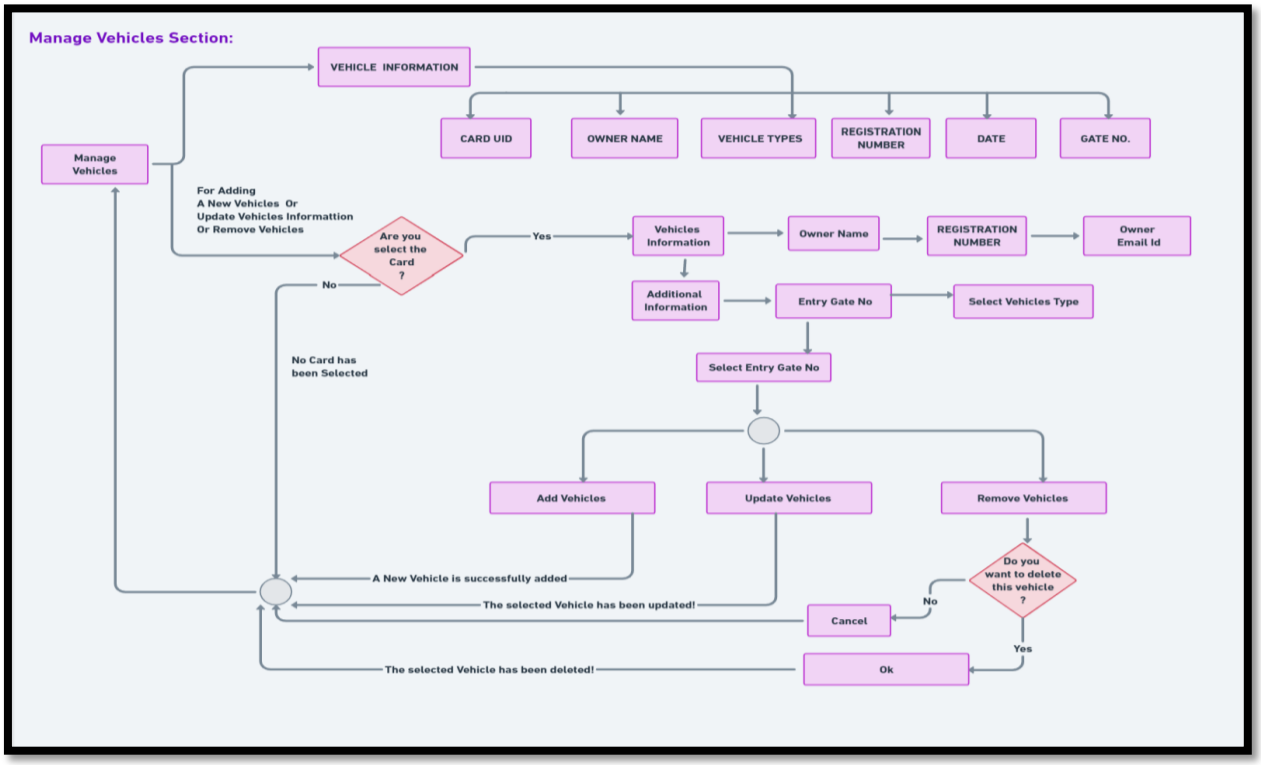


Figure:4.6: Flow control of Manage Vehicles Section

4.3.5 All Vehicles Section:

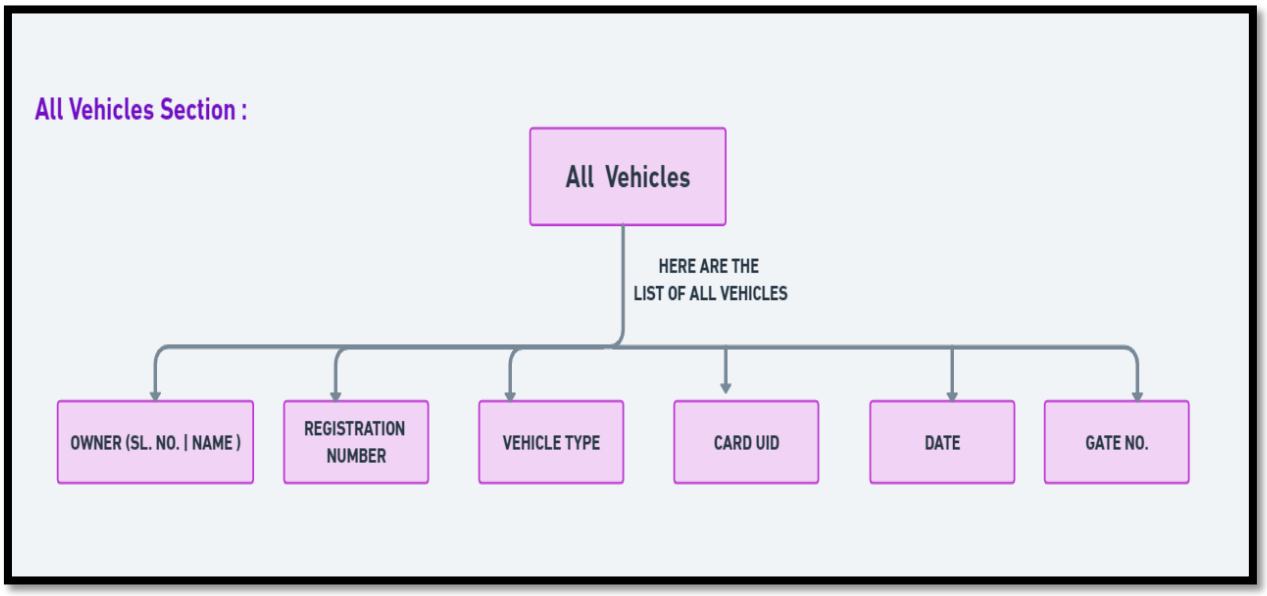


Figure:4.7: Flow control of All Vehicles Section

4.3.6 Vehicles Log Section:

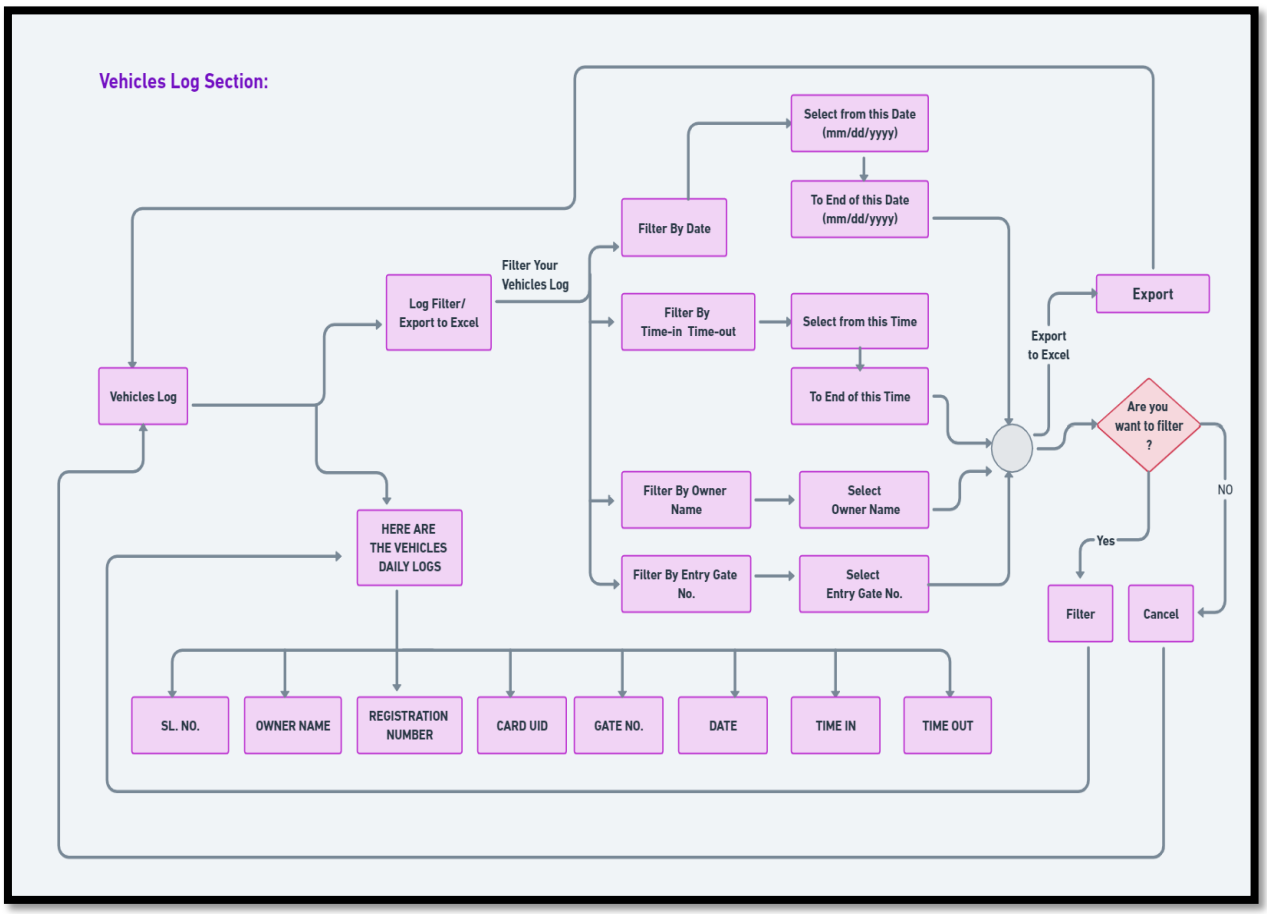


Figure:4.8: Flow control of Vehicles Log Section

4.4 Database Structure

4.4.1 Admin and Device Section:

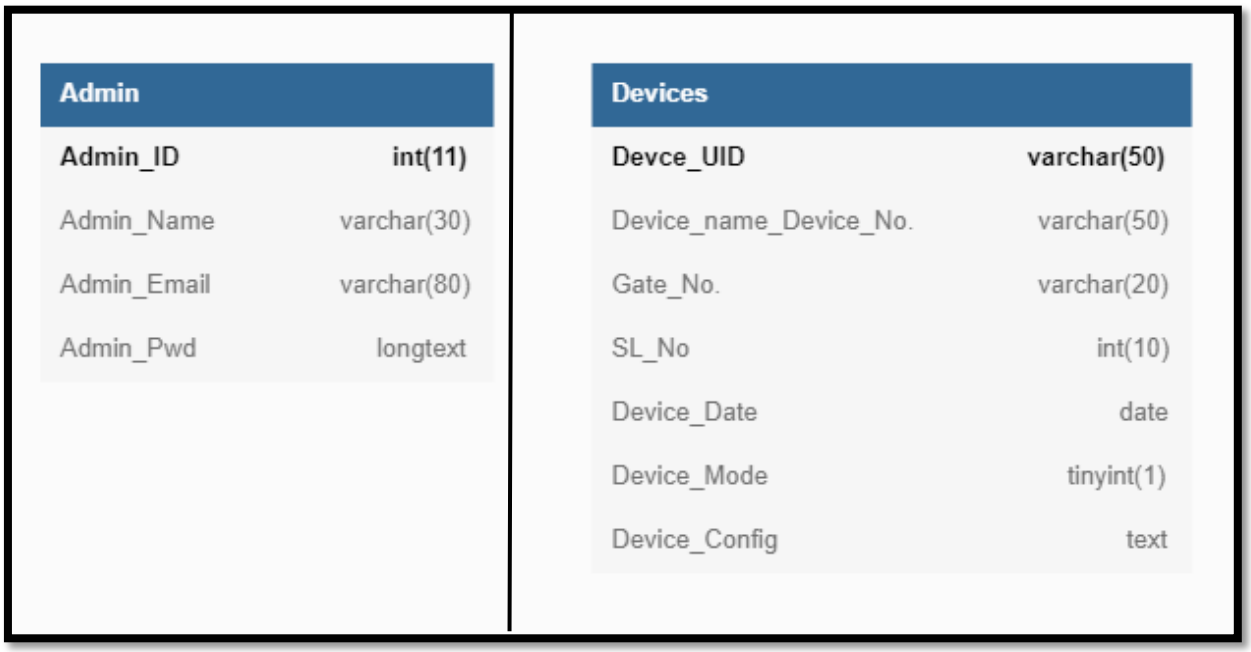


Figure:4.9: Database Structure of Admin and Device Section

4.4.2 Vehicles Section:

Figure:4.10: Database Structure of Vehicles Section

CHAPTER 5
Appendix/Outputs

5.1 Some Complex Result and their Proofs:

5.1.1 Log in and reset password page:

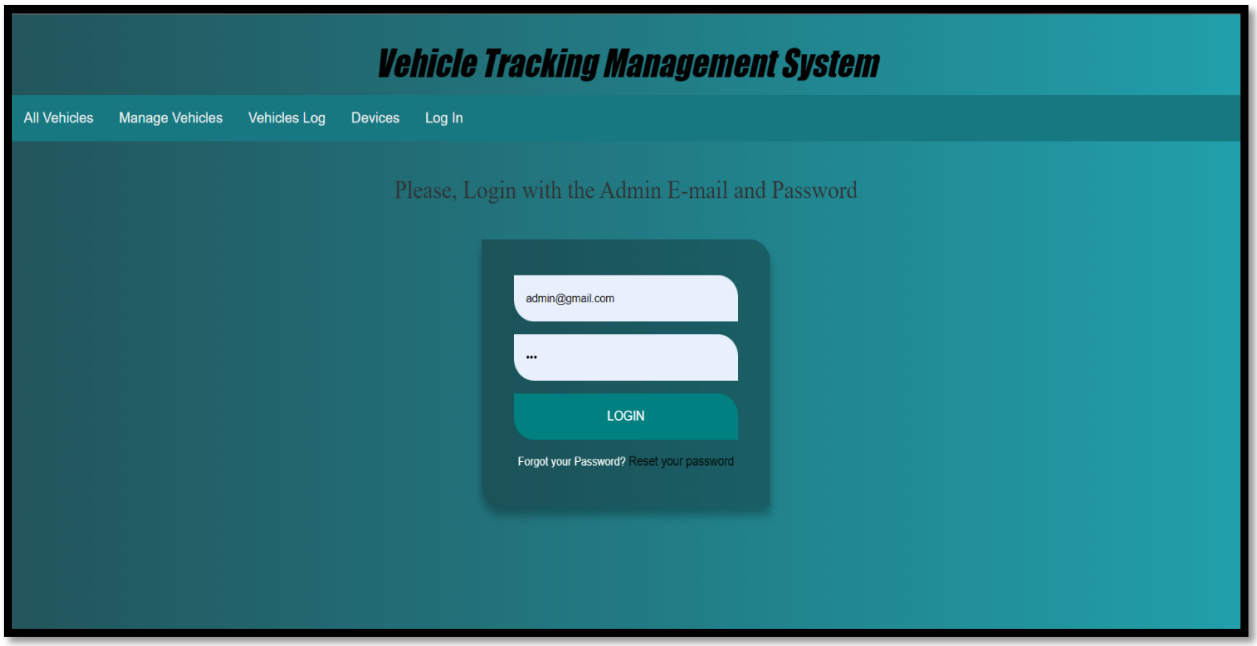


Figure:5.1: Log in Page

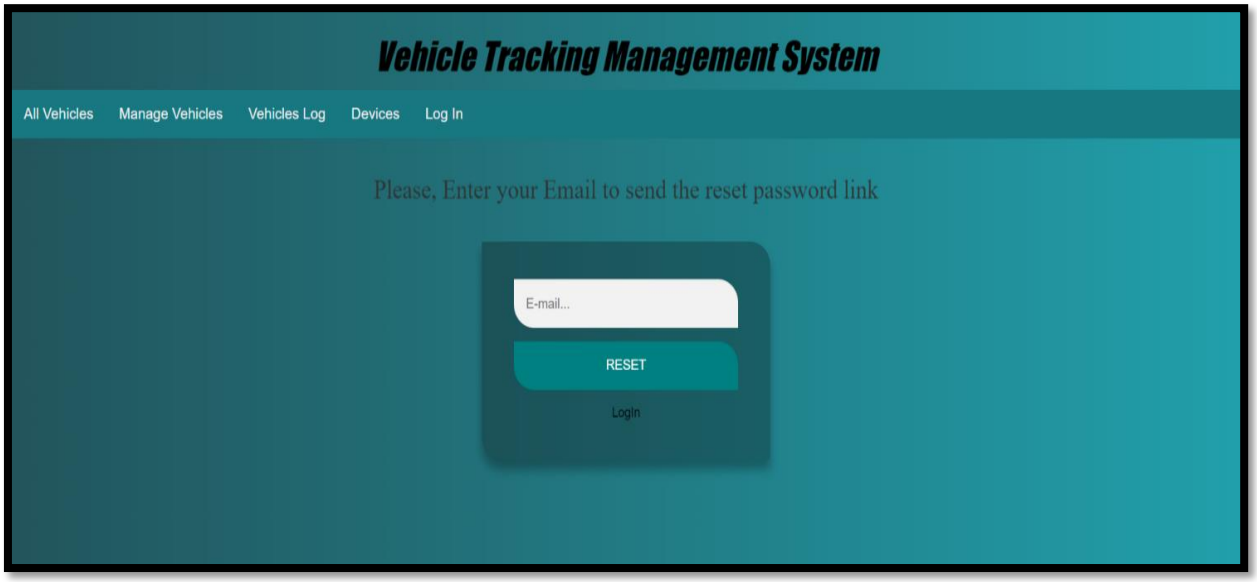


Figure:5.2: Reset password page

This is the log-in page. At first, Admin needs to put his/her mail id and password then the admin can log in to this site. In any case, if the admin forgets the password, then it has a forget password option also. Admin can reset the password.

5.1.2 Admin page:

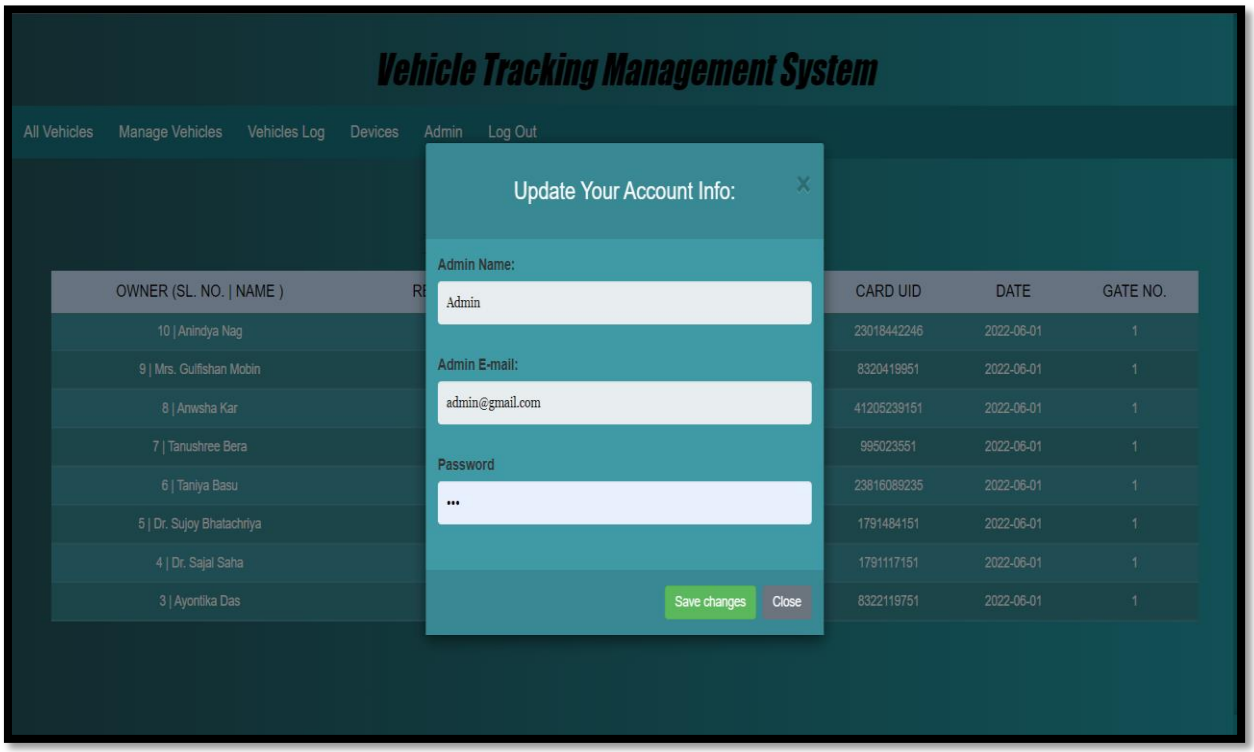


Figure: 5.3: Admin page

In this page, admin can change the email id and password. Mainly admin can update the details.

5.1.3 Devices Page:

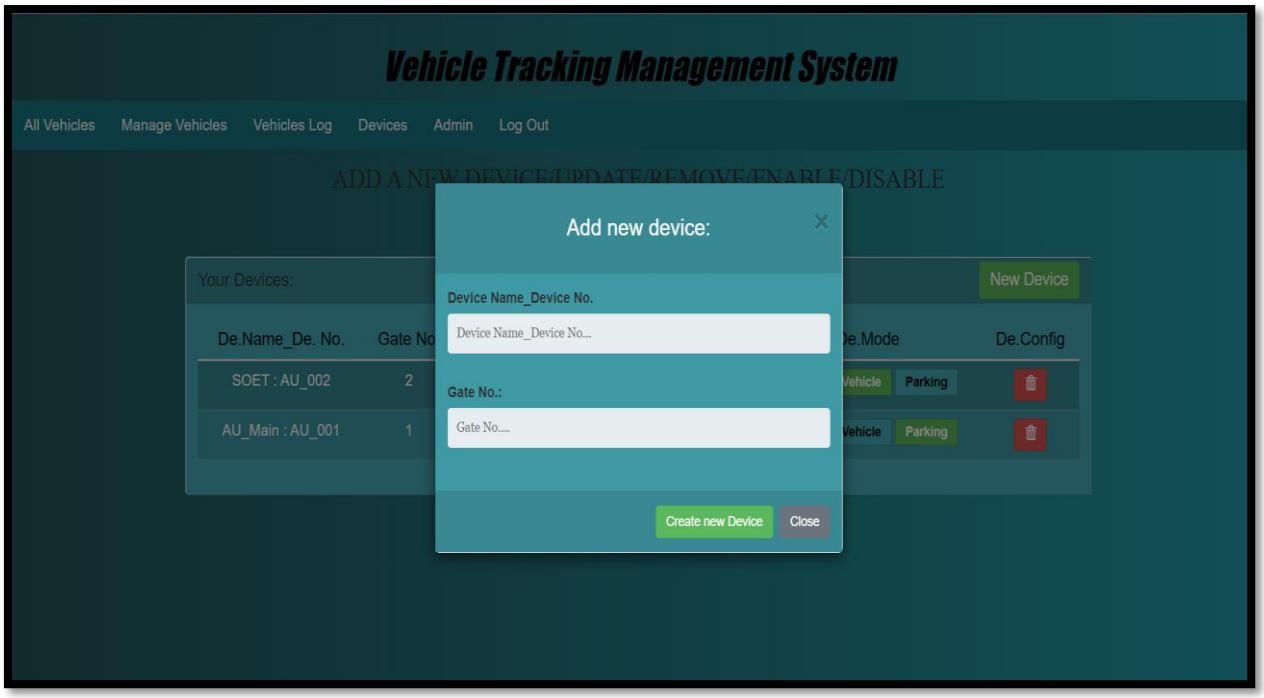


Figure: 5.4: Add new device page

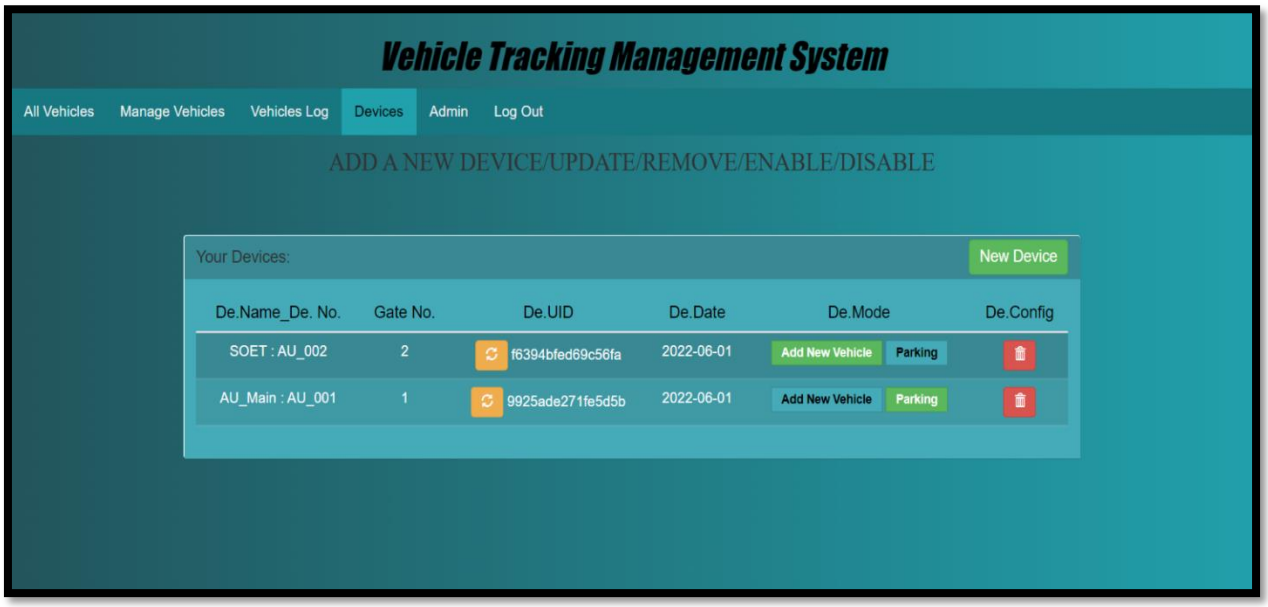


Figure: 5.5: Device page

On the Device page when any new device connects to the server at first, we need to put the device name or device number and gate number to create a new device. There are two device modes first one is **Add New Vehicle** and the second one is **Parking**.

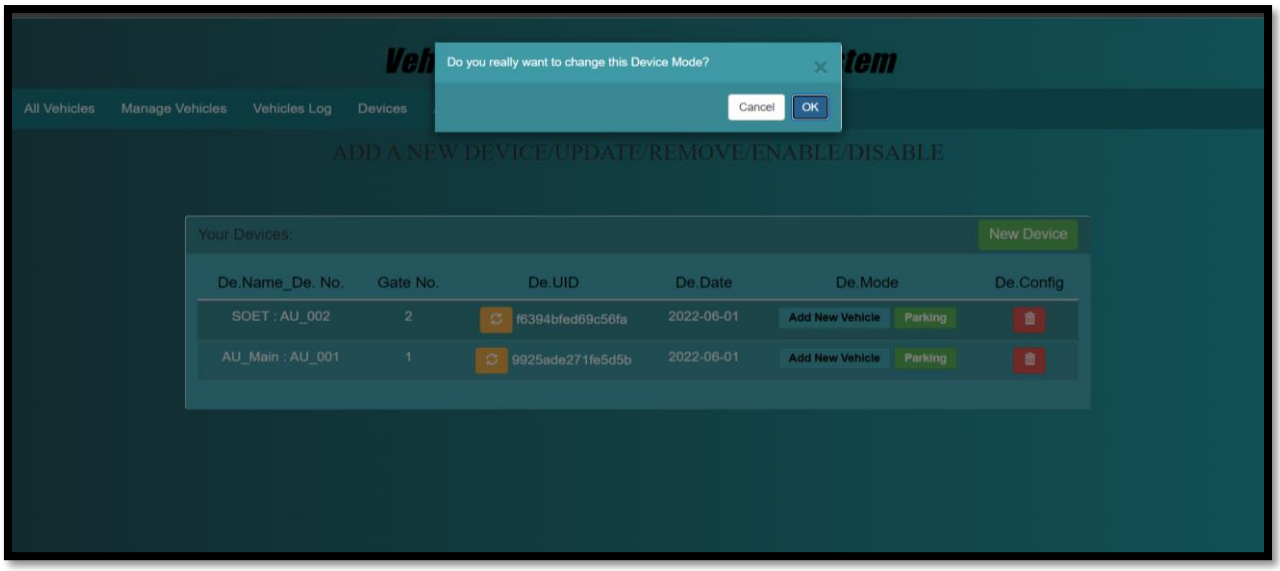


Figure:5.6: Change device mode page

Suppose we want to add any new vehicle in device number 1 gate 2 then we need to put the device in **Add New Vehicle** mood. After that when we scan the card in the RFID reader then the new vehicle is going to the **Manage Vehicle** part.

And when the previously registered vehicle is coming then the device is in **Parking Mood** for the in time and out time.

5.1.4 Manage Vehicles:

Figure: 5.7: Manage Vehicles page

In this page, if we click any Card UID, we can see all the details of the car owner. In this part we can also add new vehicle and vehicle details, we can also update vehicle details and we can remove any vehicle.

5.1.5 All vehicles:

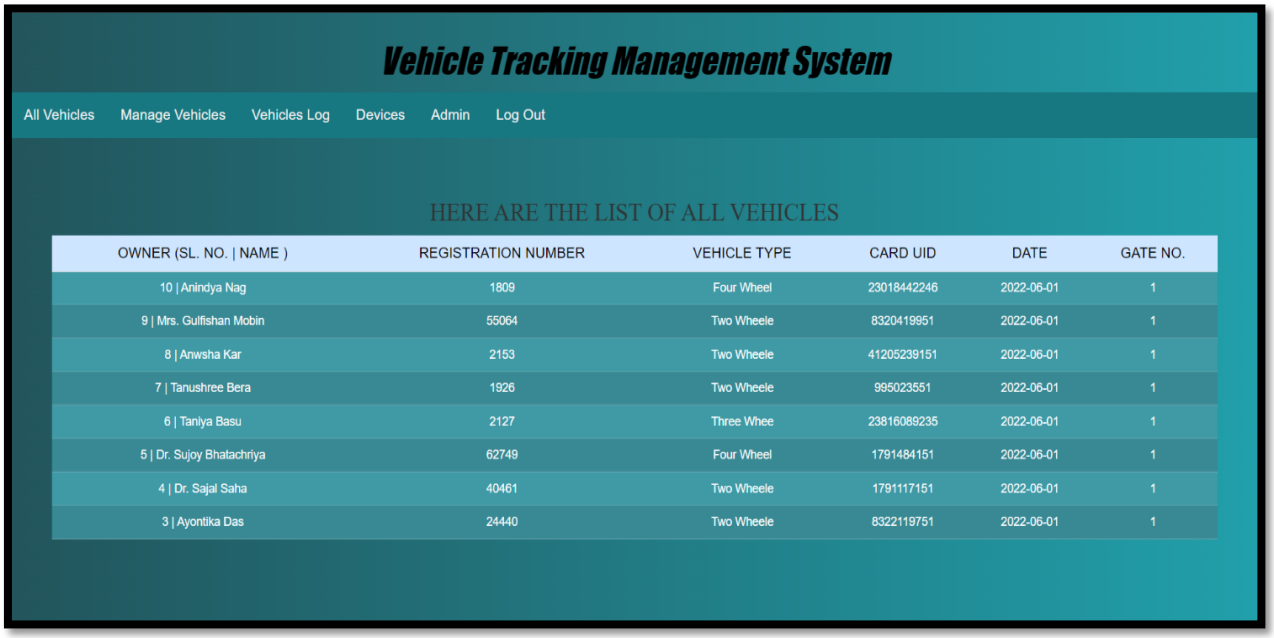
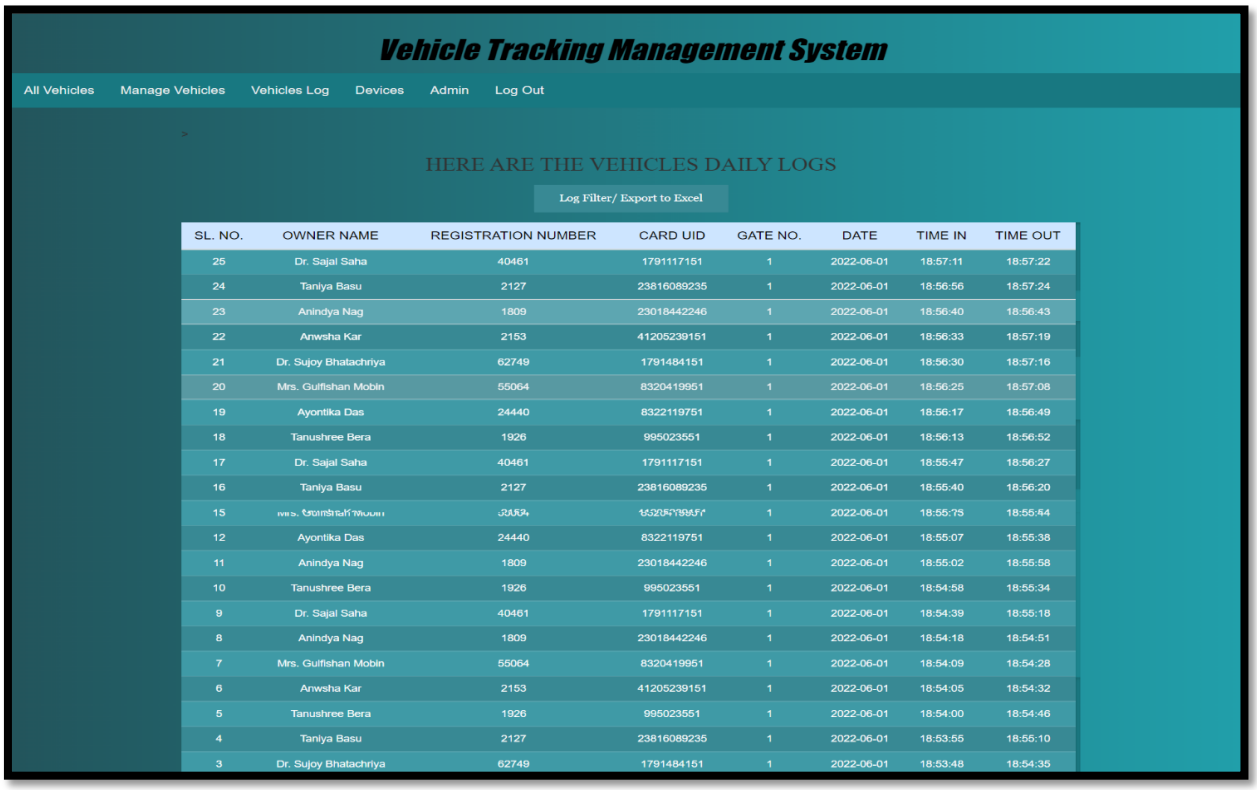


Figure: 5.8: All Vehicle page

On this page we can see all the registered vehicle details as owner name, registration no, vehicle type, Card UID, Date, and gate number.

5.1.6 Vehicle logs:



SL. NO.	OWNER NAME	REGISTRATION NUMBER	CARD UID	GATE NO.	DATE	TIME IN	TIME OUT
25	Dr. Sajal Saha	40461	1791117151	1	2022-06-01	18:57:11	18:57:22
24	Taniya Basu	2127	23816089235	1	2022-06-01	18:56:56	18:57:24
23	Anindya Nag	1809	23018442246	1	2022-06-01	18:56:40	18:56:43
22	Anwsha Kar	2153	41205239151	1	2022-06-01	18:56:33	18:57:19
21	Dr. Sujoy Bhatachriya	62749	1791484151	1	2022-06-01	18:56:30	18:57:16
20	Mrs. Gulfishan Mobin	55064	8320419951	1	2022-06-01	18:56:25	18:57:08
19	Ayontika Das	24440	8322119751	1	2022-06-01	18:56:17	18:56:49
18	Tanushree Bera	1926	995023551	1	2022-06-01	18:56:13	18:56:52
17	Dr. Sajal Saha	40461	1791117151	1	2022-06-01	18:55:47	18:56:27
16	Taniya Basu	2127	23816089235	1	2022-06-01	18:55:40	18:56:20
15	[illegible]	[illegible]	[illegible]	1	2022-06-01	18:55:[illegible]	18:55:[illegible]
12	Ayontika Das	24440	8322119751	1	2022-06-01	18:55:07	18:55:38
11	Anindya Nag	1809	23018442246	1	2022-06-01	18:55:02	18:55:58
10	Tanushree Bera	1926	995023551	1	2022-06-01	18:54:58	18:55:34
9	Dr. Sajal Saha	40461	1791117151	1	2022-06-01	18:54:39	18:55:18
8	Anindya Nag	1809	23018442246	1	2022-06-01	18:54:18	18:54:51
7	Mrs. Gulfishan Mobin	55064	8320419951	1	2022-06-01	18:54:09	18:54:28
6	Anwsha Kar	2153	41205239151	1	2022-06-01	18:54:05	18:54:32
5	Tanushree Bera	1926	995023551	1	2022-06-01	18:54:00	18:54:46
4	Taniya Basu	2127	23816089235	1	2022-06-01	18:53:55	18:55:10
3	Dr. Sujoy Bhatachriya	62749	1791484151	1	2022-06-01	18:53:48	18:54:35

Figure: 5.9: Vehicle logs page

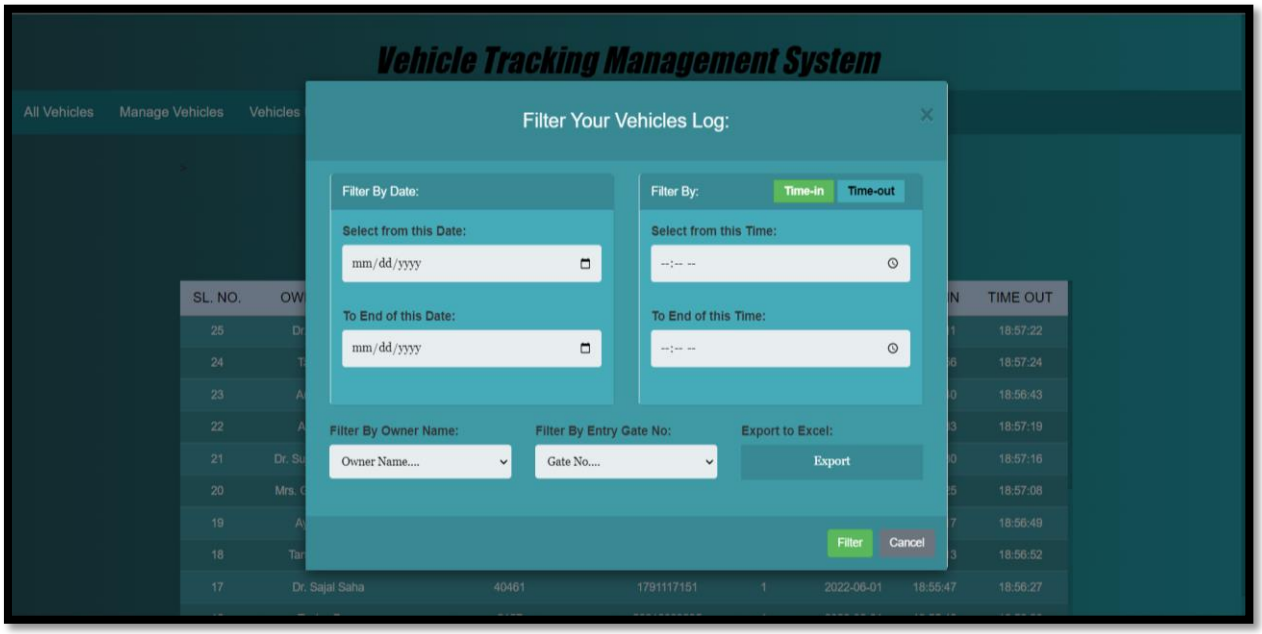


Figure: 5.10: Filter Vehicle page

On this page, we can filter the vehicles with the help of the incoming and outgoing time and date of the car. we can also filter by scrolling the owner's name and entry gate number. If we want to check any date, we can also see all the vehicles which are incoming and outgoing on that particular date.

5.2 Implemented Circuit:

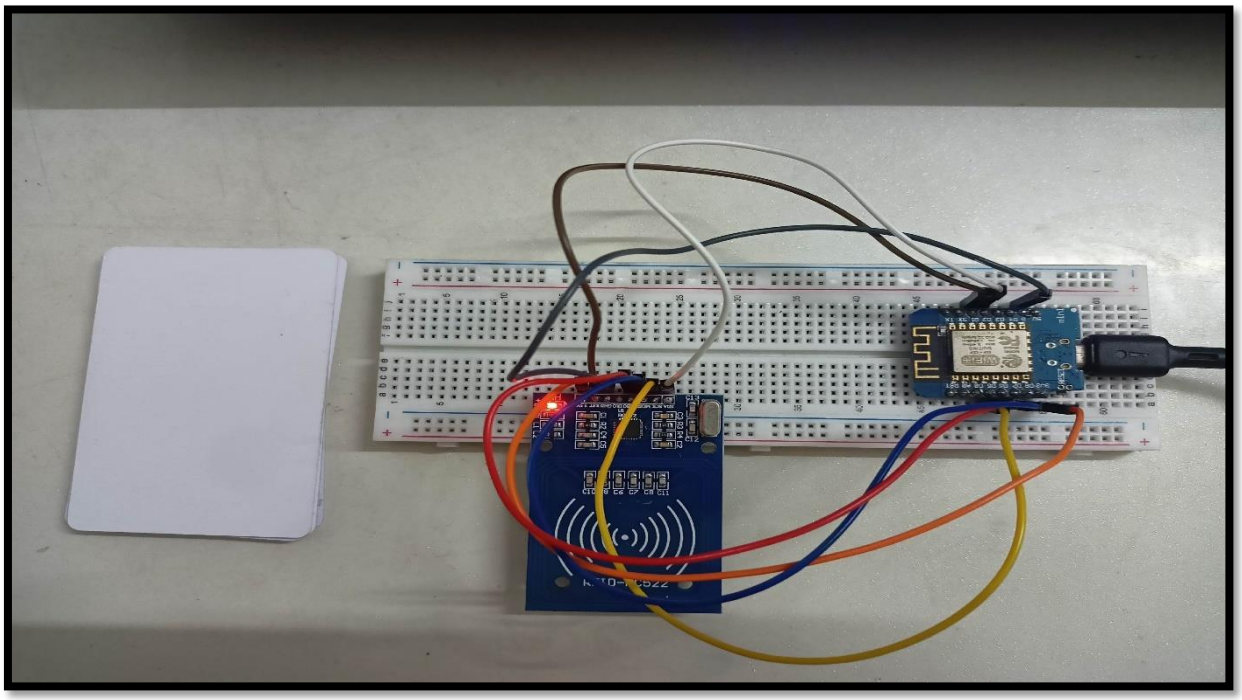


Figure: 5.11: Implemented Circuit

CONCLUSION

Parking management has become an issue that all drivers in megacities throughout the world are dealing with these days. Drivers are spending more time looking for available parking spaces, resulting in traffic congestion, increased fuel use, and pollution. A smart parking system is one of the most important components for realizing the smart city concept. Because the number of automobiles on the road is increasing every day as a result of civilization, parking spaces are becoming scarce and expensive in major cities. Our project's goal is to develop a smart car tracking and parking management system that will help smart cities and malls identify parking spaces that are appropriate for their specific needs and automobiles. This project introduces a novel algorithm that delivers real-time information on available parking spaces based on vehicle type, as well as booking and recommendation choices. This project considers vehicle category, vehicle in time, out time, current date, and parking price in order to maximize the use of existing parking spaces. To monitor the availability of parking spaces in different parking lots, data storage using cloud servers and data collecting using wireless sensors, as well as real-time with IoT sensors, are examined. As a result, this project improves the efficiency of cloud-based systems and suggests the creation of an IoT-based.

FUTURE WORK

Big Data and IoT are increasingly influencing the future development of cloud computing systems. There are research and industrial works showing up applications, experiments, services, and simulations in Clouds that support the cases related to Big Data and IoT. The provision of the aforementioned issues creates a new set of problems and challenges that must be identified and handled. The goal of this special issue is to present and discuss new ideas and research findings on all the domains of Big Data, Cloud and the Internet of Things. This special issue focuses on the opportunities and problems that occur when modern cloud applications are combined with the fields of the Internet of Things and Big Data. This special issue will emphasize the state of the art in this sector by encouraging submissions of ongoing work with important theoretical and practical discoveries, as well as position papers and case studies of currently present verification projects. One of the objectives of this special issue is to bring together researchers and practitioners to review the various aspects of security, privacy, trust, and reliability in IoT and Cloud.

- **Increased Scalability:**

  To share information for beneficial reasons, IoT devices require a lot of storage. IoT in the cloud, such as Cloud Connect to Microsoft Azure, can provide consumers with more storage capacity that can be increased as needed. Assisting customers with their storage needs.

- **Increased Performance:**

  To interact and connect with one another, the massive amounts of data created by IoT devices necessitate extreme performance. IoT in the cloud provides the connectivity required to quickly transfer information between devices and derive meaning from it.

- **Pay-as-you-go:**

  Internet Cloud Computing infrastructures assist IoT in making sense of the increasing volume of data generated. Users do not have to worry about purchasing more or less storage. They can quickly extend storage as the amount of data generated grows, and they only pay for the storage they use with Internet Cloud Computing.

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- **GitHub Repository Link:**

  https://github.com/AnindyaNag/Project_2_Vehicle-Tracking-Management-System

- **YouTube Video Link:**

  https://youtu.be/Lo1qGJUy01Y