

Summer Internship (2024) Parking Management System

Tools and Technologies

Frontend Development

- Framework: React
- Routing: React Router
- State Management: Redux
- HTTP Requests: Axios

Backend Development

- Framework: Node.js with Express.js
- Database: MongoDB with Mongoose / MySQL
- Authentication: JSON Web Tokens (JWT)

Real-Time Data Handling

- Socket.io: For real-time communication

User Authentication and Security

- HTTPS
- Bcrypt: For password hashing

Design and Prototyping Tool

- Figma: For designing and prototyping the app interface

Version Control

- Git: A distributed version control system for tracking changes in source code.

Integrated Development Environment (IDE)

- Visual Studio Code: A source code editor with support for JavaScript, React Native, and Node.js.

Tools and technology to be used might change later, as per ease.

User Stories

Admin Panel User Stories

1: Admin Login

As an admin, I want to login to the admin panel so that I can access the system features.

- Acceptance Criteria 1:

- Given: The admin has access to the login screen of the admin panel.
- When: The admin enters a valid email and password.
- Then: The admin should successfully be logged in to the admin panel.

- Acceptance Criteria 2:

- Given: The admin has access to the login screen of the admin panel.
- When: The admin enters an invalid email or password.
- Then: The admin should not be logged in to the admin panel.
- And: A relevant error message should be displayed.

2: Admin Sign-Up

As an admin, I want to sign up so that I can create an admin account.

- Acceptance Criteria 1:

- Given: The admin has access to the sign-up screen of the admin panel.
- When: The admin enters all required details correctly.
- Then: The admin account should be successfully created.

- Acceptance Criteria 2:

- Given: The admin has access to the sign-up screen of the admin panel.

- When: The admin leaves required fields empty or enters invalid information.
- Then: The admin account should not be created.
- And: A relevant error message should be displayed.

3: Admin Logout

As an admin, I want to logout so that I can securely end my session.

- Acceptance Criteria 1:
 - Given: The admin is logged in to the admin panel.
 - When: The admin clicks the logout button.
 - Then: The admin should be successfully logged out of the admin panel.
 - And: The admin should be redirected to the login screen.

4: View All Users

As an admin, I want to view the list of all users so that I can manage their accounts.

- Acceptance Criteria 1:
 - Given: The admin is logged in to the admin panel.
 - When: The admin navigates to the user management section.
 - Then: A list of all users should be displayed.
 - And: Each user entry should include their name, email, and status (active/inactive).

5: Add New Users

As an admin, I want to add new users so that they can use the parking facilities.

- Acceptance Criteria 1:
 - Given: The admin is logged in to the admin panel.
 - When: The admin enters the required user details and submits the form.

- Then: A new user account should be created.
 - And: The new user should be added to the user list.
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- Acceptance Criteria 2:
 - Given: The admin is logged in to the admin panel.
 - When: The admin enters incomplete or invalid user details.
 - Then: The user account should not be created.
 - And: A relevant error message should be displayed.

6: Edit User Information

As an admin, I want to edit user information so that I can update their details when necessary.

- Acceptance Criteria 1:
 - Given: The admin is logged in to the admin panel.
 - When: The admin updates the user information and saves the changes.
 - Then: The user information should be updated successfully.
 - And: The updated information should be reflected in the user list.
- Acceptance Criteria 2:
 - Given: The admin is logged in to the admin panel.
 - When: The admin enters invalid information while editing user details.
 - Then: The user information should not be updated.
 - And: A relevant error message should be displayed.

7: Delete User Accounts

As an admin, I want to delete user accounts so that I can remove inactive or unauthorized users.

- Acceptance Criteria 1:
 - Given: The admin is logged in to the admin panel.
 - When: The admin selects a user and clicks the delete button.

- Then: The user account should be removed from the system.
- And: The user should no longer appear in the user list.

8: View Available Parking Slots

As an admin, I want to view the number of available parking slots so that I can monitor capacity.

- Acceptance Criteria 1:
 - Given: The admin is logged in to the admin panel.
 - When: The admin navigates to the parking slot management section.
 - Then: The number of available parking slots should be displayed.

9: View Filled Parking Slots

As an admin, I want to view the number of filled parking slots so that I can understand current usage.

- Acceptance Criteria 1:
 - Given: The admin is logged in to the admin panel.
 - When: The admin navigates to the parking slot management section.
 - Then: The number of filled parking slots should be displayed.

10: Assign Parking Slots to Users

As an admin, I want to assign parking slots to users so that I can manage parking space effectively.

- Acceptance Criteria 1:
 - Given: The admin is logged in to the admin panel.
 - When: The admin assigns a parking slot to a user and saves the changes.
 - Then: The parking slot should be assigned to the user successfully.

- Acceptance Criteria 2:
 - Given: The admin is logged in to the admin panel.
 - When: The admin tries to assign an already filled slot.
 - Then: The parking slot should not be assigned.
 - And: A relevant error message should be displayed.

11: Change Parking Slot Status

As an admin, I want to change the status of parking slots (available/filled) so that I can reflect the real-time parking situation.

- Acceptance Criteria 1:
 - Given: The admin is logged in to the admin panel.
 - When: The admin updates the status of a parking slot.
 - Then: The status of the parking slot should be updated successfully.
 - And: The updated status should be reflected in the parking slot list.

12: Reserve Slots for VIP Users

As an admin, I want to reserve slots for VIP or special users so that I can accommodate important guests.

- Acceptance Criteria 1:
 - Given: The admin is logged in to the admin panel.
 - When: The admin marks a slot as reserved for a VIP user.
 - Then: The slot should be marked as reserved successfully.
 - And: The reserved status should be reflected in the parking slot list.

13: View Detailed User Information

As an admin, I want to view detailed information of users (e.g., name, contact info, vehicle details) so that I can assist them better.

- Acceptance Criteria 1:

- Given: The admin is logged in to the admin panel.
- When: The admin selects a user from the user list.
- Then: The detailed information of the user should be displayed.

14: Track Vehicle In/Out Times

As an admin, I want to track in/out times of vehicles so that I can monitor parking usage and durations.

- Acceptance Criteria 1:
 - Given: The admin is logged in to the admin panel.
 - When: The admin navigates to the parking activity section.
 - Then: The in/out times of vehicles should be displayed.

15: Search for Users

As an admin, I want to search for users by name or vehicle number so that I can quickly find their information.

- Acceptance Criteria 1:
 - Given: The admin is logged in to the admin panel.
 - When: The admin enters a user's name or vehicle number in the search bar.
 - Then: The relevant user details should be displayed.

User Panel User Stories

1: User Login

As a user, I want to login so that I can access my account and parking details.

- Acceptance Criteria 1:

- Given: The user has access to the login screen of the user panel.
- When: The user enters a valid email and password.
- Then: The user should successfully be logged in to the user panel.

- Acceptance Criteria 2:

- Given: The user has access to the login screen of the user panel.
- When: The user enters an invalid email or password.
- Then: The user should not be logged in to the user panel.
- And: A relevant error message should be displayed.

2: User Sign-Up

As a user, I want a sign-up feature so that I can create a user account.

- Acceptance Criteria 1:

- Given: The user has access to the sign-up screen of the user panel.
- When: The user enters all required details correctly.
- Then: The user account should be successfully created.

- Acceptance Criteria 2:

- Given: The user has access to the sign-up screen of the user panel.
- When: The user leaves required fields empty or enters invalid information.
- Then: The user account should not be created.
- And: A relevant error message should be displayed.

3: User Logout

As a user, I want a logout feature so that I can securely end my session.

- Acceptance Criteria 1:

- Given: The user is logged in to the user panel.
- When: The user clicks the logout button.
- Then: The user should be successfully logged out of the user panel.
- And: The user should be redirected to the login screen.

4: View Profile Information

As a user, I want to view my profile information so that I can see my account details.

- Acceptance Criteria 1:

- Given: The user is logged in to the user panel.
- When: The user navigates to the profile section.
- Then: The profile information should be displayed.

5: Edit Profile Information

As a user, I want to edit my profile information so that I can keep my details up-to-date.

- Acceptance Criteria 1:

- Given: The user is logged in to the user panel.
- When: The user updates their profile details and saves the changes.
- Then: The profile details should be updated successfully.

- Acceptance Criteria 2:

- Given: The user is logged in to the user panel.
- When: The user enters invalid information while editing profile details.

- Then: The profile details should not be updated.
- And: A relevant error message should be displayed.

6: Check Parking Slot Availability

As a user, I want to check for parking slot availability so that I can find a place to park my vehicle.

- Acceptance Criteria 1:
 - Given: The user is logged in to the user panel.
 - When: The user navigates to the parking slot availability section.
 - Then: The available parking slots should be displayed.

7: View Slot ID of Available Parking Spaces

As a user, I want to see the slot ID of available parking spaces so that I can locate them easily.

- Acceptance Criteria 1:
 - Given: The user is logged in to the user panel.
 - When: The user navigates to the parking slot availability section.
 - Then: The IDs of available parking slots should be displayed.

8: Reserve a Parking Slot

As a user, I want to reserve a parking slot so that I can ensure a spot is available when I arrive.

- Acceptance Criteria 1:
 - Given: The user is logged in to the user panel.
 - When: The user selects an available parking slot and confirms the reservation.
 - Then: The parking slot should be reserved for the user.

9: View Reserved Slot Details

As a user, I want to view the details of my reserved slot so that I know exactly where to park.

- Acceptance Criteria 1:
 - Given: The user is logged in to the user panel.
 - When: The user navigates to the reservations section.
 - Then: The details of the reserved slot should be displayed.

10: View Parking History

As a user, I want to view my parking history (in/out times, slot used) so that I can keep track of my parking activities.

- Acceptance Criteria 1:
 - Given: The user is logged in to the user panel.
 - When: The user navigates to the parking history section.
 - Then: The parking history should be displayed.

11: View Parking Duration and Charges

As a user, I want to view my parking duration and charges so that I can keep track of my expenses.

- Acceptance Criteria 1:
 - Given: The user is logged in to the user panel.
 - When: The user navigates to the parking duration and charges section.
 - Then: The parking duration and charges should be displayed.

12: Access FAQ Section

As a user, I want to access a FAQ section so that I can find answers to common questions quickly.

- Acceptance Criteria 1:
 - Given: The user is logged in to the user panel.
 - When: The user navigates to the FAQ section.

- Then: The frequently asked questions and answers should be displayed.