ONLINE CAR PARKING RESERVATION SYSTEM

Group 5

Group Members

No.	Name	ID
1	Harshal Markana	201801143
2	Ishang Kumar	201801071
3	Raj Mahla	201801243
4	Darshan Prajapati	201801146
5	Jenil Khandhara	201801217
6	Sambhav Agrawal	201801063
7	Nipun Patel	201801234
8	Parthiv Patel	201801463
9	Mahi Patel	201801039
10	Sudiksha Thusu	201801469

❖ Problem Statement

Currently, most of the existing car parking systems are manually managed and a little inefficient. In urban areas, where the number of vehicles is higher as compared to the availability of parking spaces, a lot of time being wasted in searching for parking locations. Hence online booking parking systems are a proposed method that users can reserve their parking places using the web. Providing a simple web application for parking vehicles. Booking for a parking slot at home. Can search nearby places using Google map. Easy payment system. Parking owners can add their own parking places. Make it easy to automate parking owners and customers.

❖ Functional Requirements

- **USER LOOKING FOR PARKING**
  - Create Accounts
  - No. of parking areas near me
  - To view the parking status
  - Book the slot
  - Cancel the booked slot
  - Payment and Receipt Generation
  - Time slot booking, duration
  - Feedback

- **PARKING OWNERS**
  - Create Account
  - Add/Delete Parking spaces
  - Edit parking spaces (details, time and parking slots, etc)
  - Parking Status with details of the customers (Authentication)

❖ Non-Functional Requirements

- **USER LOOKING FOR PARKING**
  - Atomicity (for payment)
  - Secure data (personal information)
  - Reviews (reliability)
  - The site does not crash, the system should be effective with an increase in the number of users too (scalable)
  - Fast response time
  - Fast recovery from the disconnection
  - 24x7 availability
  - Users should be provided with a guide for the same. (User-friendly)

- **PARKING OWNERS**
    - Secure data (personal information)
    - Reviews (reliability)
    - The site does not crash, the system should be effective with an increase in the number of users too (scalable)
    - Fast response time
    - Fast recovery from the disconnection
    - 24x7 availability
    - The user should be provided with a guide for the same. (User-friendly)

❖ Elicitation Techniques

1) Document Analysis

- Evaluation of the existing systems was done, like, https://www.planyo.com/car-parking-booking-system.php https://www.parkr.in/ , wherein we got to know about the various pages of our website.
- Reviewing and confirming our collected details with the assigned mentors.

2) Interviews

- Interview 1:
  Interviewee: Mr. Harshad Patel (Common Consumer)
  Interviewer: Mahi Patel, Sudiksha Thusu

  Question 1: Is it difficult for you to find a parking spot in a new space or a new city?
  Answer: Yes, it is indeed very difficult for me to find parking in time at a new place. Sometimes parking slots are full, and we can't find a safe space to park.
  Question 2: When you don't find the perfect place to park, where do you usually end up parking?
  Answer: We usually park outside the place we are supposed to be, but it is very risky as we have no guarantee that it is safe. We have started using cabs and public transport to avoid this problem.
  Question 3: If there was a website, where you can pre-book the parking, will you be using that?
  Answer: Yes, Of course, I will definitely use it as it will be safe and give me the details of the parking spot and pre-booking takes off the pressure to find parking.
  Question 4: What all features do you expect from the same?
  Answer: Advanced payment will help saving the time and also for the Confirmation, we can receive a receipt to handle the hustle while finding the place.

- Interview 2 :
  Interviewee: Raj Mahla (Watchman roleplay)
  Interviewer: Parthiv Patel, Nipun Patel

  Question 1: How difficult it is to manage so many customers at a time?
  Answer: It is too difficult to handle the parkers especially at the general high traffic times at around 10 am in the morning and at around 6 pm in the evening. Even with the support of 3 fellow watchmen it is a tedious task to assign parking receipts and verifying.
  Question 2: Your opinion on online parking reservations.
  Answer: Absolutely, It is indeed a very good thing. If it somehow decreases at least the work of providing the parking receipts then it is a very good option. If we are somehow free from this work then we can focus more on traffic management which is actually an on site thing. Also in this modern time everything has gone online so I don't see any issues in taking this field online, too.

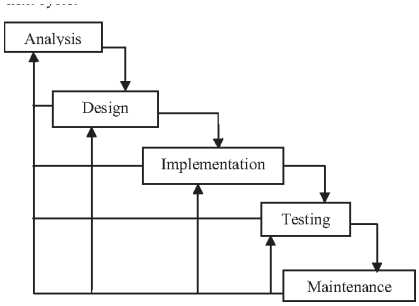
- Interview 3:
  Interviewee: Jenil Khandhara (Parking Owner roleplay)
  Interviewer: Ishang Kumar, Harshal Markana

  Question 1: Are you comfortable with the parking system right now.
  Answer: Not really, it is very difficult to maintain the record of the customers because there is not a proper booking system.
  Question 2: Will you be comfortable to use the parking booking system website, wherein you will be provided with the details of the customers who use your parking?
  Answer: Absolutely yes, I will be using it. That will help me to keep track of my parking spaces.

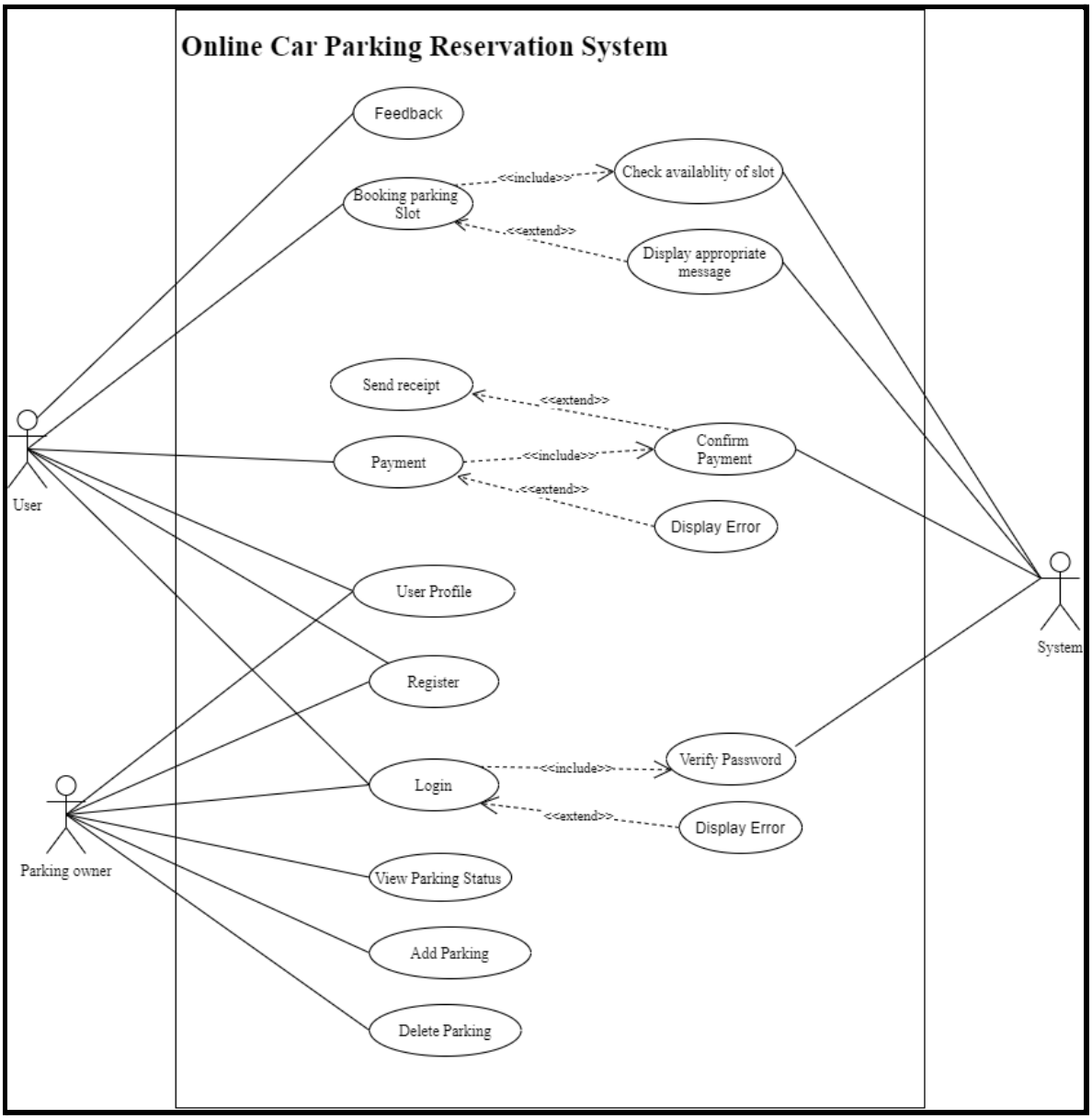
3) Brainstorming

- We first understood the problem statement and as a group, we devised certain diagrams for a better understanding of tasks and issues to be solved.
- We came up with different sub-problem statements of this website, and also thought of the possible solution to them with the known technologies.
- We were constantly browsing through different websites and resources, to get an in-depth knowledge of the proposed application.
- Through the lab assignments and the lectures, we learned to put our ideas in a structured and more refined manner.

❖ Use Case Model



In this online car parking reservation system, we have used an Iterative waterfall model which is considered more efficient than classical waterfall model. It provides feedback paths from every phase to its preceding phase. These feedback paths allow correcting errors committed by programmers during some phase. So, we will proceed in phases and at the end after the testing, the whole model will be provided to the user.



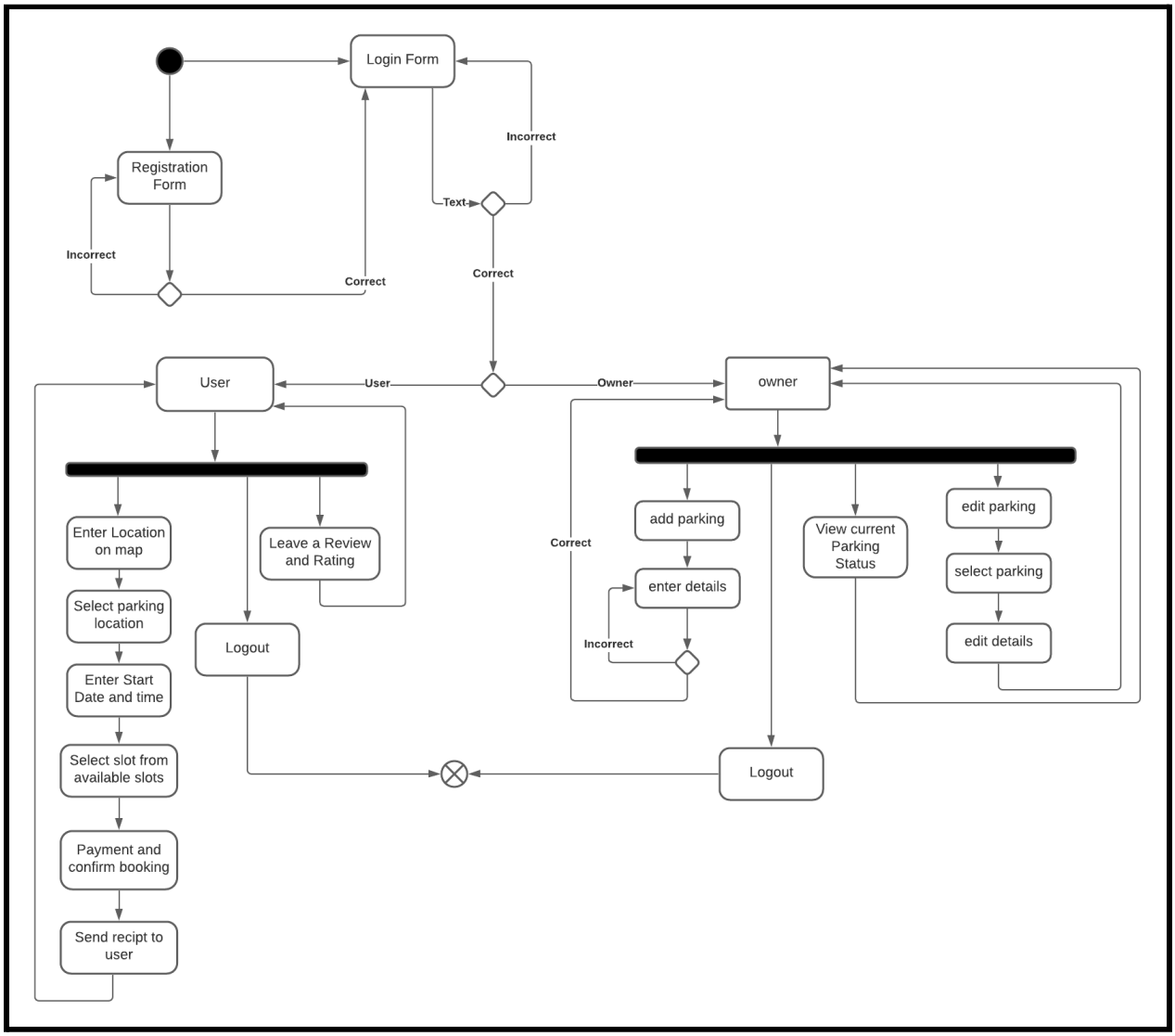
Link: [Use Case]

USE CASE DESCRIPTION:
In this car parking reservation system, we have 2 user classes.

USER: The user will be the one who would reserve the parking slot. To do so, he/she would be prompt to register in the system by entering the contact information. On the login, the user will enter the location and find the nearby parking slots. On finding the same, the user would select the preferred time duration. Based on that, he/she will be able to view the available parking slot and on selecting one, he/she can enter the vehicle details. Once that is done, he/she will be asked for the payment and after a successful transaction, an e-receipt would be generated. Henceforth the booking will be confirmed. The user can review and give feedback on the parking areas too.

PARKING OWNER: The parking owner would be one who would add his/her parking areas to be used for the reservation. He/she would register in the application as the parking owner. In doing that, he can add the details and photos of the parking area along with the slots allowed. He/she would also have to enter the fares of the parking and view the status of the vehicles placed in the parking slot. He also has the right to remove the parking area. The parking owner can view the feedback of the users.

❖ Activity Diagram



Link: [Activity Diagram]