A Mini Project Report

On

Parking Management System

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Shree Chanakya Education Society

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We are extremely grateful to our respected Vice Principal and HOD Prof. Shivendu Bhushan for providing excellent academic environment which has made this endeavour possible.

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Finally we proudly thank our parents and friends for their constant support and priceless guidance in throughout this endeavour.

Ashutosh Dash

Anand Desai

Introduction

Parking management system for managing the records of the incoming and outgoing vehicles in a parking space. It's an easy way for some employees to retrieve the data if the vehicle user has been visited through a number then they 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/spots for car parking. So to park a vehicle one has to look for all the lanes. Moreover, this involves a lot of manual labour and investment. Instead of the vehicle caught in towing the vehicle can park on safety and security at a low cost.

The parking control 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 objective of this project is to build a Vehicle Parking management system that enables the time management and control of vehicles using number plate recognition.

The system 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.

Existing System

In the existing system, a vehicle owner used to drive his/her vehicle into a parking area of a public place like a mall, etc. There an employee used to be present whose job was to give a ticket to the customer and collect the required amount from the customer when leaving the premise. Although computers are used in such a system but, the contribution is very little as it is needed. Not only it results in tedious work handling, but we also face human errors. In order to address such issues, we need a new system which not only works primarily under automation but also helps in keeping a record of each and every parking to ensure the completion of transactions on time.

In some parts of the world, a smart parking system has been introduced where an incoming vehicle's number plate gets scanned by the scanner present in the gate. After getting scanned, the details of the owner of the vehicle gets displayed on the display in front of the gate. The computerized system will assign an available parking spot. But, here also the mode of cashless payment is mostly absent along with a feature of advanced booking.

This report is based on personal observations made by us during our casual visits in such public places in various metropolitan cities like Pune, Bengaluru, Delhi, etc. The report threw light towards certain urgent issues raised by this existing system.

Disadvantages of Existing System

1. Since, the transaction process is carried out by a human, often it is observed that there are numerous mistakes made by them in events like calculating change.

2. Due to increasing traffic, there is an insufficiency of parking spots in most of the places and hence, it becomes increasingly difficult for humans to manage the parking spaces.

3. Nowadays, there is a demand of cashless payments but, such technology has not been fully available in this sector yet.

Proposed System

The aim of our proposed system is to develop a system which like the existing 'Smart Parking System', provides a computerized parking system along with a feature called as 'Advanced Parking Booking'. A customer will go to their preferred wallet app. Then, he/she will click on our system's icon to get to our webpage. On clicking the icon, a login page will get opened where the user has to provide their credentials to log in to their account. In case, the user is not an existing member, an option for creating an account will also be available.

After logging in, the user will enter into a booking page where he/she will book for parking by filling certain fields like city, mall, start date and time, end date, and time. The system will automatically detect the mode of payment (wallet) by tracking how the user visited the webpage.

The system will then generate an online receipt confirming the booking. On reaching the end time, the user will receive a notification regarding it and will provide an option to continue by paying an extra amount based on per hour rate.

Advantages of Proposed System

1. It provides a hassle-free method to book parking in advance.

2. Even in the case of on-spot parking, the feature of cashless payment along with cash payment is available near the 'OUT' gate with a QR Code display, a total amount display, and an employee for collecting cash, if cash method is chosen.

Feasibility Study

Economical Feasible

Economic feasibility attempts to weigh the cost of developing and implementing a new system, against the benefits that would accurate from having the new system in place. A simple economic analysis that gives the actual comparison of costs and benefits is much more meaningful in this case. In addition, this proves to be a useful point of reference to compare actual costs as the project progresses. There could be various types of benefits of account of parking automation. These could include increased customer satisfaction, improved accuracy of operation, better documentation and record-keeping, faster retrieval of information.

Operational Feasible

Operational feasibility is a measure of how well a proposed system solves the problems. It reviews the willingness of the organization to support the proposed system. Adopting the automated parking management system will maximize efficiency of the parking system and services and it also improves users and clients experience and satisfaction. Automated parking management system would will share real time parking information to clients and users.

Technical Feasible

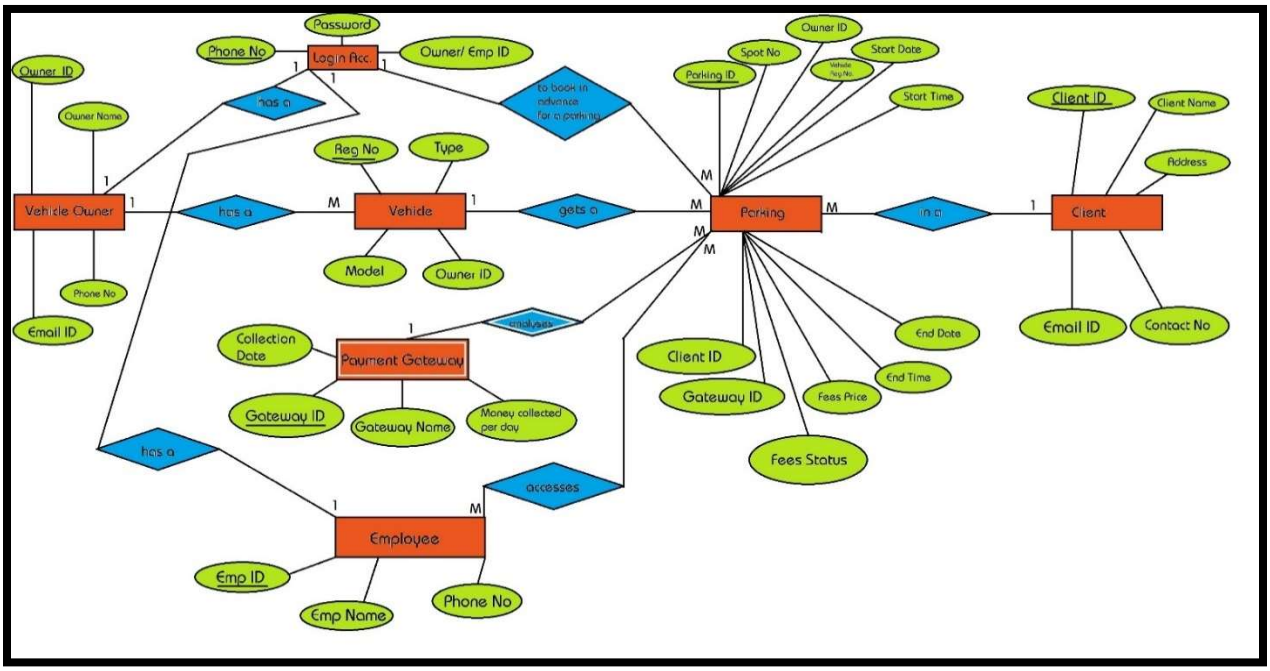
Technical feasibility considers the technical requirements of the proposed automated system. The current technical resources (hardware, software, etc.) need to be updated and added according to the proposed system requirements. This involves financial considerations to accommodate technical enhancements.

Software and Hardware Requirements

Software Requirement	
Operating System	Microsoft Windows
Software	
Front - End Software	HTML, Bootstrap (enhanced CSS), JavaScript
Back - End Software	Oracle 10G
Hardware Requirement	
Processor	Intel Core i3 1.80GHz
Ram	2GB or More
Monitor	LCD monitor
Keyboard	Normal keyboard
Mouse	Compatible mouse

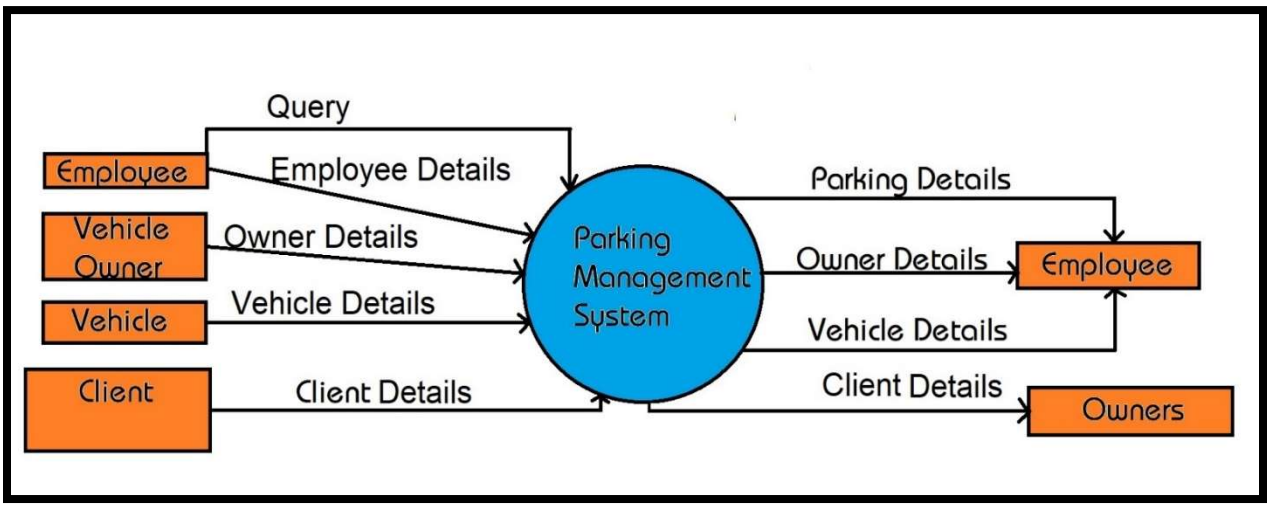
Analysis

Entity Relationship Diagram (ERD)

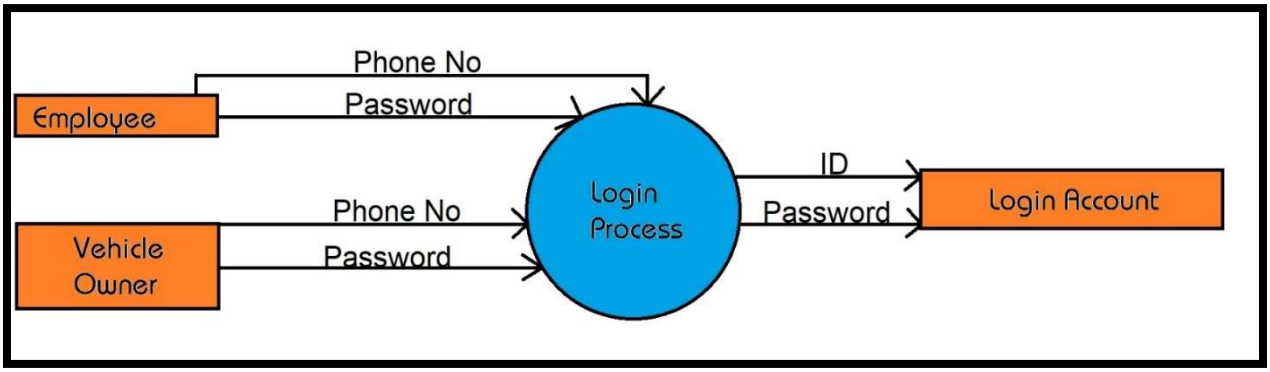


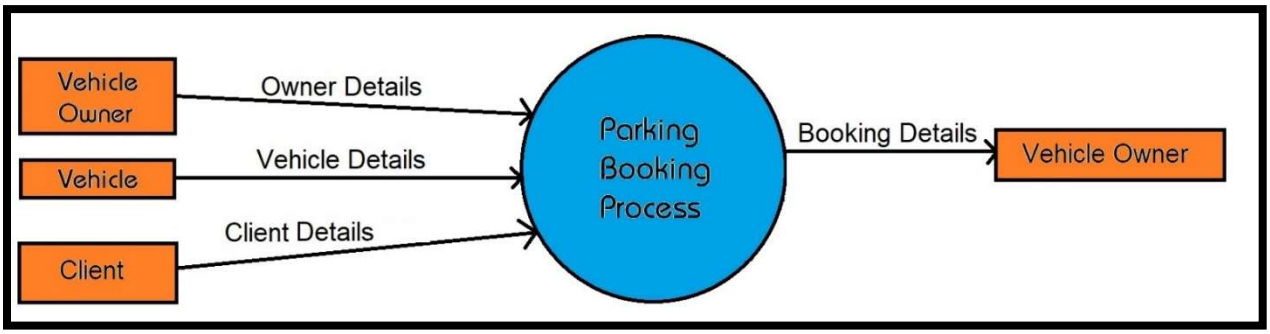
Data Flow Diagram (DFD)

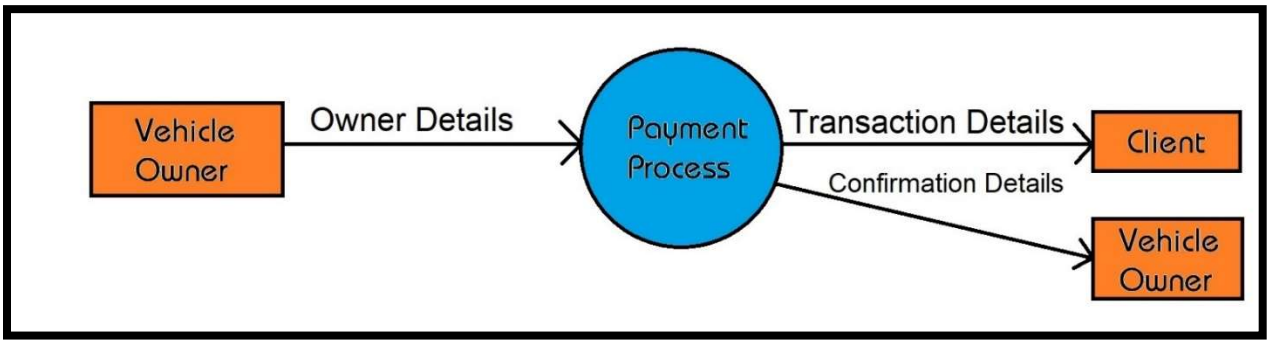
CONTEXT LEVEL DIAGRAM

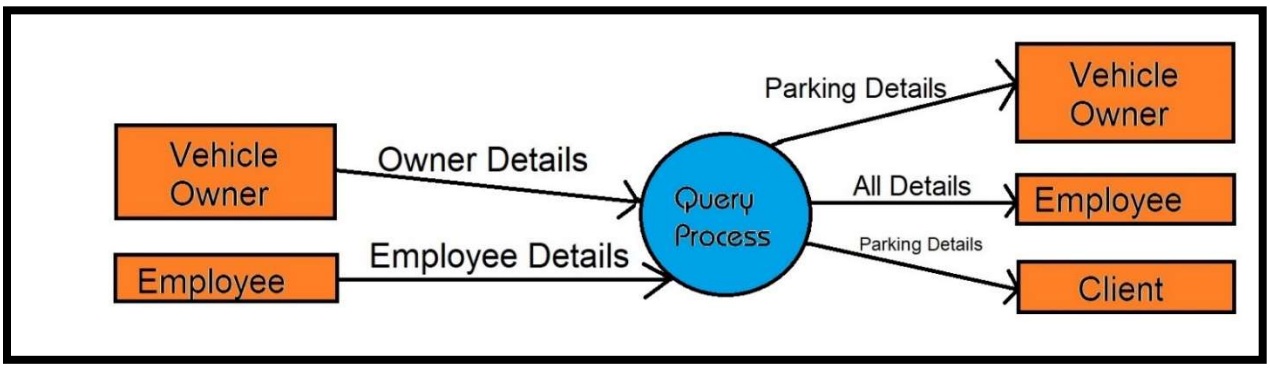


FIRST LEVEL DIAGRAM









File Design/ Normalized Database

Table Name: Employee

Sr. No.	Fields Name	Datatype	Width	Constraint
1	Emp_ID	Varchar2	8	Primary Key
2	Emp_Name	Varchar2	30	Not Null
3	Phone_No	Number	10	Not Null

Table Name: Vehicle_Owner

Sr. No.	Fields Name	Datatype	Width	Constraint
1	Owner_ID	Varchar2	8	Primary Key
2	Owner_Name	Varchar2	30	Not Null
3	Phone_No	Number	10	Not Null
4	Email_ID	Varchar2	20	Not Null

Table Name: Login

Sr. No.	Fields Name	Datatype	Width	Constraint
1	Phone_No	Number	10	Primary Key
2	Password	Varchar2	20	Not Null
3	ID	Varchar2	8	Not Null

Table Name: Vehicle

Sr. No.	Fields Name	Datatype	Width	Constraint
1	Reg_No	Varchar2	20	Primary Key
2	Type	Varchar2	10	Not Null
3	Model	Varchar2	10	Not Null
4	Owner_ID	Varchar2	8	Foreign Key

Table Name: Payment_Gateway

Sr. No.	Fields Name	Datatype	Width	Constraint
1	Gateway_ID	Varchar2	8	Primary Key
2	Gateway_Name	Varchar2	10	Not Null
3	Collection_Perday	Number	10	Not Null
4	Collection_Date	Date	-	Not Null

Table Name: Client

Sr. No.	Fields Name	Datatype	Width	Constraint
1	Client_ID	Varchar	8	Primary Key
2	Client_Name	Varchar2	10	Not Null
3	Address	Varchar2	150	Not Null

4	Contact_No	Number	10	Not Null
5	Email_ID	Varchar2	20	Not Null

Table Name: Parking

Sr. No.	Fields Name	Datatype	Width	Constraint
1	Parking_ID	Varchar2	8	Primary Key
2	Spot_No	Varchar2	5	Not Null
3	Owner_ID	Varchar2	8	Foreign Key
4	Reg_No	Varchar2	20	Foreign Key
5	Start_Date	Date	-	Not Null
6	Start_Time	Time	-	Not Null
7	End_Date	Date	-	Not Null
8	End_Time	Time	-	Not Null
9	Fees_Price	Number	10	Not Null
10	Fees_Status	Varchar2	10	Not Null
11	Gateway_ID	Varchar2	8	Foreign Key
12	Client_ID	Varchar2	8	Foreign Key

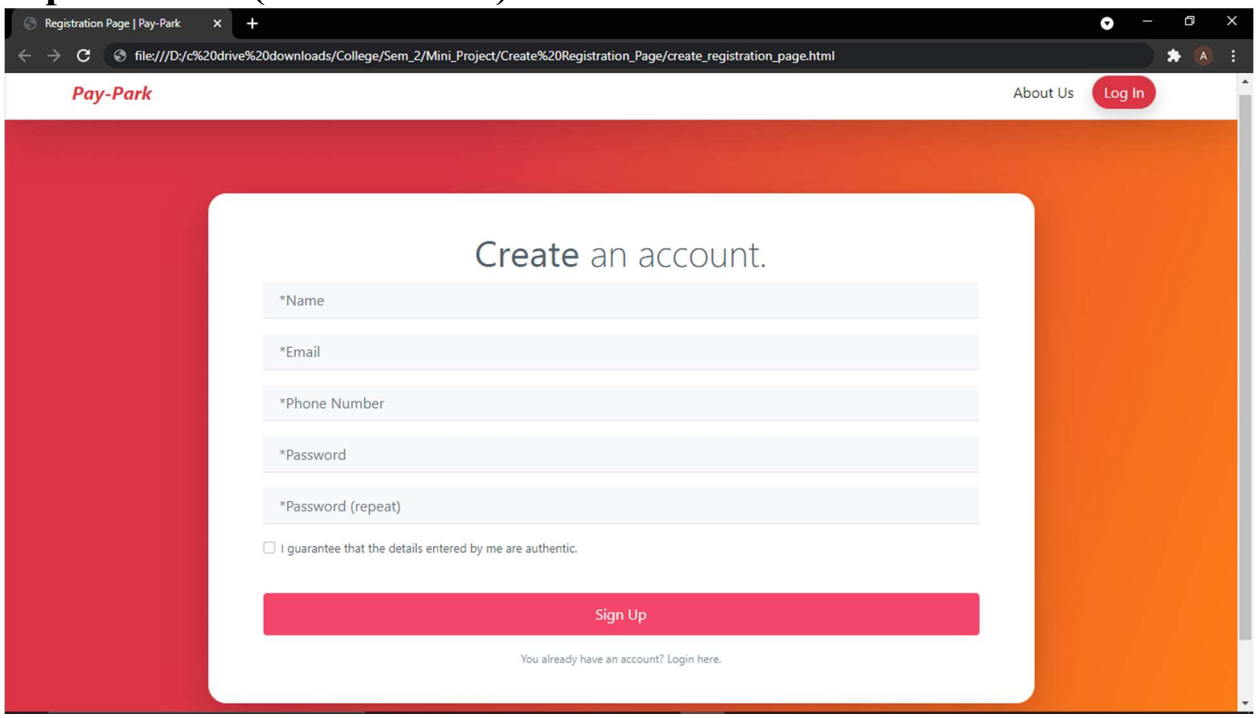
Data Dictionary

Sr. No.	Fields Name	Datatype	Width	Constraint	Table Name	Data Description
1	Owner_ID	Varchar2	8	Primary Key	Vehicle_Owner	Owner ID
2	Owner_Name	Varchar2	30	Not Null	Vehicle_Owner	Owner's Name
3	Phone_No	Number	10	Not Null	Vehicle_Owner	Owner's Phone Number
4	Email_ID	Varchar2	20	Not Null	Vehicle_Owner	Owner's Email ID
5	Phone_No	Number	10	Primary Key	Login	User's Phone No
6	Password	Varchar2	20	Not Null	Login	User's Password
7	ID	Varchar2	8	Not Null	Login	User's ID
8	Reg_No	Varchar2	20	Primary Key	Vehicle	Vehicle's Registration No
9	Type	Varchar2	10	Not Null	Vehicle	Vehicle Type

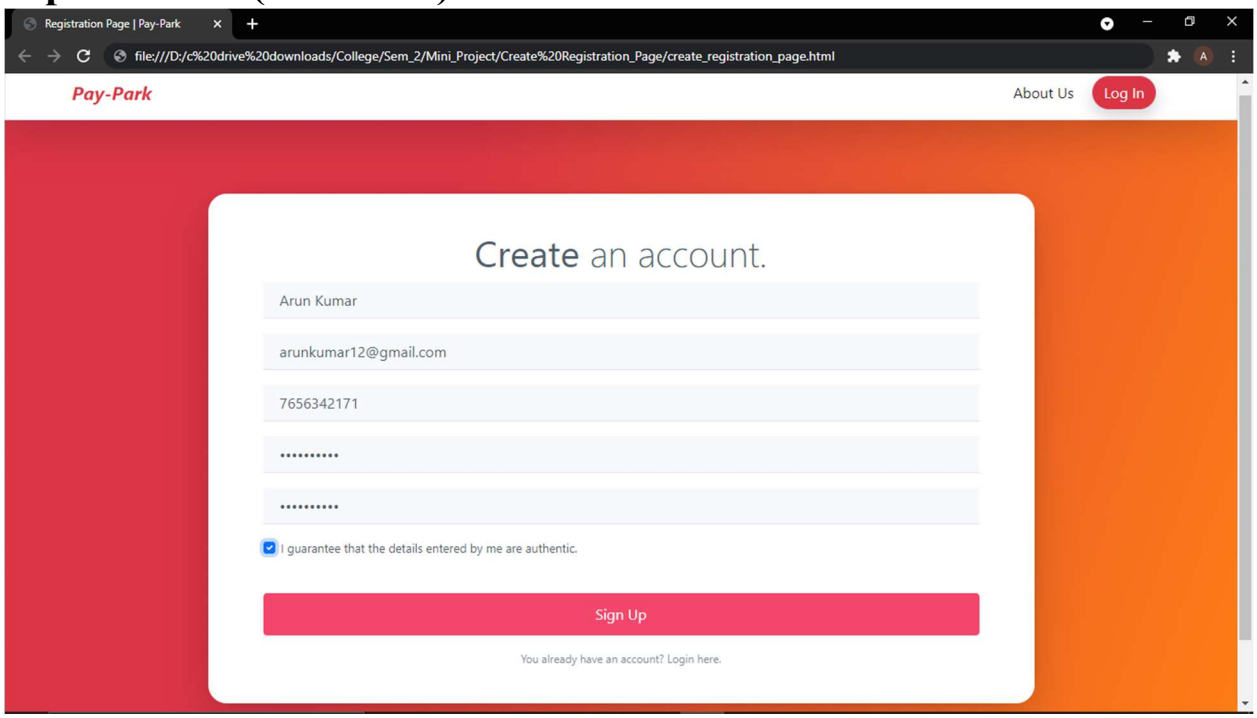
10	Model	Varchar2	10	Not Null	Vehicle	Vehicle Model
11	Client_ID	Varchar2	8	Primary Key	Client	Client's ID
12	Client_Name	Varchar2	30	Not Null	Client	Client's Name
13	Address	Varchar2	150	Not Null	Client	Client's Address
14	Contact_No	Number	10	Not Null	Client	Client's Contact No
15	Email_ID	Varchar2	20	Not Null	Client	Client's Email ID
16	Emp_ID	Varchar2	10	Primary Key	Employee	Employee's ID
17	Emp_Name	Varchar2	30	Not Null	Employee	Employee's Name
18	Phone_No	Number	10	Not Null	Employee	Employee's Phone No
19	Gateway_ID	Varchar2	8	Primary Key	Payment_Gateway	Gateway's ID
20	Gateway_Name	Varchar2	10	Not Null	Payment_Gateway	Gateway's Name
21	Money Collected per day	Number	10	Not Null	Payment_Gateway	Amount Collected per day
22	Collection Date	Date	-	Not Null	Payment_Gateway	Date of collection
23	Parking_ID	Varchar2	8	Primary Key	Parking	Parking ID
24	Spot_No	Varchar2	5	Not Null	Parking	Parking Spot No
25	Start_Date	Date	-	Not Null	Parking	Date of Start
26	Start_Time	Time	-	Not Null	Parking	Time of Start
27	End_Date	Date	-	Not Null	Parking	Date of End
28	End_Time	Time	-	Not Null	Parking	Time of End
29	Fees_Price	Number	10	Not Null	Parking	Amount calculated
30	Fees_Status	Varchar2	10	Not Null	Parking	Status of Payment

Design

Input Screen (without data)



Input Screen (with data)



Code Design

```
<!DOCTYPE html>

<html lang="en">

<head>

     <meta charset="utf-8">

     <meta name="viewport" content="width=device-width, initial-
     scale=1.0, shrink-to-fit=no">

     <title>Registration Page | Pay-Park</title>

     <link rel="stylesheet"
     href="assets/bootstrap/css/bootstrap.min.css">

     <link rel="stylesheet" href="assets/css/Registration-Form-
     with-Photo.css">

     <link rel="stylesheet" href="assets/css/styles.css">

</head>

<body>

    <nav class="navbar navbar-light navbar-expand-md border
    rounded-0 shadow-lg navigation-clean-button" style="height:
    60px;">

     <div class="container"><a class="navbar-brand"
     href="file:///D:/c%20drive%20downloads/MAVERICK/College/Sem
     _2/Mini_Project/About%20Us/home_page1.html" style="margin-
     left: -40px;font-style: italic;font-weight: bold;color:
     var(--bs-red);">Pay-Park</a><button data-bs-
     toggle="collapse" class="navbar-toggler" data-bs-
     target="#navcol-1"><span class="visually-hidden">Toggle
     navigation</span></button>

          <div class="collapse navbar-collapse d-lg-flex"
          id="navcol-1">

               <ul class="navbar-nav me-auto">

                    <li class="nav-item"></li>

                    <li class="nav-item"></li>

                </ul>
```

```
                <span class="navbar-text"><a
                href="file://D:\c%20drive%20downloads\MAVERICK\Co
                llege\Sem_2\Mini_Project\About%20Us\AboutUs.html"
                style="text-decoration:none;"> About
                Us</a></span><span class="navbar-text actions"><a
                class="btn btn-light border rounded-pill shadow
                action-button" role="button"
                href="file://D:/c%20drive%20downloads/MAVERICK/Co
                llege/Sem_2/Mini_Project/User_Login_Page/user_log
                in_page.html#" style="background: var(--bs-
                red);margin-left: 20px;color: var(--bs-
                light);margin-right: -25px;">Log In</a>

                </span>

            </div>

        </div>

</nav>

<section class="register-photo" style="background: linear-
gradient(109deg, var(--bs-red), var(--bs-red) 32%, var(--bs-
orange));">

     <div class="form-container">

          <form class="shadow-lg" method="post">

               <h6 class="display-6 text-
     center"><strong>Create</strong> an account.</h6>

               <div class="mb-3"><input class="form-control"
               type="text" name="Name" placeholder="*Name"
               autocomplete="on" inputmode="text"
               required=""></div>

               <div class="mb-3"><input class="form-control"
               type="email" name="email" placeholder="*Email"
               required="" inputmode="email"></div>

               <div class="mb-3"><input class="form-control"
               type="tel" name="Phone number" placeholder="*Phone
               Number" required=""></div>

               <div class="mb-3"><input class="form-control"
               type="password" name="Password"
               placeholder="*Password" required=""></div>
```

```
                <div class="mb-3"><input class="form-control"
                type="password" name="password-repeat"
                placeholder="*Password (repeat)"
                required=""></div>

                <div class="mb-3">

                    <div class="form-check"><label class="form-
                    check-label"><input class="form-check-input"
                    type="checkbox" required="">I guarantee that
                    the details entered by me are
                    authentic.</label></div>

                </div>

                <div class="mb-3"><a
               href="file://D:/c%20drive%20downloads/MAVERICK/Co
               llege/Sem_2/Mini_Project/Parking%20page-
               Places/parking_places.html" style="text-
               decoration:none;"><button class="btn btn-primary
               d-block w-100" type="button">Sign
               Up</button></a></div>

               <a class="already"
               href="file://D:/c%20drive%20downloads/MAVERICK/Co
               llege/Sem_2/Mini_Project/User_Login_Page/user_log
               in_page.html">You already have an account? Login
               here.</a>

            </form>

        </div>

    </section>

     <!--<script
     src="assets/bootstrap/js/bootstrap.min.js"></script>

</body>

</html>
```

Limitations of System

1. Since the entire system is in automation, it does not provide employment to people.
2. It may have technical abnormalities due to which, even though on a very rare occasion, the system may malfunction.

Bibliography

- https://getbootstrap.com
- https://www.w3schools.com
- https://www.mapout24.com/smart-parking-solution/