Faculty of Technology, Department of Computer Engineering

B. Tech. CE Semester – VI

Subject: System Design Practice

Project Title:

Online Parking Management System

By:

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Nemish Zalavadiya (CE146) (17CEUOG074)

Guided By:

Prof. Pandav K. Patel

Dharmsinh Desai University, Nadiad

Faculty of Technology, Department of Computer Engineering

This is to certify that System Design Practice Project entitled "**Online Parking Management System** " is the bonafide report of work carried out by

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2. **Shubham Vekariya (17CEUOS111)**
3. **Nemish Zalavadiya (17CEUOG074)**

Of Department of Computer Engineering , Semester VI , academic year 2020-2021, under our supervision and guidance.

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Table of Contents

Abstract

In this 21st century, population growth and urbanization increased so it is a big problem to find place for parking in city area.Therefore, our web application will be useful to the people who have been face a daily problem in the park of their vehicles And if the user is at an unknown place, then the user will not know the parking place near him, then this application will also be useful to the user and user can park their vehicle.we provide this facility to user so user have not problem for parking vehicle.

Brief Introduction

The "**Online Parking Management System**" project has been designed keep in mind Landlord, Administrator and end user who wants to take land on rent for parking purpose. Landlord can add their land with location and land details And Landlord can edit his land in future.Landlord can also delete the land which he has added and can also see all the land which he has added and also view the history of all lands and also get payout of land.The administrator can verify the land added by the landlord by checking all the details.If the land added by Landlord is not verified then the land user cannot see that land.The end user can view any nearby parking space and also reserved that place.End user can reserve parking space from any place but for that, he has to added that place location once.The end user can also view the history of all the parking locations he or she had previously used. End user can give feedback of any land and When a user open nearby parking place page, they can see this feedback.

Tools/Technologies

- **Technologies**: python, html5, Bootstrap4, jQuery
- **Framework**: Django
- **Tool**: Visual Studio Code, PyCharm, GitHub Desktop, Selenium Testing Tool
- **Platform**: Window, Linux

Software Requirement Specification

R1. **Authentication**

R1.1 Login

Input: Email address and password

Output: Authentication successful

Description: If credentials are succeeded then user related pages display else error page display on failure.

R1.2 Register

Input: New user credentials

Output: Registration successful

Description: User can register themselves and get successful message.

R1.3 Forgot Password

Input: Email Address

Output: Reset password link mail to user

Description: User reset password by link.

R1.4 Edit profile information

Input: User modify credentials

Output: Edit successful

Description: User can modify their details and get successful message.

R2. **Admin**

R2.1 Verify Land Details

Input: Select land

Output: Send successful mail to landlord

Description: Admin can verify land details by checking all details correctly.

R3. **User**

R3.1 Reserve parking spot based on current location

R3.1.1 Get nearby parking spots

Input: Date and enable location

Output: Show all nearby parking spots

Description: User can get list of all parking spots which can nearby user current location and list sorted by distance.

R3.1.2 Reserve parking spot

Input: Select parking spot

Output: Reserve parking spot successful

Description: User reserve a nearby parking spot for particular day.

R3.2 Reserve parking spot based on other location

R3.1.1 Add location

Input: Location name and enable location

Output: Add location successful

Description: User add location so he/she can be reserve parking spot in advance.

R3.1.1 Get parking spots based on added location

Input: Date and select location name

Output: Show all parking spots

Description: User can get list of all parking spots which can nearby user selected location and list sorted by distance.

R3.1.2 Reserve parking spot

Input: Select parking spot

Output: Reserve parking spot successful

Description: User reserve a nearby parking spot for particular day in advance.

R3.3 View usage history

Input: Select history page

Output: Show list of all reservation details

Description: User can view history of reservation details which reserved earlier.

R3.4 Provide feedback

Input: Select particular record and provide feedback

Output: Feedback provided successfully

Description: User can provide feedback to particular parking spot which reserved earlier.

R4. **Landlord**

R4.1 Add land details

Input: New land credential and enable location

Output: Get successful message

Description: Landlord can add land details successfully.

R4.2 Edit land details

Input: Land modify credential

Output: Get successful message

Description: Landlord can edit land details successfully.

R4.3 Remove land

Input: Select particular land

Output: Get successful message

Description: Landlord can delete land if and only if land should not reserve by any user.

R4.4 View all land details

Input: Select land details page

Output: Show list of all land among with their details.

Description: Landlord can view all land among with their details which add earlier.

R4.5 View history of particular land

Input: Select particular land

Output: Show list of all usage history among with their user details.

Description: Landlord can all usage history among with their user details for particular land.

R4.6 Get payout

Input: Select particular land

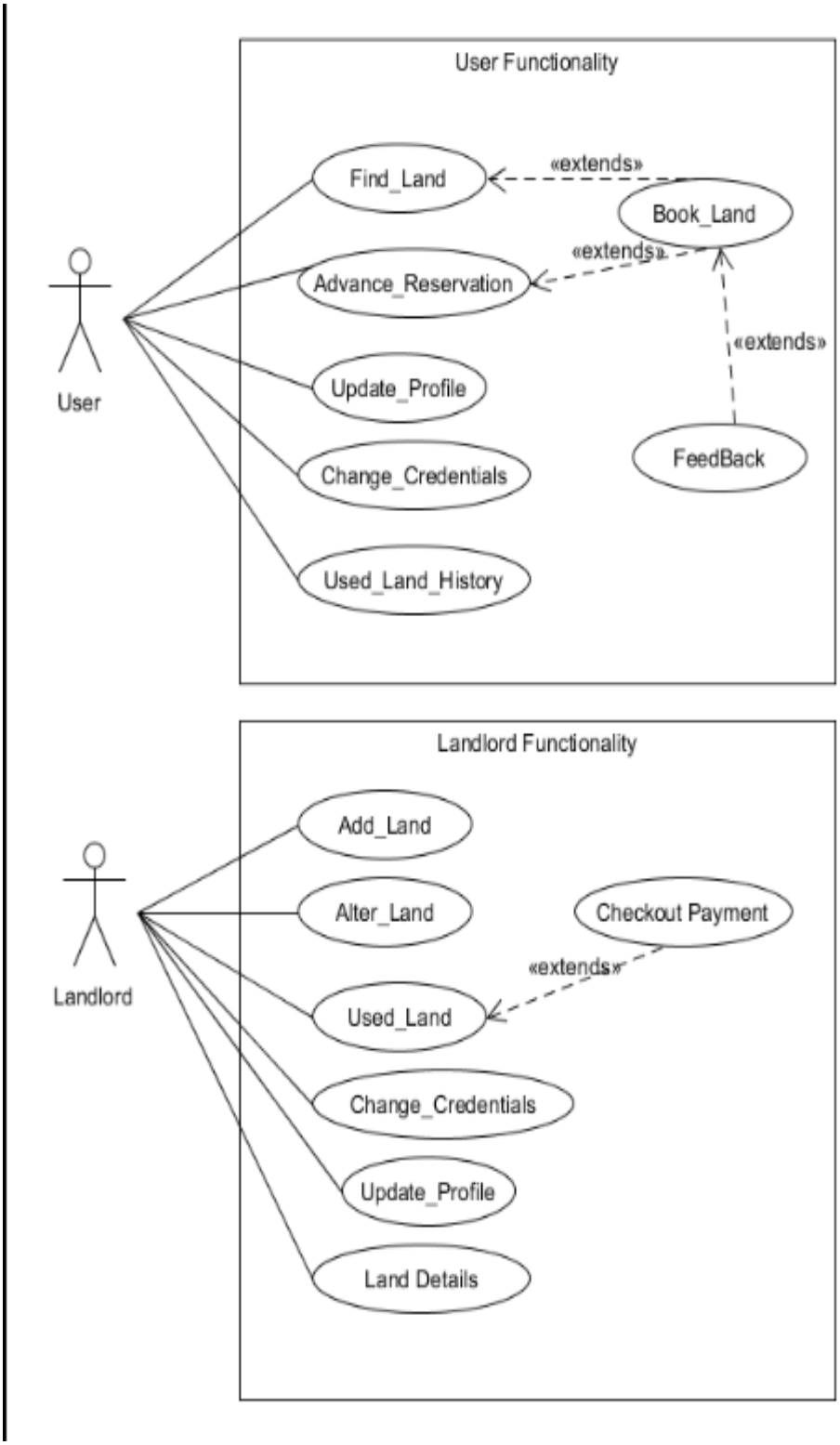
Output: Show the accumulated amount and get the payout successfully.

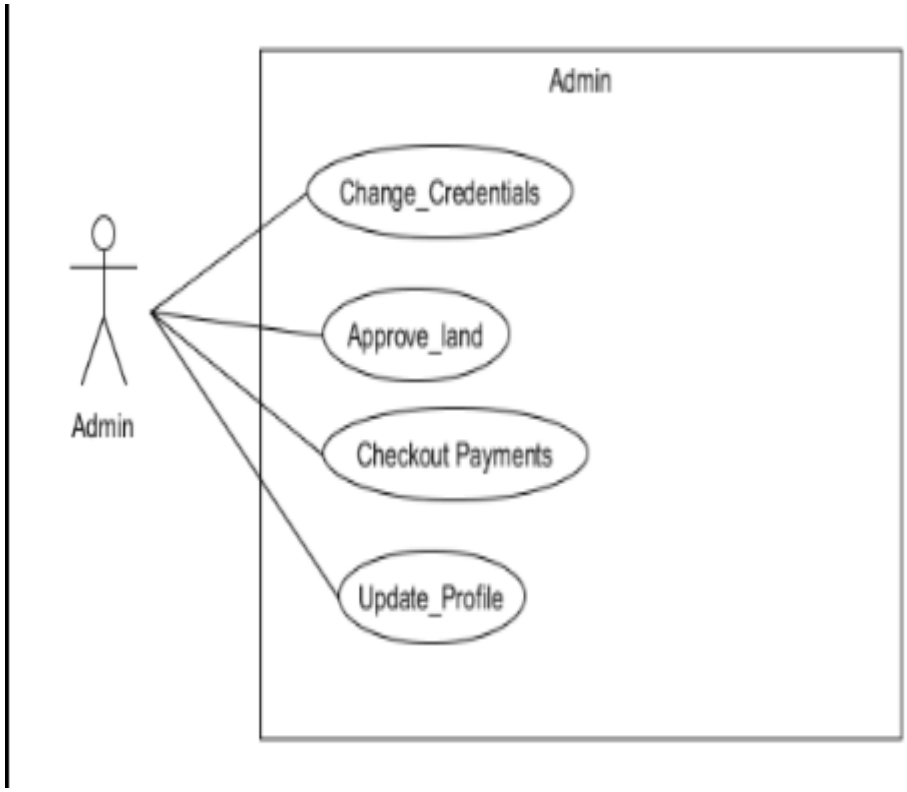
Description: Landlord view the accumulated amount and get the payout

for particular land.

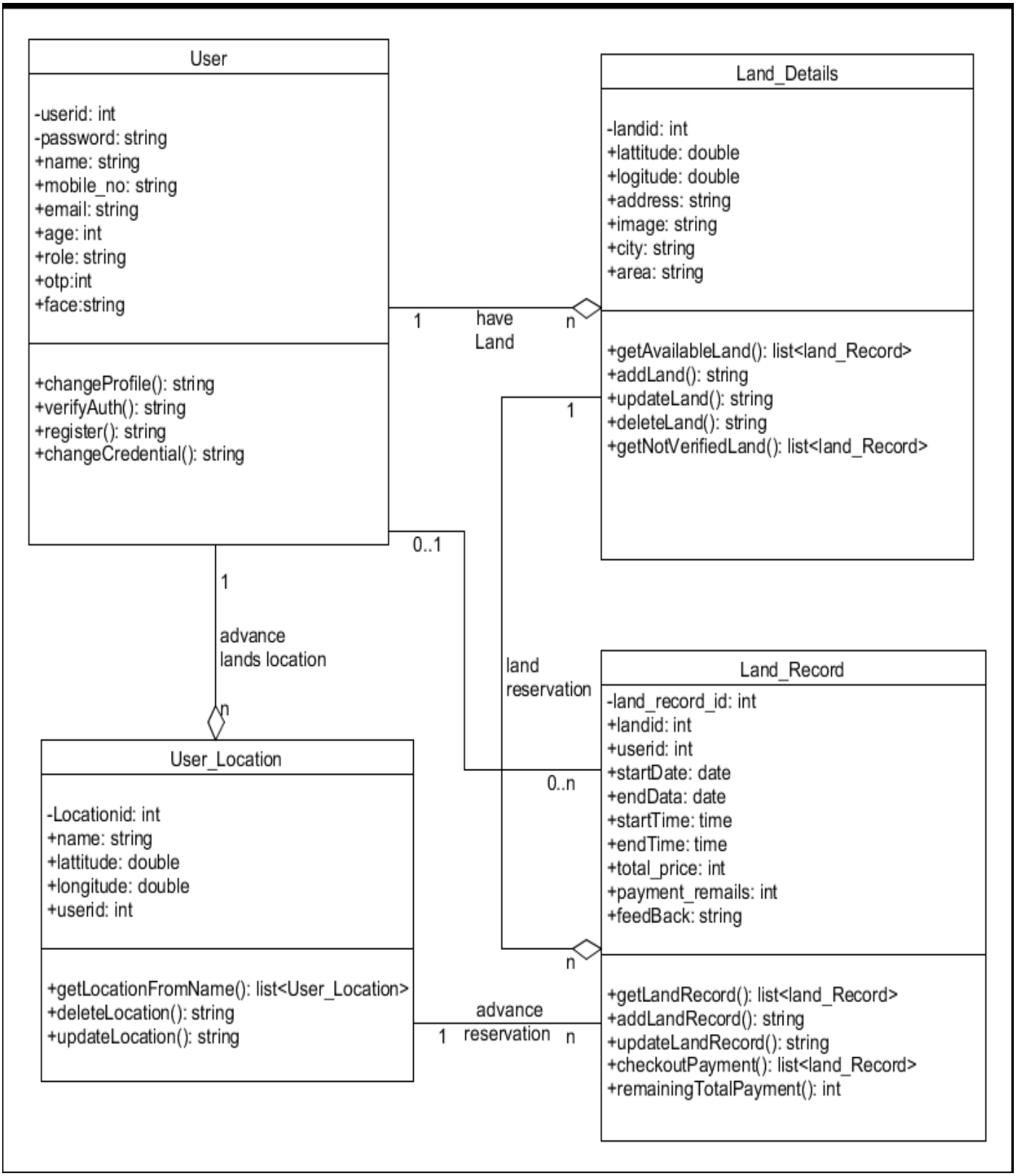
Design

Use Case Diagram

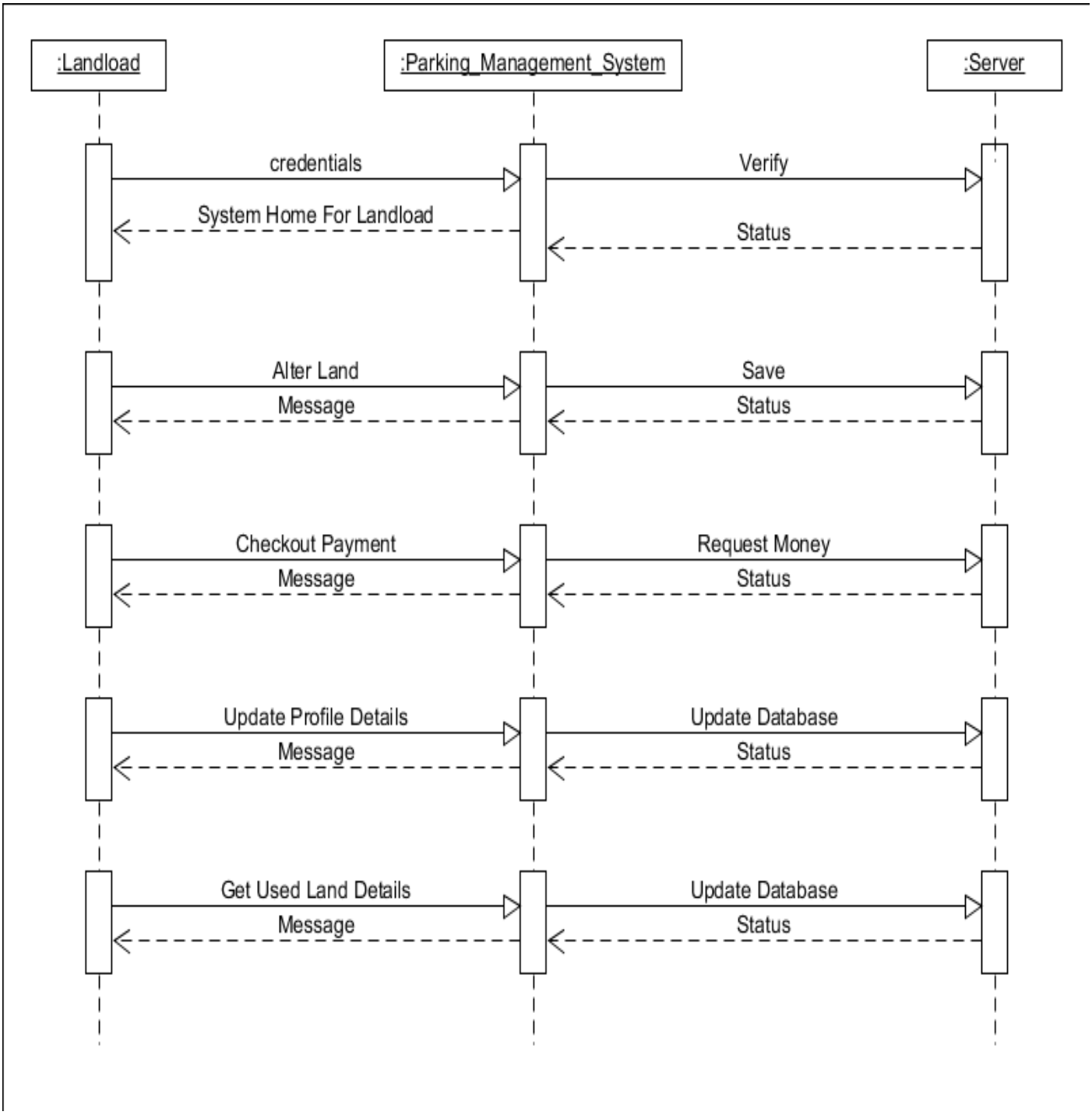


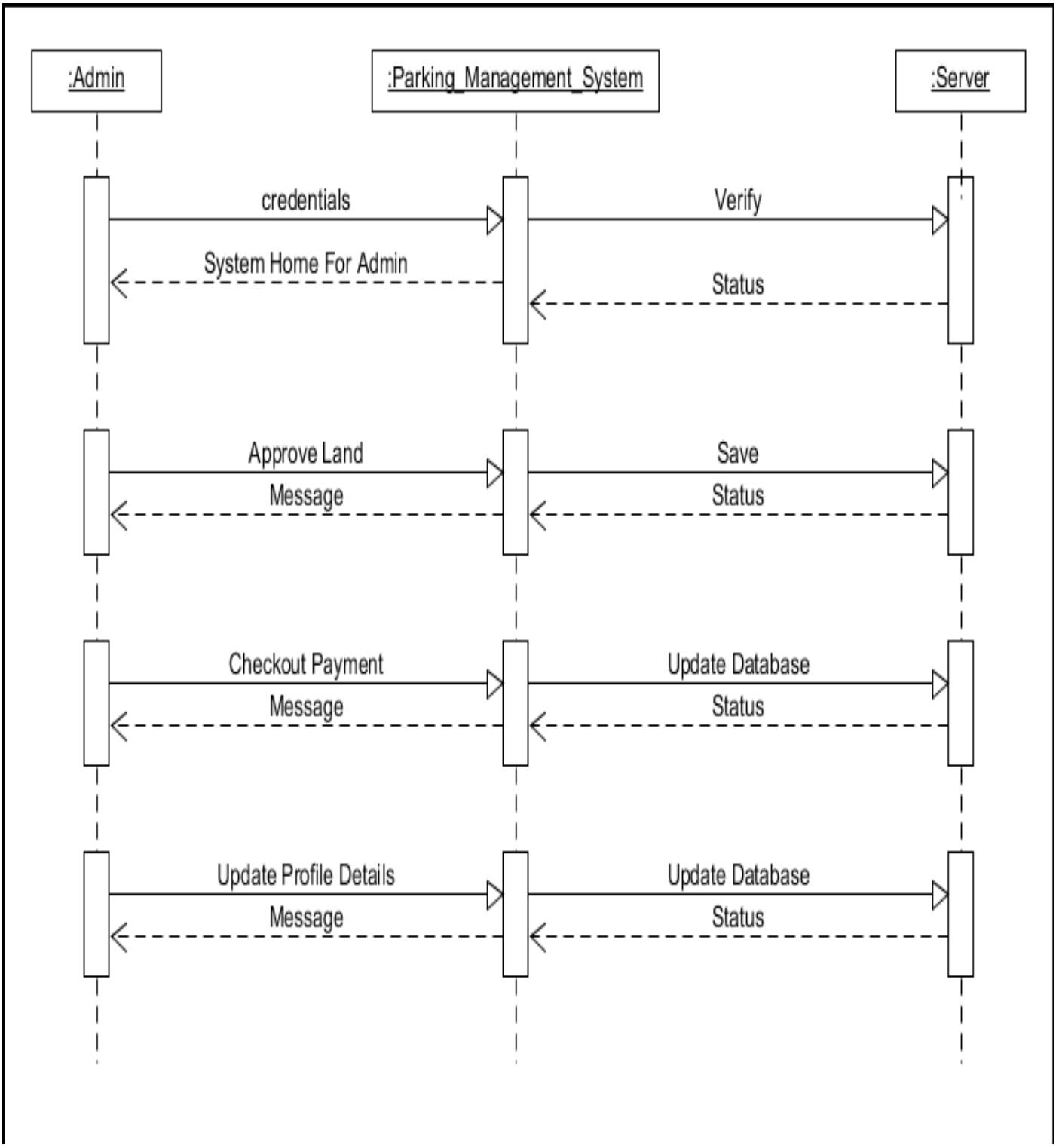

Admin
Change_Credentials
Approve_land
Checkout Payments
Update_Profile
Admin

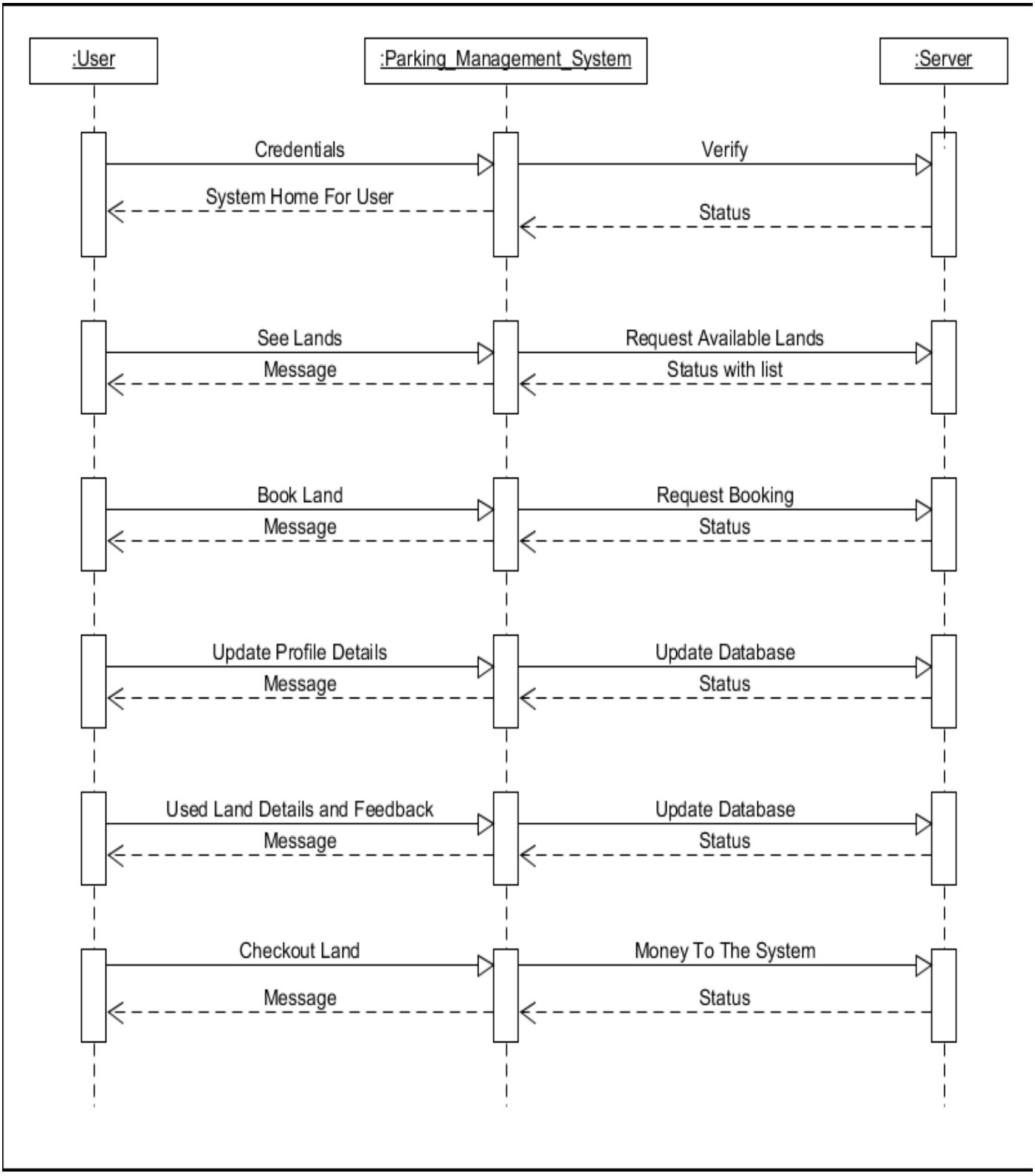
Class Diagram



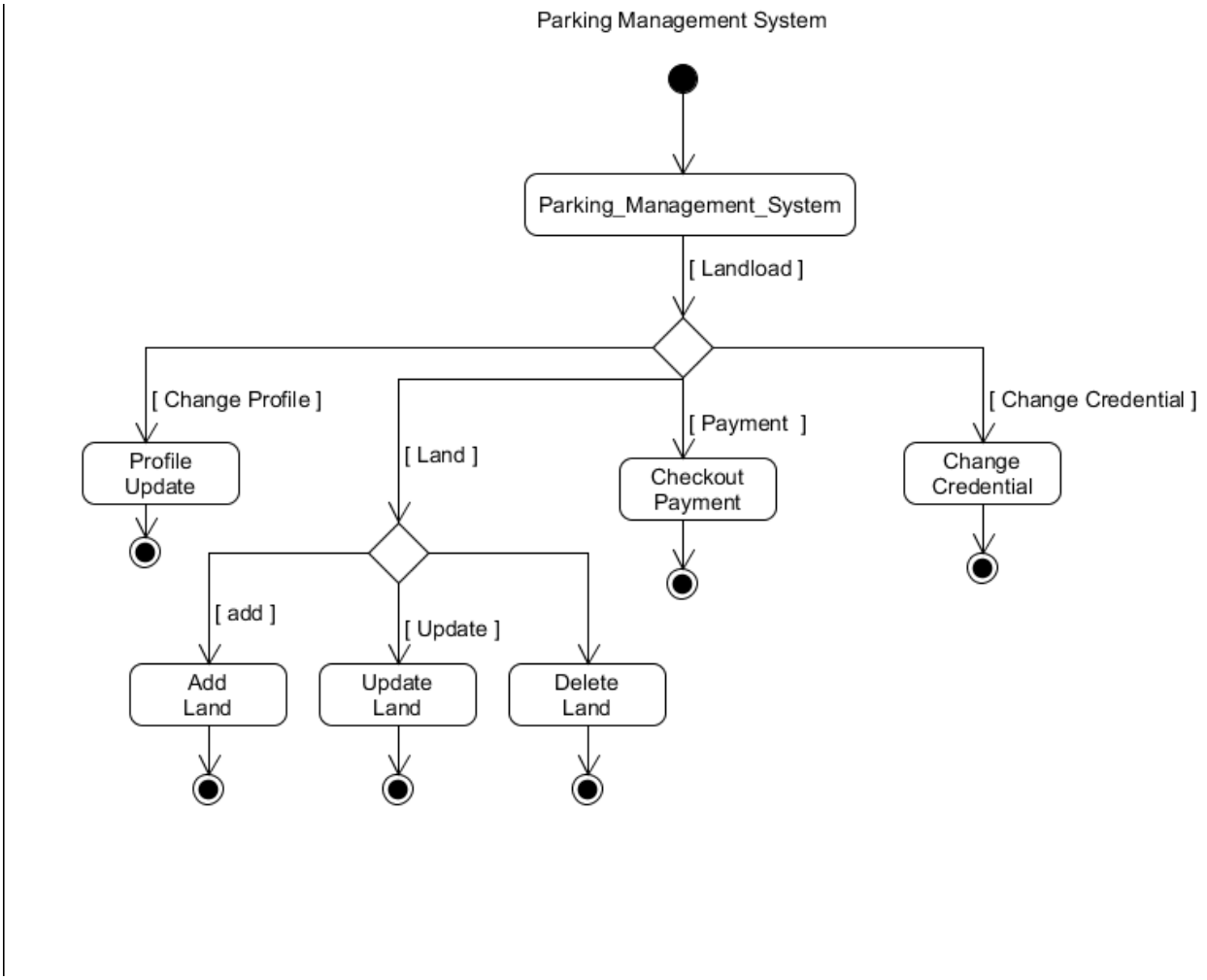
Sequence Diagram

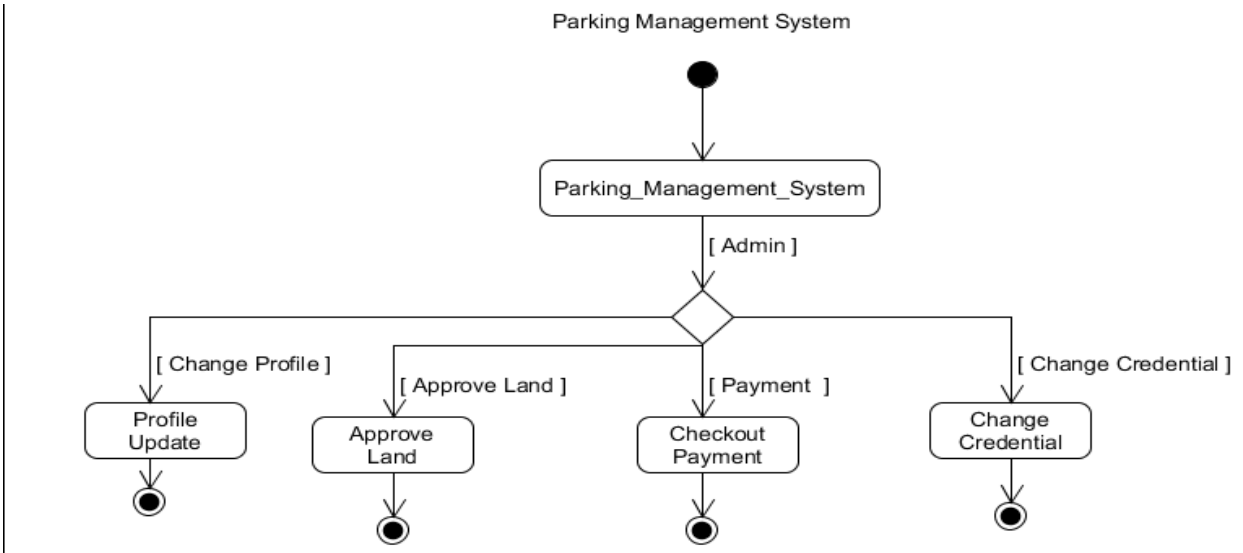


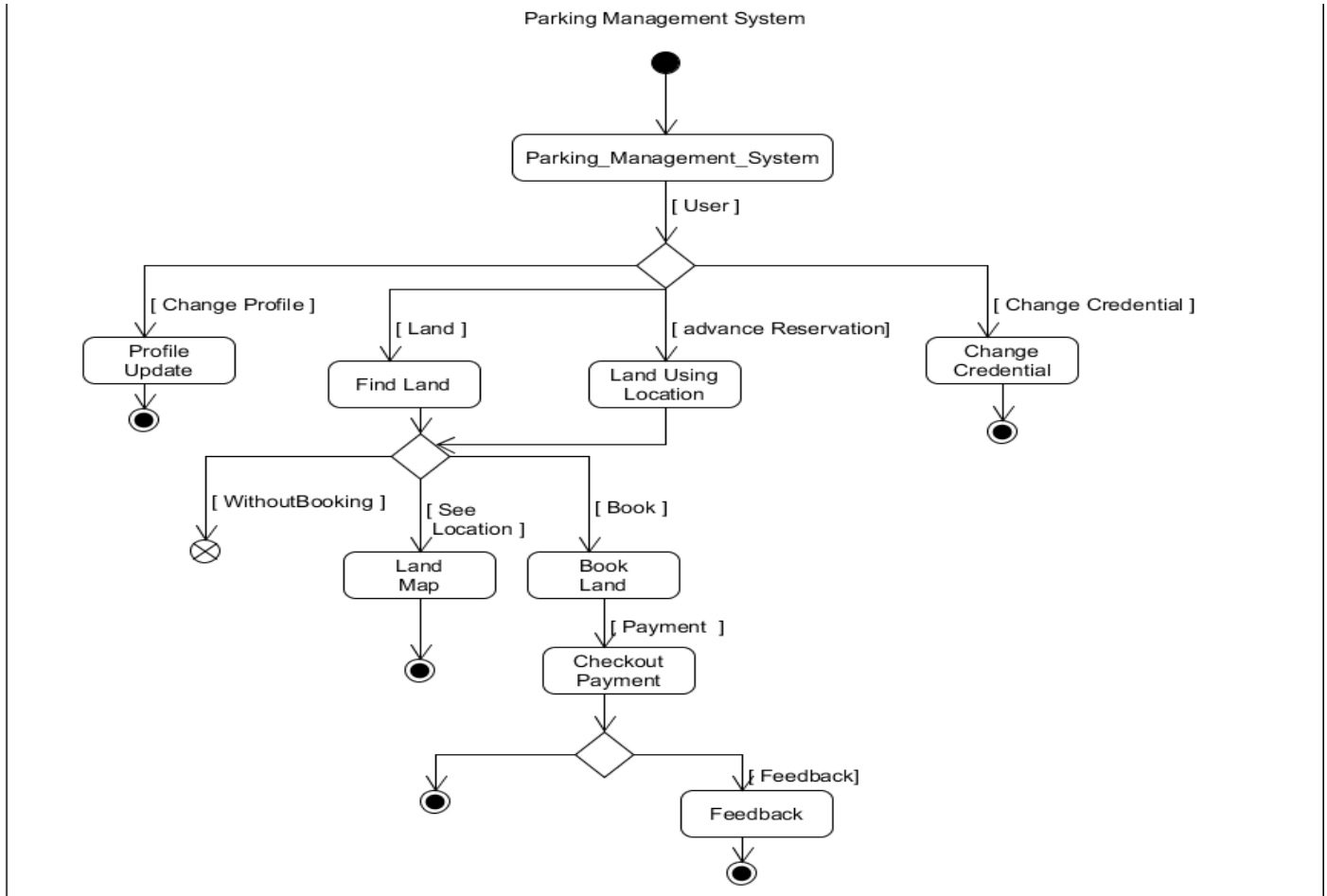

:Admin
:Parking_Management_System
:Server
credentials
Verify
System Home For Admin
Status
Approve Land
Save
Message
Status
Checkout Payment
Update Database
Message
Status
Update Profile Details
Update Database
Message
Status


:User
:Parking_Management_System
:Server
Credentials
Verify
System Home For User
Status
See Lands
Request Available Lands
Message
Status with list
Book Land
Request Booking
Message
Status
Update Profile Details
Update Database
Message
Status
Used Land Details and Feedback
Update Database
Message
Status
Checkout Land
Money To The System
Message
Status

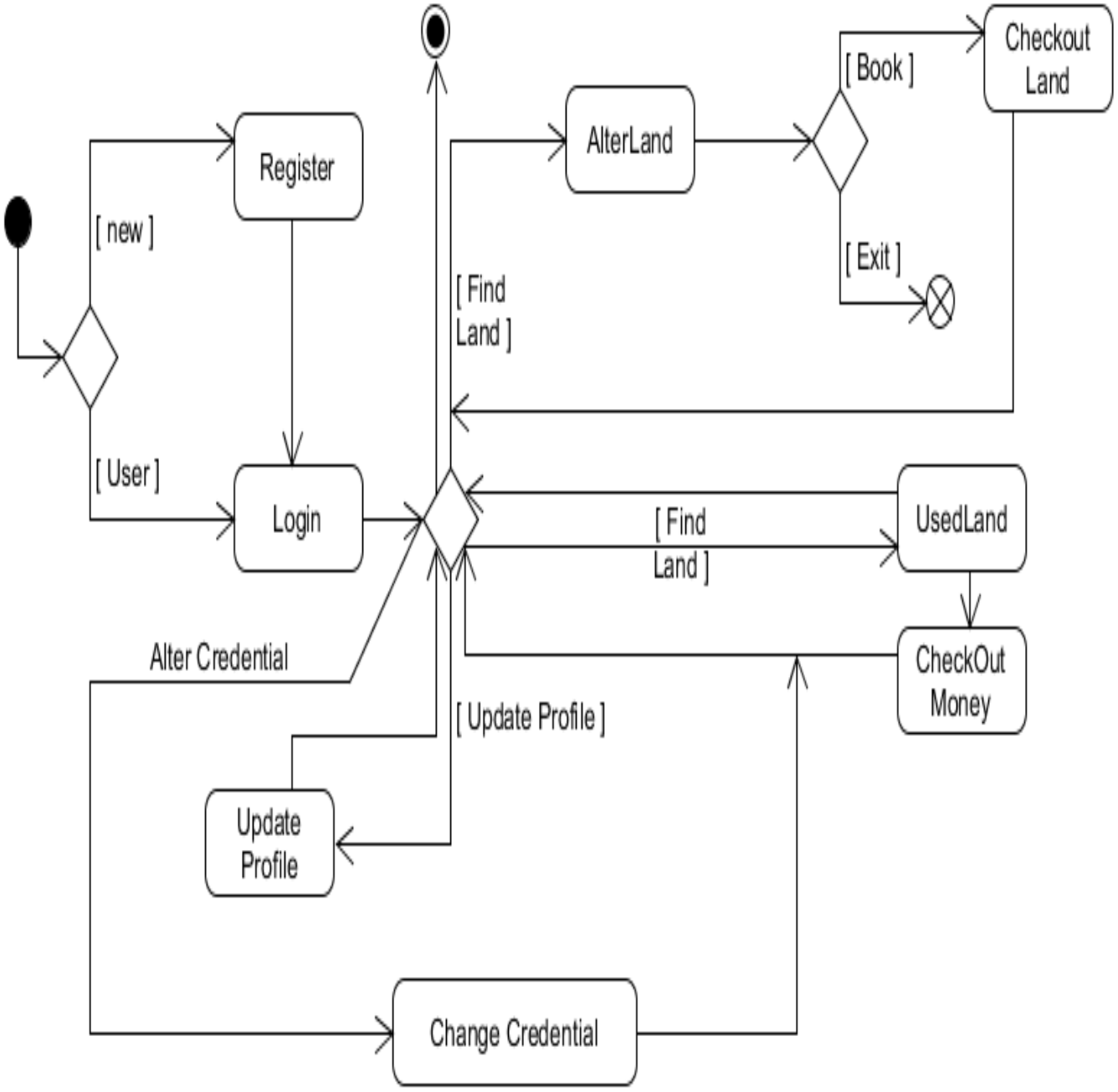
Activity Diagram



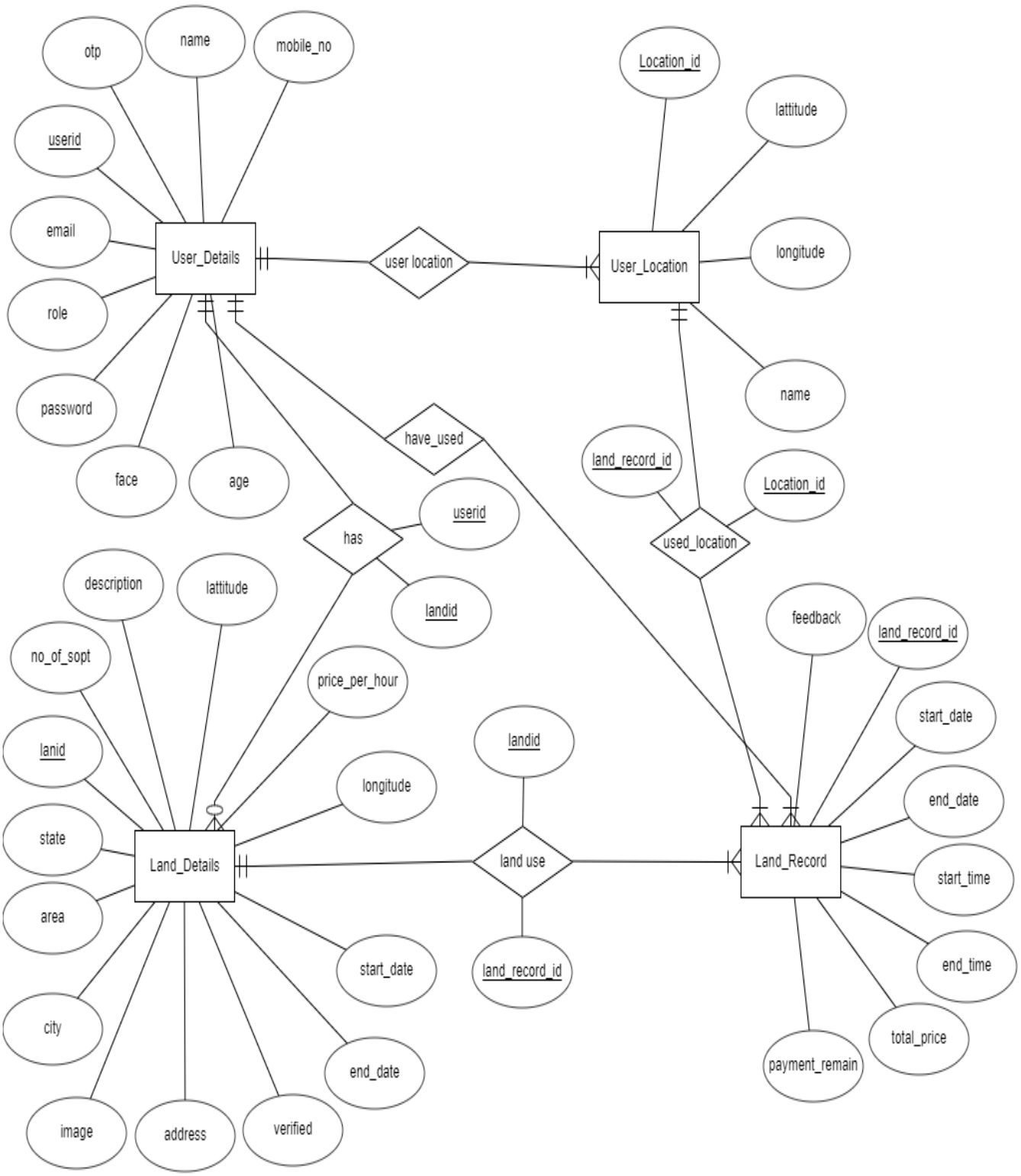

Parking Management System
Parking_Management_System
[Admin]
[Change Profile]
[Approve Land]
[Payment]
[Change Credential]
Profile Update
Approve Land
Checkout Payment
Change Credential


Parking Management System
Parking_Management_System
[User]
[Change Profile]
[Land]
[advance Reservation]
[Change Credential]
Profile Update
Find Land
Land Using Location
Change Credential
[WithoutBooking]
[See Location]
[Book]
Land Map
Book Land
[Payment]
Checkout Payment
[Feedback]
Feedback

State Diagram



E-R Diagram


otp
name
mobile_no
userid
email
role
password
face
age
User_Details
user location
Location_id
lattitude
longitude
User_Location
name
have_used
land_record_id
Location_id
used_location
has
userid
landid
description
lattitude
no_of_sopt
price_per_hour
lanid
longitude
state
area
Land_Details
landid
land use
land_record_id
start_date
end_date
city
image
address
verified
feedback
land_record_id
start_date
end_date
start_time
end_time
total_price
payment_remain
Land_Record

Data Dictionary

User_detail								
Sr. No.	Field Name	Data Type	Width	Required	Unique	PK/FK	Referenced Table	Description
1.	userid	Number	11	Yes	Yes	PK		
2.	name	Varchar	100	Yes	No			
3.	password	Varchar	14	Yes	No			
4.	mobile_no	Number	10	Yes	No			
5.	email	Varchar	100	Yes	Yes			
6.	age	Number	11	Yes	No			
7.	role	Varchar	10	Yes	No			
8.	otp	Number	11	No	No			
9.	face	Longtext		No	No			

User_Location								
Sr. No.	Field Name	Data Type	Width	Required	Unique	PK/FK	Referenced Table	Description
1.	Locationid	Number	10	Yes	Yes	PK		

2.	name	Varchar	10	Yes	No			
3.	lattitude	Double	30	Yes	No			
4.	langitude	Double	30	Yes	No			
5.	userid	Number	10	Yes	No	FK	User_detail	

Land_detail

Sr. No.	Field Name	Data Type	Width	Required	Unique	PK/FK	Referenced Table	Description
1.	landid	Number	11	Yes	Yes	PK		
2.	lattitude	Double	30	Yes	No			
3.	langitude	Double	30	Yes	No			
4.	address	Varchar	300	Yes	No			
5.	image	Varchar	100	No	No			
6.	city	Varchar	255	Yes	No			
7.	area	Varchar	255	Yes	No			
8.	state	Varchar	255	Yes	No			
9.	no_of_spot	Number	11	Yes	No			
10.	description	Longtext		No	No			
11.	price_per_hour	Double	20	Yes	No			

12.	start_date	Date		Yes	No			
13.	end_date	Date		Yes	No			
14.	verified	Boolean	1	Yes	No			
15.	userid	Number	1	Yes	No	FK	User_detail	

Land_record

Sr. No.	Field Name	Data Type	Width	Required	Unique	PK/ FK	Referenced Table	Description
1.	land_record_id	Number	11	Yes	Yes	PK		
2.	landid	Number	11	Yes	No	FK	Land_detail	
3.	userid	Number	11	Yes	No	FK	User_detail	
4.	start_date	Date	300	Yes	No			
5.	end_date	Date	100	No	No			
6.	start_time	Time	6	No	No			
7.	end_time	Time	6	No	No			
8.	total_price	Number	11	Yes	No			
9.	payment_remaining	Boolean	1	Yes	No			
10.	feedback	Varchar	255	No	No			

5 Implementation Details

5.1 Module Description

- **Login Module**

  This is first page after home page if user want to perform any operation in our application.According to credentials given by any user they can login into the system.

- **Registration Module**

  In our system, any user is registered by giving his details.in this system, there are two type of registration page one for landlord and another one for user.Any users of the system can sign up for landlord and end user. users can sign up for both if desired.

- **Landlord Module**

  Landlord can add their land with location and land details And Landlord is also edit its land in the future.Landlord can also delete the land which he has added.he can also see all the land which he has added.he also get money from his land. Landlord also see the land wise history.

- **Administrator module**

  The administrator is a person who only has the authority to verify the land that has been uploaded by the landlord and if the administrator does not verify that land, the end user cannot see that land for parking.

- **User module**

  The end user can view any nearby parking space and also reserved that place. End user can reserve parking space from any place but for that, he has to added that place location once.The end user can also view the history of all the parking locations which he had previously used. End user can give feedback of any land and When a user open nearby parking place page, they can see this feedback.

5.2 Function Prototype

Operation :

- **Create** : For registration, reserve parking spot and add land.
- **Read** : For view land list and usage history.
- **Update** : For modify land details and user profile details.
- **Delete** : For Delete particular land.
- **Search** : For view nearby parking spot details

Testing

We have done Black box testing and also some validation testing.

- **CSRF(Cross-Site Request Forgery) Token**

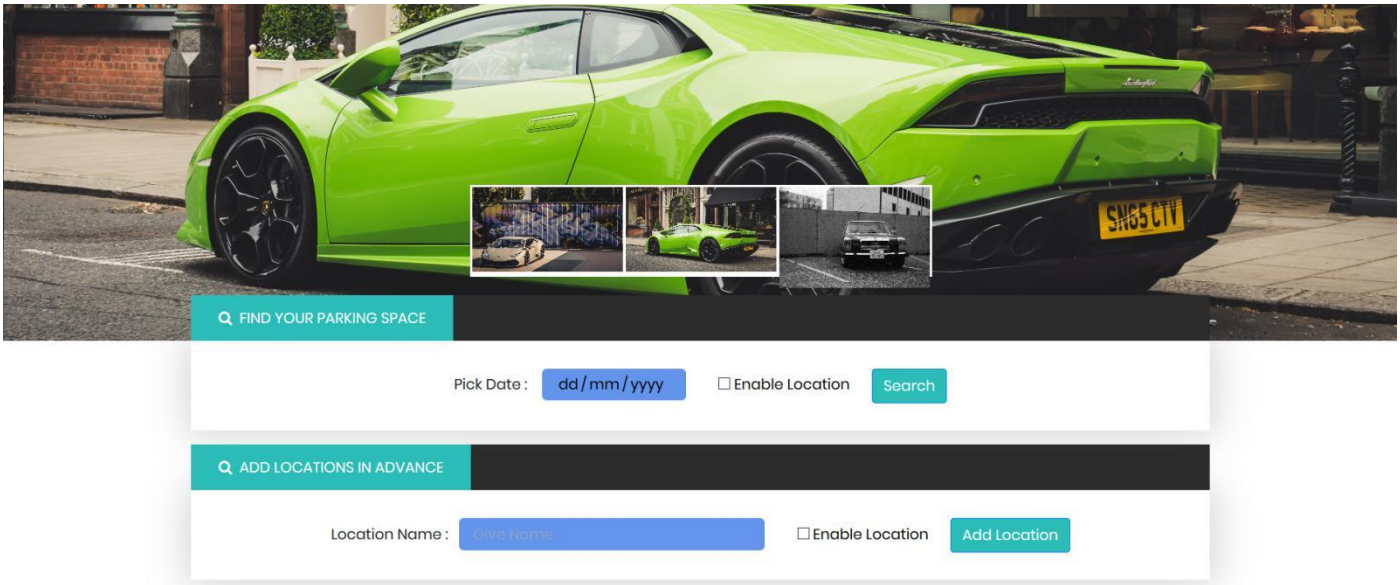
Attacker can send URL like for login ,logout, payment etc and if victim click on that link victim perform the task. It called cross site request forgery. For preventing this attack CSRF token is come into picture.so if victim click on the attacker's link than it give invalid CSRF token because it is different for every request and not create cookies and also can not access the account. So we use CSRF Token.

- **Selenium testing tool**

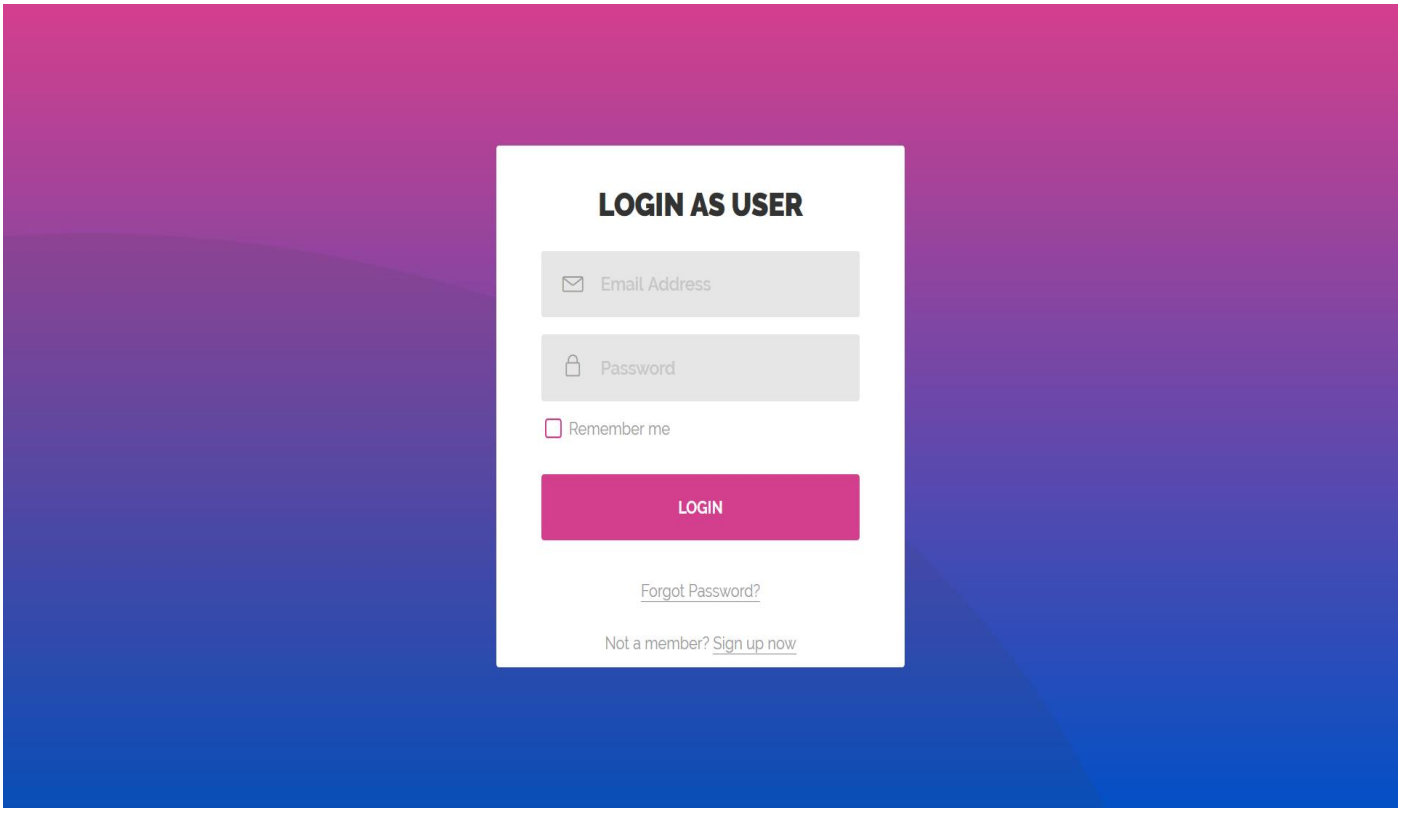
we use selenium testing tool for test our website because It create robust, browser-based regression automation suites and tests, scale and distribute scripts across many environment.for that we have writing test script in both famous browser Google chrome and mozilla Firefox and we have also test our website in different platform like Linux and window.In this script, we did different test cases in sign in page and sign up page like, in sign in page we check for blank username or password, incorrect username or incorrect password.And in sign up page we check for any blank data,age below 18, both password must same.And we also check test case for add parking land page like location enable or not and required field.

Screen Shot

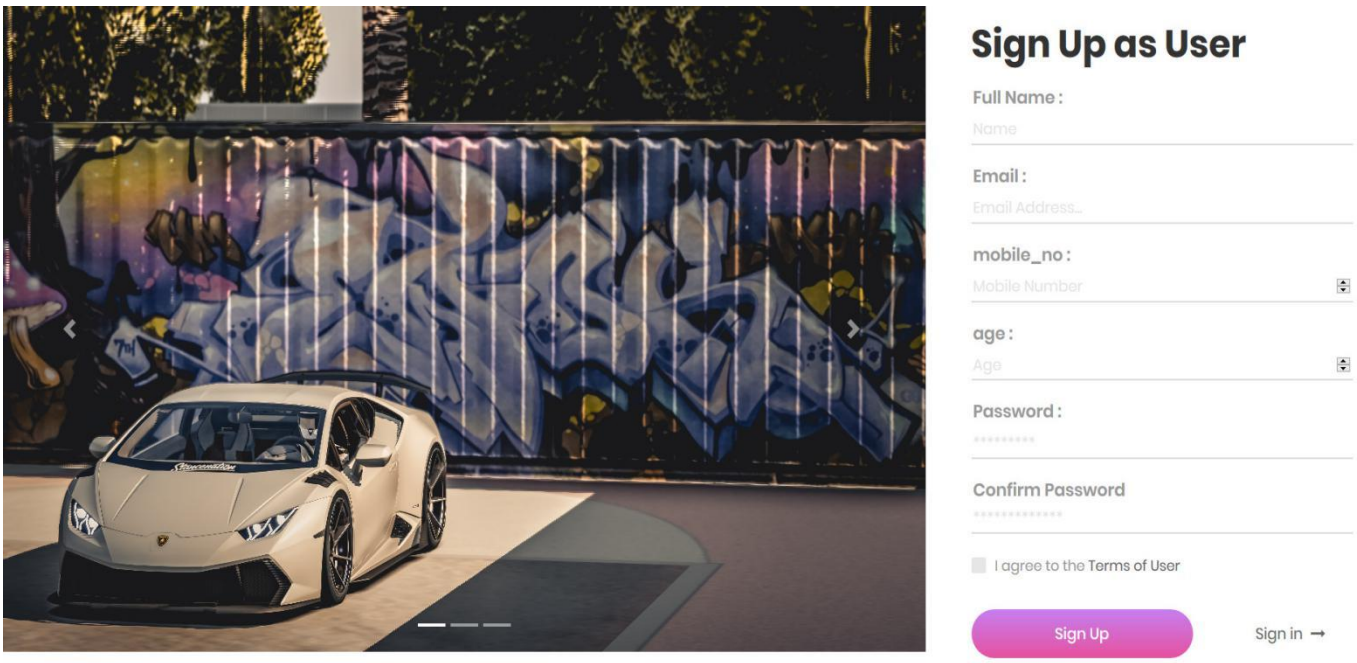
❖ Home Page



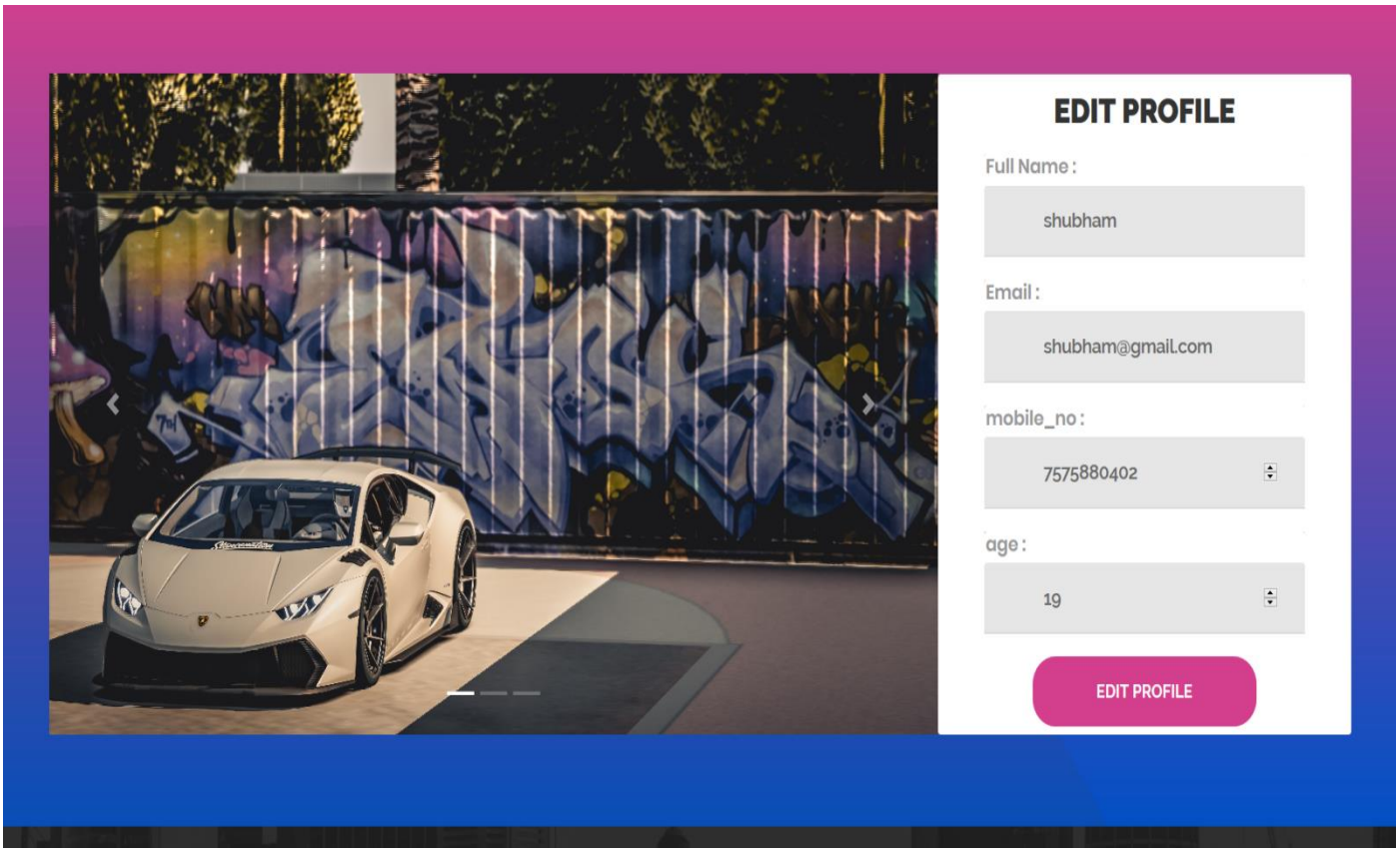
❖ Login Page



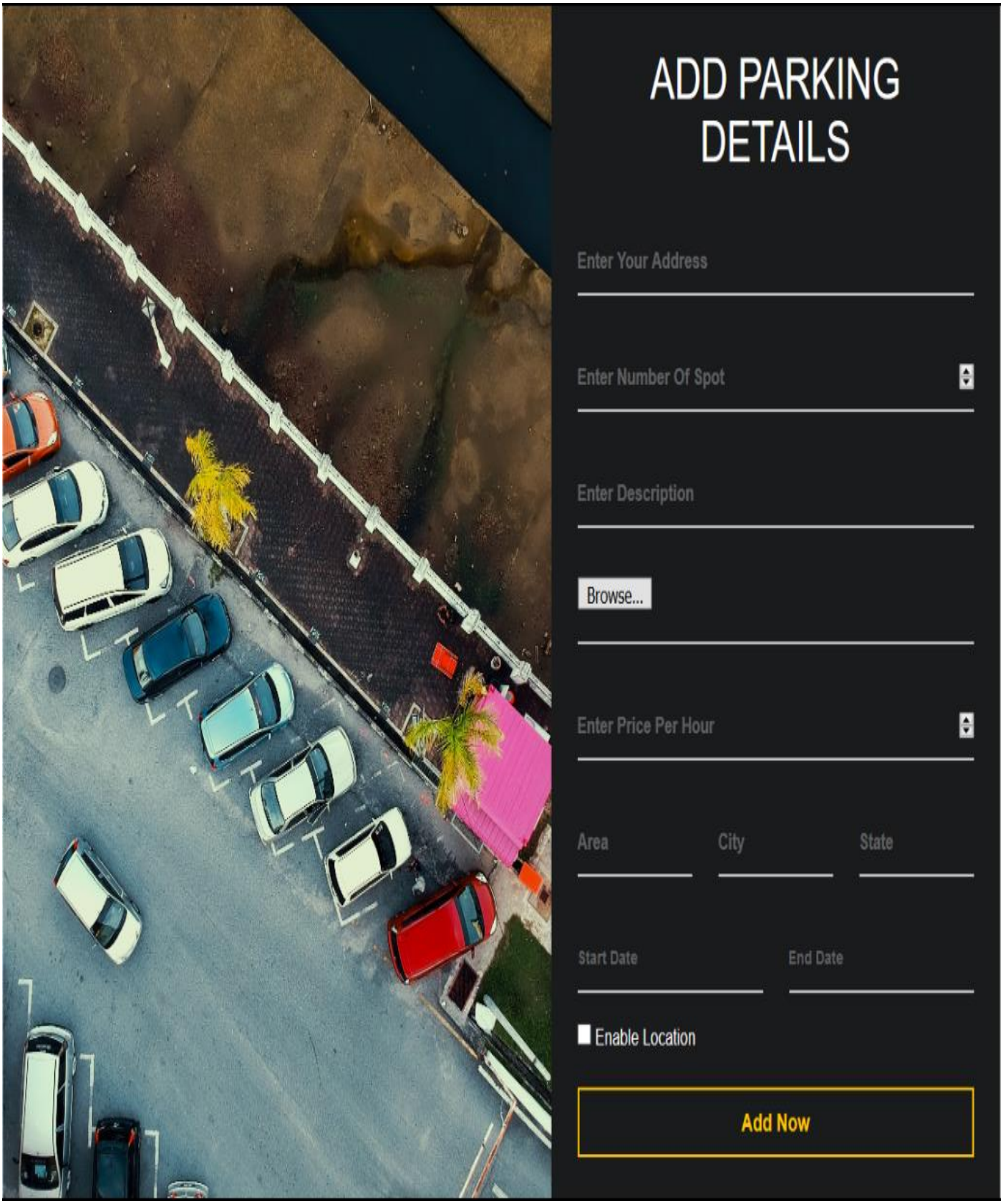
❖ Sign Up Page



❖ Edit Profile



❖ Add Parking Place



❖ User History for land

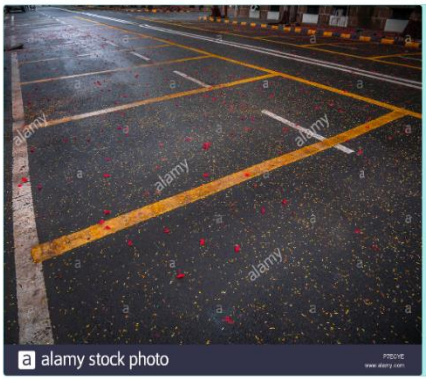
HOME LAND DETAILS ADD LAND Logout

Azenta.

Phone: (+91) 9664911300 Address: DDU ,Nadiad Email: ParkingSystem@gmail.com

Date	User Name	User Email	User Mobile Number	User Age
April 28, 2020	shubham	shubham@gmail.com	7575880402	19
April 28, 2020	bhavya	bhavya@gmail.com	9874512630	22
April 27, 2020	bhavya	bhavya@gmail.com	9874512630	22
April 27, 2020	bhavya	bhavya@gmail.com	9874512630	22
April 26, 2020	bhavya	bhavya@gmail.com	9874512630	22
April 26, 2020	shubham	shubham@gmail.com	7575880402	19
April 27, 2020	shubham	shubham@gmail.com	7575880402	19
April 24, 2020	shubham	shubham@gmail.com	7575880402	19
April 28, 2020	shubham	shubham@gmail.com	7575880402	19

❖ Land Detail (Landlord)



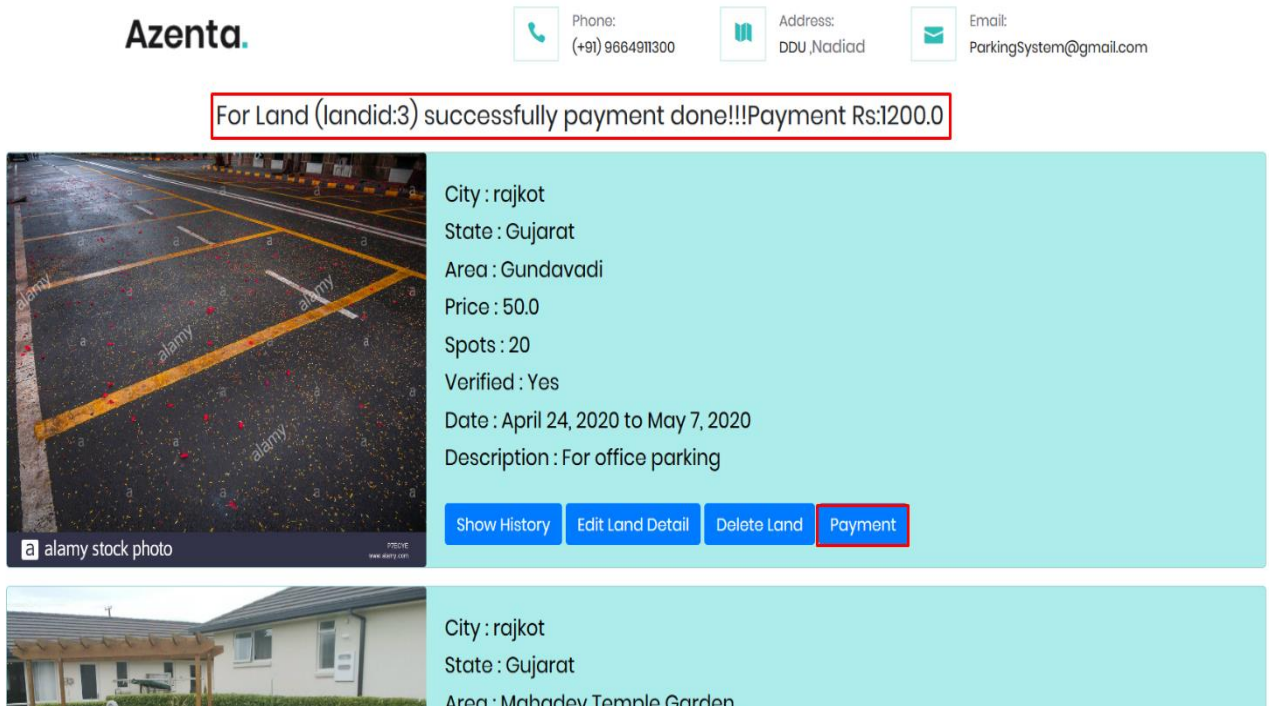
City : rajkot
State : Gujarat
Area : Gundavadi
Price : 50.0
Spots : 20
Verified : Not verified
Date : April 24, 2020 to May 7, 2020
Description : For office parking

Show History | Edit Land Detail | Delete Land | Payment

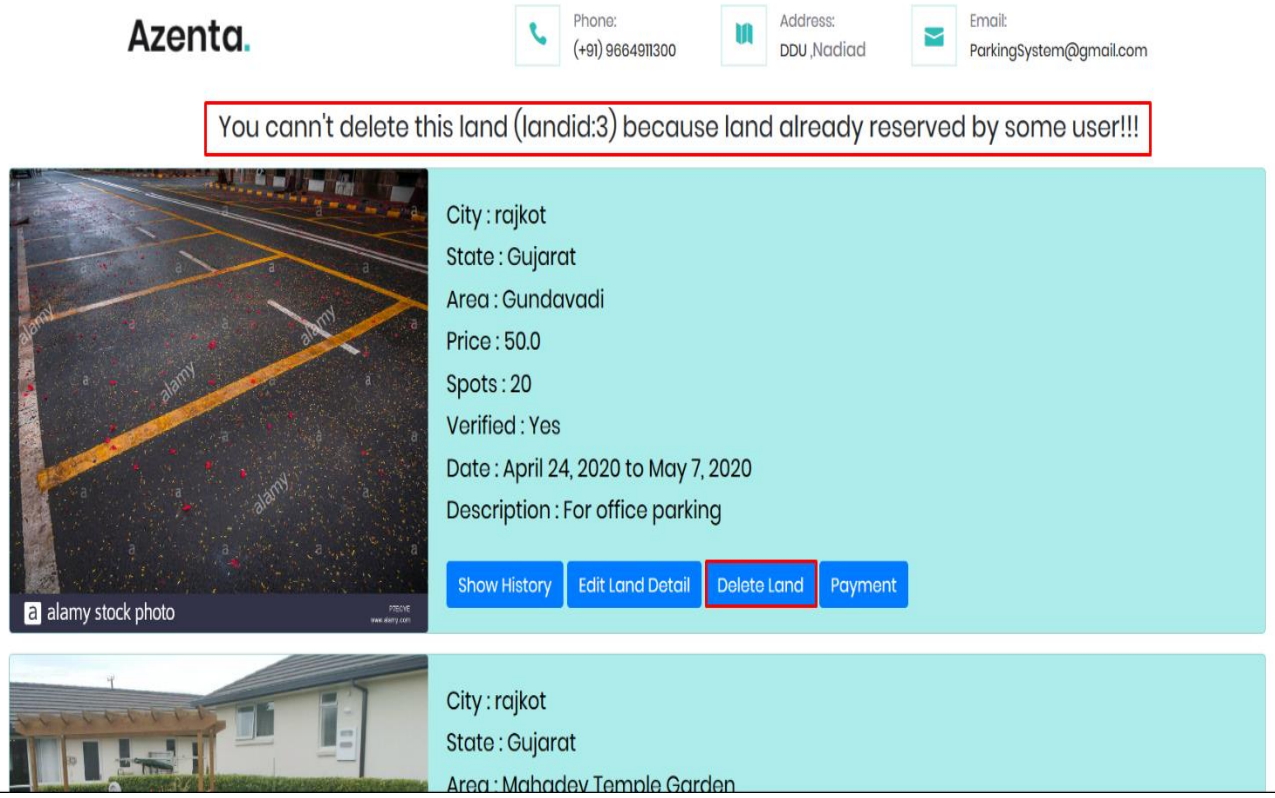
City : rajkot
State : Gujarat
Area : Mahadev Temple Garden
Price : 40.0
Spots : 18
Verified : Not verified
Date : April 23, 2020 to April 29, 2020
Description : Best place for parking

Show History | Edit Land Detail | Delete Land | Payment

- Payment of land



- Delete Land (Landlord)



❖ History of Land(landlord)

Azenta.

Phone: (+91) 9664911300 | Address: DDU ,Nadiad | Email: ParkingSystem@gmail.com

Date	Price	Land Address	Landlord Name	Landlord Email	Landlord Mobile Number	Landlord Age	FeedBack
April 23, 2020	2400	Home,Race Course,rajkot,Gujarat	yash	yash@gmail.com	9654854621	20	✓
April 28, 2020	960	Park,Mahadev Temple Garden,rajkot,Gujarat	rutvik	rutvik@gmail.com	9876543210	18	✓
April 24, 2020	1200	Office,Gundavadi ,rajkot,Gujarat	rutvik	rutvik@gmail.com	9876543210	18	✓
April 26, 2020	960	Park,Mahadev Temple Garden,rajkot,Gujarat	rutvik	rutvik@gmail.com	9876543210	18	✓
April 27, 2020	960	Park,Mahadev Temple Garden,rajkot,Gujarat	rutvik	rutvik@gmail.com	9876543210	18	✓
April 24, 2020	960	Park,Mahadev Temple Garden,rajkot,Gujarat	rutvik	rutvik@gmail.com	9876543210	18	✓
April 28, 2020	960	Park,Mahadev Temple Garden,rajkot,Gujarat	rutvik	rutvik@gmail.com	9876543210	18	✓

❖ Land Verification (Admin)

Azenta.

Phone: (+91) 9664911300 | Address: DDU ,Nadiad | Email: ParkingSystem@gmail.com

Approval Needed

Address	No Of Spots	Description	Price_Per_Hour	Start_Date	End_Date	Approve
Home	10	Best place for parking	100.0	April 22, 2020	April 30, 2020	✔ Done
Park	18	Best place for parking	40.0	April 23, 2020	April 29, 2020	Verification Required
Office	20	For office parking	50.0	April 24, 2020	May 7, 2020	Verification Required

Home

❖ Advance Reservation (User)

Land Details

CHOOSE PLACE

Pick Place : Home

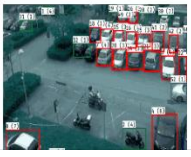
Pick Date : dd / mm / yyyy

Search

Address	City	Area	State	Number of spot	Description	Price per Hour	Distance(km)	Path	Book	Image
Park	rajkot	Mahadev Temple Garden	Gujarat	18	Best place for parking	40.0	5.87	Map	Reserve	
Office	rajkot	Gundavadi	Gujarat	20	For office parking	50.0	7.94	Map	Reserve	

❖ Reserve your favorite space (User)

Land Details

Address	City	Area	State	Number of spot	Description	Price per Hour	Distance(km)	Path	Book	Image
Park	rajkot	Mahadev Temple Garden	Gujarat	18	Best place for parking	40.0	5.87	Map	Reserve	
Office	rajkot	Gundavadi	Gujarat	20	For office parking	50.0	7.94	Map	Reserve	
Home	rajkot	Race Course	Gujarat	10	Best place for parking	100.0	9.11	Map	Reserve	

Conclusion

The functionality implemented in system after understanding all the system modules according to the requirements.

Functionality That are successfully implemented in the system are:

- User registration with all the necessary validation on field
- Login
- Logout
- Forgot password with email verification
- Add land details
- Edit land details
- View usage history
- Delete land
- Get pay-out for land
- Verification of land by admin
- Reserve parking spot based on current location
- View reservation history
- Add location in advance
- Provide feedback

After the implementation and coding of system comprehensive testing was performed on the system to determine the errors and possible flaws in the system

Limitation and Future Extension

Limitation

- User can’t reserve parking spot for particular time interval.
- If user wants to add a location then he/she must be at that location. .

Future Extension

- SMS for reserved parking details
- Authentication using face detection
- Use of Google Map API.

Bibliography

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