

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

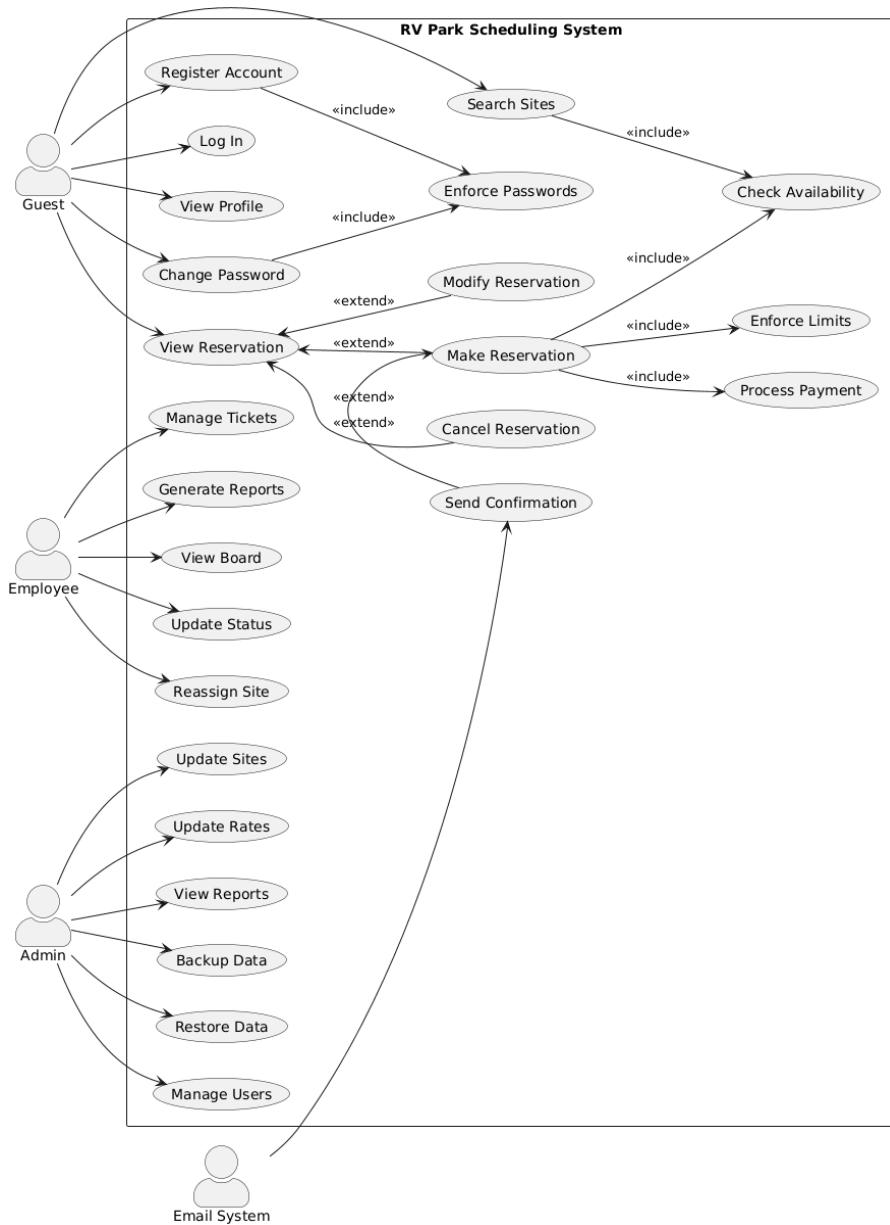
- Reporting & Admin Tools
 - Filter reports by date range
 - Have summaries for Reservations, Payments, Occupancy, Dry Storage
- Access Control & Search
 - Admin: everything
 - Employee: manage reservations/payments, not roles
 - Customer: manage their own reservations & profile
 - Customers can browse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

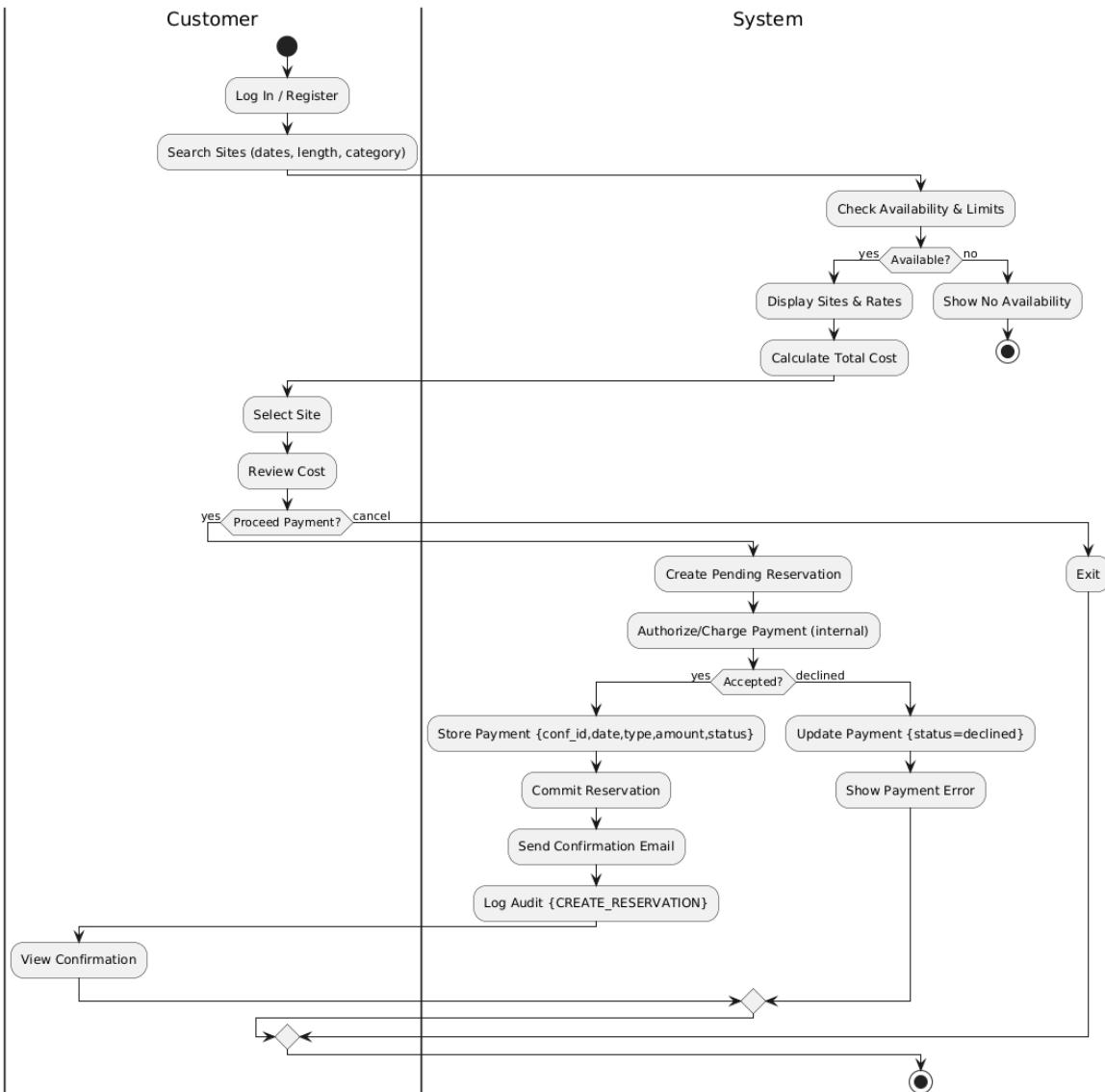
5. Design Artifacts

5.1 UML Use-Case Diagram

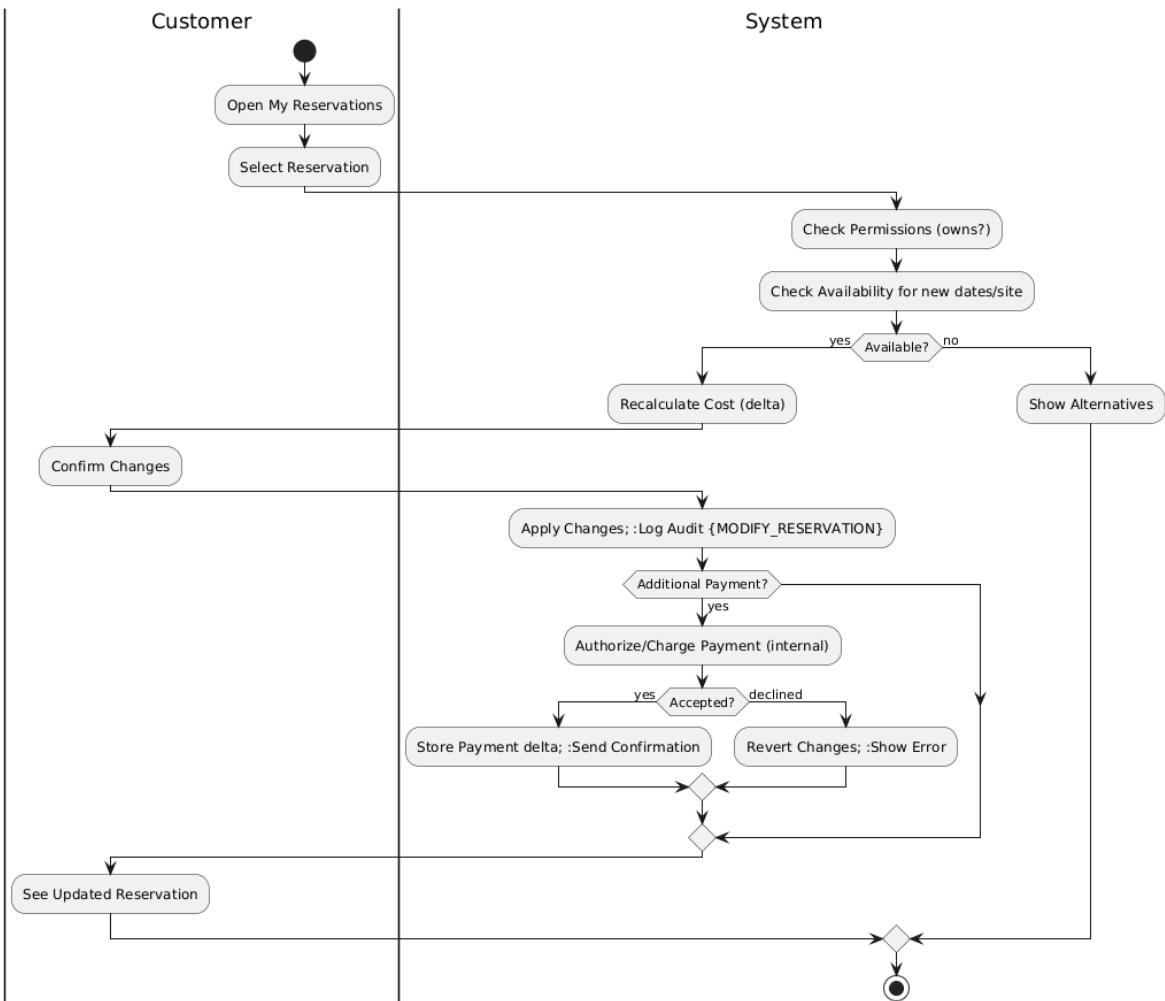


5.2 UML Activity Diagrams

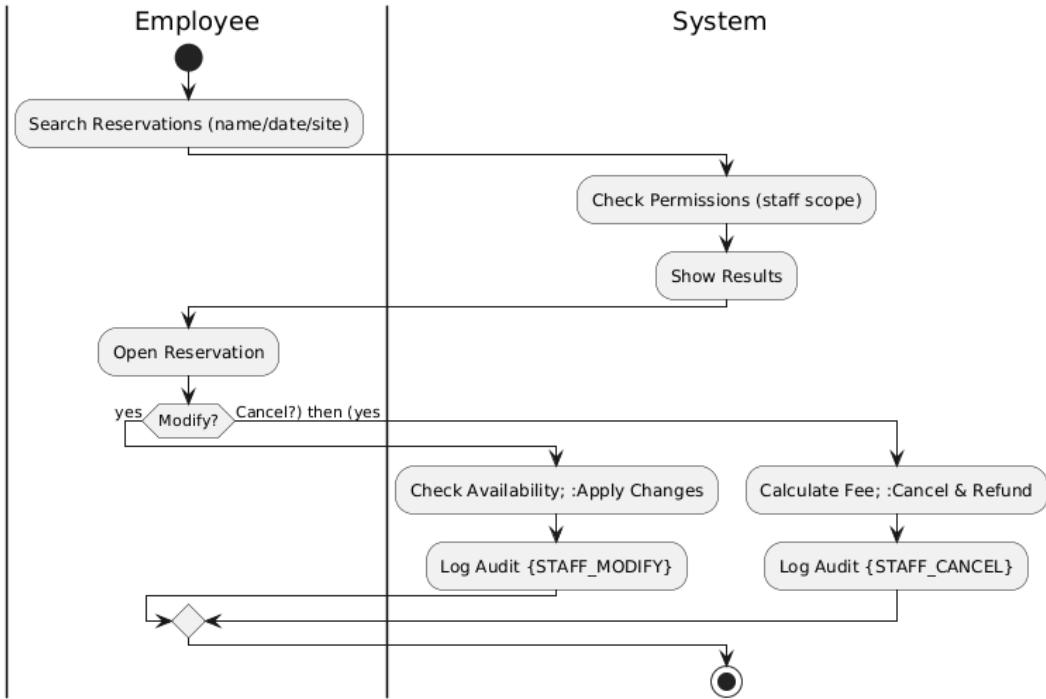
5.2.1. Guest book reservation diagram.



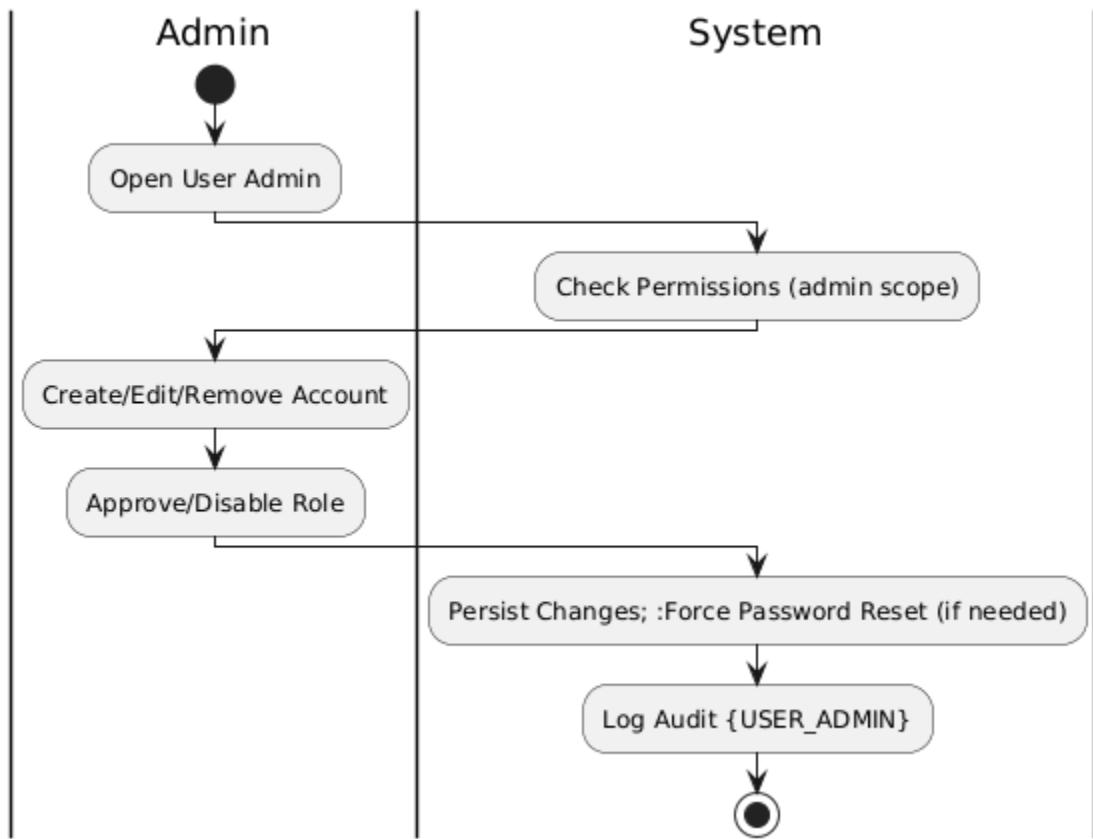
5.2.2. Guest modify reservation



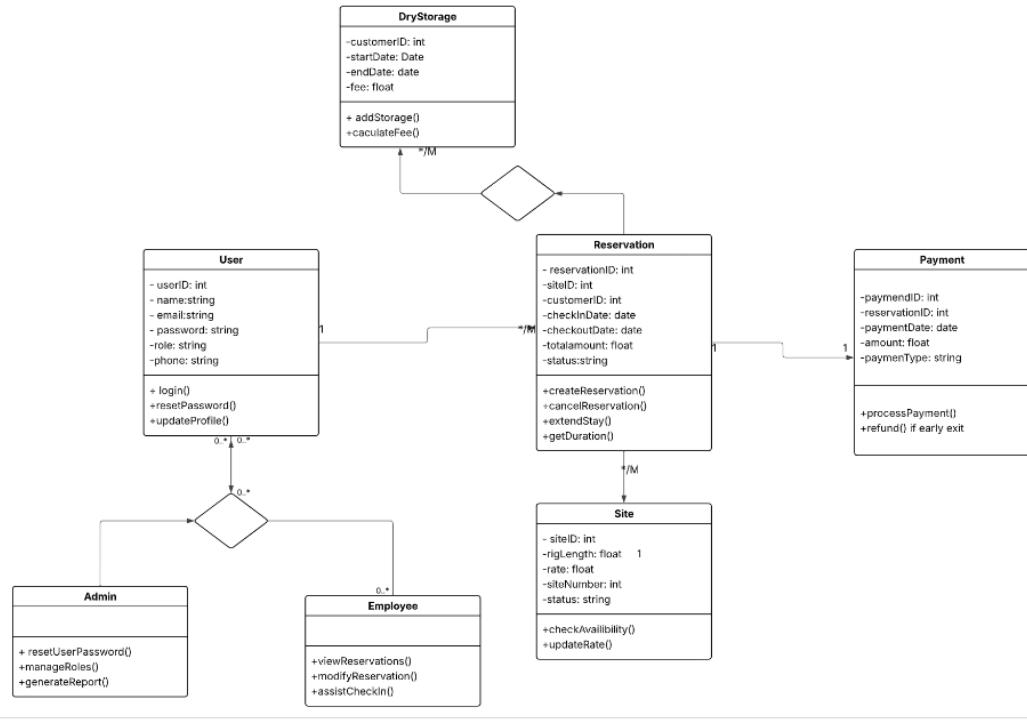
5.2.3. Employees manage reservations.



5.2.4. Admin manage user roles



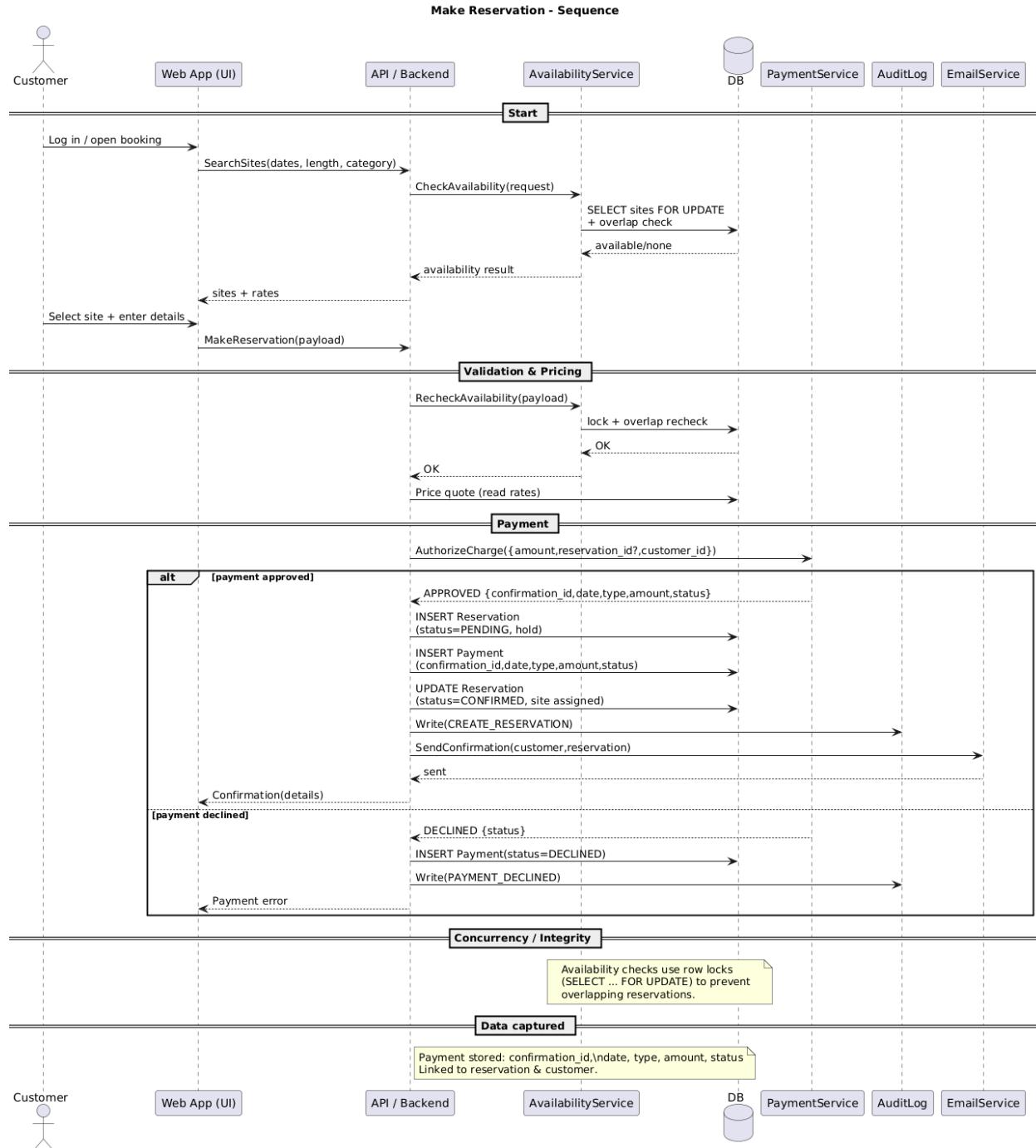
5.3 UML Class Diagram



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

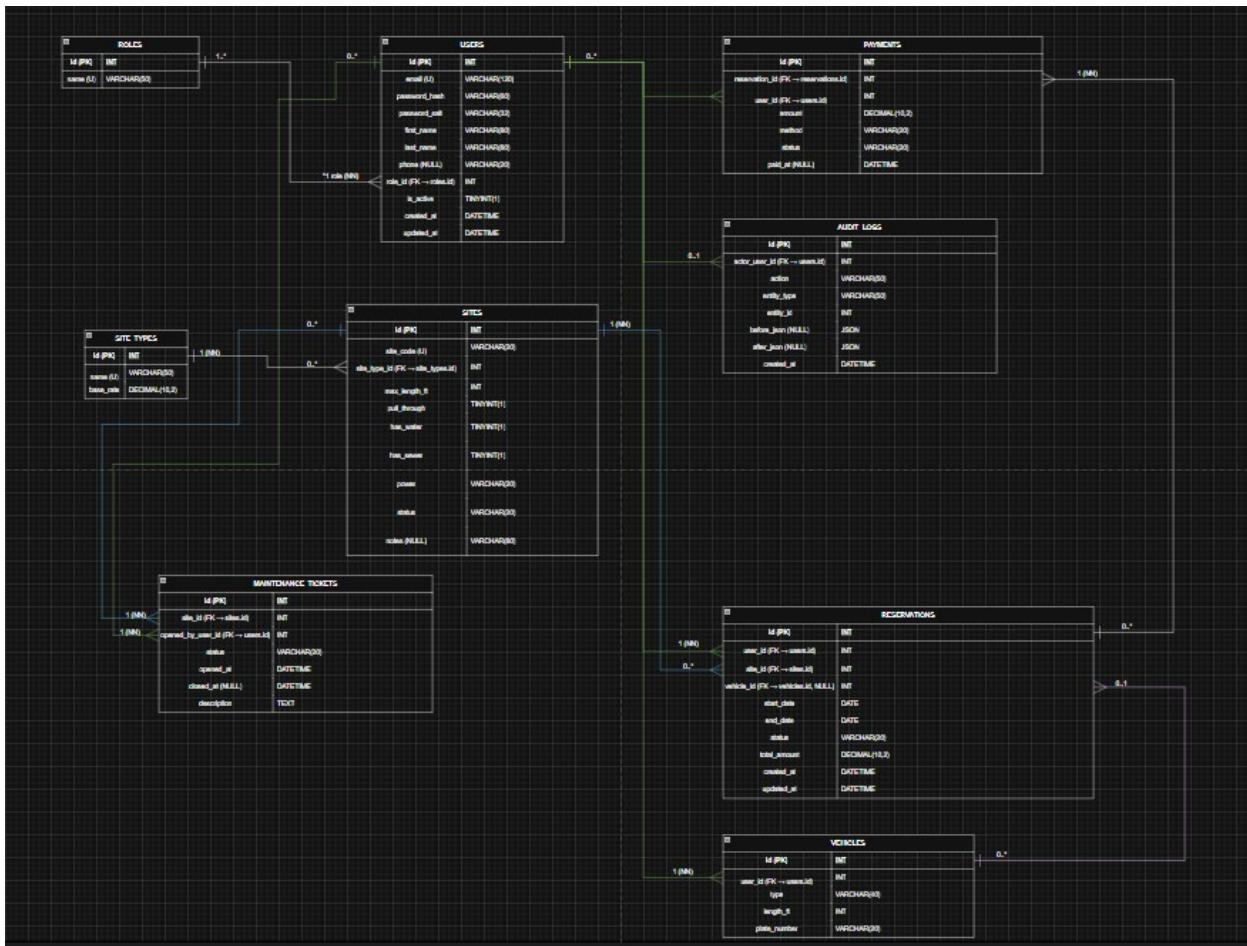
5.4.1. Make reservation sequence diagram



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

The image displays two screenshots of a web application interface, likely a Campground Reservation System.

Top Screenshot: Sign In Page

This screenshot shows a "Sign In" form within a browser window. The form includes fields for "Username" and "Password", both preceded by small icons. A "Submit" button is located below the password field. Below the form, there is text indicating "Don't have an account? [Sign Up](#)" and a link "[Forgot your password?](#)".

Bottom Screenshot: Guest Dashboard

This screenshot shows a "Guest Dashboard" page. At the top, a green header bar contains the title "Guest Dashboard" and several navigation links: "Search Campsites", "My Reservations", "Profile", and "Logout". Below the header, a welcome message "Welcome, Jane Doe!" is displayed. Underneath, a section titled "Your Upcoming Reservations" shows a table of one reservation:

Reservation ID	Site	Dates	Status	Actions
R12345	Site 12 (Full Hookup)	Nov 5 – Nov 8, 2025	Confirmed	Modify Cancel

At the bottom of the dashboard, a small copyright notice reads "© 2025 Campground Reservation System".

The screenshot shows a web browser window with a green header bar containing the title "Find a Site". Below the header is a navigation bar with links: "Search Campsites", "My Reservations", "Profile", and "Logout".

Below the navigation bar is a search form with fields for "Check-in" (mm/dd/yyyy), "Check-out" (mm/dd/yyyy), "Rig length (ft)", and "Site type" (a dropdown menu set to "Any"). There is also a section for "Hookups" with checkboxes for "No Hookups", "Power", "Sewer", and "Water", and a search button.

The main content area is titled "Available Sites (2)". It displays a table with two rows:

#	Type	Length (ft)	Pull-through	Hookups	Status
12	STANDARD	30	Yes	Power Water Sewer	Available
7	TENT	15	No	No Hookups	Available

The screenshot shows a web browser window with a green header bar containing the title "My Reservations". Below the header is a navigation bar with links: "Search Campsites", "My Reservations", "Profile", and "Logout".

The main content area is titled "Your Reservations". It displays a table with one row:

Reservation ID	Site	Type	Length (ft)	Hookups	Dates	Status	Actions
R28281	Site 12	STANDARD	30	Power Water Sewer	Nov 5 – Nov 8, 2025	Confirmed	Modify Cancel

Discord | #general | Team 1... | RV Park | Trello | 07 Challenge Activity: Requirements | Explain UI design steps | rv_park_TEAM_PROJECT/seen | Profile

localhost:3000/guest/profile

http://qacblogs.org... Chat eWeber WSU Canvas Weber Mail Genshin Impact Batt... Graduate Leadership... Teyvat Interactive M... Google Calendar Business Law Text Thetawise Other 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 | Trello | 07 Challenge Activity: Requirements | Explain UI design steps | rv_park_TEAM_PROJECT/seen | Book | Book

localhost:3000/guest/book

http://qacblogs.org... Chat eWeber WSU Canvas Weber Mail Genshin Impact Batt... Graduate Leadership... Teyvat Interactive M... Google Calendar Business Law Text Thetawise Other 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

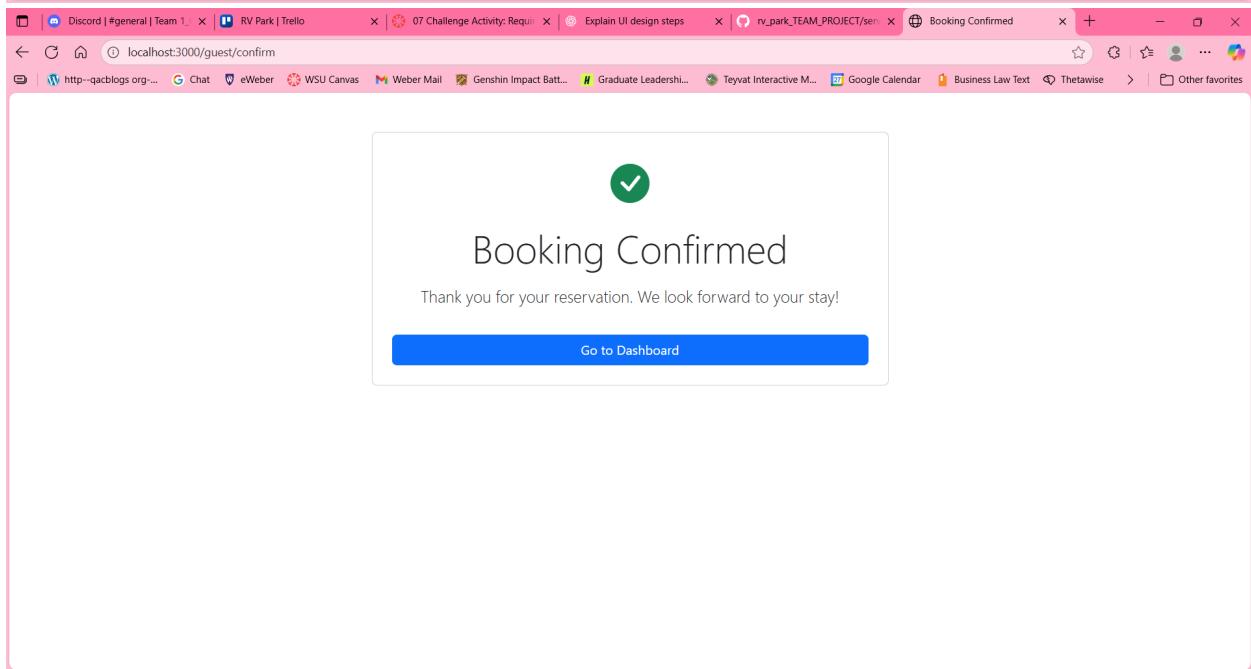
Reservation Details

Arrival Date: mm/dd/yyyy

Departure Date: mm/dd/yyyy

Confirm Reservation

A screenshot of a web browser window showing a registration form titled "Register New Account". The form consists of seven input fields: First Name, Last Name, Username, Email, Phone Number, Password, and Re-enter Password. Each field has a small user icon to its left. Below the fields is a green "Create Account" button.



Employee Dashboard

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	Mark as Checked In View Guest Details
R12346	Sam Smith	7	Oct 30, 2025	Nov 1, 2025	Not Checked In	Mark as Checked In View Guest Details

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	Mark as Checked Out View Guest Details
R54322	Chris Kim	22	Oct 28, 2025	Oct 30, 2025	Checked In	Mark as Checked Out View Guest Details

Reservation Management

All Reservations

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

The screenshot shows a browser window titled "Employee Dashboard". The top navigation bar includes links for "Manage Reservations", "Site Status", "Maintenance Tickets", and "Logout". Below the navigation is a section titled "Site Status" containing a table:

Site ID	Status	Actions	
12	Available	Change Status	Reassign Guest
15	Occupied	Change Status	Reassign Guest
22	Maintenance	Change Status	Reassign Guest

The screenshot shows a browser window titled "Employee Dashboard". The top navigation bar includes links for "Manage Reservations", "Site Status", "Maintenance Tickets", and "Logout". Below the navigation is a section titled "Maintenance Tickets" containing a table:

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

The screenshot shows a browser window titled "Employee Dashboard". The main content area is a "New Ticket" form. It has two input fields: "Site" and "Description", both represented by text input boxes. Below the input fields is a blue "Submit Ticket" button.

The screenshot shows a browser window titled "Admin Dashboard". The main content area displays three cards with key metrics: "Total Guests" (128), "Occupancy Rate" (82%), and "Open Tickets" (5). Each card features an icon: two people for guests, a bar chart for occupancy, and an exclamation mark for open tickets.

The screenshot shows a web browser window with a pink header bar. The main content area has a green header bar with the title "Manage Users". Below the header is a navigation bar with links: "Manage Sites", "Manage Users" (which is active), "Reports", "System Logs", and "Logout". A blue button labeled "Add User" is located in the top right corner. The main content area contains a table with the following data:

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

The screenshot shows a web browser window with a pink header bar. The main content area has a green header bar with the title "Reports". Below the header is a navigation bar with links: "Manage Sites", "Manage Users", "Reports" (which is active), "System Logs", and "Logout". The main content area contains two sections:

Occupancy Overview

[Occupancy Chart]

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

Reservation Stats

Reservation Stats

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

[Reservation Chart]

System Logs

Manage Sites | Manage Users | Reports | System Logs | Logout

Backup Data | Restore 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

The screenshot shows a web browser window with a green header bar titled "Site Management". Below the header is a navigation bar with links: "Manage Sites", "Manage Users", "Reports", "System Logs", and "Logout". The main content area is titled "Site Management" and displays a table of site data. The table has columns for "Site ID", "Type", "Rate", and "Actions". There are three rows in the table:

Site ID	Type	Rate	Actions
12	STANDARD	\$45/night	Edit Update
15	TENT	\$30/night	Edit Update
22	TRAILER	\$55/night	Edit Update