

Homework

Lab 4

Exercise 1

Use Cases:

1. Use Case: Make Reservation

1. DISPLAY RESERVATION FORM

The system displays a form with fields for rental dates, vehicle type, and pickup office. Customer accesses the form via the company's website or app.

2. ENTER PREFERENCES

Customer inputs: Start and end dates (using a calendar widget); Preferred vehicle type (e.g., SUV, Compact) from a dropdown; Pickup office location (e.g., "Downtown Branch") from a dropdown. System validates dates (ensures end date \geq start date and dates are in the future). If invalid, displays error: **"Invalid dates. Please ensure end date is after start date."**

3. RESERVE

User clicks "Reserve Now" to submit the form. System temporarily holds the reservation request and proceeds to pricing.

4. DISPLAY PRICE

System calculates total cost (base rate + taxes) and shows price breakdown: **"Total: \$X.XX. Do you agree to proceed?"**.

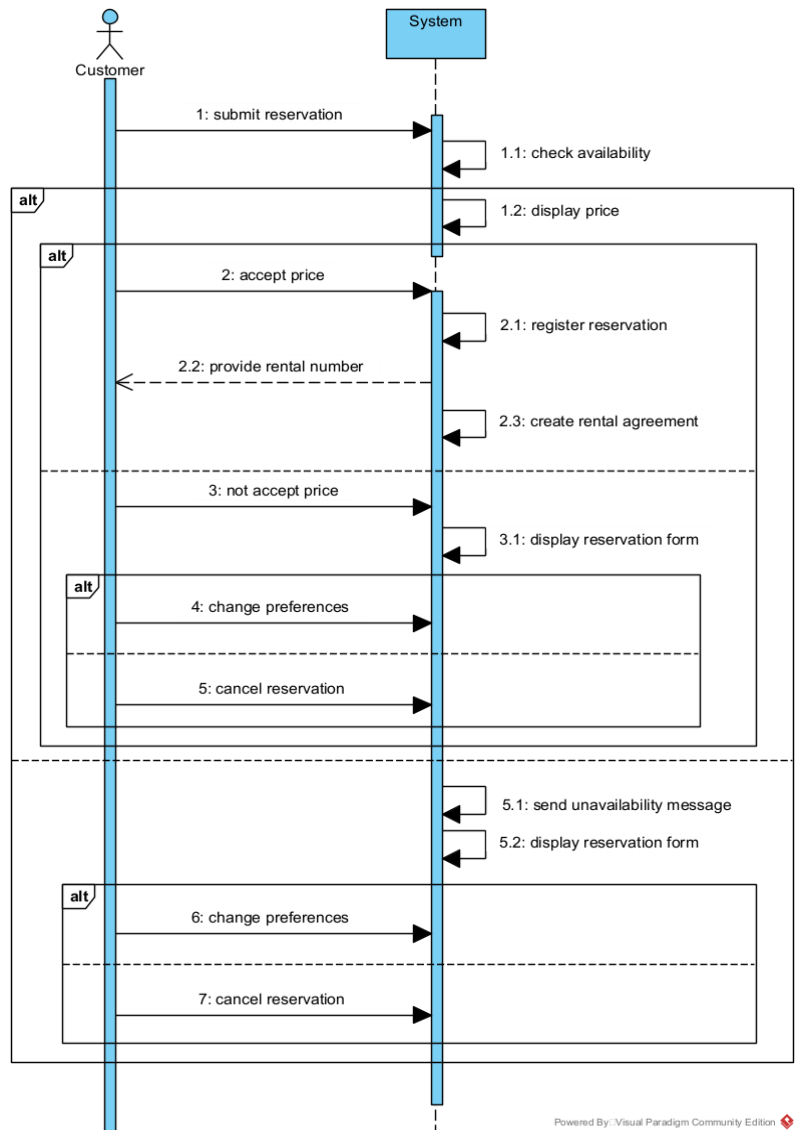
User reviews the price and decides to accept or decline.

5. AGREE PRICE

User Clicks "Agree and Continue. System locks the price and initiates availability checks.

6. CHECK AVAILABILITY

System verifies real-time availability of the selected vehicle at the chosen pickup office. If available, reserves the vehicle and marks it as "booked." If unavailable, triggers an error (see *Alternate Flow A*).



7. DISPLAY RENTAL NUMBER

System generates a unique rental number (e.g., **#RN-2023-789**). Creates a rental agreement PDF with the number, dates, vehicle, and pickup details. User receives the rental number and agreement via email or on-screen confirmation.

Use Case Ends.

Alternate Flows

A. Vehicle Unavailable After Price Agreement

- **Trigger:** Step 6 (Check Availability) fails.
- **System Action:**
 - Displays error: **"The selected vehicle is no longer available. Please adjust your preferences."**
 - Returns user to the reservation form with previously entered data.
 - Suggests alternative vehicles or dates.

B. Invalid Form Submission

- **Trigger:** Invalid dates or missing fields in Step 2 (Enter Preferences).
- **System Action:**
 - Highlights erroneous fields in red.
 - Displays error: **"Please correct the highlighted fields to proceed."**

C. Customer Declines Price

- **Trigger:** User clicks "Decline" at Step 4 (Display Price).
- **System Action:**
 - Asks for confirmation: **"Are you sure you want to cancel? Your reservation will be lost."**
 - If confirmed: Resets the form and returns to the homepage.

2. Use Case: Check Availability

1. Verify Availability

User Action: Submits rental preferences (dates, vehicle type, pickup office).

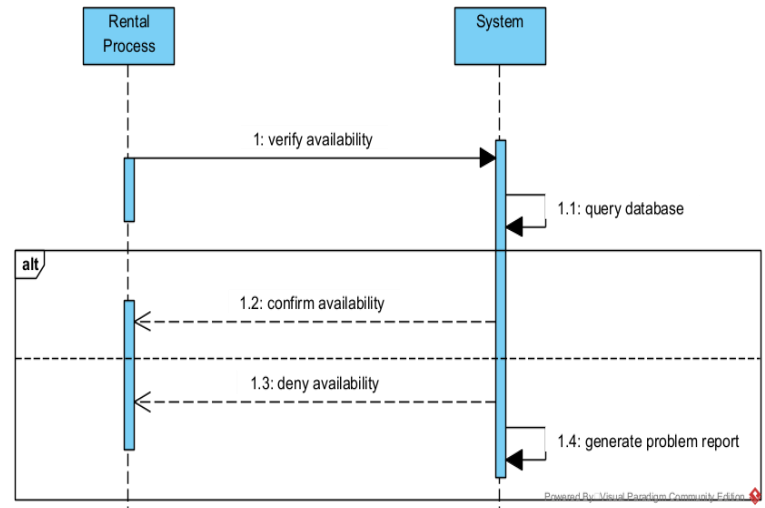
System Action: Queries the database for real-time availability. If available: **"Vehicle is available! Proceed to reservation."** If unavailable: **"Vehicle unavailable. Generate problem report."**

2. Confirm Availability

System Action: Reserves the vehicle and locks the price.

3. Deny Availability

System Action: Logs the problem report with timestamp and request details. Suggests alternatives: **"Try a different vehicle or adjust dates."**



Alternate Flows

- **Database Query Failure:**
 - **System Action:** Displays error: **"System error. Please try again later."**
- **Problem Report Generation:**
 - **System Action:** Automatically emails the customer: **"We've noted your request and will notify you if options open up."**

3. Use Case: Initiate Rental

1. Quote Rental Number

System Action: Assigns a unique rental number (e.g., #RN-2023-567) after reservation confirmation.

2. Introduce Rental Number

System Action: Displays the number prominently and includes it in emails/agreements.

3. Accept/Decline Rental Agreement

User Action: Reviews terms and clicks "Accept" or "Decline."

System Action: If accepted: Proceeds to insurance/payment. If declined: "Reservation paused. Edit preferences or cancel."

4. Insurance Workflow

Indicate Insurance Option: User selects coverage (Basic, Premium, None).

Introduce Insurance Preference: System updates total price and confirms: "Added [Insurance Type] (+\$X.XX)."

5. Search/Display/Print Agreements

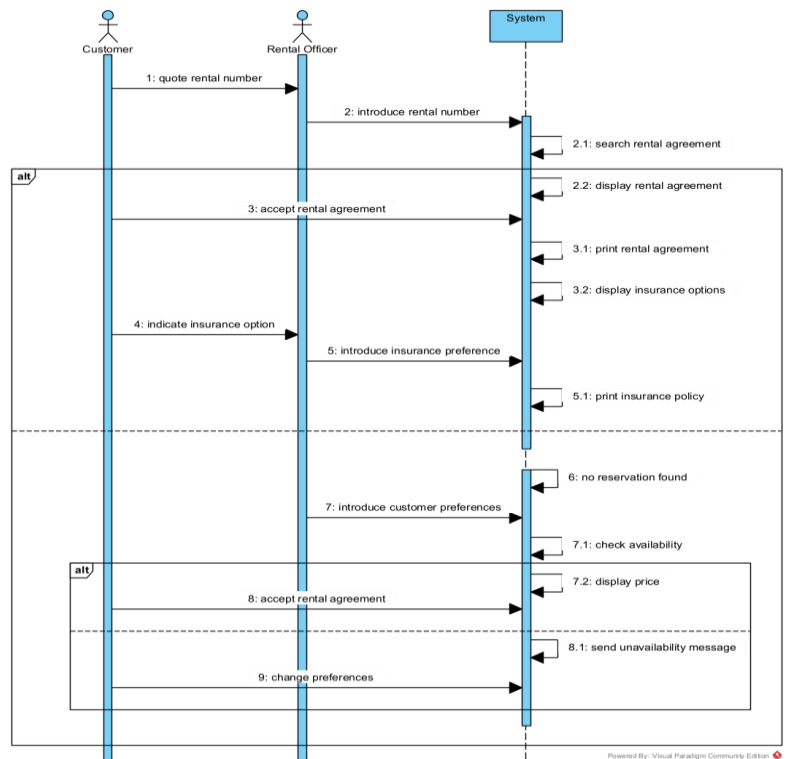
Search Rental Agreement: User enters rental number to retrieve details.

Display/Print Agreement: System shows PDF preview and allows download.

6. Error Handling

No Reservation Found: "Invalid rental number. Verify or contact support."

Unavailability After Edit: "New preferences unavailable. Revert or cancel."



4. Use Case: Process Vehicle Returns

1. Mileage & Fuel Tracking

Create/Introduce Mileage Number: System logs starting mileage/fuel level during pickup.

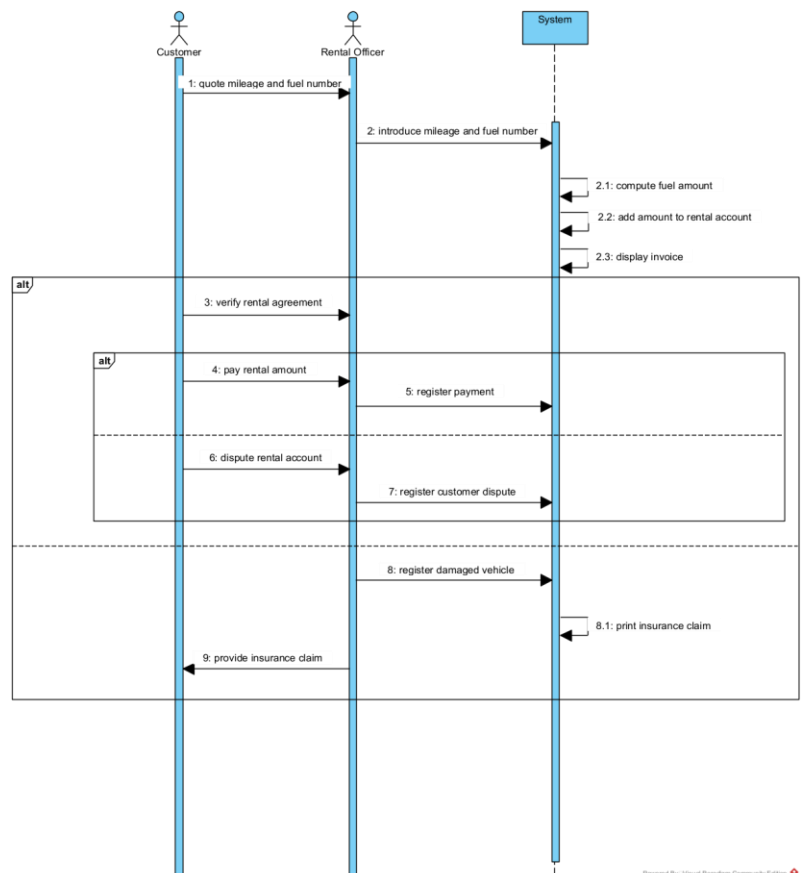
2. Verify Rental Agreement

Staff Action: Confirms agreement terms match the vehicle and rental period.

3. Payment & Disputes

Pay Rental Amount: User pays via integrated gateway. System confirms: "**Payment successful. Invoice #INV-789 generated.**"

Dispute Rental Account: User submits dispute via form. System logs it and alerts staff: "**Dispute #DSP-123 registered.**"



4. Damage & Insurance Claims

Register Damaged Vehicle: Staff uploads photos/notes. System flags the vehicle for maintenance.

Provide Insurance Claim: Generates claim form pre-filled with rental/insurance details.

5. Post-Rental Actions

Print Insurance Claim: User downloads claim form for submission to insurer.

5. Use Case: Provide Management Reports

1. Select Report Type

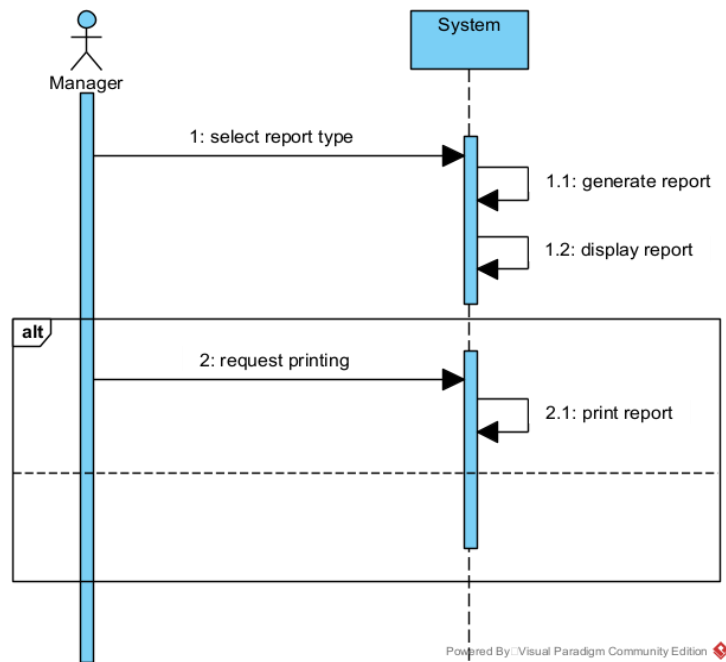
- **Staff Action:** Chooses report type (e.g., "Daily Reservations," "Damage Logs").

2. Generate/Display Report

- **System Action:** Pulls data from the database and formats it into tables/charts.

3. Print Report

- **Staff Action:** Clicks "Print" to save as PDF or physical copy.



Error Handling

- **Report Generation Failure:** "Data unavailable. Check database connectivity."