

# MOAB Family

## RV Park

### Software Requirements & Design Document

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# 1. Overview

## 1.1. Summary

The *MOAB Family RV Park Reservation System* is being developed to modernize and streamline the manual campground management process currently used at the Moab Family RV Park site. The existing system relies heavily on paper-based records and phone reservations, which often result in double bookings, inconsistent data tracking, and delays in payment processing.

This responsive web-based system will automate reservations, site management, and payments while centralizing customer, vehicle, and site data in a secure database. The system will allow guests to check availability, make reservations online, and receive confirmation instantly. It will also provide employees with a user-friendly dashboard to manage guest check-ins, update site statuses, and view maintenance logs. Administrators will have the ability to manage users, update site rates, and generate reports for operational insights.

Developed using **Node.js**, **Express**, **MySQL**, and **Bootstrap**, the MOAB Family OutLand system will ensure seamless functionality across both desktop and mobile browsers. Guests will enjoy a simplified booking experience with secure payment integration, while staff and administrators benefit from real-time data synchronization and improved operational efficiency.

## 1.2. Purpose

The purpose of this document is to outline the software requirements, use cases, and design artifacts for the *MOAB Family Outland Reservation System*. It serves as a foundation for system development, stakeholder review, and future iterations to ensure that all technical and functional requirements are met in alignment with the client's objectives.

## 2. Stakeholders & Roles

### 2.1. Customer

**Purpose:**

Book RV sites online and receive clear confirmation of payment and reservation details.

**Goals:**

- Simplify booking and cancellation.
- Access the reservation system 24/7 via a mobile-friendly interface.
- Receive receipts and confirmation emails automatically.

**Needed Functionality:**

- Create an account and log in.
- View and book available sites based on length and dates.
- Pay online through Stripe.
- View, cancel, or modify existing reservations.
- Reset own password.
- Update DOD status.

### 2.2. Employee

**Purpose:**

Support guests and manage reservations more efficiently than the current manual system.

**Goals:**

- Reduce double bookings.
- Check guests in and out easily.

- Track payment and occupancy status.
- Assist customers with account or reservation issues.

**Needed Functionality:**

- Search, view, and manage all reservations.
- Modify or cancel bookings as needed.
- View customer details and DOD verification.
- Generate daily occupancy and revenue reports.
- Reset or update customer credentials upon request.

## **2.3. Administrator**

**Purpose:**

Oversee RV Park operations, user accounts, and employee activities while maintaining data accuracy and system integrity.

**Goals:**

- Manage employee access and permissions.
- Monitor financial reports and booking metrics.
- Maintain the overall security and data structure of the system.

**Needed Functionality:**

- Create, edit, or remove employee and customer accounts.
- Approve or disable user roles.
- View detailed system reports (revenue, occupancy, and performance).
- Update pricing, site availability, and system configurations.

- Manage integrations such as Stripe and database backups.

## **3. Use Cases**

### **3.1 Customer**

### **3.2 Employee**

### **3.3 Admin**

## **4. Functional & Non-Functional Requirements**

### **4.1 Functional Requirements**

- Accounts & Roles
  - Three types of users: Customer, Employee, Admin
  - Login with email + password
  - Admins can reset a user's password to a default
  - Admins can promote/demote users between Employee/Admin
- Reservations
  - Customers and staff can create reservations (choose site, dates, etc.)
  - Employees/Admins can do everything customers can (extend, rebook, cancel)
  - No double-booking the same site for overlapping dates
- Payments
  - Take credit card payments
  - Store these details from the processor: Confirmation ID, Date, Type, Amount, Status
  - Link payments to the reservation and customer
- Sites, Categories, Pricing
  - Each site belongs to a category (Dry, Tent, Normal, Premium)
  - Staff can edit categories, assign sites, and set rates

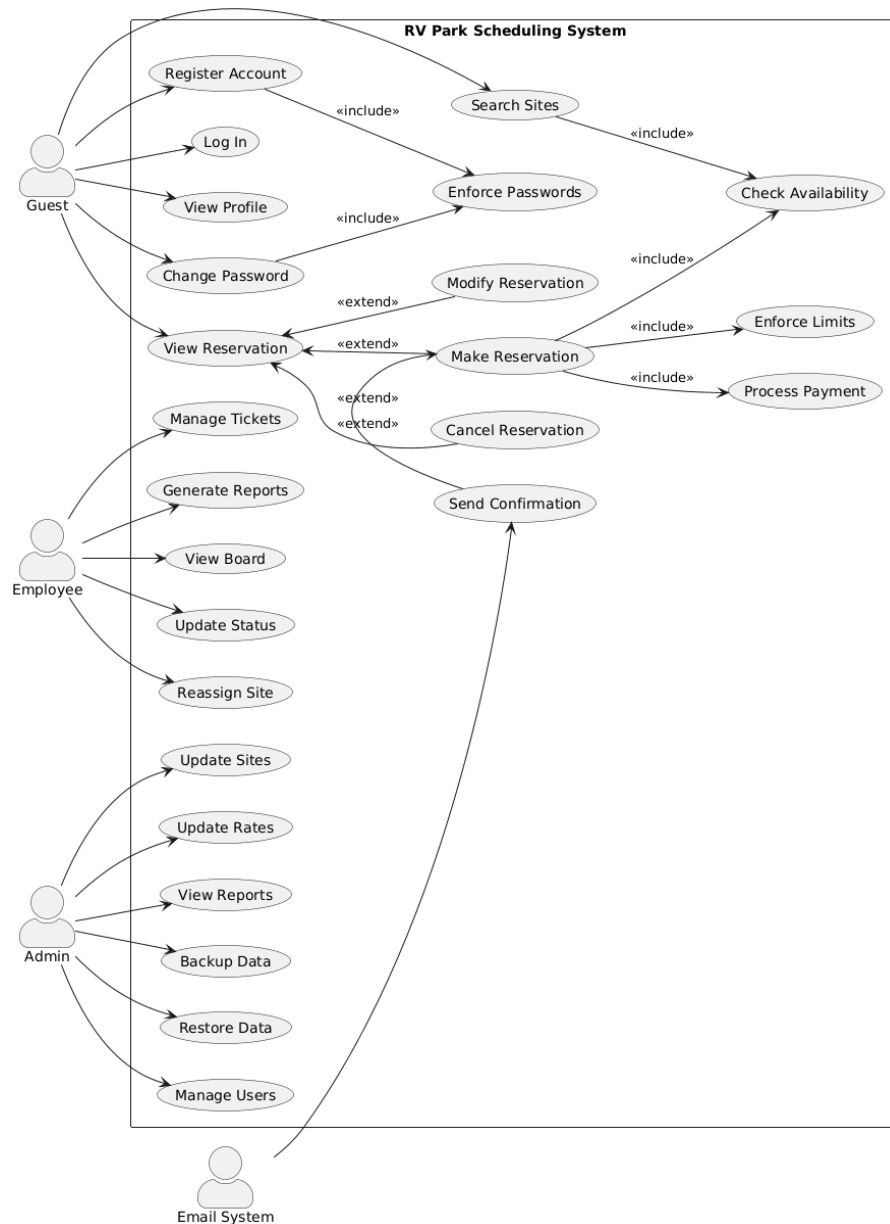
- Reporting & Admin Tools
  - Filter reports by date range
  - Have summaries for Reservations, Payments, Occupancy, Dry Storage
- Access Control & Search
  - Admin: everything
  - Employee: manage reservations/payments, not roles
  - Customer: manage their own reservations & profile
  - Customers can browse sites by category, see rates and availability

## **4.2 Non-Functional Requirements**

- Aim for 99.5% uptime monthly.
- Handle ~50 staff and ~200 customers online at once comfortably.
- Keep a clear log of changes to reservations, payments, roles, and password resets.
- Log when customer data is viewed
- Track key metrics: bookings/day, revenue/day, payment success rate, search latency.
- Alerts for spikes in payment errors or auth failures.
- Separate services/modules for reservations, payments, sites/pricing, reporting, and dry storage.
- Minimum length, block common passwords, rate-limit login.

# 5. Design Artifacts

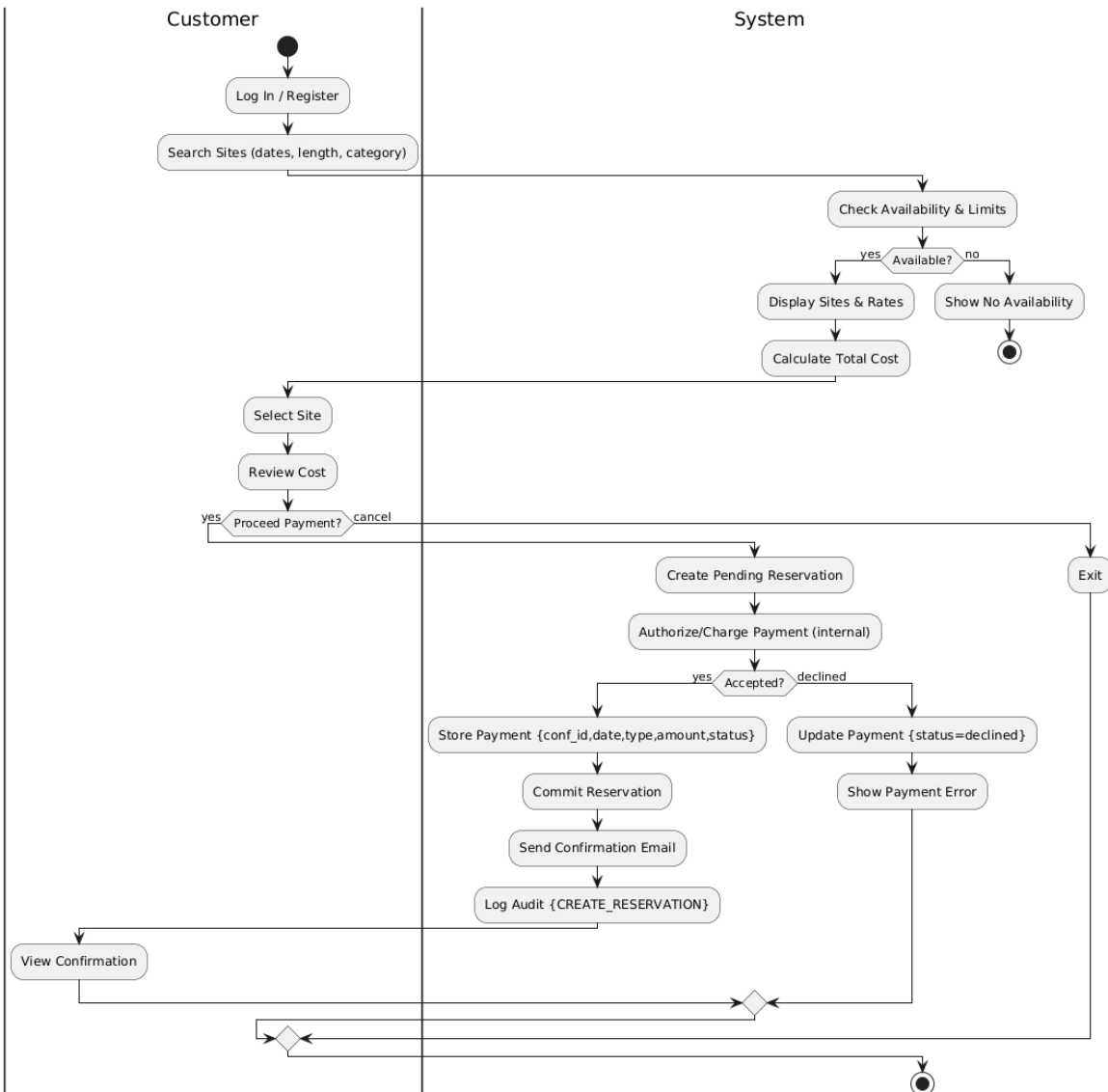
## 5.1 UML Use-Case Diagram



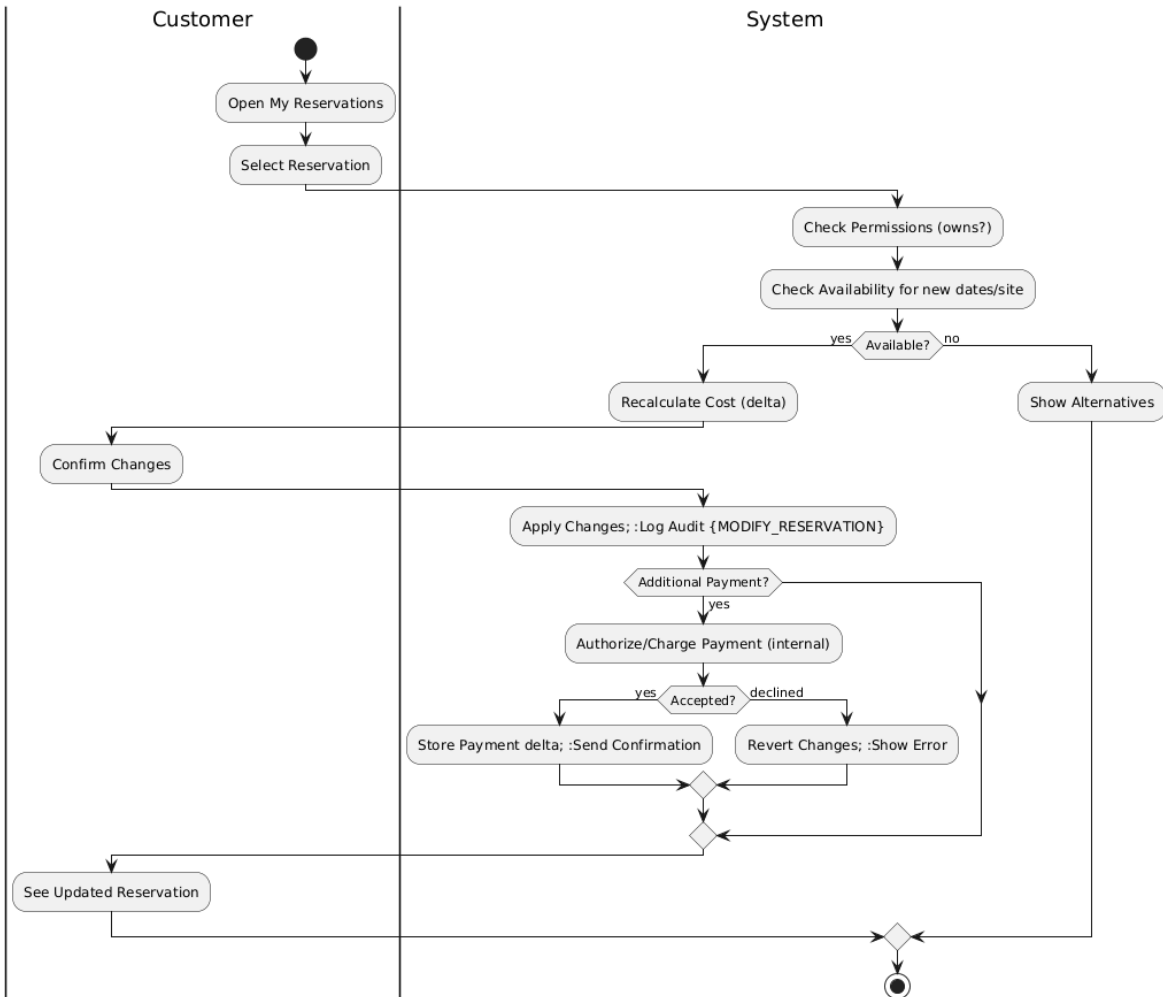
## 5.2 UML Activity Diagrams



### 5.2.1. Guest book reservation diagram.

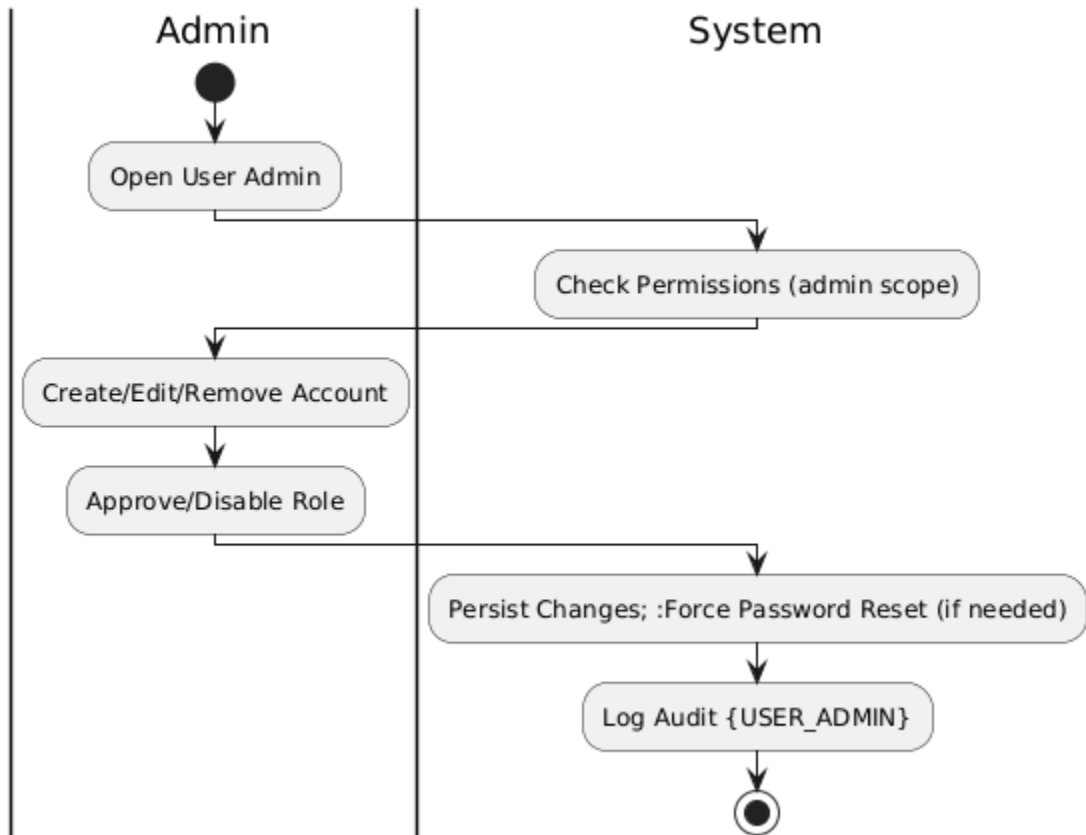


### 5.2.2. Guest modify reservation

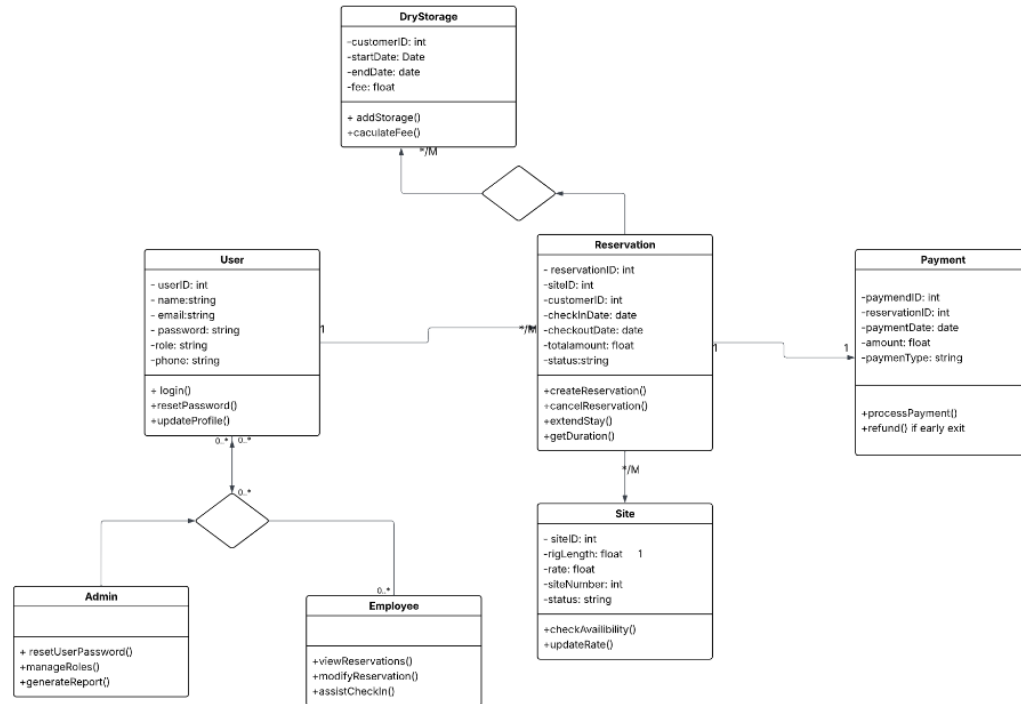


### 5.2.3. Employees manage reservations.





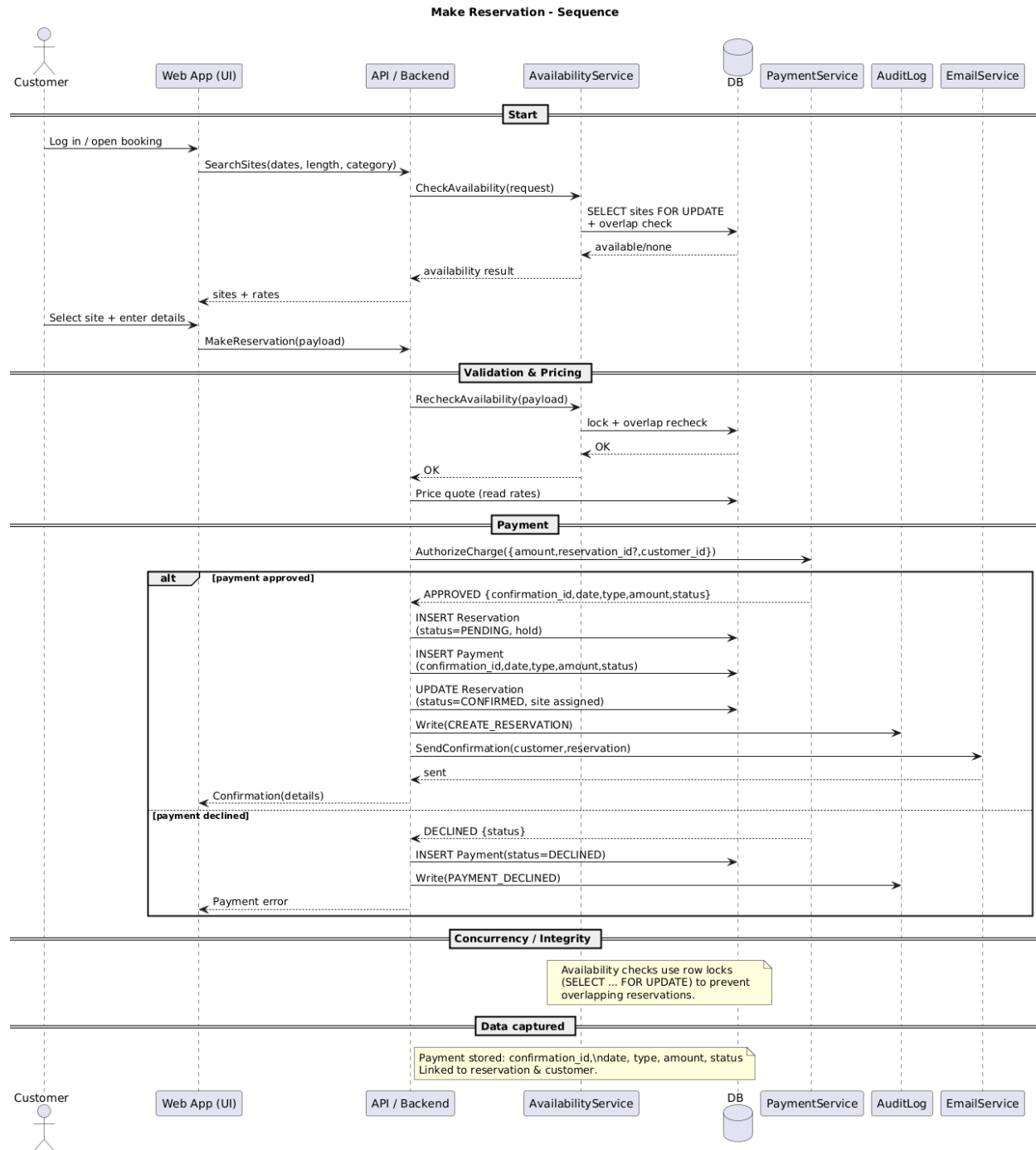
## 5.3 UML Class Diagram



In the updated RV Park Reservation System model, a single User can create many Reservations over time while each reservation is owned by exactly one user (a clear 1→M association), and both Admin and Employee are specialized roles that inherit from User through generalization, sharing common credentials and profile behavior while adding role-specific operations. Each Reservation is tied to exactly one Site, but any site can appear in many reservations on different dates, so Site to Reservation is also a 1→M relationship. Critically, to reflect your professor's guidance that DryStorage is a part of a reservation, the Reservation–DryStorage link is modeled as an aggregation with a hollow diamond at Reservation, indicating that storage is an optional component that exists in the context of a particular booking; the recommended cardinality is Reservation 1 — 0..1 DryStorage (switchable to 0..\* if you want multiple storage periods within the same stay). Because DryStorage is conceptually part of a reservation, there is no direct association from User to DryStorage; access flows through the owning reservation, and the foreign key should reference the reservation (e.g., reservationID) rather than the user. Finally, Payment participates in a strict 1:1 association with Reservation—each reservation produces exactly one payment record and each payment belongs to exactly one reservation—capturing a clean, auditable mapping between reservations and their financial transactions while keeping all other multiplicities aligned with real-world usage of the park.

## 5.4 UML Communication / Sequence Diagrams

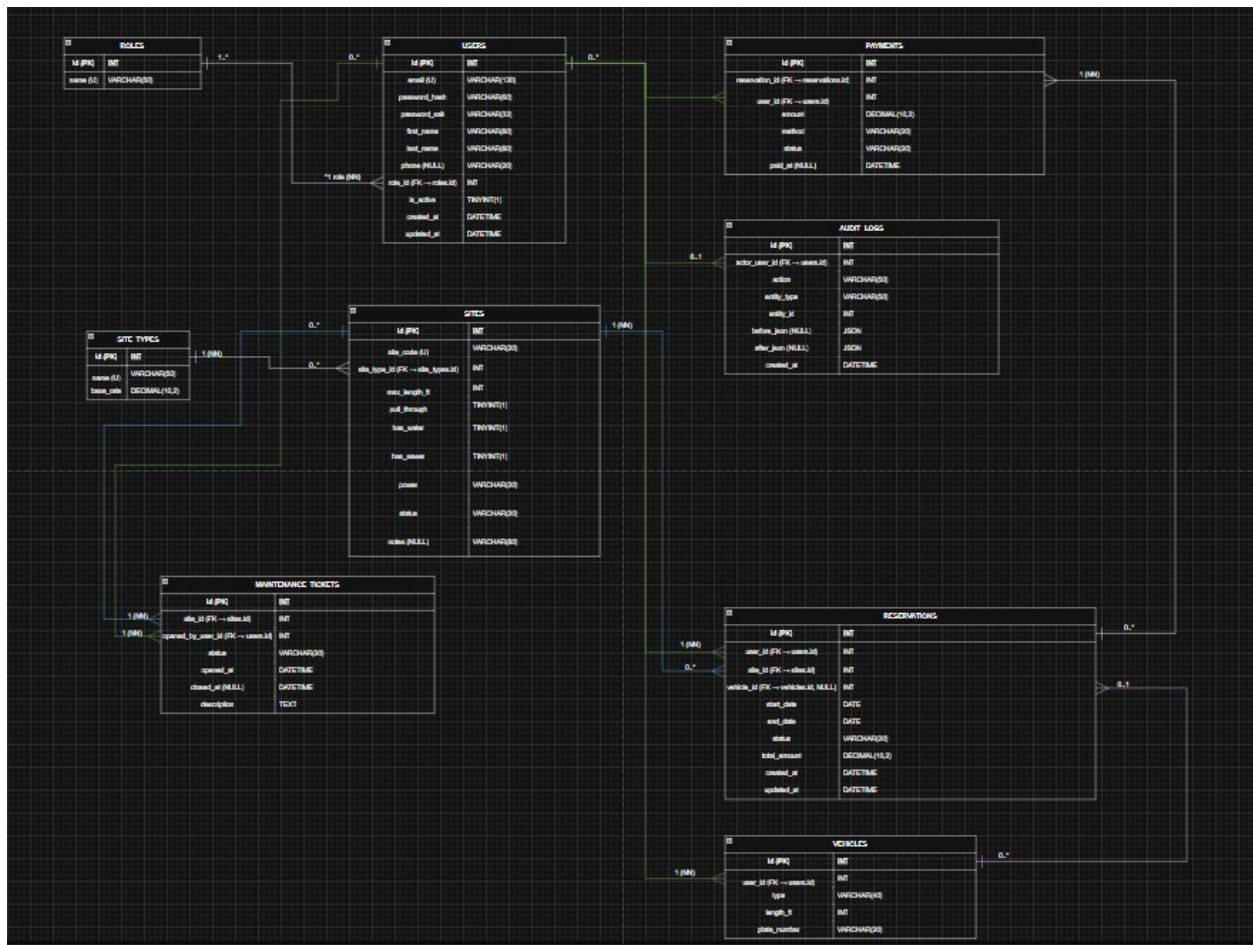
### 5.4.1. Make reservation sequence diagram



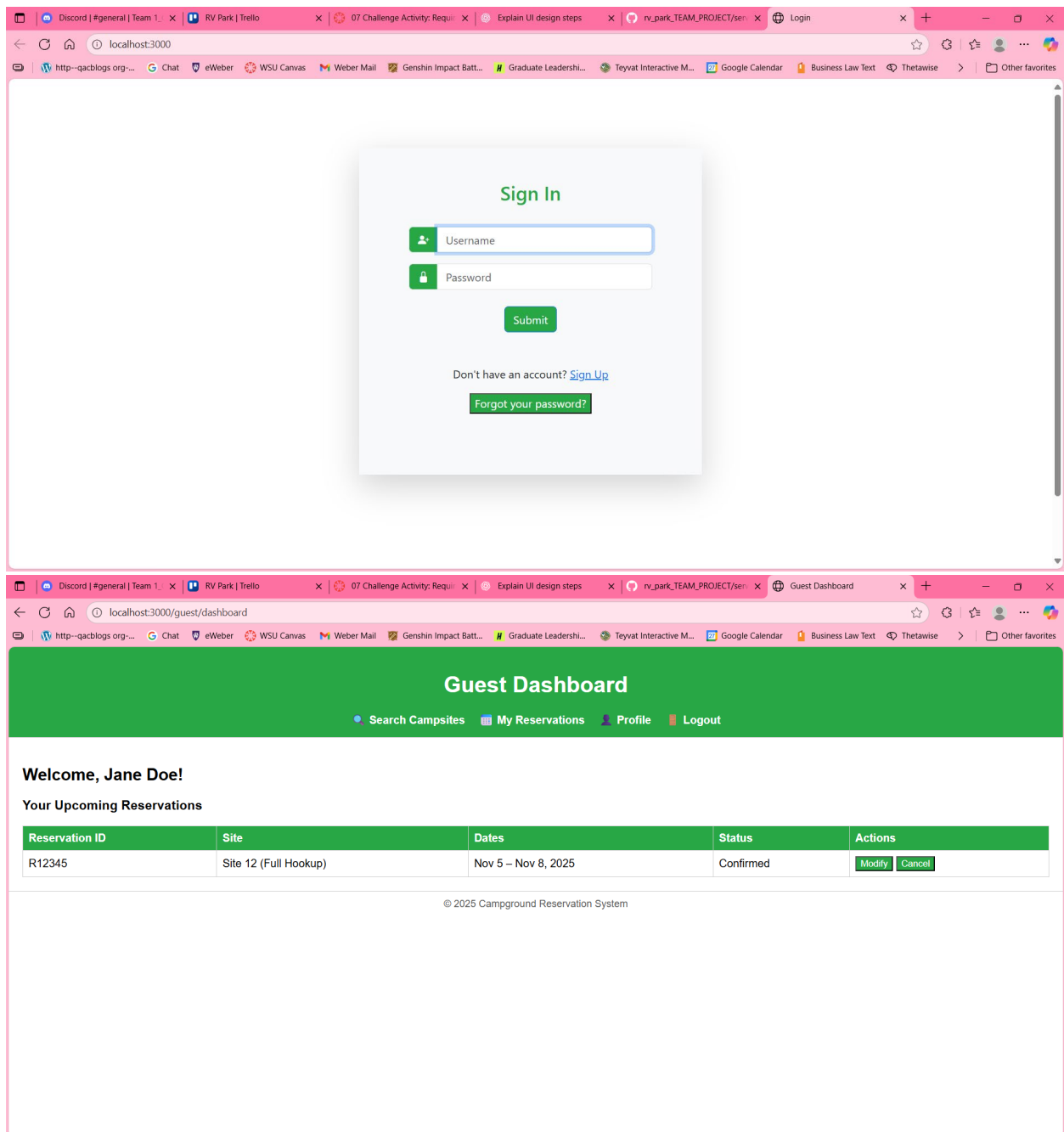
## 5.5 ER Diagram

The Entity Relationship Diagram (ERD) for the Moab Family OutLand Reservation System outlines how data is structured and related within the application. It defines the key entities; *Users*, *Roles*, *Sites*, *Reservations*, *Payments*, and *Maintenance Tickets*. It also includes the relationships between them.

The diagram ensures data integrity by enforcing proper primary and foreign key constraints while showing clear cardinality (for example, one user can make many reservations, and each reservation is linked to a single site and payment record). This structure supports efficient queries, prevents duplicate data, and maintains consistency across user, reservation, and site management features.



## 5.6 UI Mockups





Discord | #general | Team 1...RV Park | Trello07 Challenge Activity: Requ...Explain UI design stepsrv\_park\_TEAM\_PROJECT/seri...Search

localhost:3000/guest/search

http--qacblogs.org...ChateWeberWSU CanvasWeber MailGenshin Impact Batt...Graduate Leadershi...Teyvat Interactive M...Google CalendarBusiness Law TextThetawiseOther favorites

Find a Site

Search CampsitesMy ReservationsProfileLogout

Check-in

mm/dd/yyyy

Check-out

mm/dd/yyyy

Rig length (ft)

Site type

Any

Hookups

☐ No Hookups

☐ Power

☐ Sewer

☐ Water

Available Sites (2)

Discord | #general | Team 1...RV Park | Trello07 Challenge Activity: Requ...Explain UI design stepsrv\_park\_TEAM\_PROJECT/seri...My Reservations

localhost:3000/guest/manage

http--qacblogs.org...ChateWeberWSU CanvasWeber MailGenshin Impact Batt...Graduate Leadershi...Teyvat Interactive M...Google CalendarBusiness Law TextThetawiseOther favorites

My Reservations

Search CampsitesMy ReservationsProfileLogout

Your Reservations

Reservation ID	Site	Type	Length (ft)	Hookups	Dates	Status	Actions
R28281	Site 12	STANDARD	30	PowerWaterSewer	Nov 5 – Nov 8, 2025	Confirmed	ModifyCancel

Discord | #general | Team 1...RV Park | Trello07 Challenge Activity: Requ...Explain UI design stepsrv\_park\_TEAM\_PROJECT/seriProfile

localhost:3000/guest/profile

http--qacblogs.org...ChateWeberWSU CanvasWeber MailGenshin Impact Batt...Graduate Leadershi...Teyvat Interactive M...Google CalendarBusiness Law TextThetawiseOther favorites

Profile

[Search Campsites](#)[My Reservations](#)[Profile](#)[Logout](#)

Account Details

Name

Jane Doe

Email

jane.doe@email.com

Phone Number

555-123-4567

Change Password

Current password

New password

Save Changes

Discord | #general | Team 1...RV Park | Trello07 Challenge Activity: Requ...Explain UI design stepsrv\_park\_TEAM\_PROJECT/seriBook

localhost:3000/guest/book

http--qacblogs.org...ChateWeberWSU CanvasWeber MailGenshin Impact Batt...Graduate Leadershi...Teyvat Interactive M...Google CalendarBusiness Law TextThetawiseOther favorites

Book a Site

[Search Campsites](#)[My Reservations](#)[Profile](#)[Logout](#)

Selected Site Details

Site Number

12

Type

STANDARD

Length (ft)

30

Pull-through

Yes

Hookups

Power

Water

Sewer

Status

Available

Reservation Details

Arrival Date

mm/dd/yyyy

Departure Date

mm/dd/yyyy


Confirm Reservation


Discord | #general | Team 1... x RV Park | Trello x 07 Challenge Activity: Requ... x Explain UI design steps x rv\_park\_TEAM\_PROJECT/ser... x Register x + -


localhost:3000/register


http--qacblogs.org-... Chat eWeber WSU Canvas Weber Mail Genshin Impact Batt... Graduate Leadershi... Teyvat Interactive M... Google Calendar Business Law Text Thetawise > Other favorites


### Register New Account


 First Name


 Last Name

 Username

 Email

 Phone Number

 Password


 Re-enter Password

Create Account

Discord | #general | Team 1... x RV Park | Trello x 07 Challenge Activity: Requ... x Explain UI design steps x rv\_park\_TEAM\_PROJECT/ser... x Booking Confirmed x + -

localhost:3000/guest/confirm

http--qacblogs.org-... Chat eWeber WSU Canvas Weber Mail Genshin Impact Batt... Graduate Leadershi... Teyvat Interactive M... Google Calendar Business Law Text Thetawise > Other favorites



## Booking Confirmed

Thank you for your reservation. We look forward to your stay!

Go to Dashboard

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localhost:3000/employee

http--qacblogs org...ChateWeberWSU CanvasWeber MailGenshin Impact Batt...Graduate Leadershi...Teyvat Interactive M...Google CalendarBusiness Law TextThetawiseOther favorites

## Employee Dashboard

Manage Reservations Site Status Maintenance Tickets Logout

Welcome, John Doe!

Today's Check-ins

Reservation ID	Guest Name	Site	Arrival	Departure	Status	Actions
R12345	Jane Doe	12	Oct 30, 2025	Nov 2, 2025	Not Checked In	<a href="#">Mark as Checked In</a> <a href="#">View Guest Details</a>
R12346	Sam Smith	7	Oct 30, 2025	Nov 1, 2025	Not Checked In	<a href="#">Mark as Checked In</a> <a href="#">View Guest Details</a>

Today's Check-outs

Reservation ID	Guest Name	Site	Arrival	Departure	Status	Actions
R54321	Alex Lee	15	Oct 27, 2025	Oct 30, 2025	Checked In	<a href="#">Mark as Checked Out</a> <a href="#">View Guest Details</a>
R54322	Chris Kim	22	Oct 28, 2025	Oct 30, 2025	Checked In	<a href="#">Mark as Checked Out</a> <a href="#">View Guest Details</a>

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localhost:3000/employee/reservations

http--qacblogs org...ChateWeberWSU CanvasWeber MailGenshin Impact Batt...Graduate Leadershi...Teyvat Interactive M...Google CalendarBusiness Law TextThetawiseOther favorites

## Reservation Management

Manage Reservations Site Status Maintenance Tickets Logout

### All Reservations

Reservation ID	Guest Name	Site	Dates	Status	Actions
R12345	Jane Doe	12	Oct 30 – Nov 2, 2025	Confirmed	<a href="#">Modify</a> <a href="#">Cancel</a> <a href="#">View Guest Details</a>
R12399	Sam Smith	7	Nov 10 – Nov 12, 2025	Upcoming	<a href="#">Modify</a> <a href="#">Cancel</a> <a href="#">View Guest Details</a>
R12400	Alex Lee	15	Oct 25 – Oct 28, 2025	Cancelled	<a href="#">Modify</a> <a href="#">Cancel</a> <a href="#">View Guest Details</a>

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localhost:3000/employee/sites

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Employee Dashboard

Manage ReservationsSite StatusMaintenance TicketsLogout

Site Status

Site ID	Status	Actions
12	Available	<button>Change Status</button> <button>Reassign Guest</button>
15	Occupied	<button>Change Status</button> <button>Reassign Guest</button>
22	Maintenance	<button>Change Status</button> <button>Reassign Guest</button>

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localhost:3000/employee/maintenance

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Employee Dashboard

Manage ReservationsSite StatusMaintenance TicketsLogout

Maintenance Tickets

Add Ticket

Ticket ID	Site	Description	Status	Actions
T1001	12	Leaking water hookup	Open	<button>Update Ticket</button> <button>Close Ticket</button>
T1002	15	Electrical outlet not working	Open	<button>Update Ticket</button> <button>Close Ticket</button>
T1003	22	Broken picnic table	Closed	<button>Update Ticket</button> <button>Close Ticket</button>

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localhost:3000/employee/addticket

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Employee Dashboard

Manage Reservations

Site Status

Maintenance Tickets

Logout

New Ticket

Site

Description

Submit Ticket

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localhost:3000/admin

http--qacblogs.org...ChateWeberWSU CanvasWeber MailGenshin Impact Batt...Graduate Leadershi...Teyvat Interactive M...Google CalendarBusiness Law TextThetawiseOther favorites

Admin Dashboard

Manage Sites

Manage Users

Reports

System Logs

Logout

Total Guests

128

Occupancy Rate

82%

Open Tickets

5

22

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localhost:3000/admin/users

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Manage Users

Manage SitesManage UsersReportsSystem LogsLogout

Add User

User ID	Name	Role	Status	Actions
U1001	Jane Doe	Admin	Active	Assign RoleDeactivate User
U1002	Sam Smith	Staff	Active	Assign RoleDeactivate User
U1003	Alex Lee	Staff	Inactive	Assign RoleDeactivate User

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localhost:3000/admin/reports

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Reports

Manage SitesManage UsersReportsSystem LogsLogout

Occupancy Overview

[Occupancy Chart]

Month	Occupancy Rate	Total Reservations
October	82%	120
September	76%	98
August	88%	140

Reservation Stats

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localhost:3000/admin/reports

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Month	Occupancy Rate	Total Reservations
October	82%	120
September	76%	98
August	88%	140

### Reservation Stats

[Reservation Chart]

Site Type	Reservations	Avg. Stay (days)
STANDARD	60	3.2
TENT	35	2.7
TRAILER	25	4.1

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localhost:3000/admin/logs

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## System Logs

Manage SitesManage UsersReportsSystem LogsLogout

Backup DataRestore Backup

### Recent System Logs

Timestamp	User	Action	Details
2025-10-30 09:15	Jane Doe	Login	Successful login
2025-10-30 09:18	Sam Smith	Update Site	Changed Site 12 status to Maintenance
2025-10-30 09:20	Alex Lee	Close Ticket	Closed Ticket T1003



Discord | #general | Te...MOAB Family Out Lar...RV Park | Trello07 Challenge Activity...Explain UI design step...Site Managementhow to set the remote...+--□×

localhost:3000/admin/sites

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Site Management

Manage SitesManage UsersReportsSystem LogsLogout

Site Management

Site ID	Type	Rate	Actions
12	STANDARD	\$45/night	<div>EditUpdate</div>
15	TENT	\$30/night	<div>EditUpdate</div>
22	TRAILER	\$55/night	<div>EditUpdate</div>