PARKING MANAGEMENT SYSTEM

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B-52 Sheliya Mohsinali

Introduction

In the dynamic landscape of urban infrastructure, the challenges associated with parking have become increasingly prevalent. As cities grow and populations surge, the need for efficient and intelligent parking solutions has never been more critical. The Parking Management System (PMS) project is an innovative solution tailored to address the challenges associated with parking facilities. With the goal of optimizing parking operations, the project focuses on creating a user-friendly system that efficiently manages parking spaces, reduces congestion, and enhances overall user experience.

EXISTING SYSTEM

In a manual parking management system, the processes typically involve human intervention at various stages. This includes the issuance of paper tickets upon entry, manual recording of entry time, and assigning parking spaces by attendants. Payment processing often involves physical cash transactions or card payments at designated booths. Monitoring of parking spaces and enforcement of rules may rely on manual patrols, and record-keeping might involve handwritten logs or simple spreadsheets. The manual system requires substantial human resources for ticket issuance, payment handling, and overall management.

Need For The New System

The purpose of a new parking management system is to address these challenges and overcome the limitations of the existing system. A modern parking management system aims to provide a more efficient, secure, and user-friendly experience. It helps optimize parking space utilization, reduce congestion . The new system will leverage technology to create a more connected and intelligent infrastructure that benefits both users and the city as a whole.

Objectives

- **Optimizing Space Utilization**
- **Enhancing Customer Experience**
- **Increasing Revenue Generation**
- **Reducing Information Latency**
- **Simplifying Administrative**

Problem Definition

The problem at hand involves designing and implementing a comprehensive parking management system. This system aims to address the challenges associated with parking in urban areas by providing efficient and convenient solutions for both drivers and parking administrators. The scope of this system encompasses various functionalities such as real-time parking space availability tracking, reservation and payment processing, enforcement of parking regulations, and data analytics for optimizing parking operations. The goal is to improve the overall parking experience, alleviate congestion, and maximize the utilization of parking spaces while ensuring compliance with regulations and generating revenue for parking facilities.

Project Profile

Project Title	Parking Management System
Group detail	B-01 Aghariya Imdadali B-02 Amaan Khan B-52 Sheliya Mohsinali
Front-End	HTML5, CSS3, JavaScript
Back-End	Dbsqlite3
Tools And Technology	Django

Assumption And Constraints

Assumptions: -

- **User Authentication Requirement**
- **Internet Connectivity**
- **Data Accuracy**
- **User Training**

Constraints: -

- **Time Constraints**
- **Resource Limitation**

Advantages:-

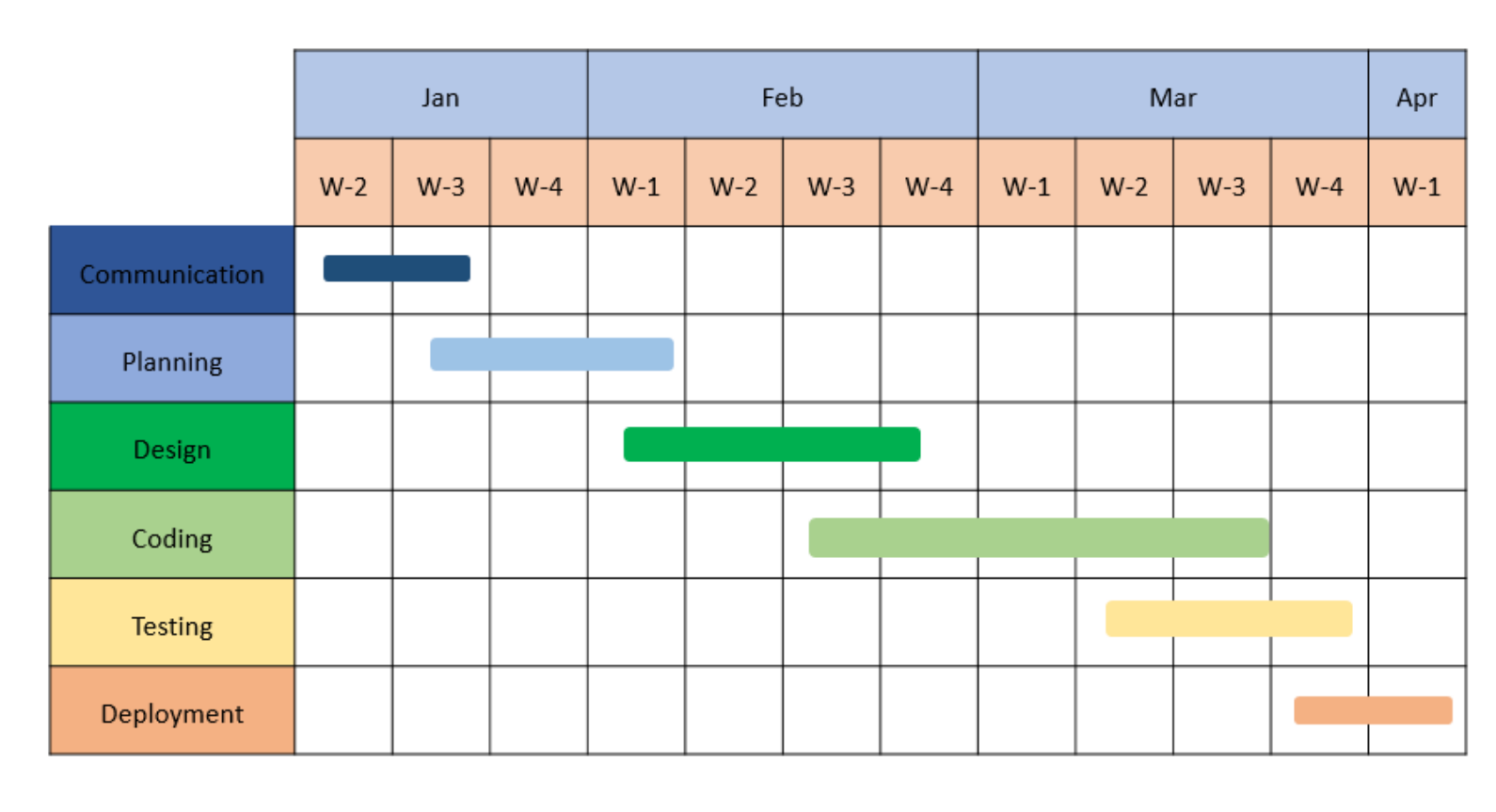
- Find parking space easily.
- Less time consuming
- Reduce paper work.
- Manage monthly records.
- User friendly

Limitations:-

- The system needs Internet connectivity to function which is not available in all condition.

- If the starting date surpasses the ending date, the system may display a negative price, potentially causing confusion for users and compromising the accuracy of the information provided.

Timeline Chart



Requirement Determination & Analysis

Requirement Determination

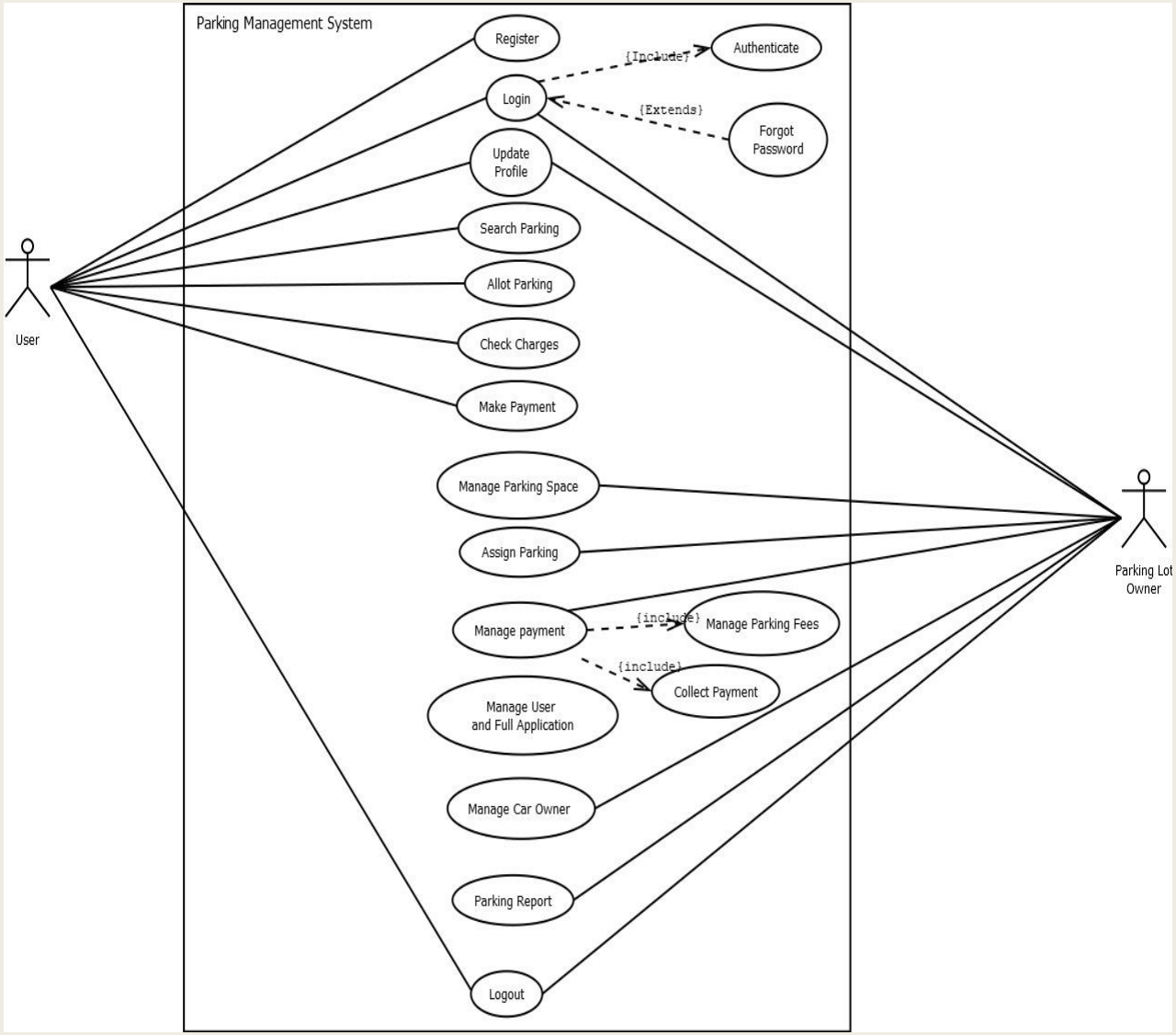
As previously the parking system is done manually so we conducted a group discussion in which we discussed about new system and gather requirements such as the new system should be online and the other functionality of the proposed system also we prepare questionnaires for our peers that how can we improve our parking system.

Targeted Users

Users: - Customer, Parking lot owner

Admin: - platform owner

Use-Case


Parking Management System
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Update Profile
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Allot Parking
Check Charges
Make Payment
Manage Parking Space
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Manage payment
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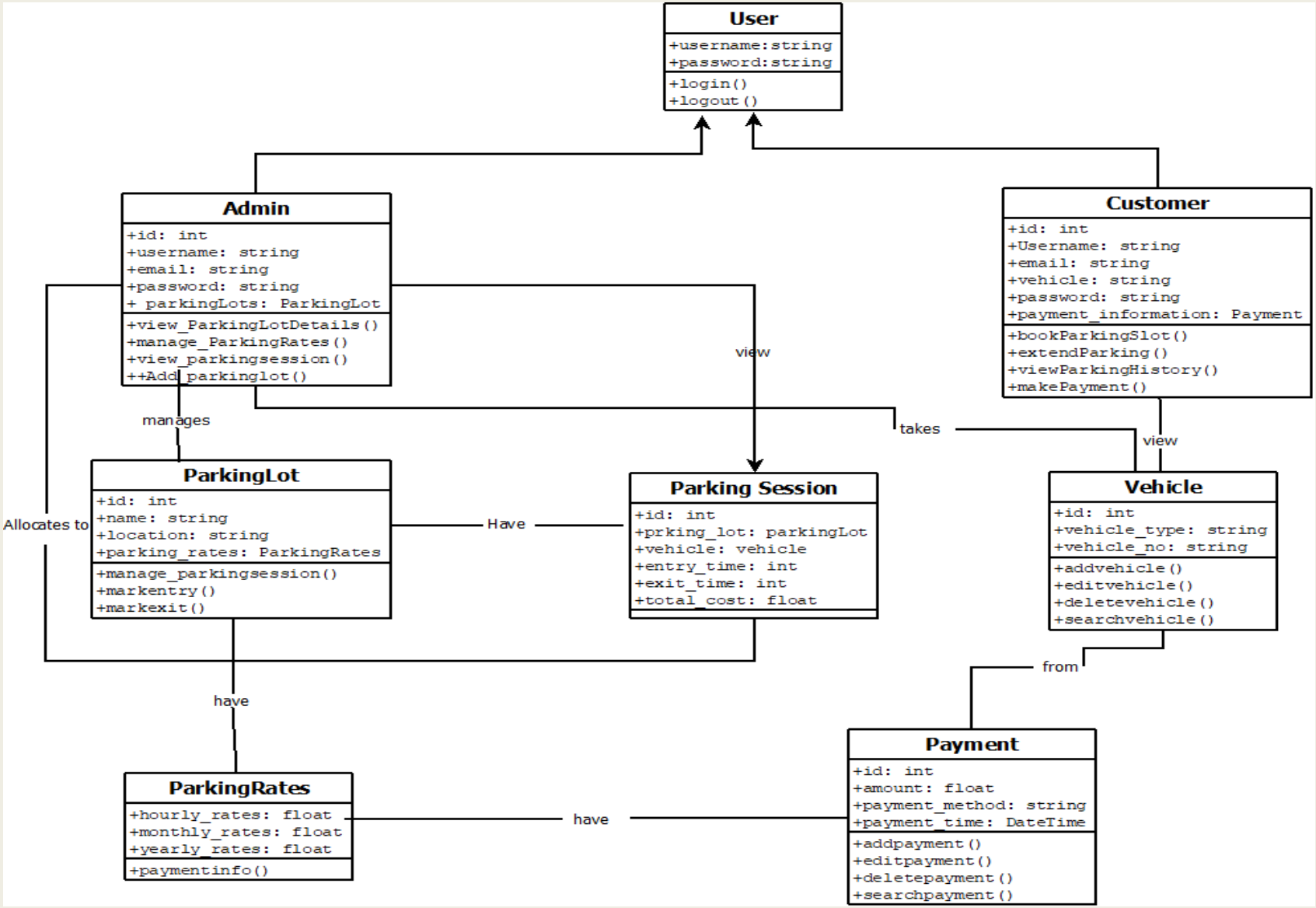
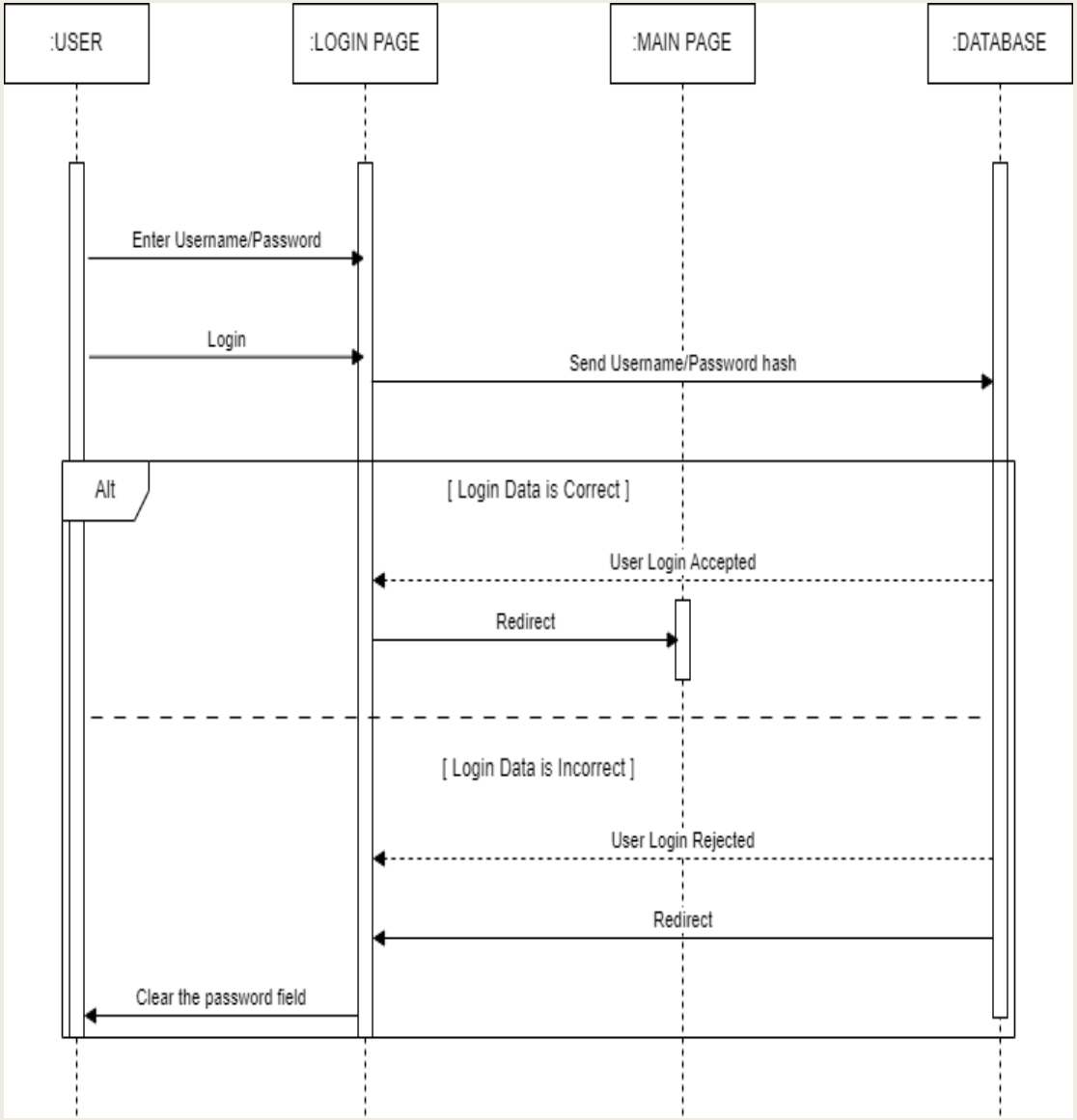
Collect Payment
Manage User and Full Application
Manage Car Owner
Parking Report
Logout
User
Parking Lot Owner

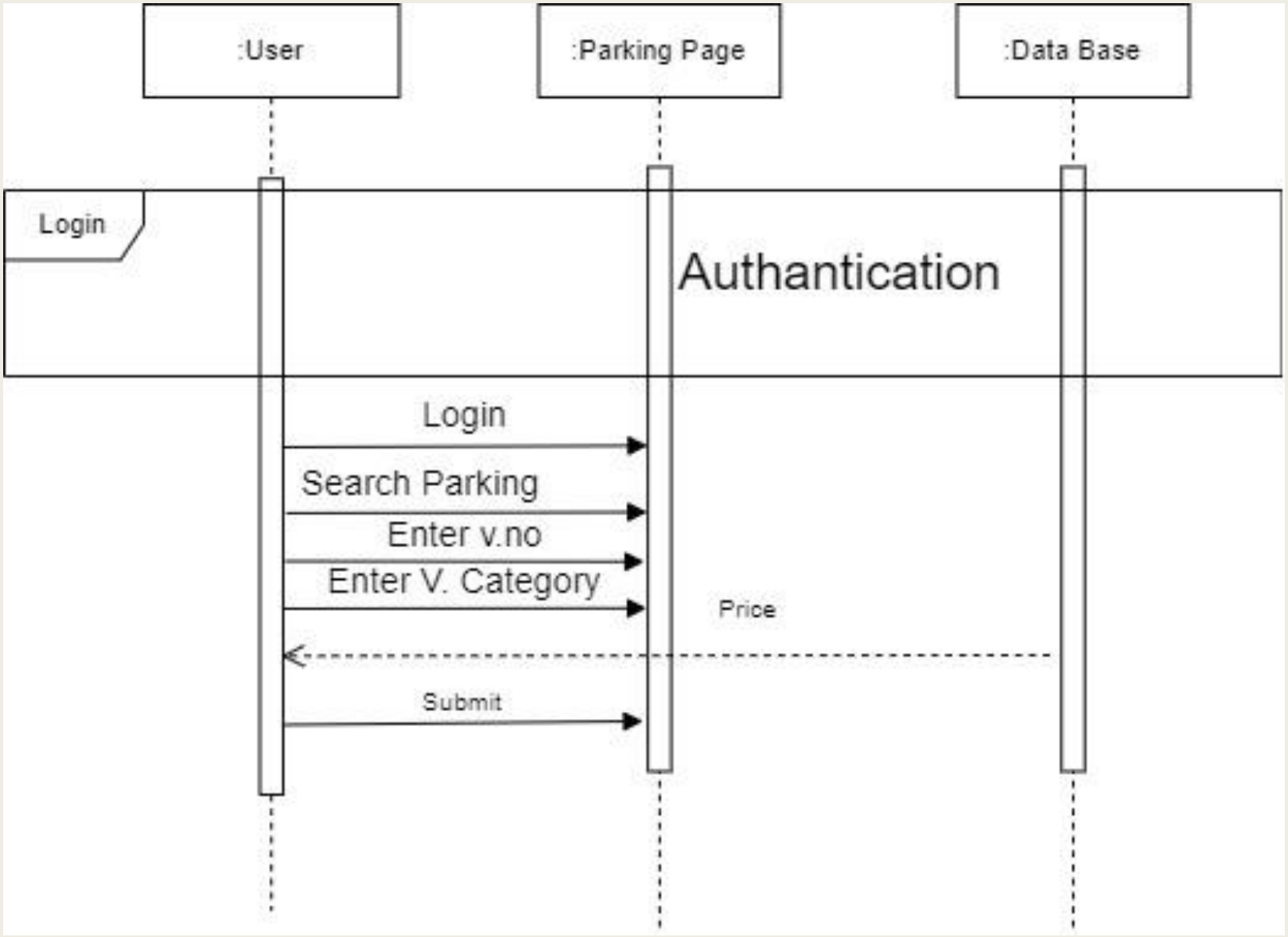
Class Diagram



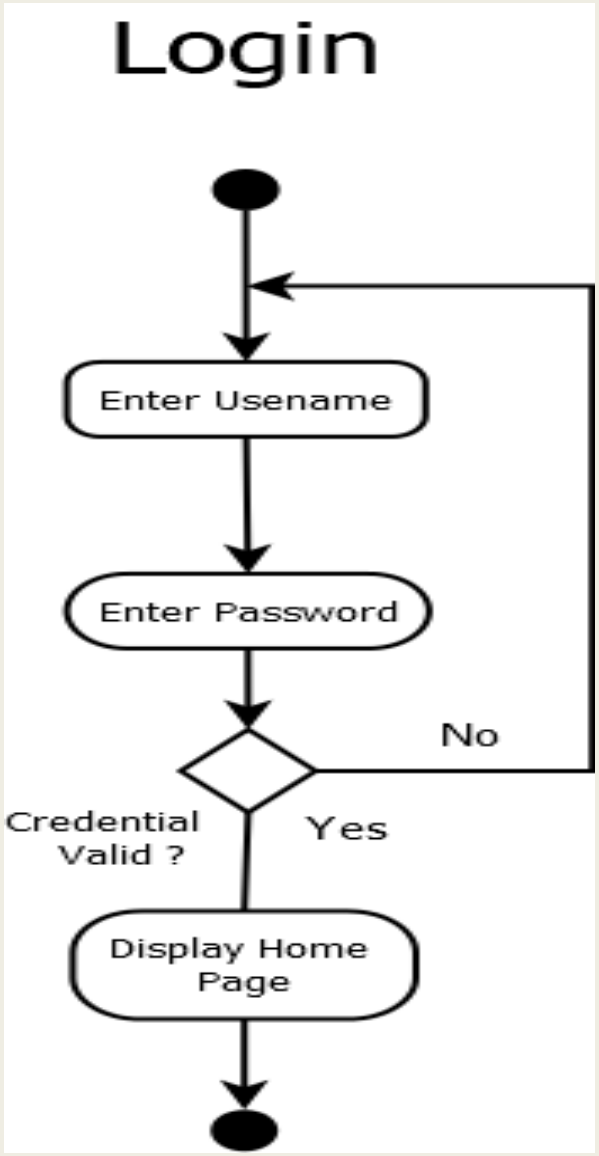
Interaction Diagram



Interaction Diagram

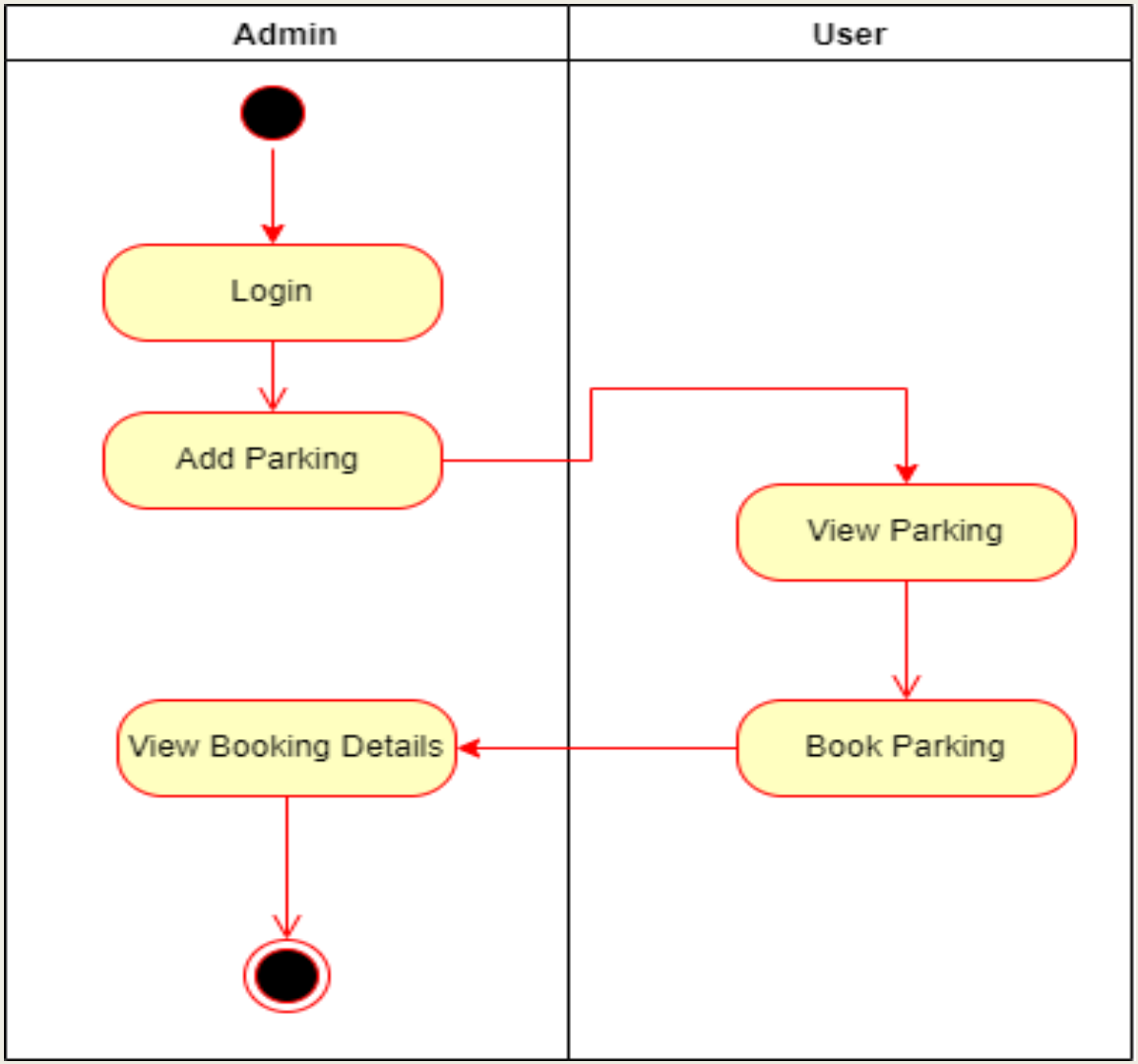


Activity Diagram



Activity Diagram

Add Parking



Data Dictionary

Table name: User

	FIELD NAME	DATA TYPE	SIZE	CONSTRAINT	DESCRIPTION	SAMPLE DATA
	userid	int	6	primary key	User id	0
	firstname	Varchar	20	not null	First name of user	Amaan
	lastname	Varchar	20	not null	Last name of user	khan
	email	Varchar	50	not null	Email id	am1@gmail.com
	password	Varchar	30	not null	User password	park123
	Address	Varchar	255	not null	User Address	99,niman complex
	pincode	int	6	not null	Pincode	380001
	Gender	Varchar	6	not null	Gender	Male
	mobileno	int	10	not null	User mobile no	9870987678
	type	Varchar	10	not null	two/four wheeler	four wheeler
	v_id	int	6	not null	vehicle id	0

Table name: Parking Lot Owner

FIELD NAME	DATA TYPE	SIZE	CONSTRAINT	DESCRIPTION	SAMPLE DATA
prklotowner_id	int	6	primary key	prklot owner id	0
firstname	Varchar	30	not null	firstname	krish
lastname	Varchar	30	not null	lastname	thakkar
email	Varchar	30	not null	email	k123@gmail.com
password	Varchar	30	not null	password	k123456
address	Varchar	50	not null	address	maninagar
pincode	int	6	not null	pincode	380008
gender	Varchar	6	not null	gender	male
mobileno	int	10	not null	prklotownermobno	9875641290
parking lot	Varchar	50	not null	parkinglot name	shankush parking plot

Table name: Vehicle

FIELD NAME	DATA TYPE	SIZE	CONSTRAINT	DESCRIPTION	SAMPLE DATA
v_id	int	6	primary key	vehcile id	0
vehiclename	Varchar	30	not null	vehicle name	verna
vehiclecolour	Varchar	30	not null	vehicle colour	red
vehicletype	Varchar	30	not null	two/four wheeler	four wheeler
vehicleno	Varchar	20	not null	vehicle no plate	GJ 27 WA 5409
paymentmode	Varchar	30	not null	monthly/yearly	monthly

Table name: Parking Session

FIELD NAME	DATA TYPE	SIZE	CONSTRAINT	DESCRIPTION	SAMPLE DATA
prksess_id	int	6	primary key	parkingsession id	0
userid	int	30	foreign key	user id	0
v_id	int	30	foreign key	vehicle id	0
vehiclename	Varchar	30	not null	vehicle name	verna
parking lot	Varchar	20	not null	parking plot name	shankush parking lot
entry time	int	30	not null	vehicle entry time	11:00 PM

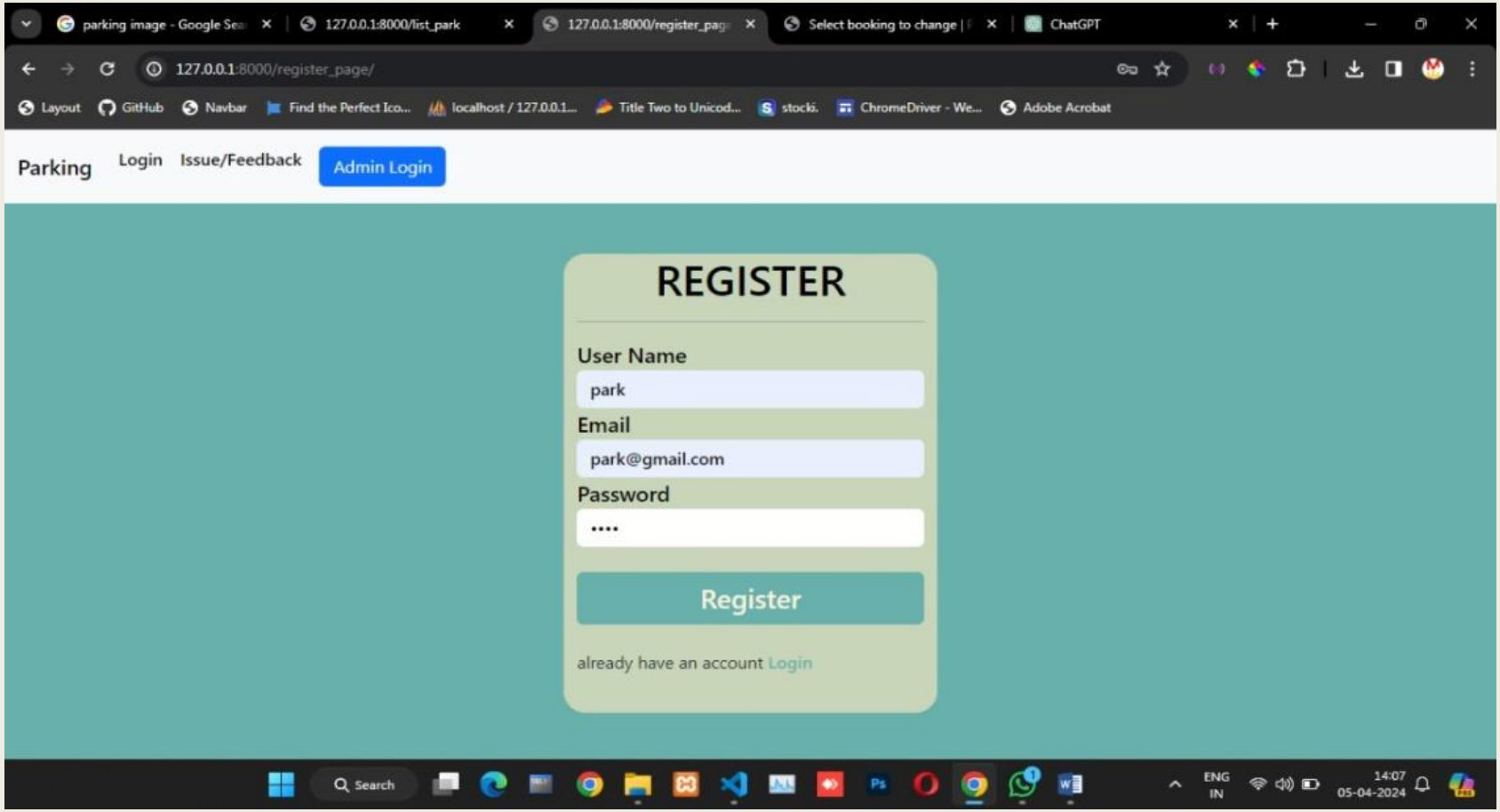
Table name: Parking Lot

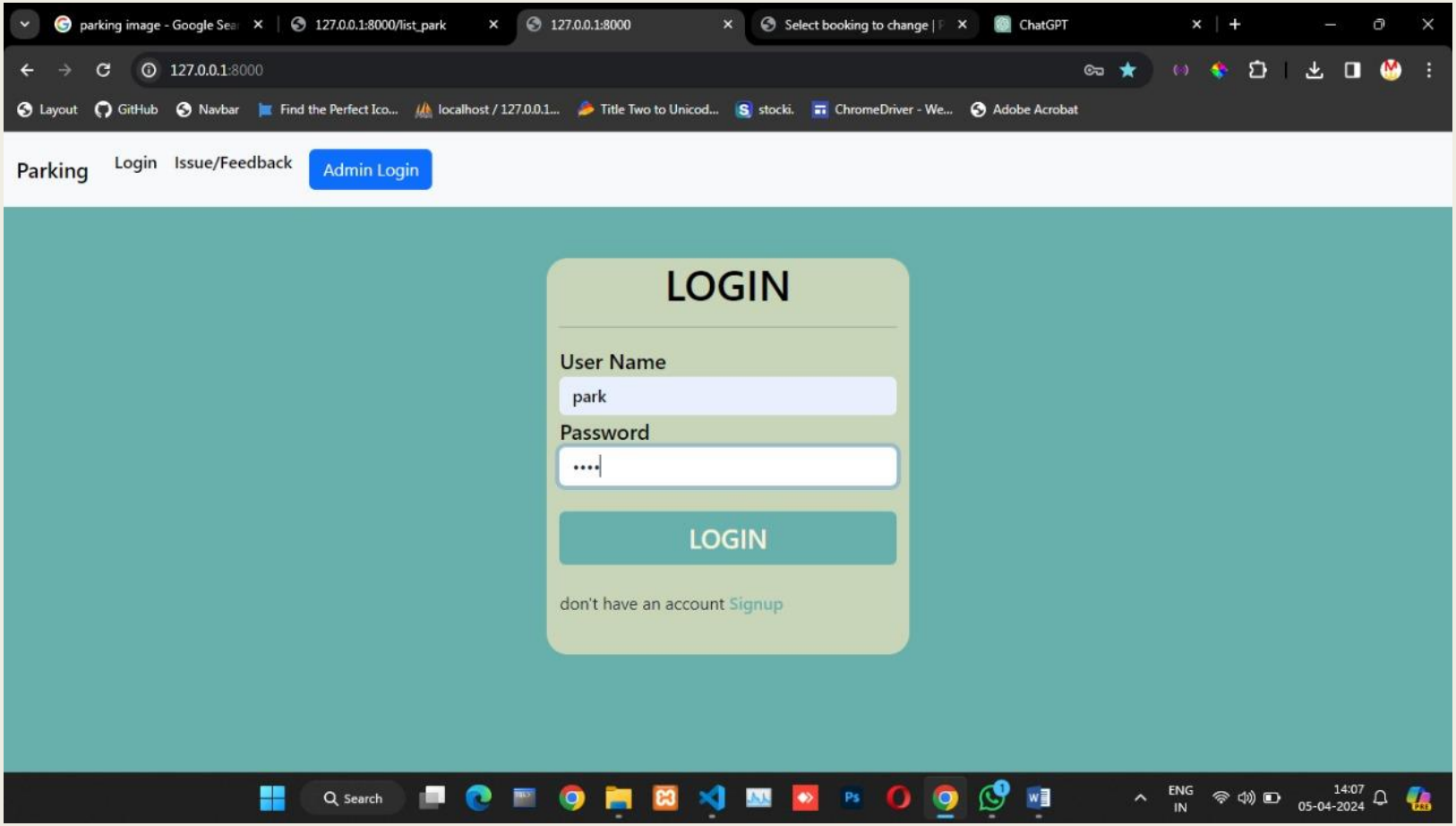
FIELD NAME	DATA TYPE	SIZE	CONSTRAINT	DESCRIPTION	SAMPLE DATA
prklot_id	int	6	primary key	parking lot id	0
prking lot	Varchar(30)	30	not null	parking lot name	shankush parking lot
address	Varchar(50)	30	not null	address	s g highway
prk hourly rates	int(6)	30	not null	hourly rates	40
prk monthly rates	int(6)	20	not null	monthly rates	3000
prk yearly rates	int(6)	20	not null	yearly rates	12:00 AM
pincode	int(6)		not null	pincode	12:00 AM

Coding Standards

- Use a single blank line between the last import and any module level code, and use two blank lines above the first function or class.
- {% extends %} should be the first non-comment line.
- Put exactly one space between {{, variable contents, and }}.
- In Django views, the first parameter in a view function should be called request.
- Implement robust error handling to gracefully manage exceptions and provide informative error messages.
- Use Django's logging framework to log errors and debugging information.
- Follow Django's URL naming conventions, using **urlpatterns** in **urls.py** files to map URLs to views

Screenshots




parking image - Google Sea
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Parking
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Issue/Feedback
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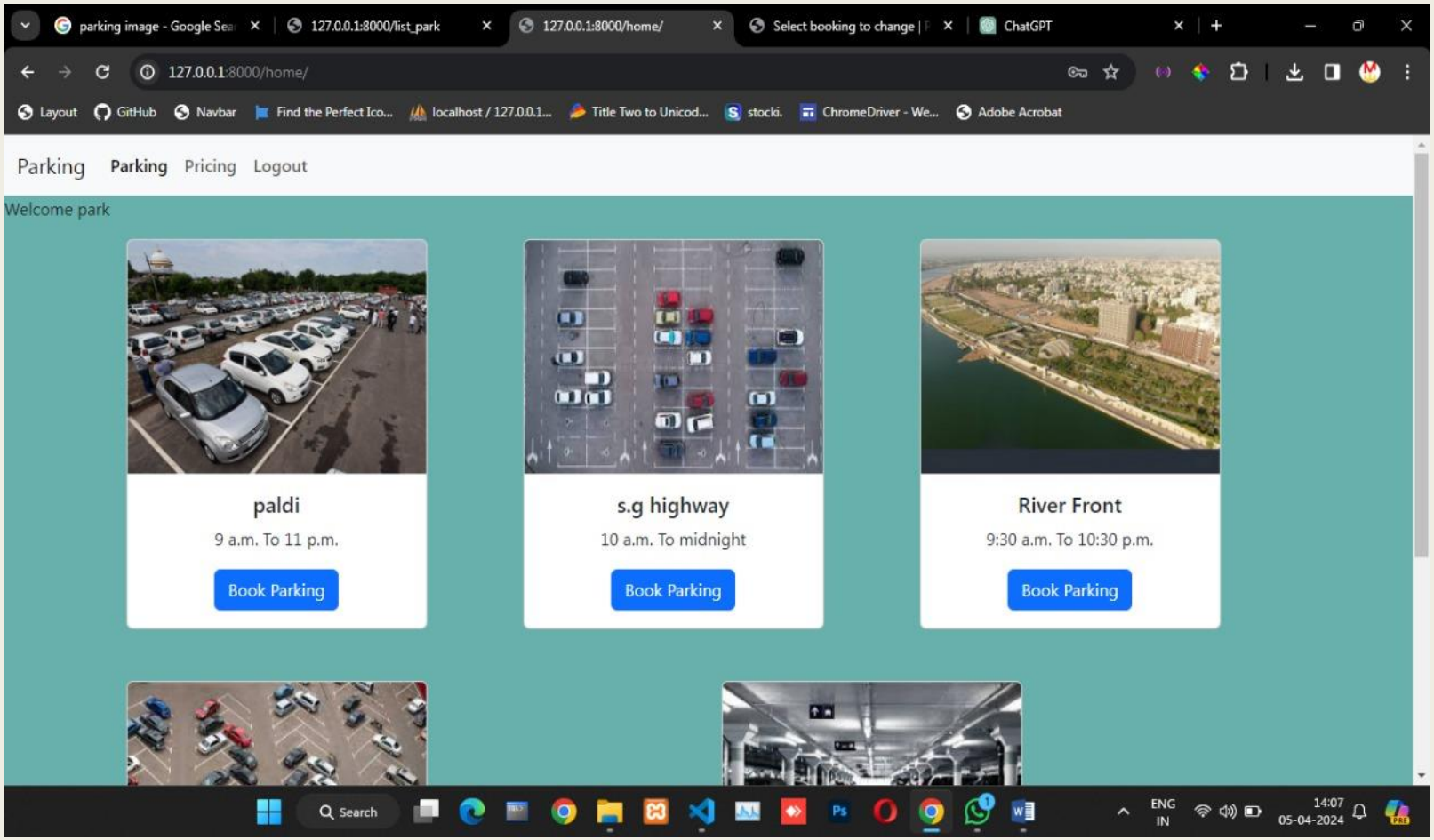
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Parking
Pricing
Logout
Welcome park
paldi
9 a.m. To 11 p.m.
Book Parking
s.g highway
10 a.m. To midnight
Book Parking
River Front
9:30 a.m. To 10:30 p.m.
Book Parking
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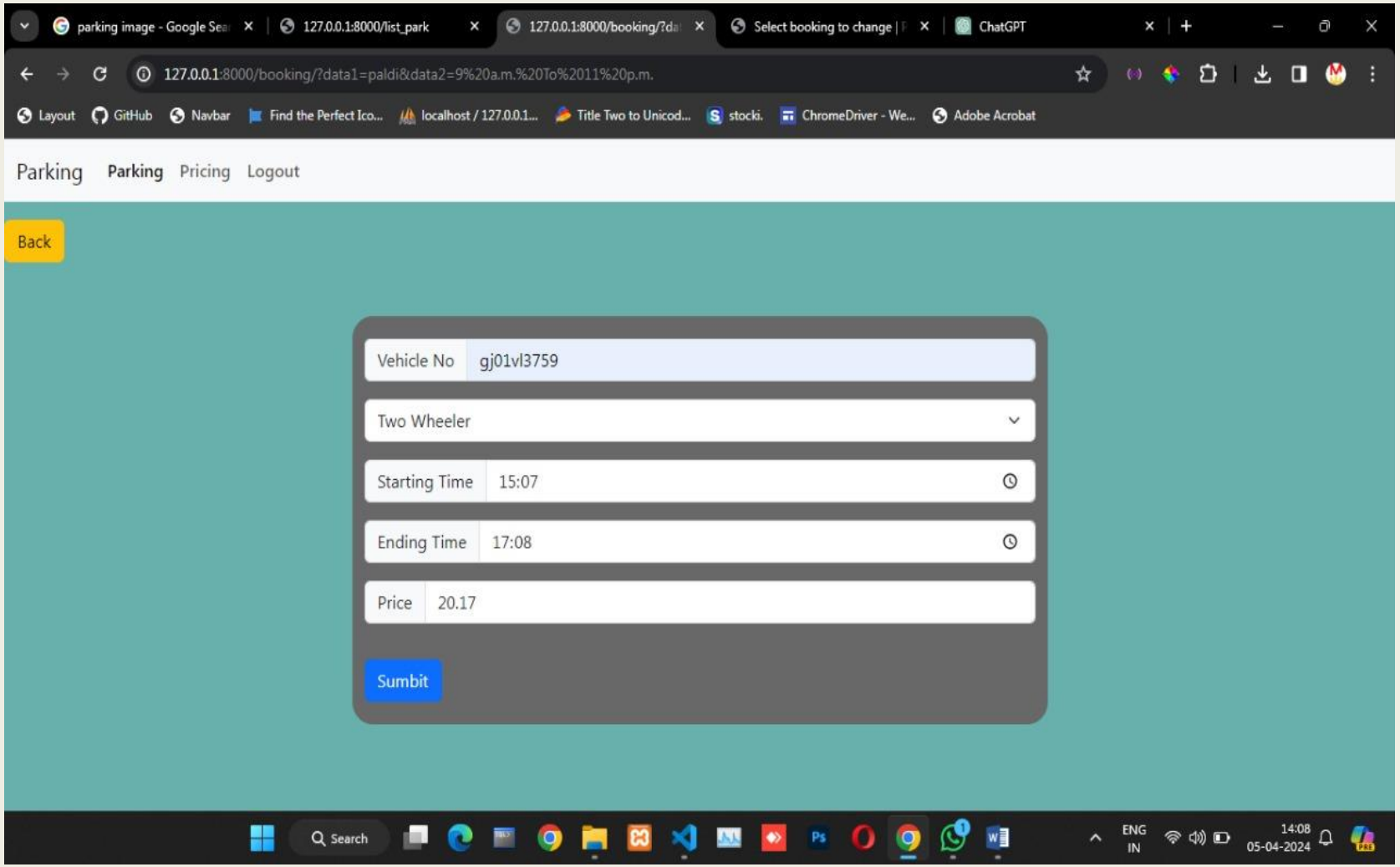
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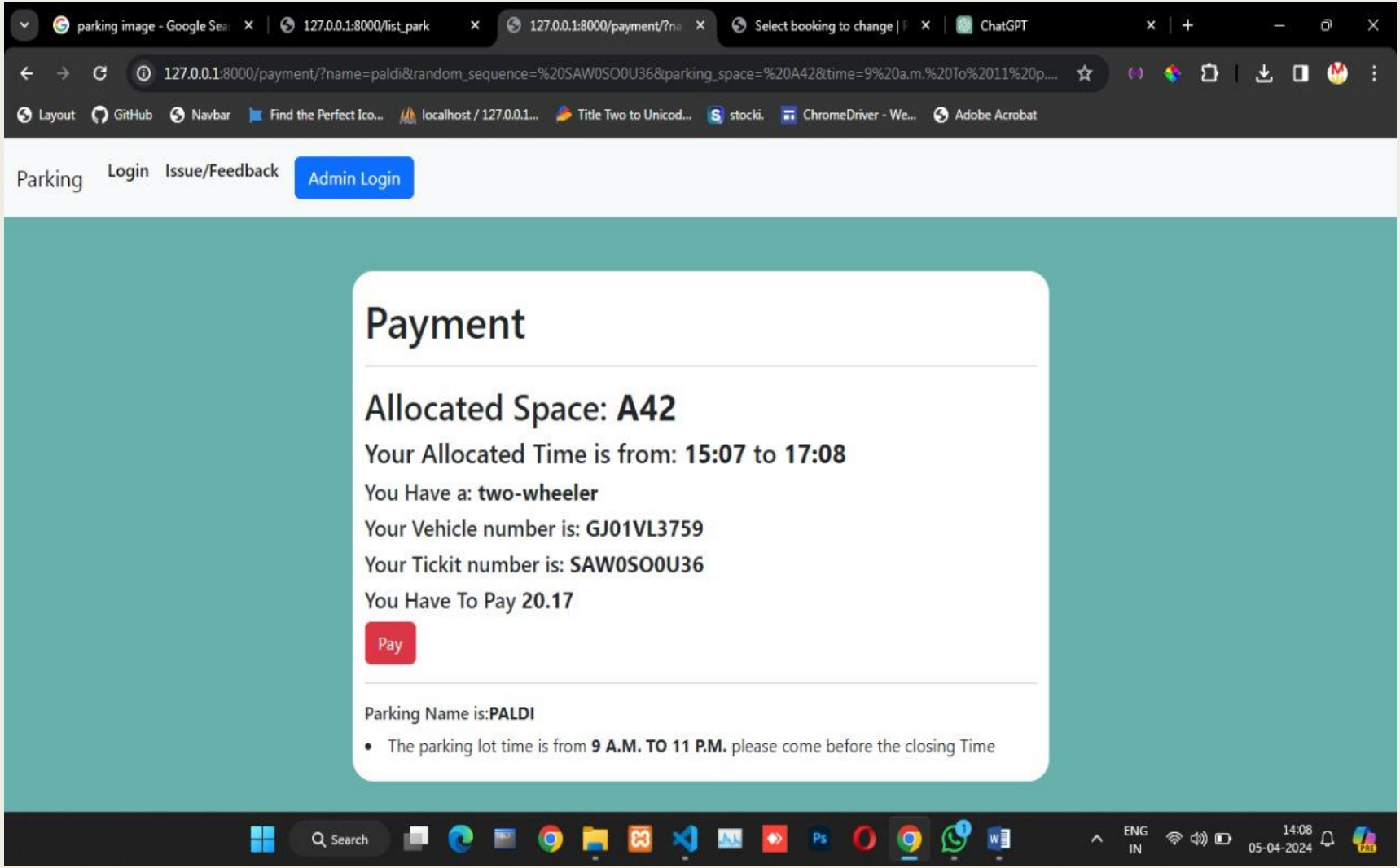
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Parking
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Issue/Feedback
Admin Login
Payment
Allocated Space: A42
Your Allocated Time is from: 15:07 to 17:08
You Have a: two-wheeler
Your Vehicle number is: GJ01VL3759
Your Tickit number is: SAW0SO0U36
You Have To Pay 20.17
Pay
Parking Name is:PALDI
The parking lot time is from 9 A.M. TO 11 P.M. please come before the closing Time
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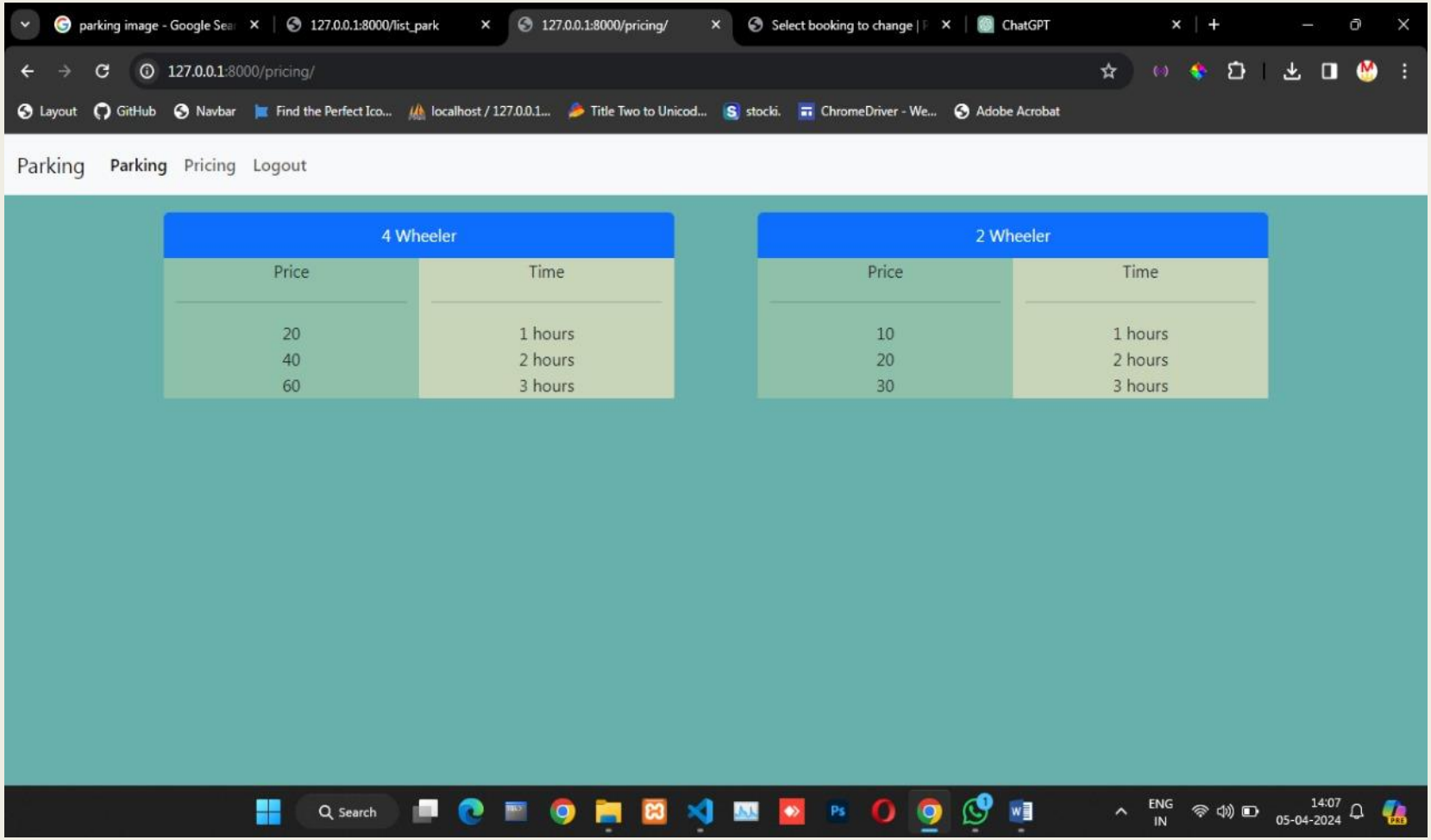
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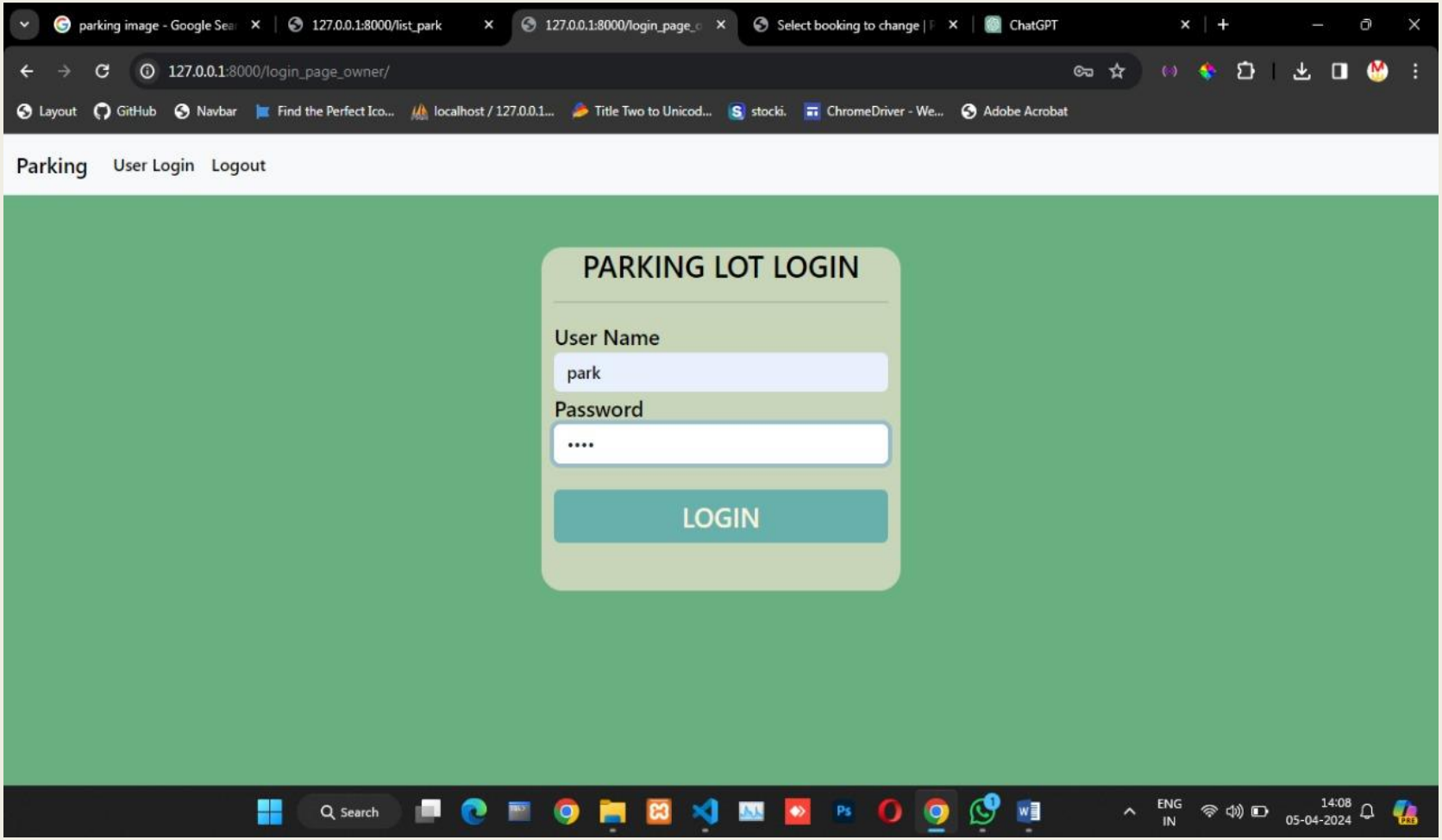
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Logout
PARKING LOT LOGIN
User Name
park
Password
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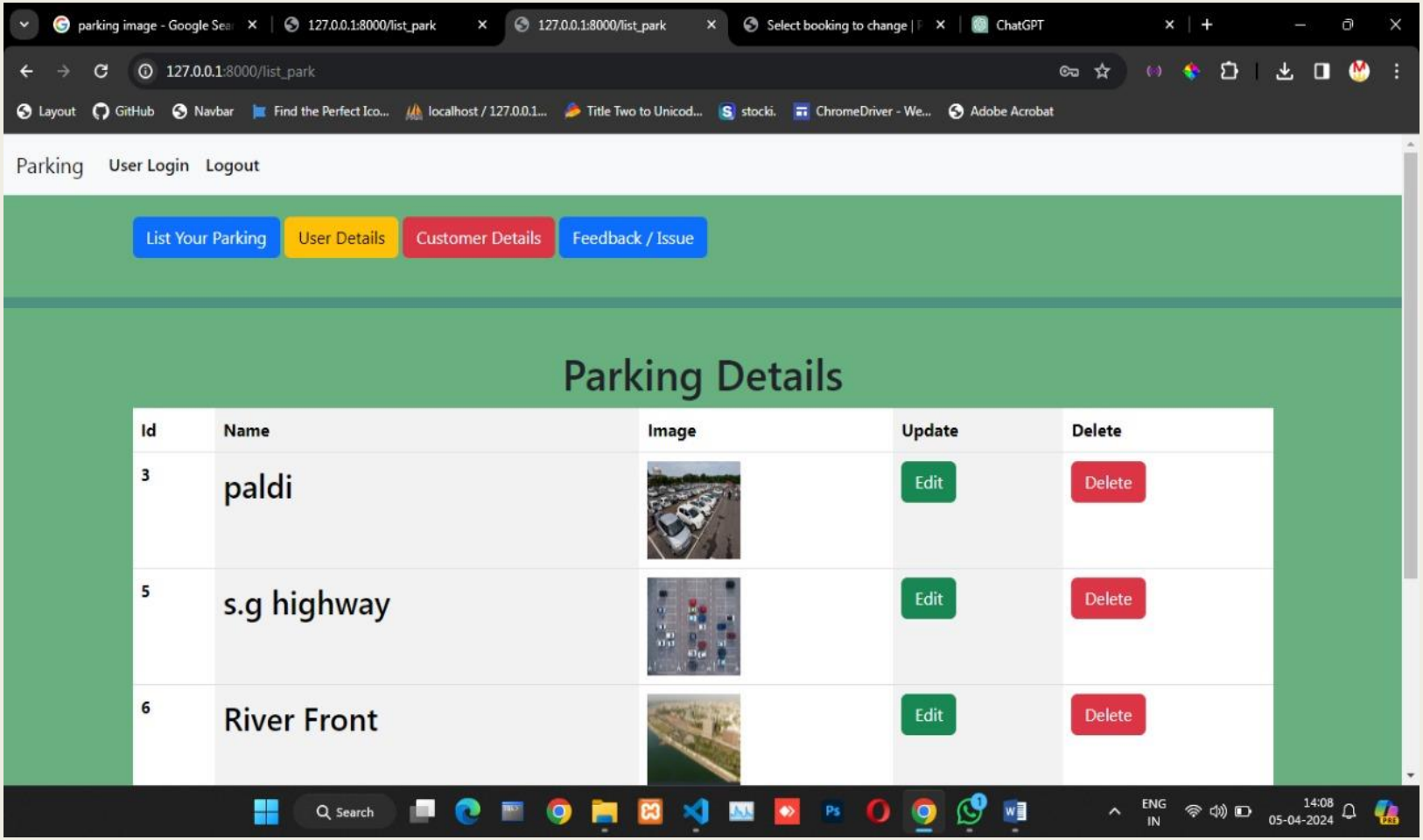
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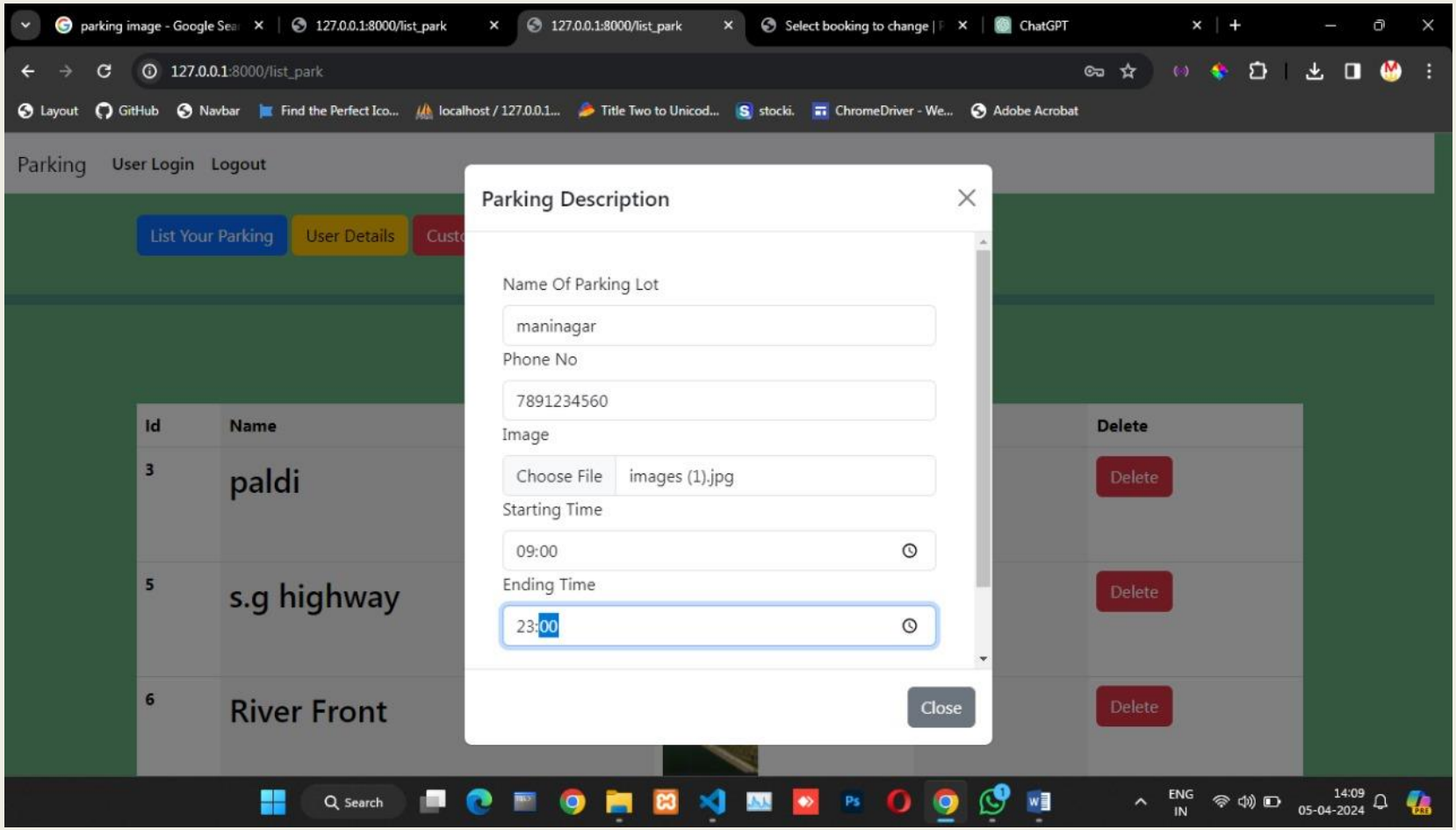
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Logout
List Your Parking
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Parking Description
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Phone No
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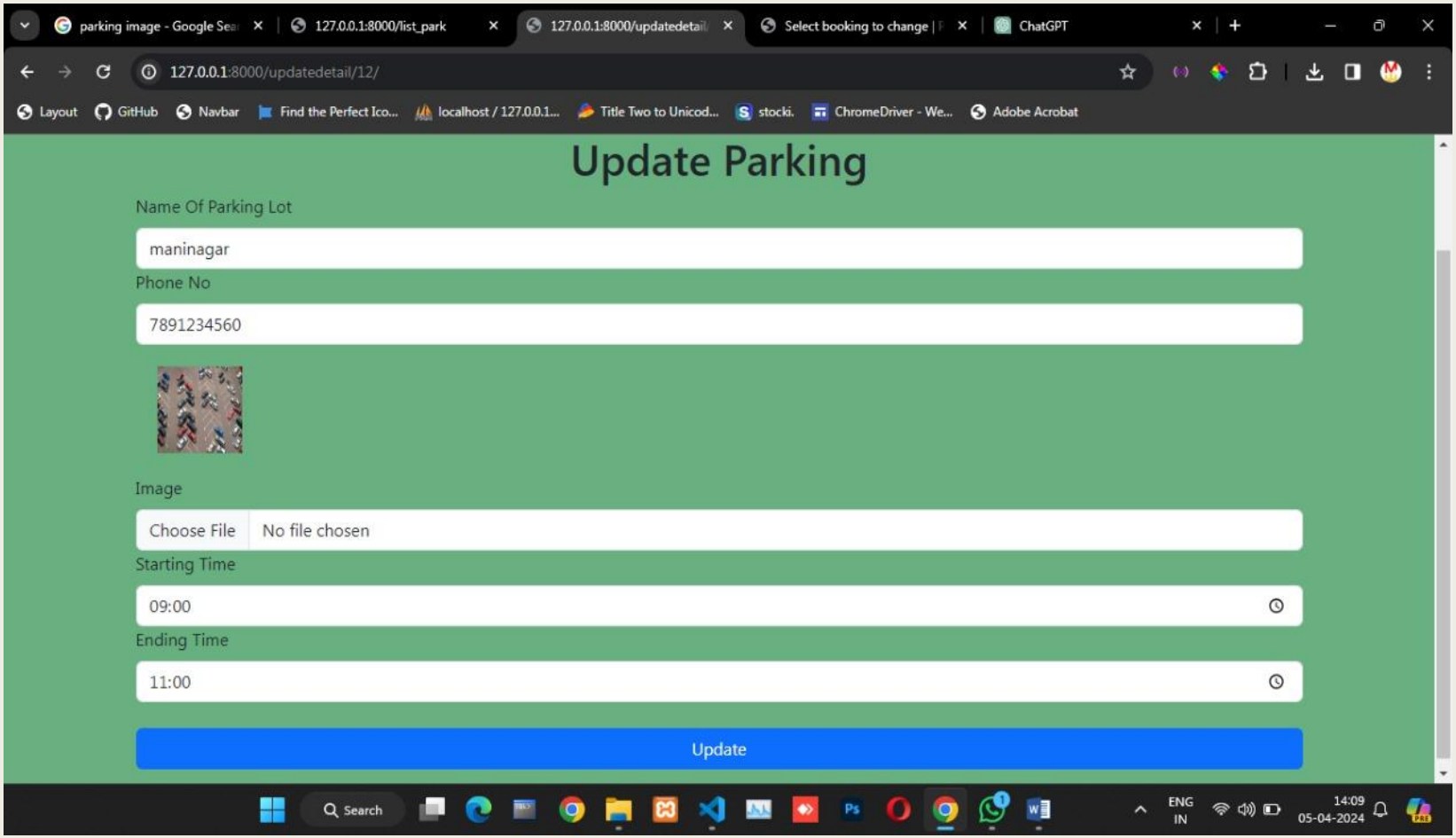
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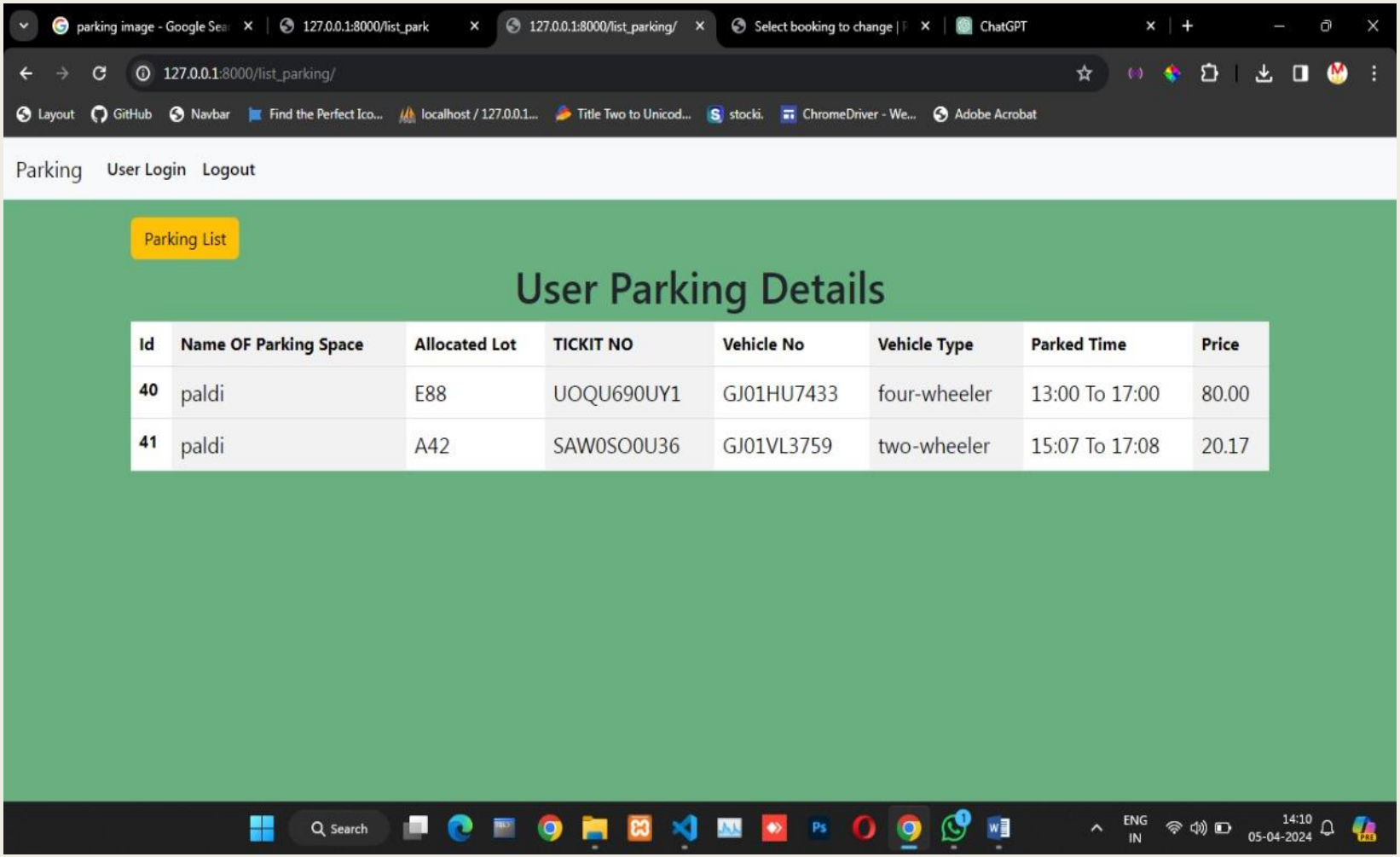
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Allocated Lot
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Vehicle No
Vehicle Type
Parked Time
Price
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paldi
E88
UOQU690UY1
GJ01HU7433
four-wheeler
13:00 To 17:00
80.00
41
paldi
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two-wheeler
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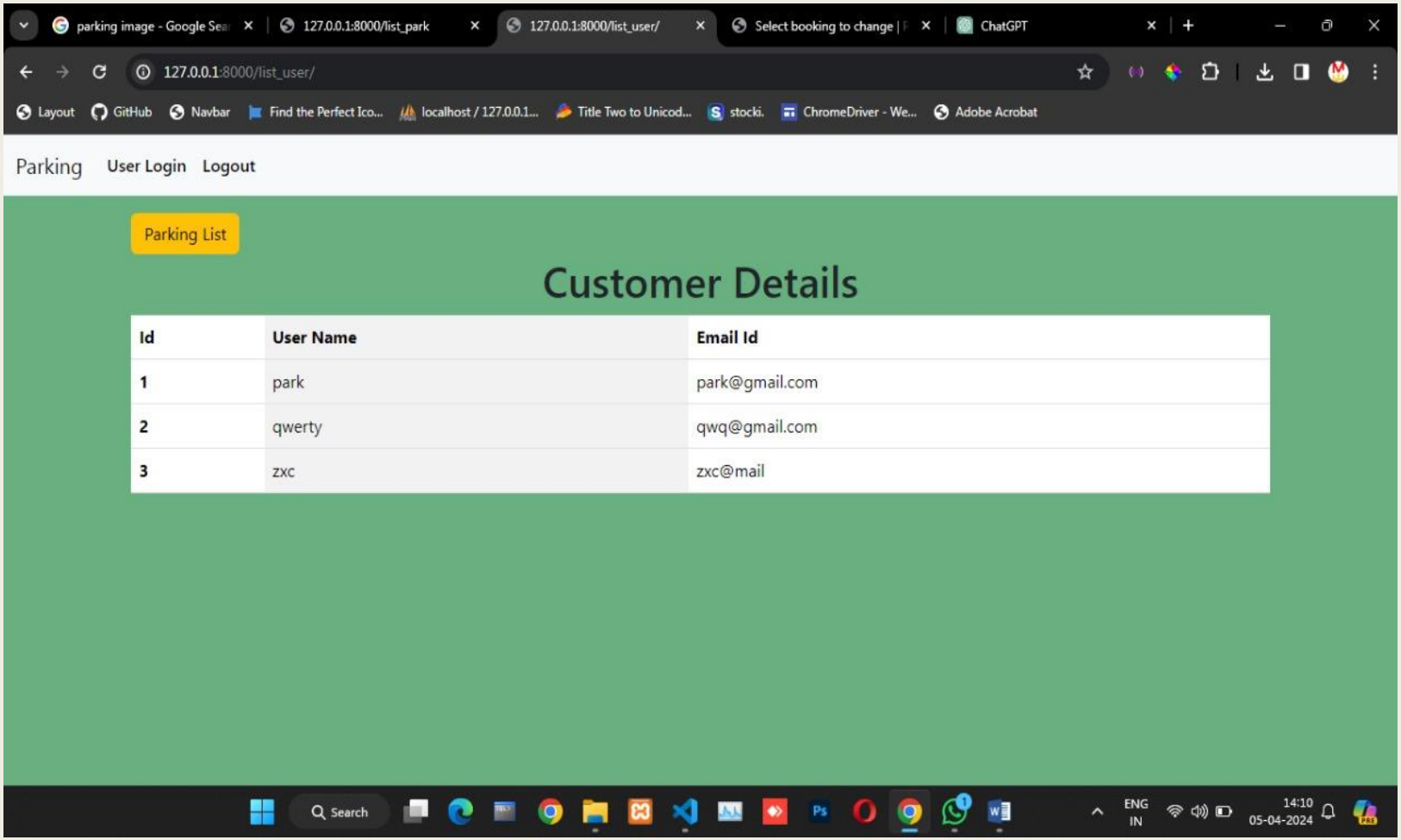
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Logout
Parking List
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park
park@gmail.com
2
qwerty
qwq@gmail.com
3
zxc
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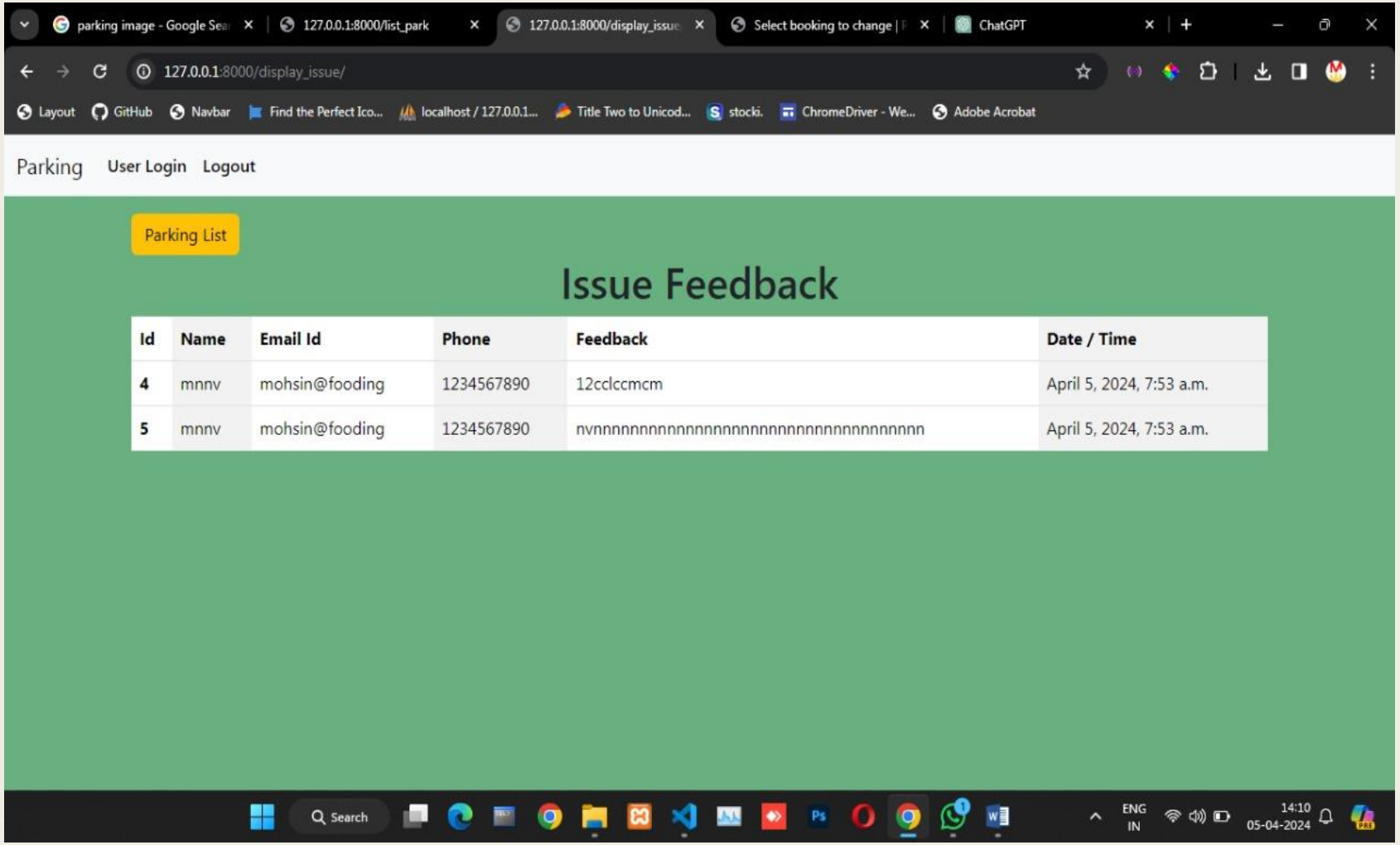
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ChromeDriver - We...
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Parking
User Login
Logout
Parking List
Issue Feedback
Id
Name
Email Id
Phone
Feedback
Date / Time
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mnnv
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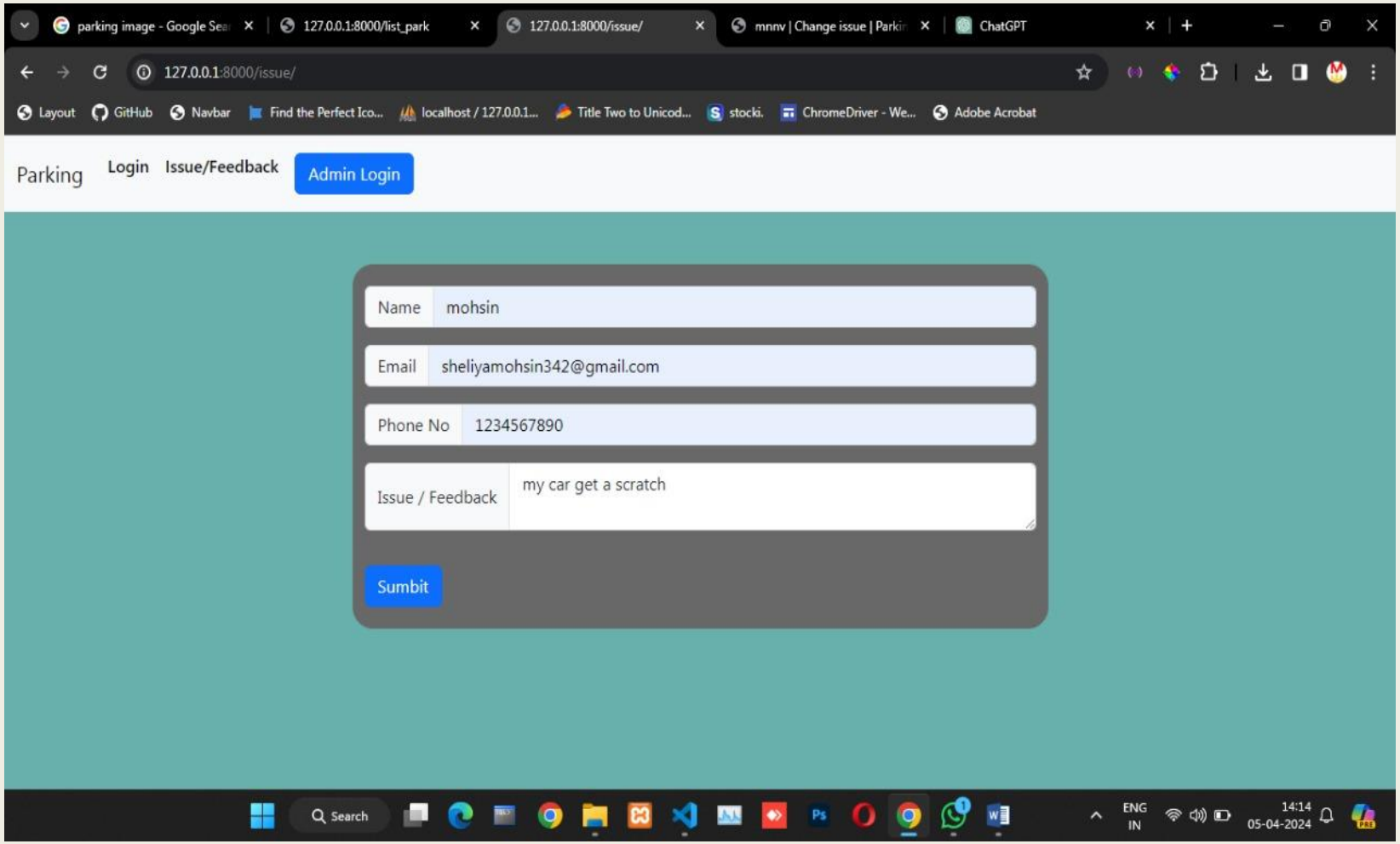
05-04-2024

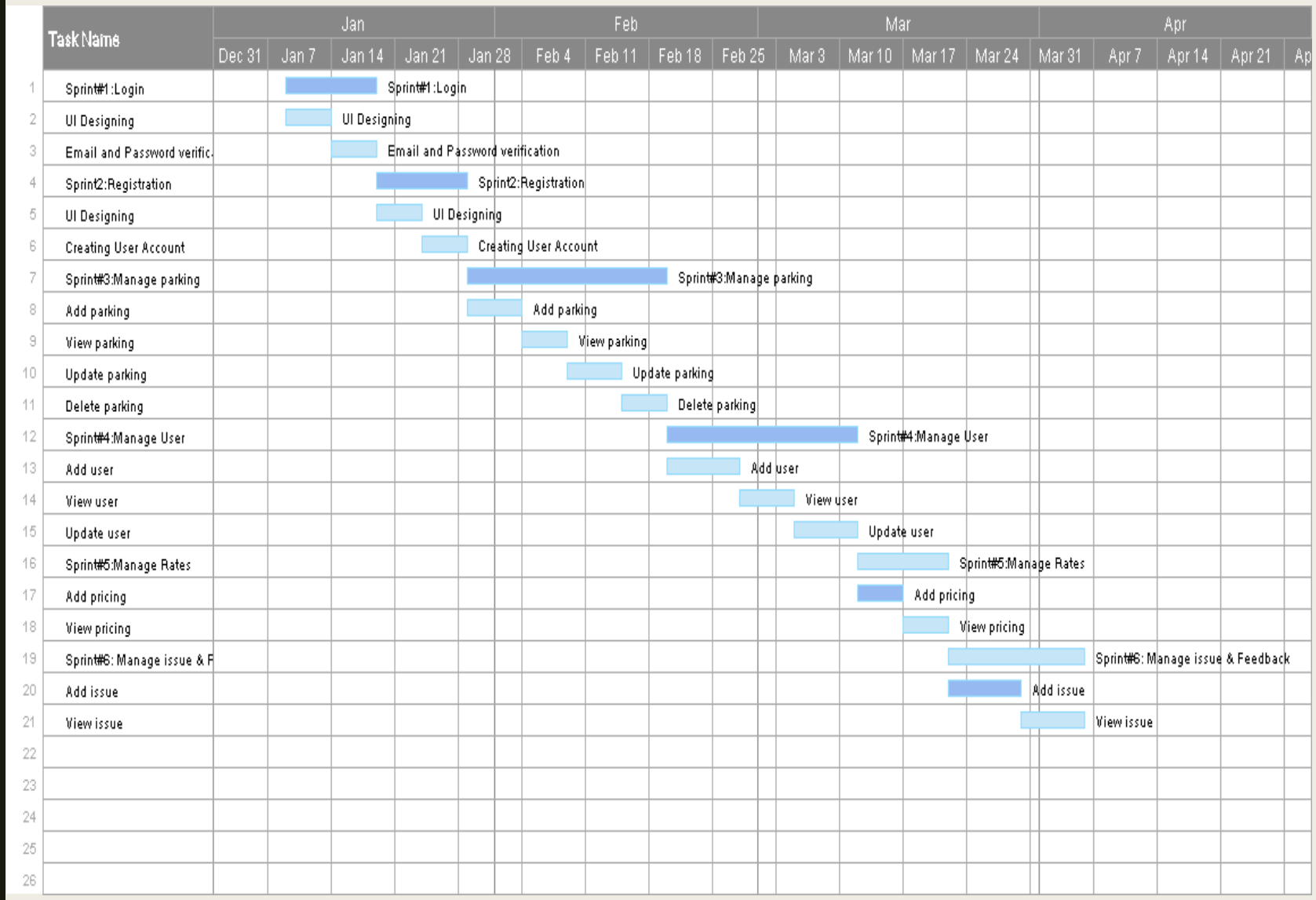

parking image - Google Sea
127.0.0.1:8000/list_park
127.0.0.1:8000/issue/
mnnv | Change issue | Parkir
ChatGPT
127.0.0.1:8000/issue/
Layout
GitHub
Navbar
Find the Perfect Ico...
localhost / 127.0.0.1...
Title Two to Unicod...
stocki.
ChromeDriver - We...
Adobe Acrobat
Parking
Login
Issue/Feedback
Admin Login
Name
mohsin
Email
sheliyamohsin342@gmail.com
Phone No
1234567890
Issue / Feedback
my car get a scratch
Sumbit
Search
ENG
IN
14:14
05-04-2024

Agile Project Charter

General Project Information	
Project Name	Parking Management System
Project Champion	B-01 Aghariya Imdadali B-02 Amaan Khan B-52 Sheliya Mohsinali
Project Sponsor	Company name
Project Manager	Sangeeta mam
Stakeholders	L.J Institute Of Computer Application
Expected Start Date	9th January 2024
Expected Completion Date	5th April 2024

Project Details	
Mission	Our mission is to develop a streamlined platform that enables users to report parking-related issues seamlessly, empowers parking attendants to provide timely resolutions, and facilitates transparent communication between users and parking management to ensure smooth operation of parking resources.
Vision	Our vision is to create a dynamic platform that empowers parking management authorities to efficiently oversee parking operations, streamline parking space allocation, and implement effective issue resolution and feedback mechanisms. Through innovative solutions, we aim to enhance the overall parking experience for users while ensuring optimal utilization of parking resources.
Scope	Our system will encompass all facets of parking management, from user administration to issue resolution. It will empower administrators to efficiently oversee parking operations, manage parking spaces, and ensure seamless utilization of resources. Users will have the capability to report parking-related issues effortlessly, leading to prompt resolutions. Furthermore, feedback mechanisms will be in place to facilitate continuous improvement in the parking environment, ensuring an enhanced experience for all stakeholders.

Agile RoadMap



Agile Project Plan

Task Name	Duration	Start	Finish	Status
Sprint#1:Login	10d	09-01-2024	18-01-2024	Complete
UI Designing	5d	09-01-2024	13-01-2024	Complete
Email and Password verification	5d	14-01-2024	18-01-2024	Complete
Sprint2:Registration	10d	19-01-2024	28-01-2024	Complete
UI Designing	5d	19-01-2024	23-01-2024	Complete
Creating User Account	5d	24-01-2024	28-01-2024	Complete
Sprint#3:Manage parking	22d	29-01-2024	19-02-2024	Complete
Add parking	6d	29-01-2024	03-02-2024	Complete
View parking	5d	04-02-2024	08-02-2024	Complete
Update parking	6d	09-02-2024	14-02-2024	Complete
Delete parking	5d	15-02-2024	19-02-2024	Complete

Sprint#4:Manage User	21d	20-02-2024	11-03-2024	Complete
Add User	8d	20-02-2024	27-02-2024	Complete
View User	6d	28-02-2024	04-03-2024	Complete
Update User	7d	05-03-2024	11-03-2024	Complete
Sprint#5:Manage Rates	10d	12-03-2024	21-03-2024	Complete
Add pricing	5d	12-03-2024	16-03-2024	Complete
View pricing	5d	17-03-2024	21-03-2024	Complete
Sprint#6:Manage issue & Feedback	15d	22-03-2024	05-04-2024	Complete
Add issue & Feedback	8d	22-03-2024	29-03-2024	Complete
View issue & Feedback	7d	30-03-2024	05-04-2024	Complete

Agile User Story

User Story ID	As s(type of user)	I want to perform	So that I can(achieve some task)
1	Admin	Login	Access My Account
2	User	Request For New Parking	Integrate a new parking in parking lot
3	User	Report Issue	Parking lot owner can resolve issue efficiently

Agile Release Plan

Task Name	Duration	Start	Finish	Status	Release Date
Sprint#1:Login	10d	09-01-2024	18-01-2024	Complete	17-01-2024
UI Designing	5d	09-01-2024	13-01-2024	Complete	13-01-2024
Email and Password verification	5d	14-01-2024	18-01-2024	Complete	17-01-2024
Sprint2:Registration	10d	19-01-2024	28-01-2024	Complete	24-01-2024
UI Designing	5d	19-01-2024	23-01-2024	Complete	20-01-2024
Creating User Account	5d	24-01-2024	28-01-2024	Complete	24-01-2024
Sprint#3:Manage parking	22d	29-01-2024	19-02-2024	Complete	15-02-2024
Add parking	6d	29-01-2024	03-02-2024	Complete	30-01-2024
View parking	5d	04-02-2024	08-02-2024	Complete	04-02-2024
Update parking	6d	09-02-2024	14-02-2024	Complete	10-02-2024
Delete parking	5d	15-02-2024	19-02-2024	Complete	15-02-2024

Sprint#4:Manage User	21d	20-02-2024	11-03-2024	Complete	07-03-2024
Add User	8d	20-02-2024	27-02-2024	Complete	20-02-2024
View User	6d	28-02-2024	04-03-2024	Complete	26-02-2024
Update User	7d	05-03-2024	11-03-2024	Complete	01-03-2024
Sprint#5:Manage Rates	10d	12-03-2024	21-03-2024	Complete	16-03-2024
Add pricing	5d	12-03-2024	16-03-2024	Complete	11-03-2024
View pricing	5d	17-03-2024	21-03-2024	Complete	16-03-2024
Sprint#6:Manage issue & Feedback	15d	22-03-2024	05-04-2024	Complete	26-03-2024
Add issue & Feedback	8d	22-03-2024	29-03-2024	Complete	21-03-2024
View issue & Feedback	7d	30-03-2024	05-04-2024	Complete	26-03-2024

Agile Sprint Backlog

Task Name	Story	Sprint Ready	Priority	Status	Storypoint
Sprint#1:Login	Yes	Yes	High	Complete	10
UI Designing	Yes	Yes	medium	Complete	8
Email and Password verification	Yes	Yes	High	Complete	7
Sprint2:Registration	Yes	Yes	High	Complete	10
UI Designing	Yes	Yes	Medium	Complete	7
Creating User Account	Yes	Yes	High	Complete	8
Sprint#3:Manage parking	Yes	Yes	Medium	Complete	7
Add parking	Yes	Yes	High	Complete	8
View parking	Yes	Yes	Medium	Complete	6
Update parking	Yes	Yes	Medium	Complete	8
Delete parking	Yes	Yes	Low	Complete	2

Sprint#4:Manage parking Lot	**Yes**	**Yes**	**Medium**	**Complete**	**8**
Add parking Lot	Yes	Yes	High	Complete	9
View parking Lot	Yes	Yes	Medium	Complete	6
Update parking Lot	Yes	Yes	Medium	Complete	4
Delete parking Lot	Yes	Yes	Low	Complete	2
Sprint#5:Manage Rates	Yes	Yes	Medium	Complete	8
Add pricing	Yes	Yes	High	Complete	6
View pricing	Yes	Yes	Medium	Complete	9
Sprint#6:Manage issue	Yes	Yes	Medium	Complete	9
Add issue	Yes	Yes	High	Complete	7
View issue	Yes	Yes	Medium	Complete	8
Sprint#7:Manage Feedback	Yes	Yes	Medium	Complete	7
Add feedback	Yes	Yes	High	Complete	8
View feedback	Yes	Yes	Medium	Complete	8

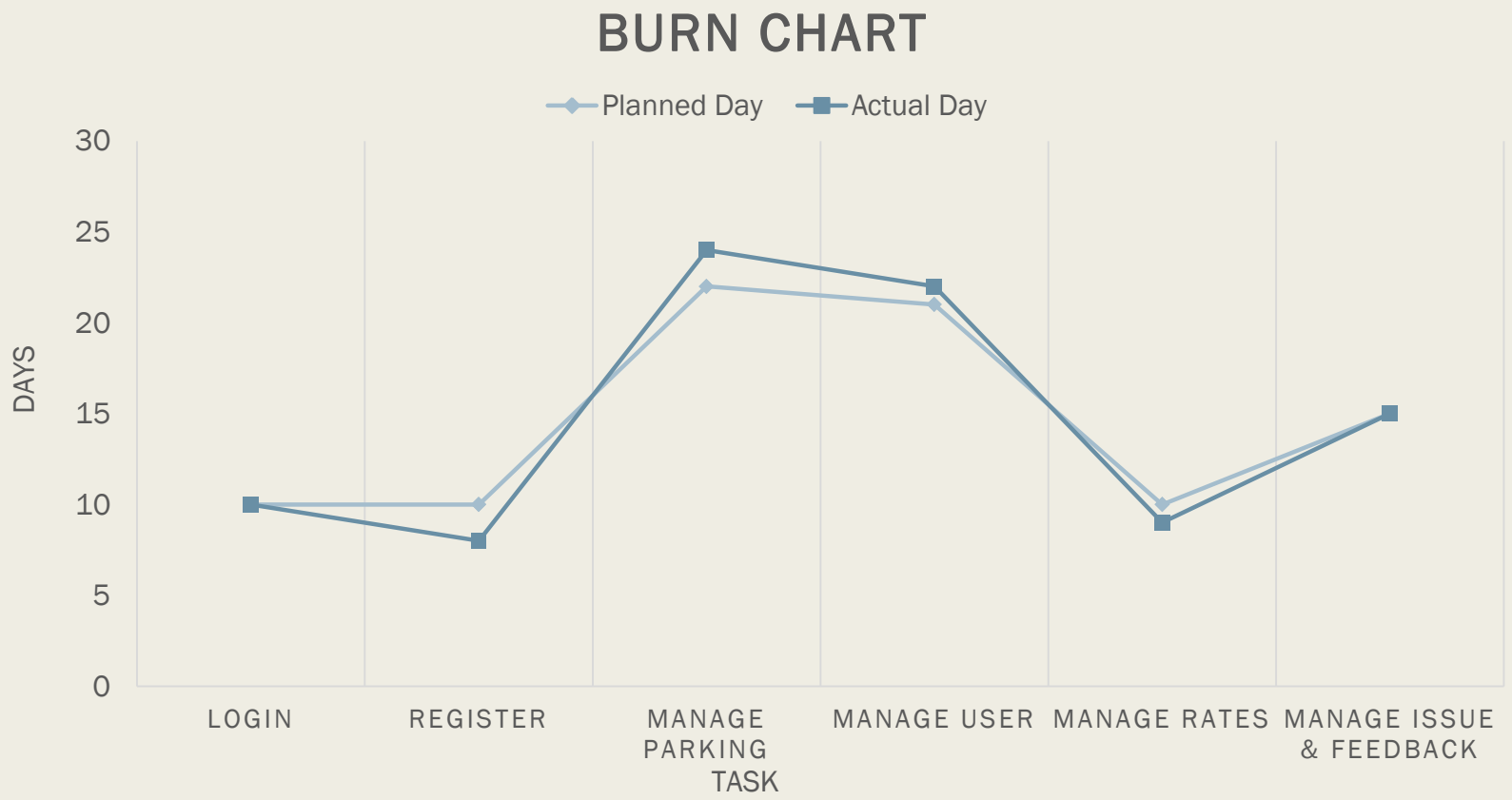
Agile Test Plan

Project Name	Parking Management System			Device	HP intel core i3 10th gen
Test Case Id	1			Test Title	Login to access user account
Module Name	Login			Tested By	Sheliya Mohsinali
Priority	High			Execution Date	01-04-2024
Test	Test Step	Action	Expected Result	Actual Result	Pass
1	**Enter correct Username**	**Valid username**	**User username should accepted**	**Username Accepted**	**Yes**
2	**User name is wrong**	**Invalid name**	**User username should be accepted**	**Username is Invalid**	**No**
3	**Password is wrong**	**Invalid Password**	**User password should be accepted**	**Invalid user password**	**No**
4	**Enter correct Password**	**Valid password**	**User password should be accepted**	**Valid user password**	**Yes**

Agile Test Plan

Project Name	Parking Management System			Device	HP intel core i3 10th gen
Test Case Id	1			Test Title	Login to access user account
Module Name	Login			Tested By	Amaan khan
Priority	High			Execution Date	01-04-2024
Test	Test Step	Action	Expected Result	Actual Result	Pass
1	**Enter correct category and time**	**valid time**	**Customer category and Time accepted**	**Display price**	**Yes**
2	Enter Wrong time	Ending time is less than starting time	Price will be displayed in negative no	Invalid time and price	No
3	Enter time without category	No price displayed	Nothing displayed in p rice	Nan	No

EARNED-VALUE AND BURN CHARTS



Proposed Enhancement

- **Efficient Entry and Exit**
- **Improved Security**
- **Enhanced User Experience**
- **Real-Time Data**
- **Integration with Payment Systems**

Conclusion

The development of the parking management system in Django has been a significant endeavor, aimed at providing a comprehensive solution for efficient parking management. Through careful planning and implementation, the system offers features such as parking lot management, spot reservation, and payment processing, all contributing to a seamless parking experience. The modular design of the system, along with adherence to coding standards and best practices, ensures its scalability and maintainability. While the system may not directly address the risk of car crash injuries, its role in optimizing parking operations and enhancing user convenience indirectly contributes to overall road safety. Ongoing maintenance and updates will be essential to keep the system relevant and effective in meeting the evolving needs of users and parking management authorities. Overall, the parking management system in Django represents a significant step towards modernizing parking operations and improving the parking experience for all stakeholders.

Bibliography

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- BootstrapDocumentation: https://getbootstrap.com/docs/5.0/getting-started/introduction/
- jQuery Documentation: https://api.jquery.com/
- Git Version Control Documentation: https://git-scm.com/doc
- Stack Overflow: https://stackoverflow.com/

Thank You