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# **Software Requirements and Design Document**

**for**

**RealtyHub**

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**FAST NUCES**

**27<sup>th</sup> November, 2024**

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# 1. Introduction

## 1.1 Purpose

*RealtyHub is an integrated platform designed for the streamlined management of real estate operations.*

## 1.2 Product Scope

*This system consolidates various functions, including property listings, client interactions, lease management, and transaction processing, into a single, user-friendly interface. Unlike existing fragmented solutions, RealtyHub offers a cohesive experience that enhances operational efficiency for real estate professionals and property managers.*

## 1.3 Title

RealtyHub: Real Estate Management System for Efficient Property Management

## 1.4 Objectives

- | Develop a comprehensive platform for managing property listings, including detailed property information, images, and availability status.
- | Facilitate seamless client interactions, allowing potential buyers or renters to inquire about properties, schedule viewings, and track application status.
- | Implement a robust lease management system that handles lease agreements, renewals, and terminations, with automated reminders and documentation storage.
- | Enable efficient transaction processing, including rent collection, payment tracking, and financial reporting.
- | Provide real-time updates on property status, client inquiries, and transaction activities to ensure timely and informed decision-making.
- | Design an intuitive dashboard for real estate professionals to access and manage all relevant data efficiently, improving overall workflow and client service.

## 1.5 Problem Statement

Current real estate management practices often rely on disparate systems for property listings, client management, lease administration, and transaction processing. This disjointed approach leads to inefficiencies, data inconsistency, and increased administrative workload. Property managers and real estate professionals frequently face challenges in maintaining accurate property information, tracking client interactions, and managing lease agreements effectively.

## 2. Overall Description

*RealtyHub aims to address these issues by providing a unified solution where property listings, client interactions, lease management, and transaction processing are seamlessly integrated. By offering real-time updates, secure access, and centralized data management, RealtyHub enhances the overall efficiency of real estate operations. The platform leverages advanced technology to streamline processes, reduce administrative burden, and improve the overall client experience.*

*With the implementation of modern cloud computing and secure database management systems, RealtyHub is well-positioned to deliver a high-impact solution. The system aims to optimize real estate management, ensure accurate and timely information, and support a more productive and responsive real estate environment.*

### 2.1 List of Use Cases

- Aazib Abdullah 22i-1031
- 1. Register User
- 2. Login
- 3. Manage Properties (for user who wants to sell or rent their property)
- 4. View Properties (for use who want to buy or rent a property)
  - Amir Akbar 22i-1112
- 5. Manage Profile (both buyers and sellers)
- 6. Search Properties (buyers can apply different filters)
- 7. Contact Property Owner (for buyers)
  - Rayyan Khan 22i-1002
- 8. Schedule Property Viewing/Visiting (buyer will request the visit and seller will accept)
- 9. Process Payment
- 10. Property Verification
- 11. Rate and Feedback (for buyer and seller)

## 2.2 Extended Use Cases

### 1. Register User

**Use Case Name:** Register

**Scope:** RealtyHub

**Level:** User Goal

**Primary Actor:**

- Buyer or
- Seller

**Stakeholders and Interests:**

- Buyer/Seller – Wants to register to start using the system
- System Admin – Wants to ensure user are registered to use the system with valid information

**Preconditions:**

- Buyer/Seller is not already registered in the system
- Buyer/Seller has access to the registration page

**Postconditions:**

- Buyer/Seller is registered and a new profile is created in the system

**Main Success Scenario:**

1. Buyer/Seller navigates to the registration page.	
	2. The system prompts the Buyer/Seller to input required information (name, email, password, role: buyer or seller).
3. Buyer/Seller submits the registration form.	
	4. The system validates the information.
	5. The system confirms the registration and creates a new profile.
6. Buyer/Seller receives a confirmation message (email or on-screen notification).	

**Extensions:**

- 3a. System detects invalid/incomplete data and prompts user to rectify it
- 4a. Email is already registered and a new profile cannot be created.

## 2. Login

**Use Case Name:** Login

**Scope:** RealtyHub

**Level:** User Goal

**Primary Actor :**

- Buyer or
- Seller

**Preconditions:**

- Buyer/Seller must be registered
- Buyer/Seller wants to login

**Postconditions:**

- Buyer/Seller is logged in and redirected to their dashboard

**Main Success Scenario:**

1. User navigates to the login page.	
	2. System prompts the user to input their email and password.
3. User submits the login form.	
	4. System verifies the credentials.
	5. Upon successful verification, the system grants access and redirects the user to their dashboard.

**Extensions:**

3a. Buyer/Seller selects “Forgot Password” options and follow recovery steps

4a. System detects incorrect credentials and prompts Buyer/Seller to re-enter credentials

5a. Upon multiple failed login attempts, account is locked.

## 3. Manage Properties

**Use Case Name:** Manage Properties

**Scope:** RealtyHub

**Primary Actor:** Seller

**Stakeholders and Interests:**

- Seller – wants to list, update, or remove properties they are selling or renting
- Buyer – Needs accurate and up-to-date property listings
- System Admin – Wants to ensure listings meet platform guidelines

**Preconditions:**

- Seller must be logged in
- Seller wants to make changes to their property portfolio

**Postconditions:**

- Property portfolio is updated and saved in the system

**Main Success Scenario:**

1. Seller navigates to the "Manage Properties" section.	
	2. System displays the seller's current property listings.
3. Seller chooses to either add a new property, update an existing listing, or remove a property.	
	4. System prompts the seller for the necessary property details (e.g., price, location, description).
5. Seller submits the form, and the system validates the information.	
	6. System confirms the action (property listed, updated, or removed) and displays the updated list.

**Extensions:**

3a. Invalid data input – system detects missing or incorrect property details and prompts to rectify the information

5a. If a duplicate listing is made, the system warns the seller and prevents duplication

**4. View Properties**

**Use Case Name:** View Properties

**Scope:** RealtyHub

**Level:** User Goal

**Primary Actor:** Buyer

**Stakeholders and Interests:**

- Buyer – wants to browse and view properties available for sale or rent.
- Seller – Wants their listed properties to be viewed by potential buyers/renters.

- System Admin – Wants to ensure that all property listings comply with the platform's standards and policies.

**Preconditions:**

- Buyer is logged in
- There are available listings

**Postconditions:**

- Buyer is displayed all available listings and their details

**Main Success Scenario:**

1. Buyer navigates to the "View Properties" section.	
	2. System displays a list of available properties for sale or rent.
3. Buyer selects a property to view its detailed information (e.g., images, price, location).	
	4. System displays the selected property's full details, including contact information for the seller.

**Extensions:**

3a. No properties are available

## 5. Manage Profile

**Use Case Name:** Manage Profile

**Scope:** RealtyHub

**Level:** User Goal

**Primary Actor:** User (Buyer or Seller)

**Stakeholders and Interests:**

- User – wants to change profile information
- System Admin – wants to ensure user information is accurate

**Preconditions:**

- User is logged in
- User wants to change their profile information

**Postconditions:**

- System saves the new profile information



**Main Success Scenario:**

1. User opens profile.	
	2. System displays profile information that can be changed (email, contact, etc.)
3. User changes profile information	
	5. System saves the changed information
	6. System displays confirmation to user (on-screen)

**Extensions:**

- 4a. User no longer wants to change profile information and exits

**6. Search Properties**

**Use Case Name:** Search Properties

**Scope:** RealtyHub

**Level:** User Goal

**Primary Actor:** Buyer

**Stakeholders and Interests:**

- Buyer – wants to view compatible properties
- Seller – wants to sell or rent out their property

**Preconditions:**

- Buyer is logged in
- Buyer wants to view properties according to some criteria

**Postconditions:**

- System displays properties that fit the Buyer's criteria

**Main Success Scenario:**

1. Buyer chooses to search properties	
	2. System prompts Buyer to enter search criteria
3. Buyer enters criteria	
	4. System displays properties that match the entered criteria

**Extensions:**

- 4a. No properties match the entered criteria

**7. Contact Property Owner**

**Use Case Name:** Contact Property Owner

**Scope:** RealtyHub

**Level:** User Goal

**Primary Actor:** Buyer

**Stakeholders and Interests:**

- Buyer
- Seller

**Preconditions:**

- Buyer is logged in
- Buyer wants to contact the owner of the property that the user is interested in

**Postconditions:**

- Buyer's message is sent to the seller.

**Main Success Scenario:**

1. Buyer chooses to contact seller of a particular property	
	2. System displays any previous chat with the seller.
	3. System prompts buyer to enter message.
4. Buyer enters message	
	5. System sends message to seller.

**Extensions:**

- 4a. Buyer no longer wants to contact Seller and exits

## 8. Schedule Property Visit

**Use Case Name:** Schedule Property Visit

**Scope:** RealtyHub

**Level:** User Goal

**Primary Actor:** Buyer

**Stakeholders and Interests:**

- Buyer – Wants to visit the property they are interested in.
- Seller – Wants to schedule visits at convenient times.
- System Admin – Ensures smooth scheduling.

**Preconditions:**

- Buyer must be registered and logged into the system.
- The property listing must be available for viewing.
- Seller is registered and has a listed property.

**Postconditions:**

- The viewing/visiting appointment is successfully scheduled and confirmed.
- Notification is sent to both buyer and seller.

**Main Success Scenario:**

1. Buyer selects a property and requests a visit.	
2. Buyer selects a preferred time and submits the request.	
	3. System notifies the seller of the request.
	4. Seller accepts, declines, or suggests an alternative time.
	5. If accepted, the system schedules the visit.
	6. Both parties receive confirmation and reminders about the visit.

**Extensions:**

4a. Seller suggests alternative time: Buyer receives alternative time and can accept or reject.

4b. Seller declines request: Buyer receives notification of rejection and may submit another request.

**9. Verify Property**

**Use Case Name:** Verify Property

**Scope:** RealtyHub

**Level:** User Goal

**Primary Actor:** System Admin

**Stakeholders and Interests:**

- Seller – Wants the property to be verified quickly and accurately for listing.
- Buyer – Wants assurance that the properties listed are authentic and verified.
- System Admin – Wants to ensure that all properties listed are valid, preventing fraudulent or misleading listings.

**Preconditions:**

- The seller has submitted property details for listing.

**Postconditions:**

- Property is verified and approved for listing.

1. System Admin chooses a submission from the pending list	
	2. System displays submission details
3. System Admin cross-verifies the documents against external databases or third-party services.	
4. System Admin approves submission	
	5. System lists the property for buyers to view
	6. Seller is notified of successful verification

**Extensions**

4a. Documents are invalid and submission is rejected by admin. System notifies the seller of issues and provides reasons for rejection.

**10. Rate and Feedback**

**Use Case Name:** Rate and Give Feedback

**Scope:** RealtyHub

**Level:** User Goal

**Primary Actor:**

- Buyer
- Seller

**Stakeholders and Interests:**

- Buyer: Wants to rate their experience with the property or the seller.
- Seller: Wants to rate their experience with the buyer.
- Other Buyers/Sellers: Use feedback to inform their future decisions.
- System Admin: Moderates reviews for inappropriate content.

**Preconditions:**

- The transaction (purchase or rent) is completed.
- Buyer and seller are registered and logged into the system.

**Postconditions:**

- Ratings and feedback are submitted and visible to other users.

**Main Success Scenario:**

1. Buyer completes the purchase or rent of the property.	
	2. System prompts both buyer and seller to provide a rating and feedback.
3. Buyer submits a rating for the property and seller, along with comments.	
4. Seller submits a rating for the buyer.	
	5. System displays ratings and feedback publicly on the respective profiles.

**Extensions:**

3a/4a. Inappropriate feedback: System detects or receives a report of inappropriate content and temporarily removes the feedback pending moderation.

## 2.3

### 11. Process Payment

**Use Case Name:** Process Payment

**Scope:** RealtyHub

**Level:** User Goal

**Primary Actor:** Buyer

**Stakeholders and Interests:**

- Buyer – Wants a secure, seamless payment process for property purchase or rent.
- Seller – Wants to receive payments promptly.
- Bank – Ensures proper handling of funds.
- System Admin – Ensures secure payment transactions.

**Preconditions:**

- Buyer is registered and logged in.
- Payment gateway is functional and available.

**Postconditions:**

- Payment is successfully processed, and confirmation is sent to both buyer and seller.
- System updates property status (sold/rented) accordingly.

**Main Success Scenario:**

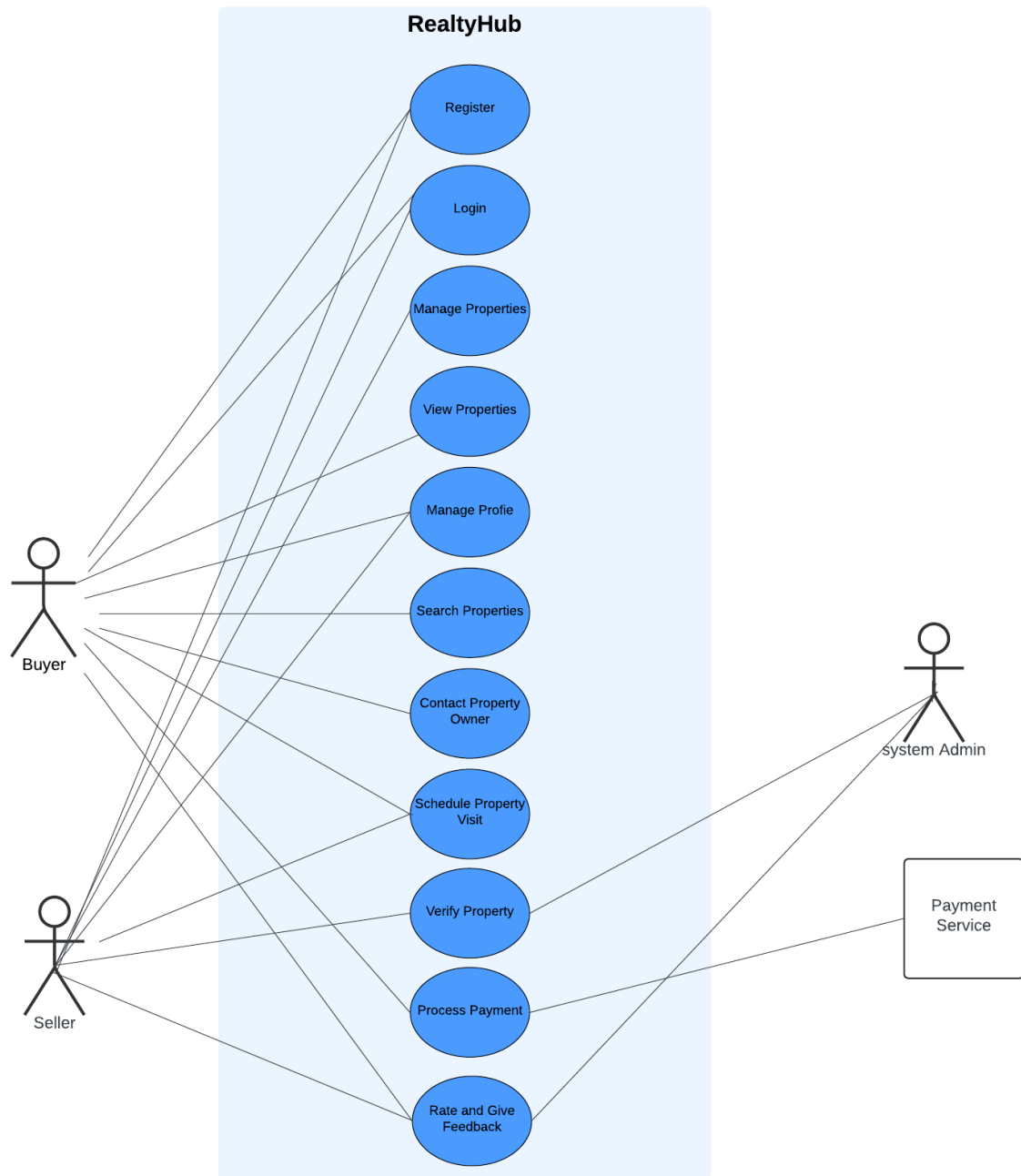
1. Buyer selects a property for purchase or rent.	
2. Buyer selects a payment method (e.g., credit card, bank transfer, financing options).	
	3. System verifies payment details and processes the payment.
	4. Payment confirmation is sent to both the buyer and the seller.
	5. System updates the property status (sold or rented).

**Extensions:**

3a. Payment failure – System notifies buyer of the failure and prompts them to re-enter payment details or choose another method.

4a. Payment delay – System informs seller of a delay in payment processing.

## 2.4 Use Case Diagram



### **3. Other Nonfunctional Requirements**

#### **3.1 Performance Requirements**

- *User-friendly layout*
- *Sufficient Database Capacity*
- *Efficient Data Access*

#### **3.2 Safety Requirements**

*Properties must be verified by an administrator.*

#### **3.3 Security Requirements**

Secure Login.

#### **3.4 Software Quality Attributes**

- *Usability*
- *Maintainability*
- *Scalability*

#### **3.5 Business Rules**

#### **3.6 Operating Environment**

Client System: Windows 10/11.

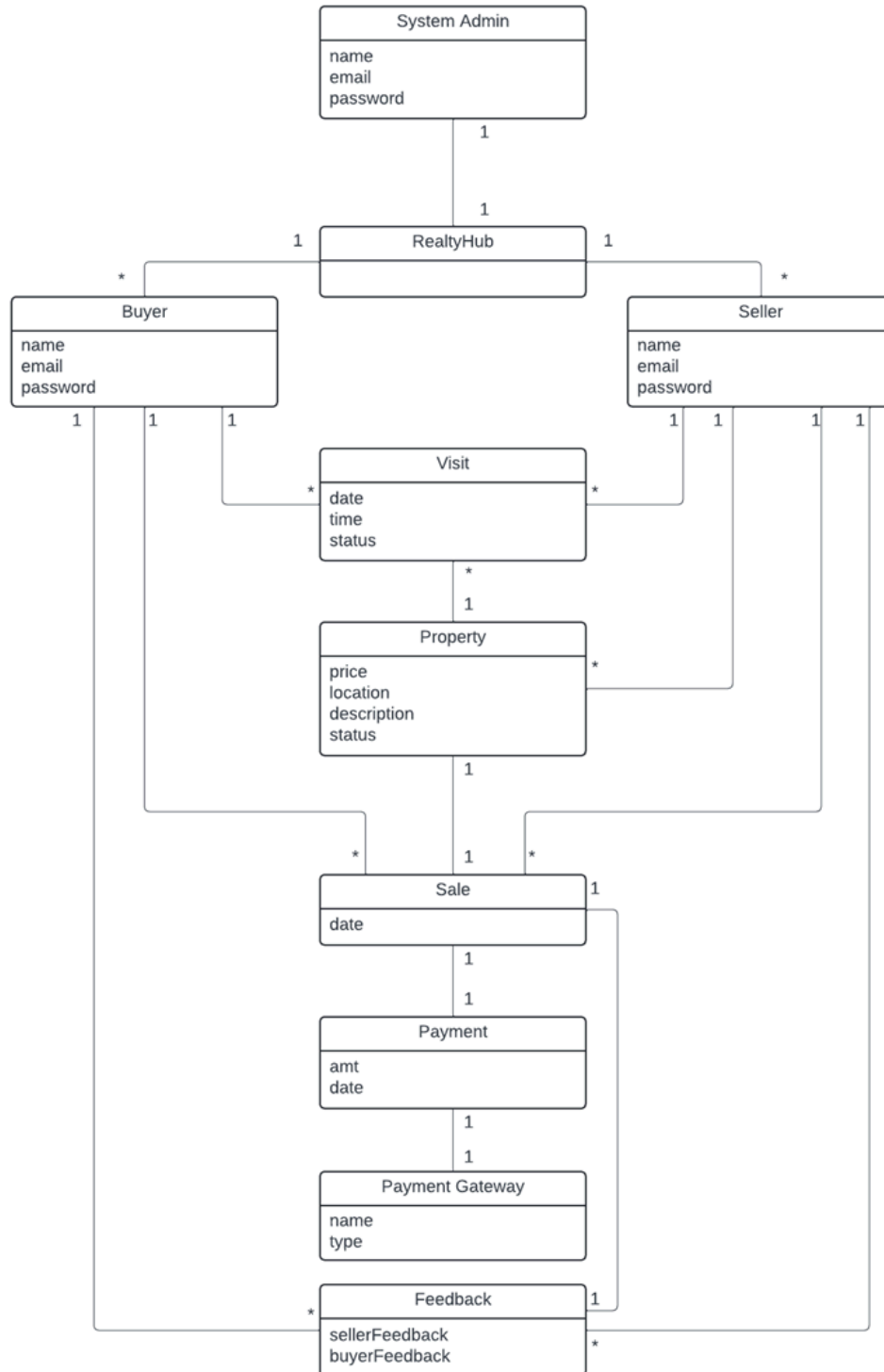
Server Environment: MySQL Database with Java runtime environment.

#### **3.7 User Interfaces**

*<Describe the logical characteristics of each interface between the software product and the users. This may include sample screen images, any GUI standards or product family style guides that are to be followed, screen layout constraints, standard buttons and functions (e.g., help) that will appear on every screen, keyboard shortcuts, error message display standards, and so on. Define the software components for which a user interface is needed. Details of the user interface design should be documented in a separate user interface specification.>*

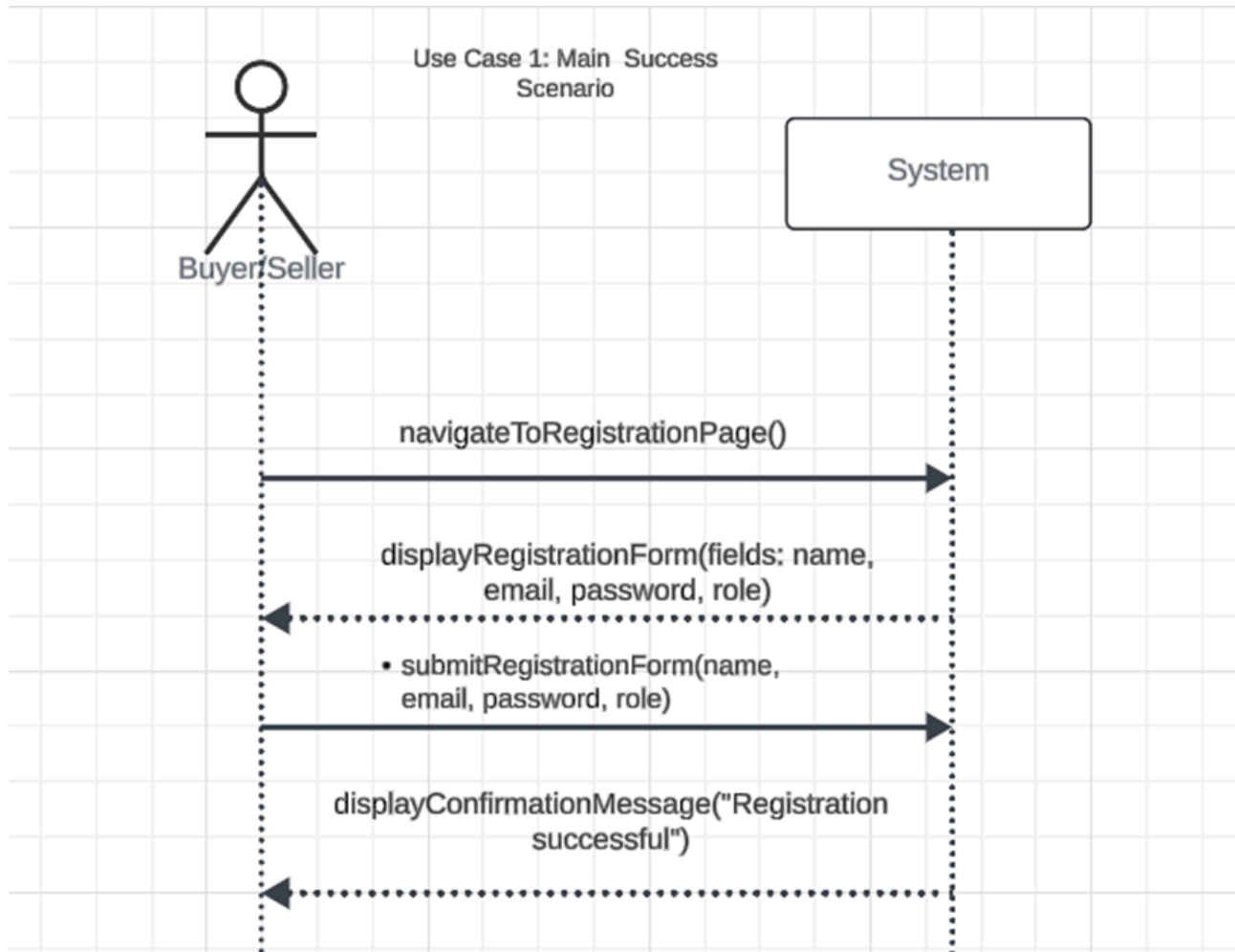
## **4. Domain Model**

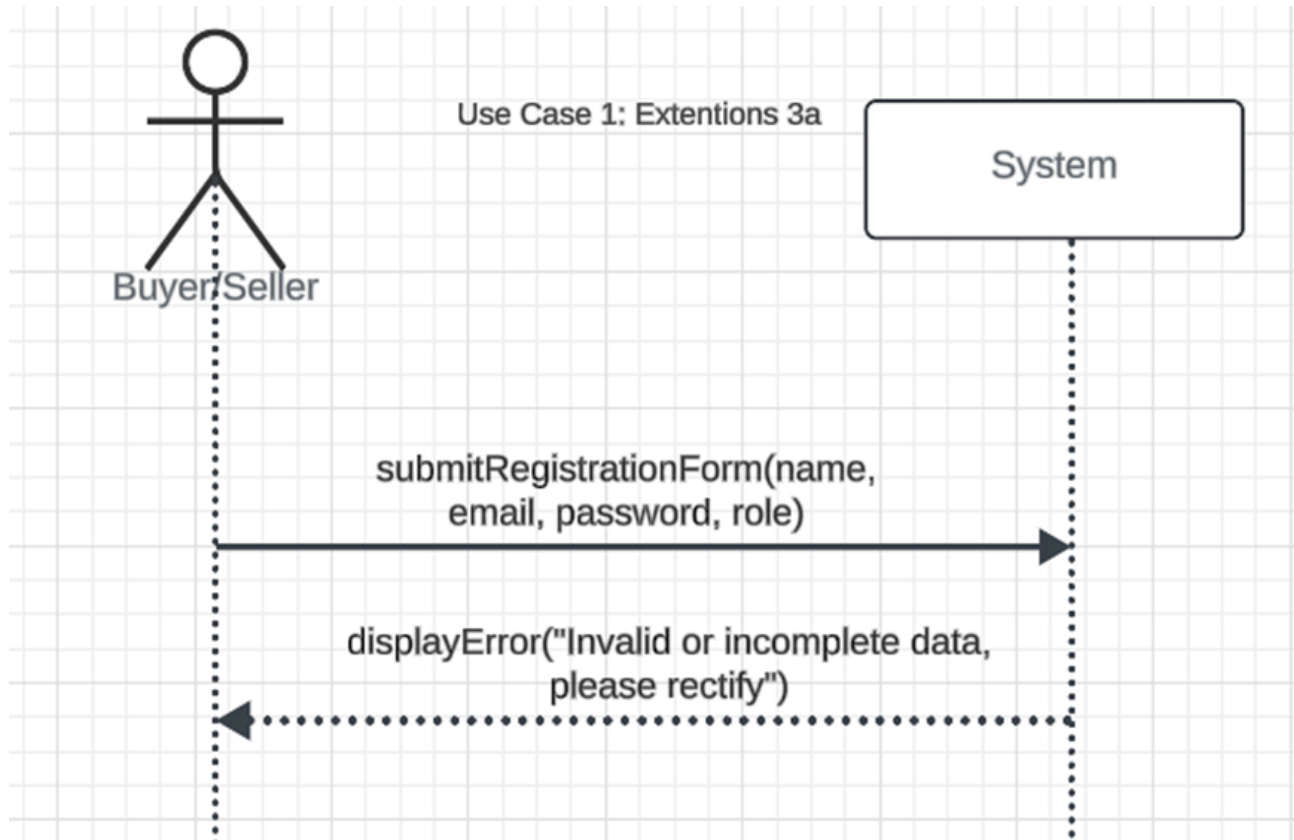


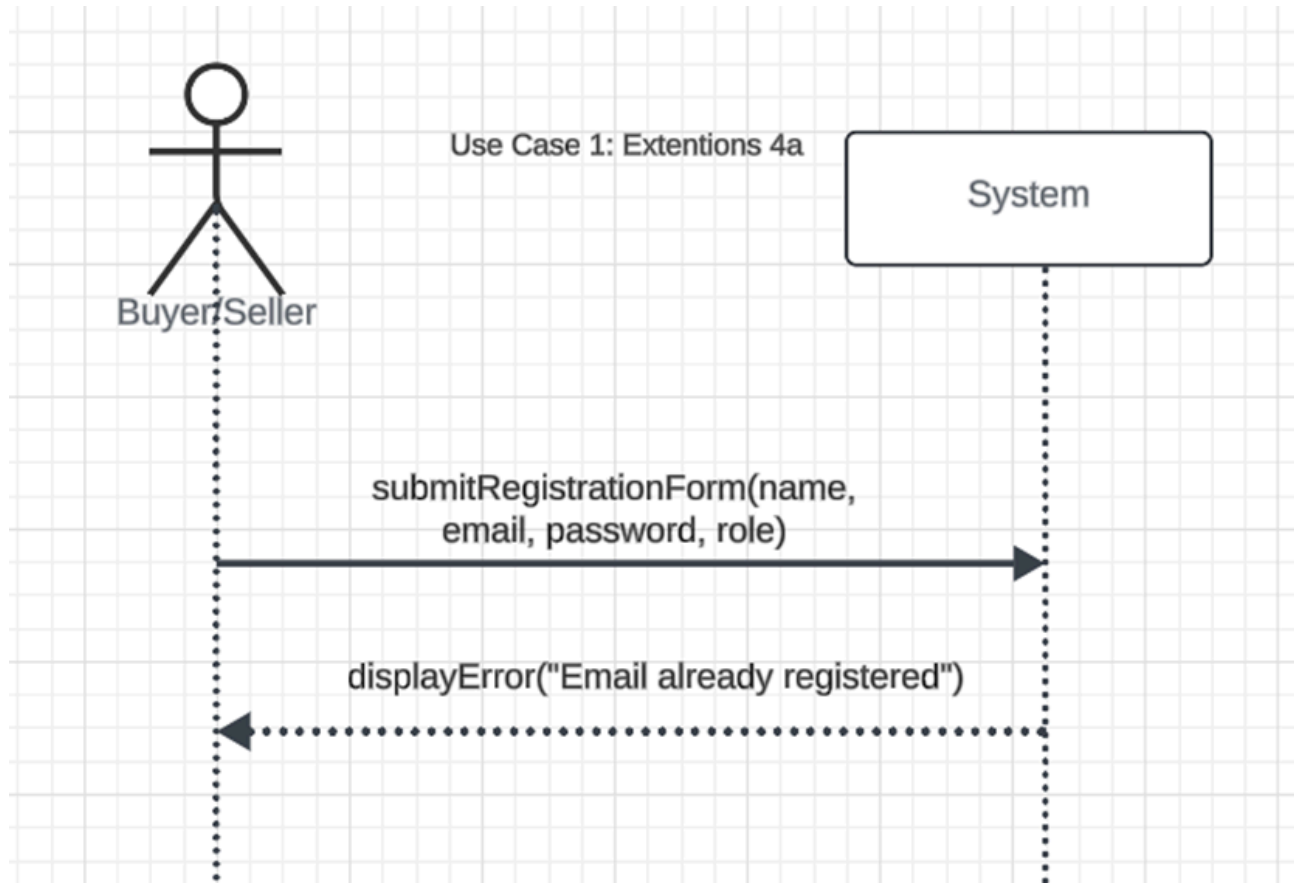


## 5. System Sequence Diagram

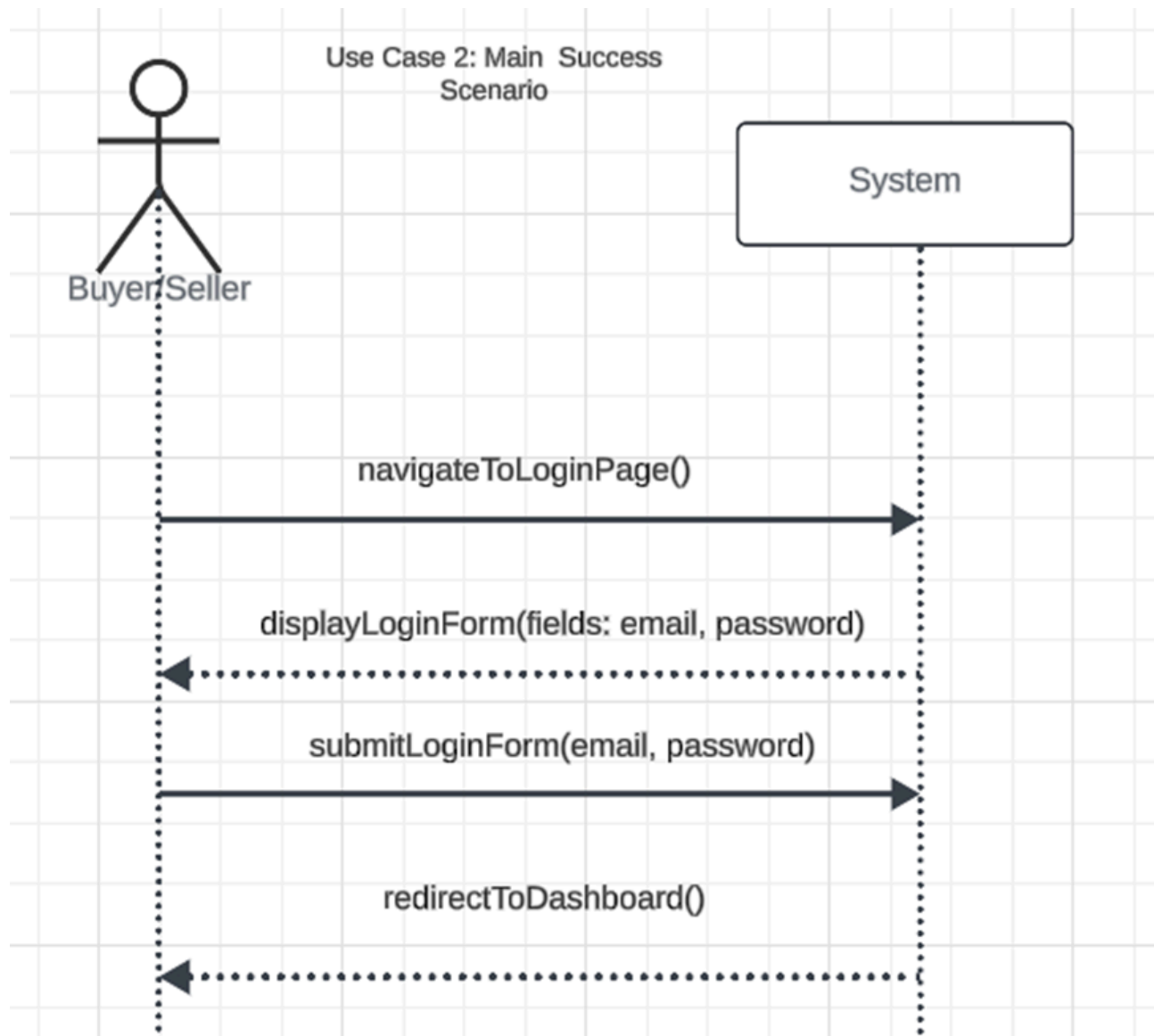
### Use Case 1

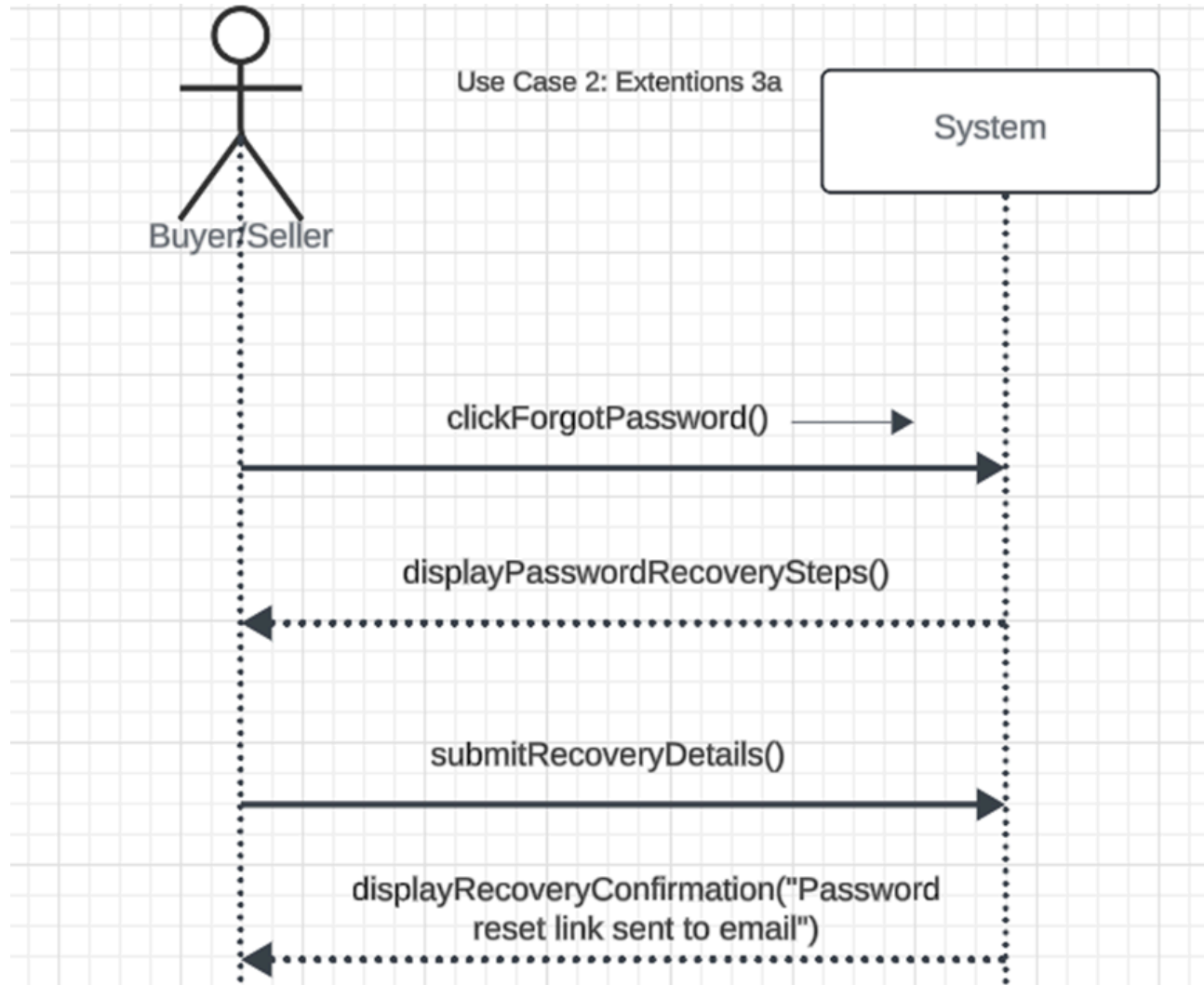


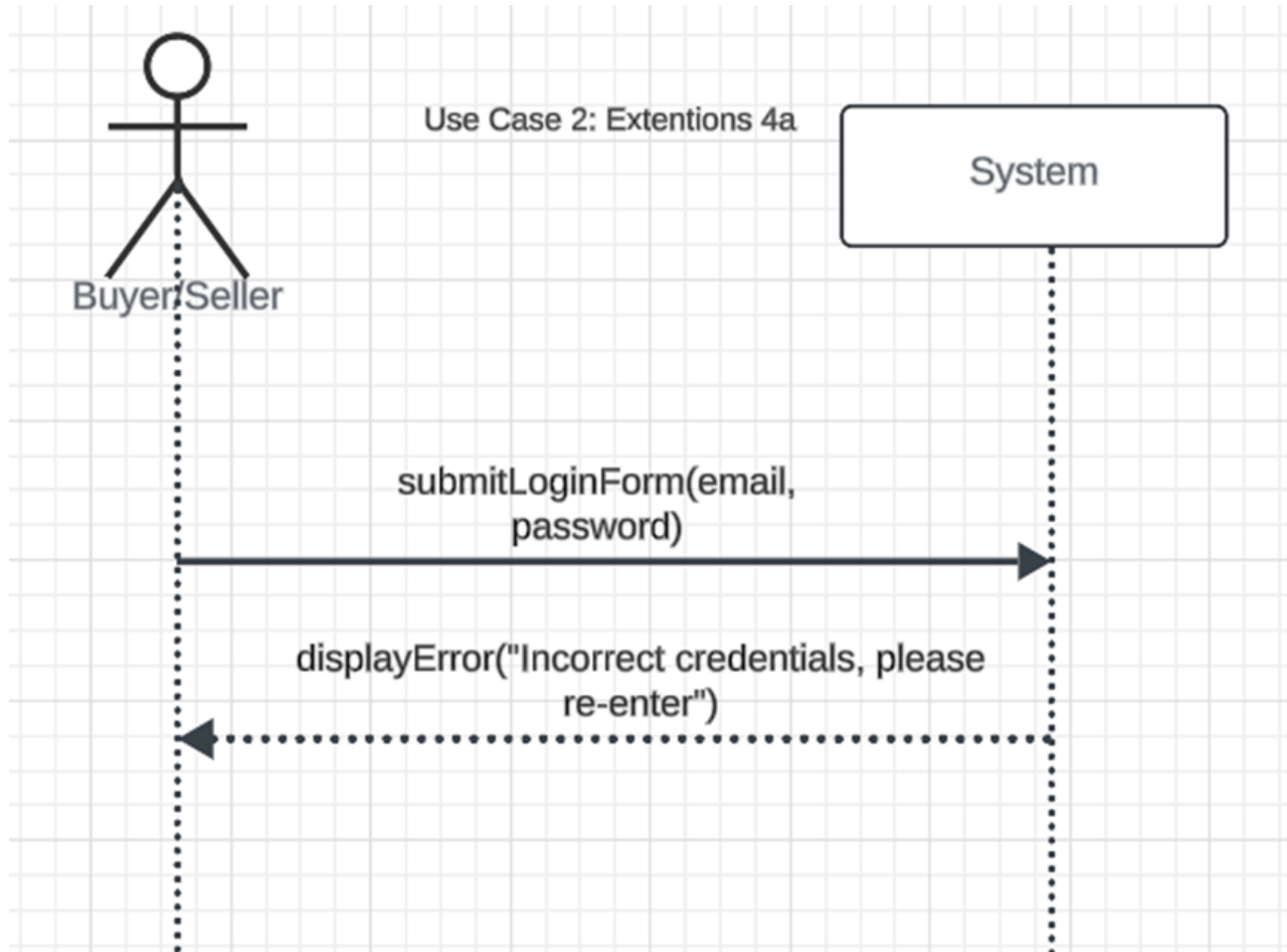




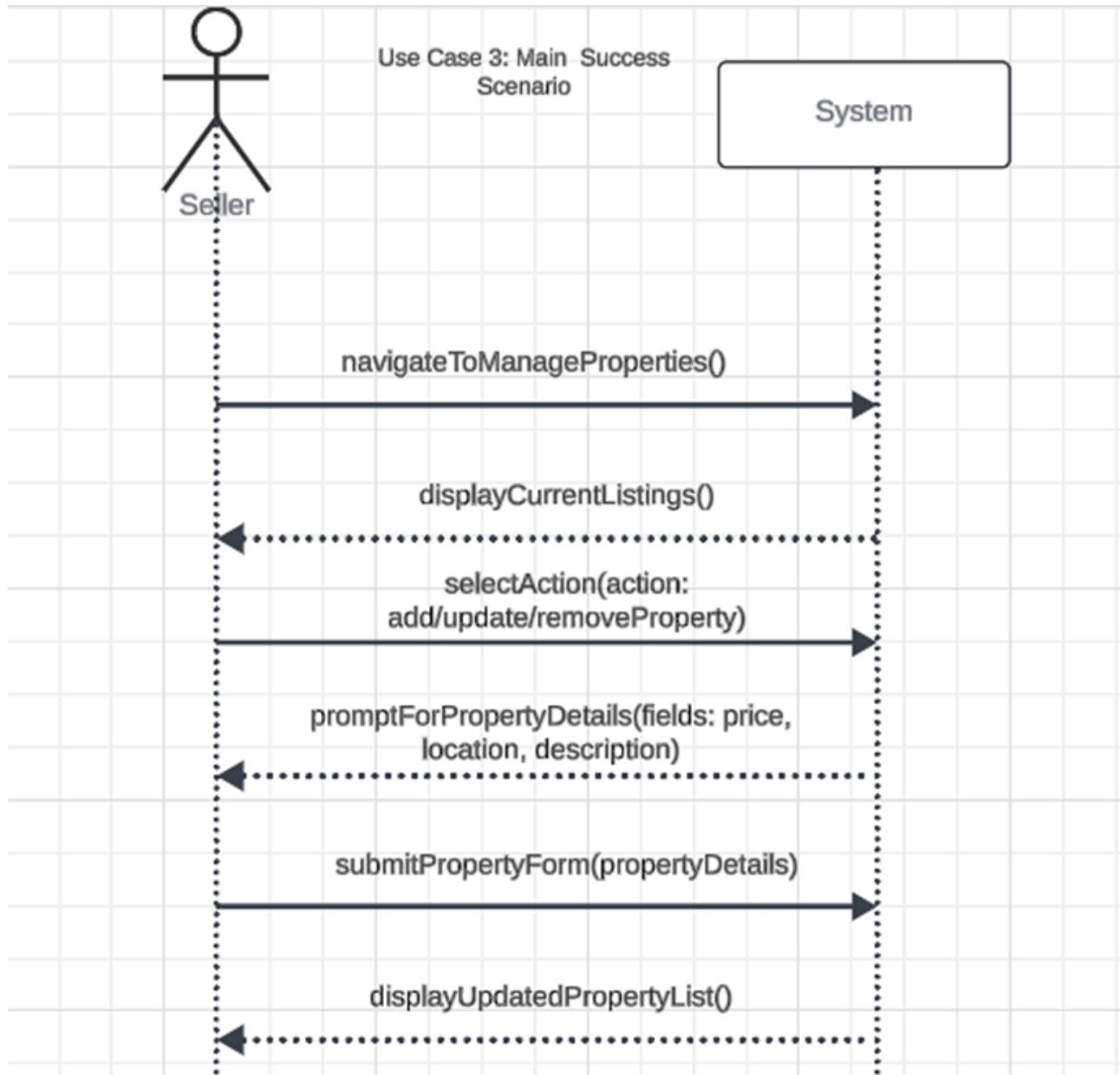
## Use Case 2



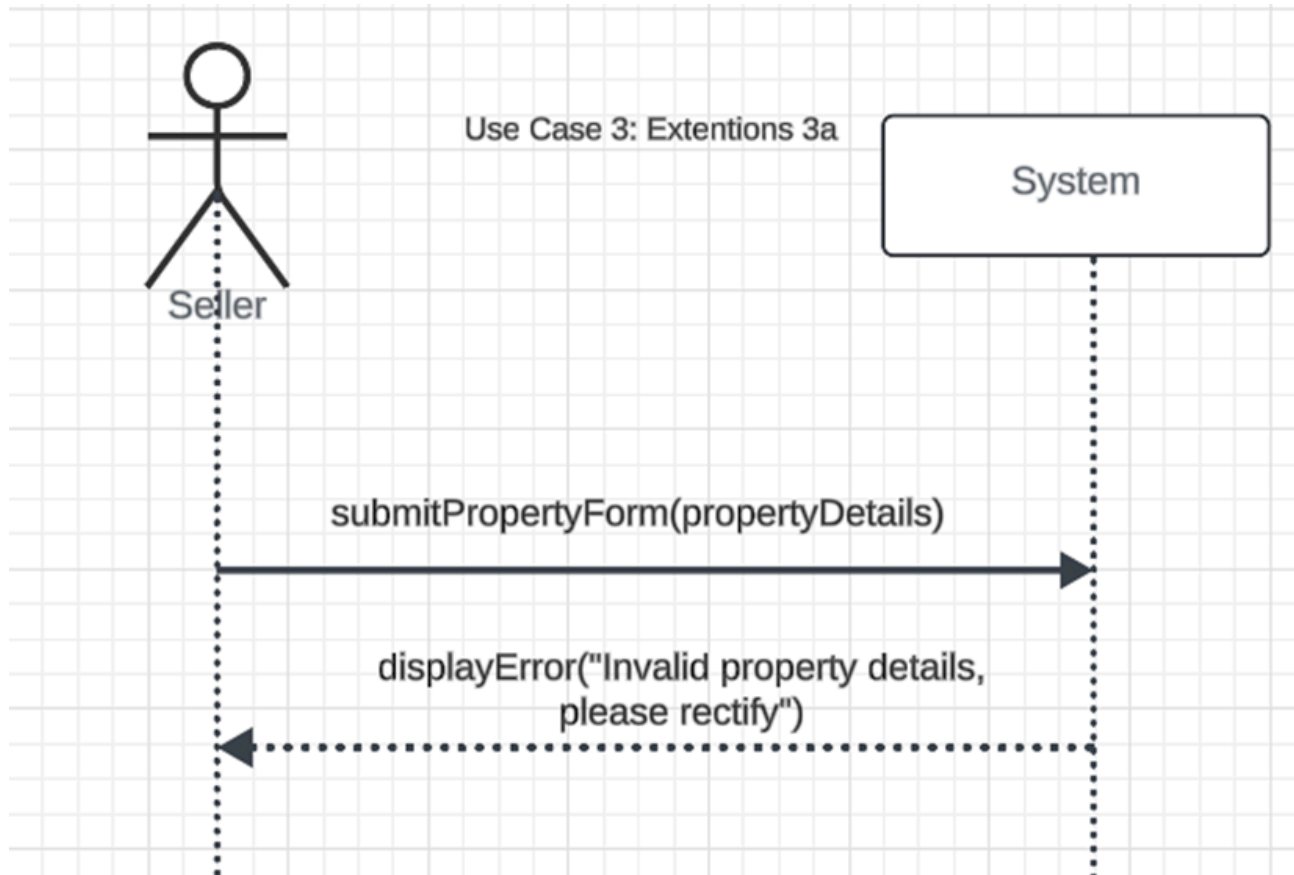


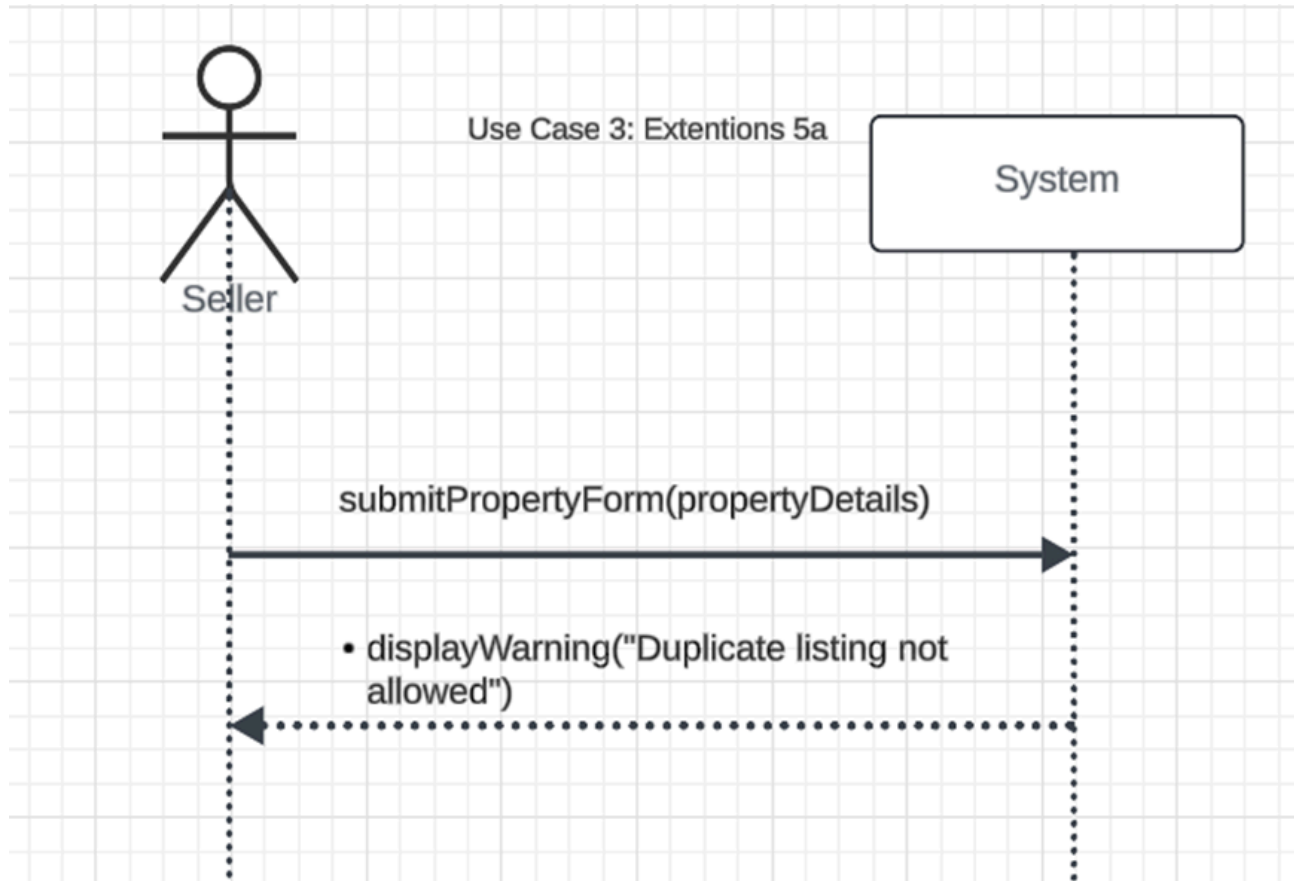


### Use Case 3

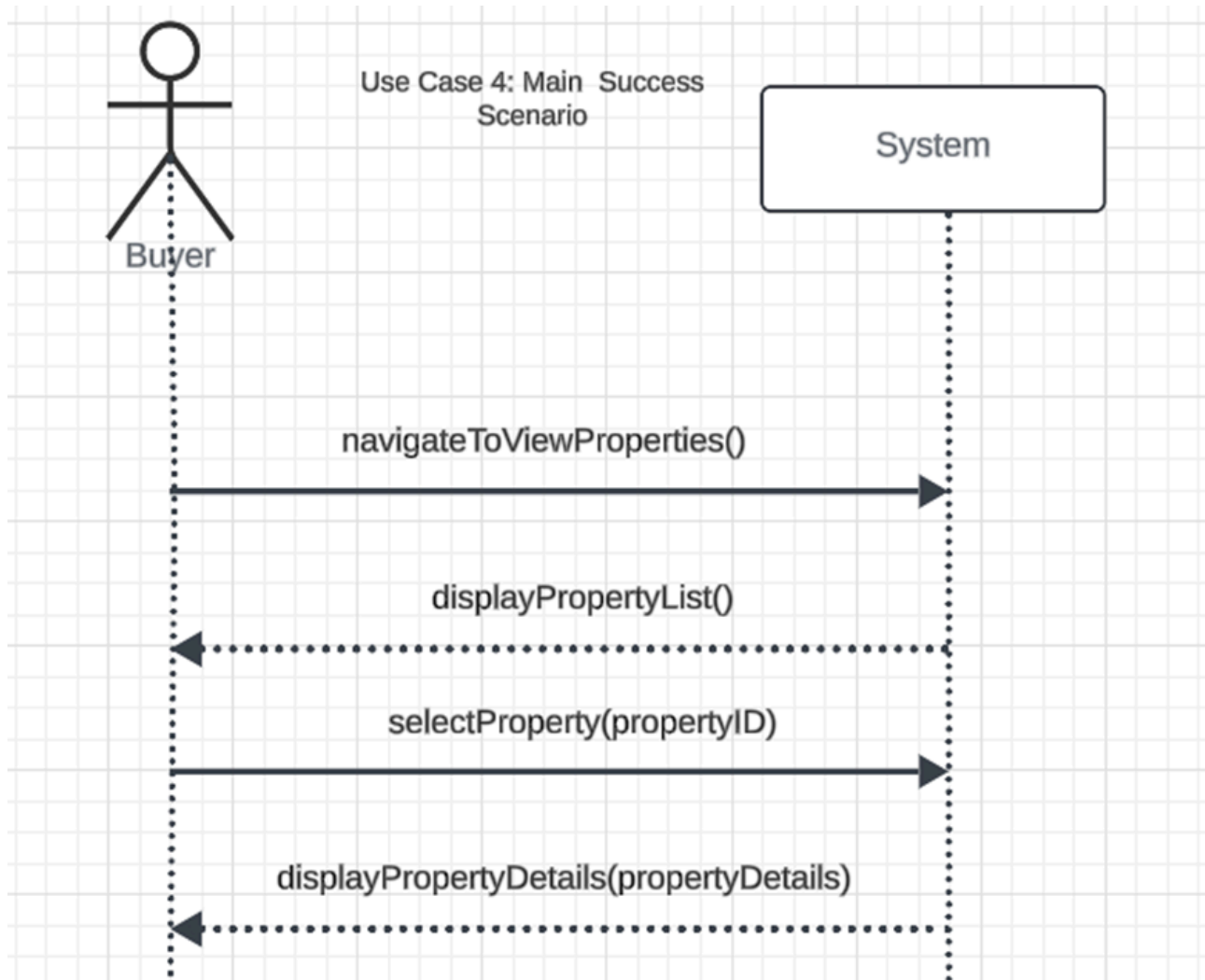


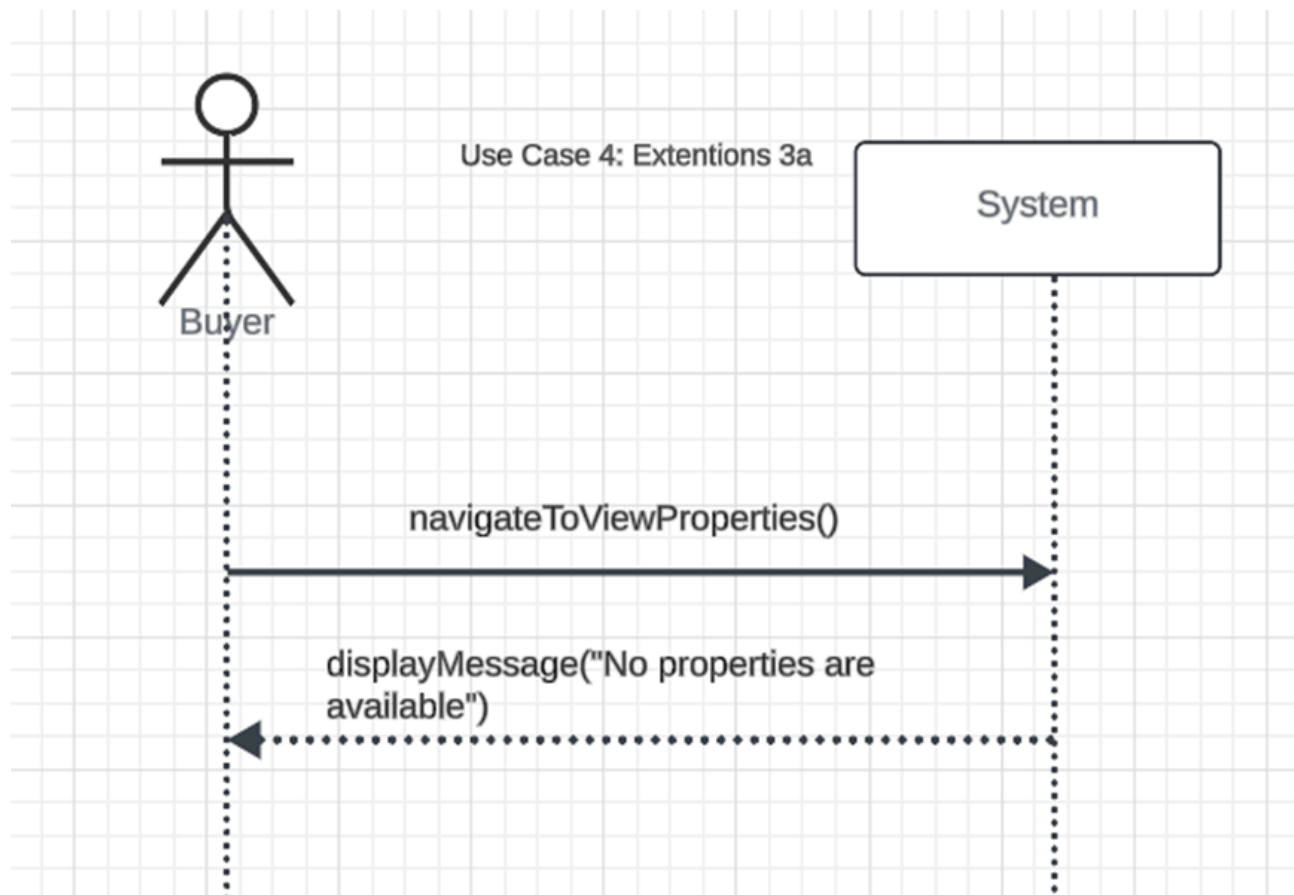






## Use Case 4



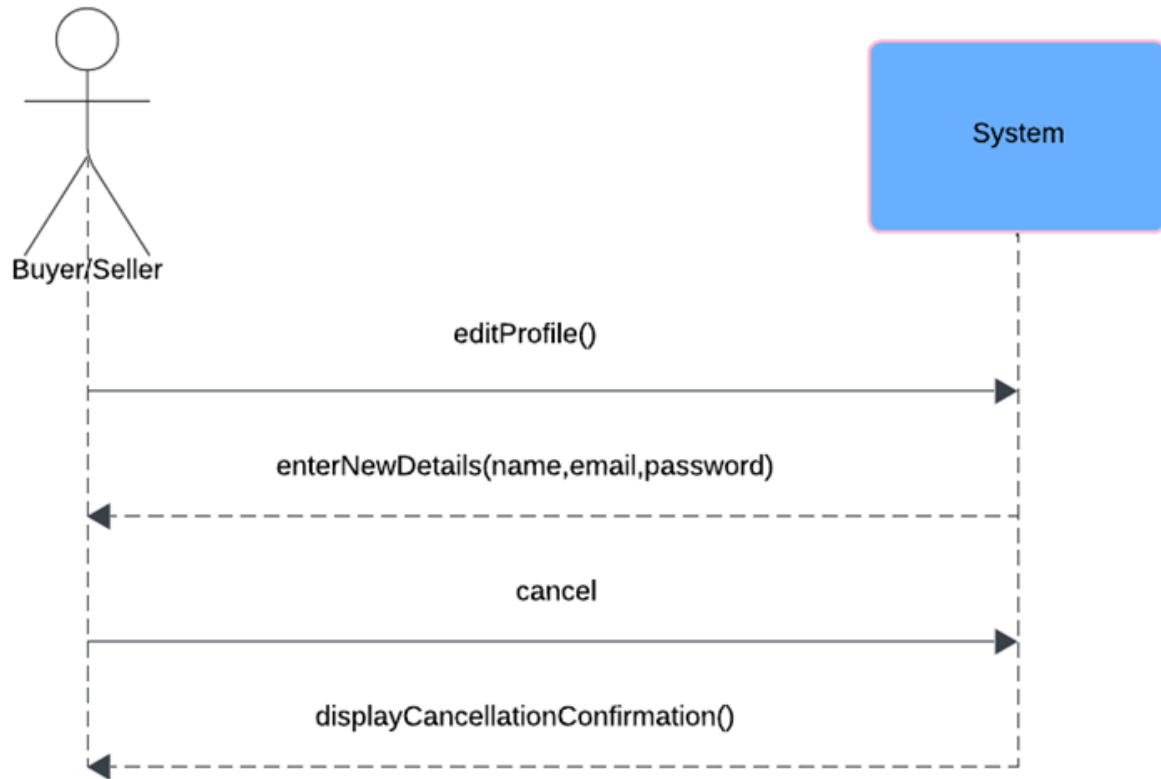


## Use Case 5

Use Case 5: Main Success  
Scenario



## Use Case 5: Extension 4a

**Use Case 6**

Use Case 6: Main Success  
Scenario



## Use Case 6: Extension 4a

**Use Case 7**



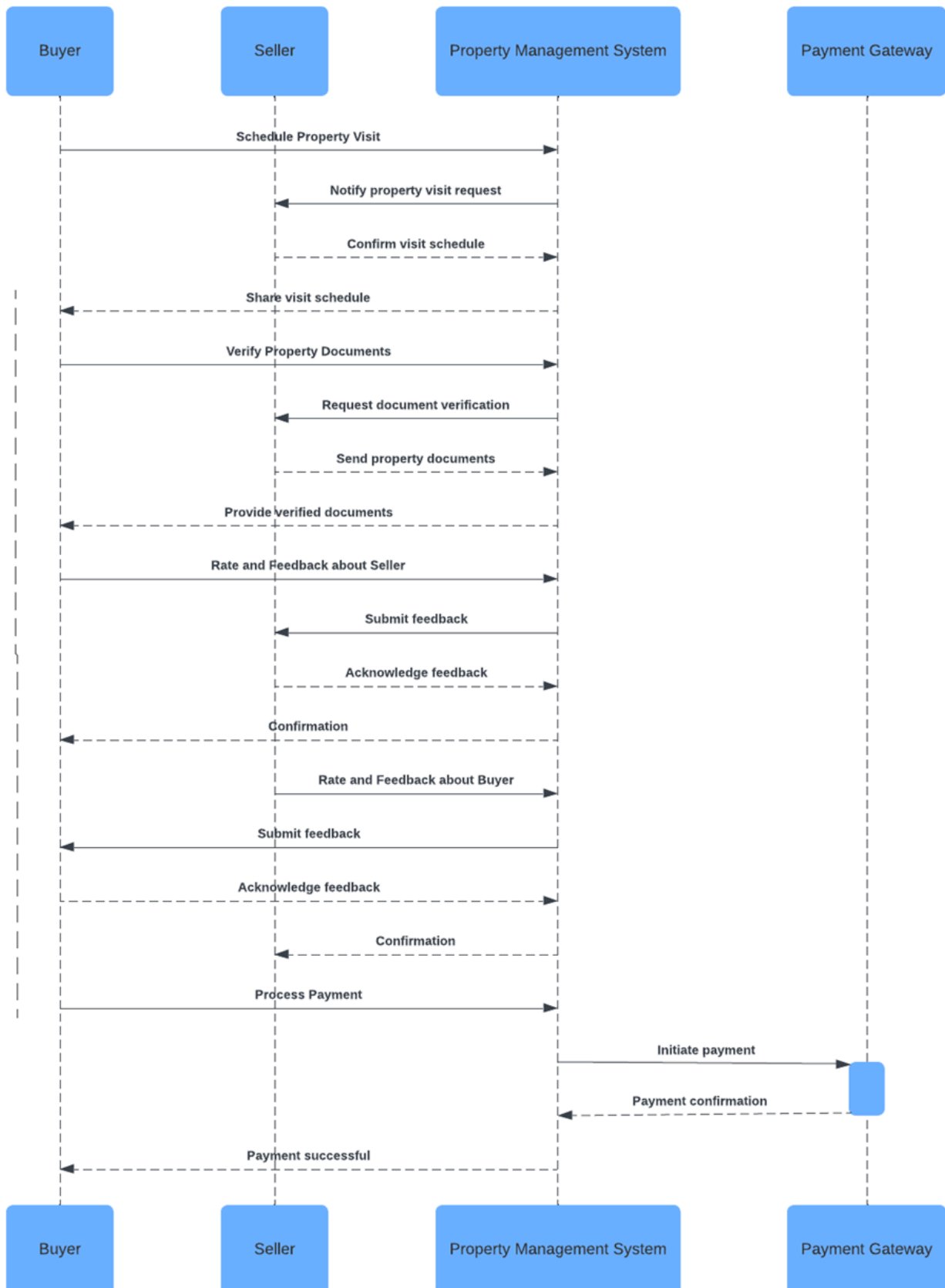
Use Case 7: Main Success  
Scenario



Use Case 7: Extension 4a

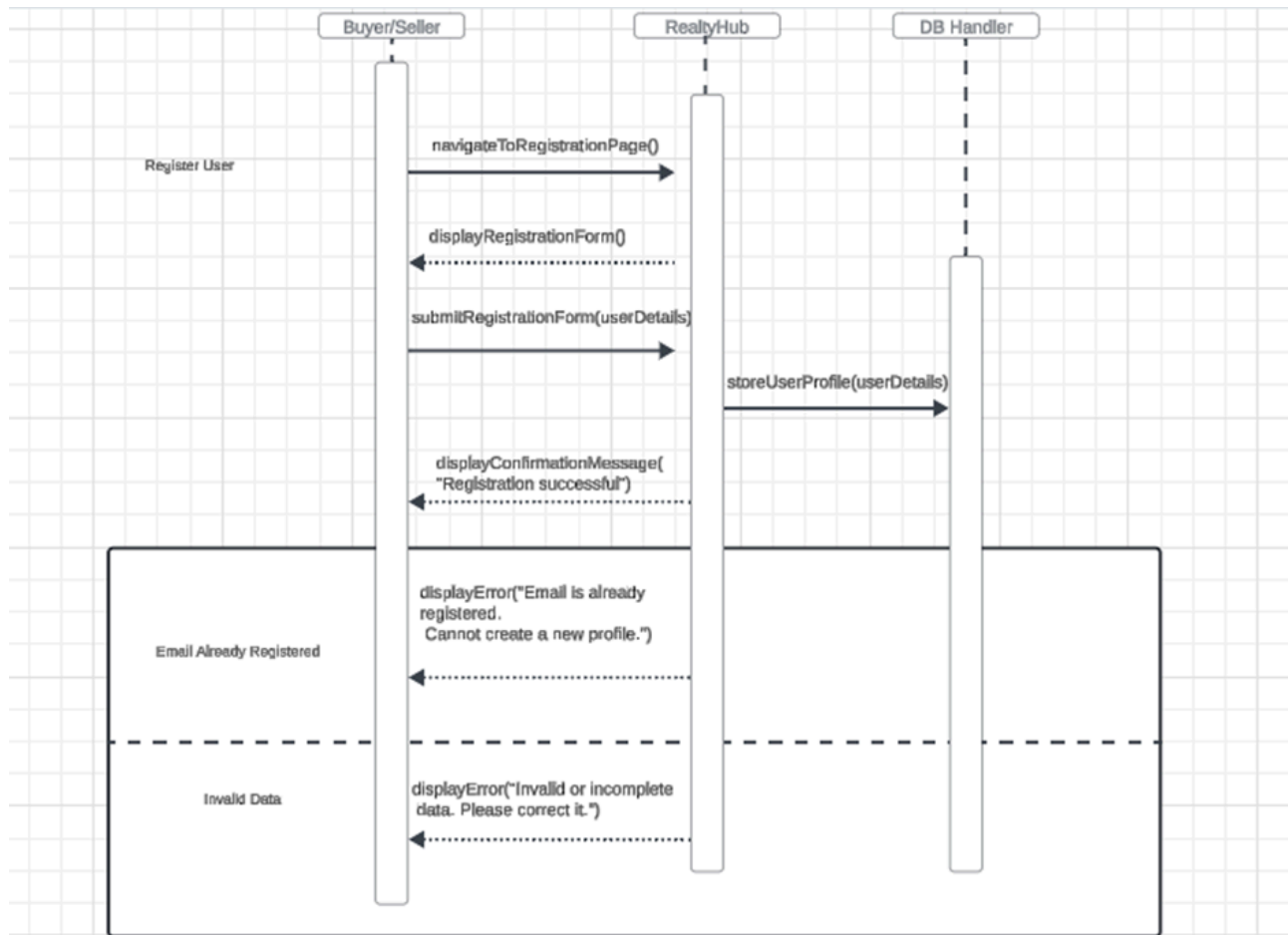


## **Use Case 8/9/10/11**

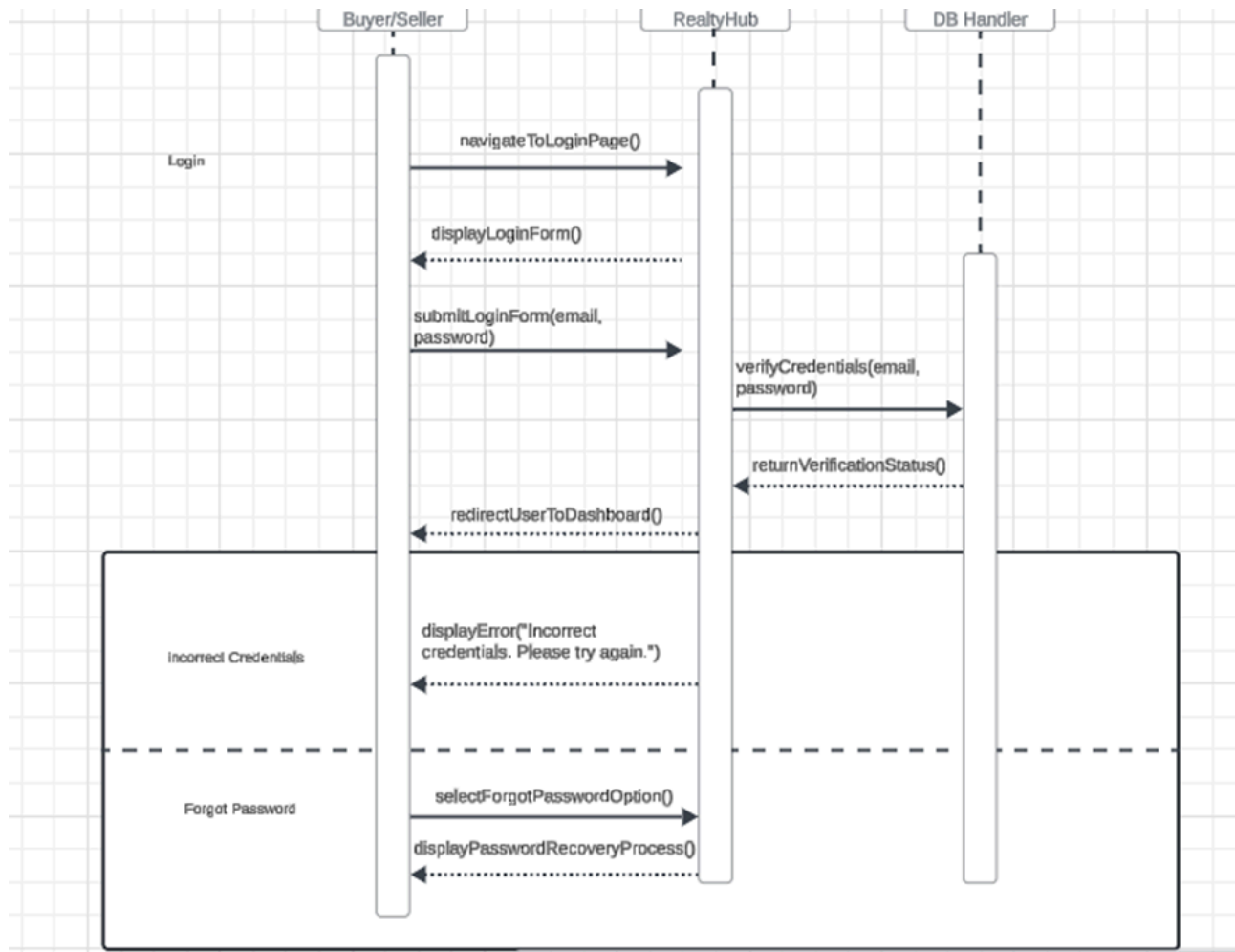


## 6. Sequence Diagram

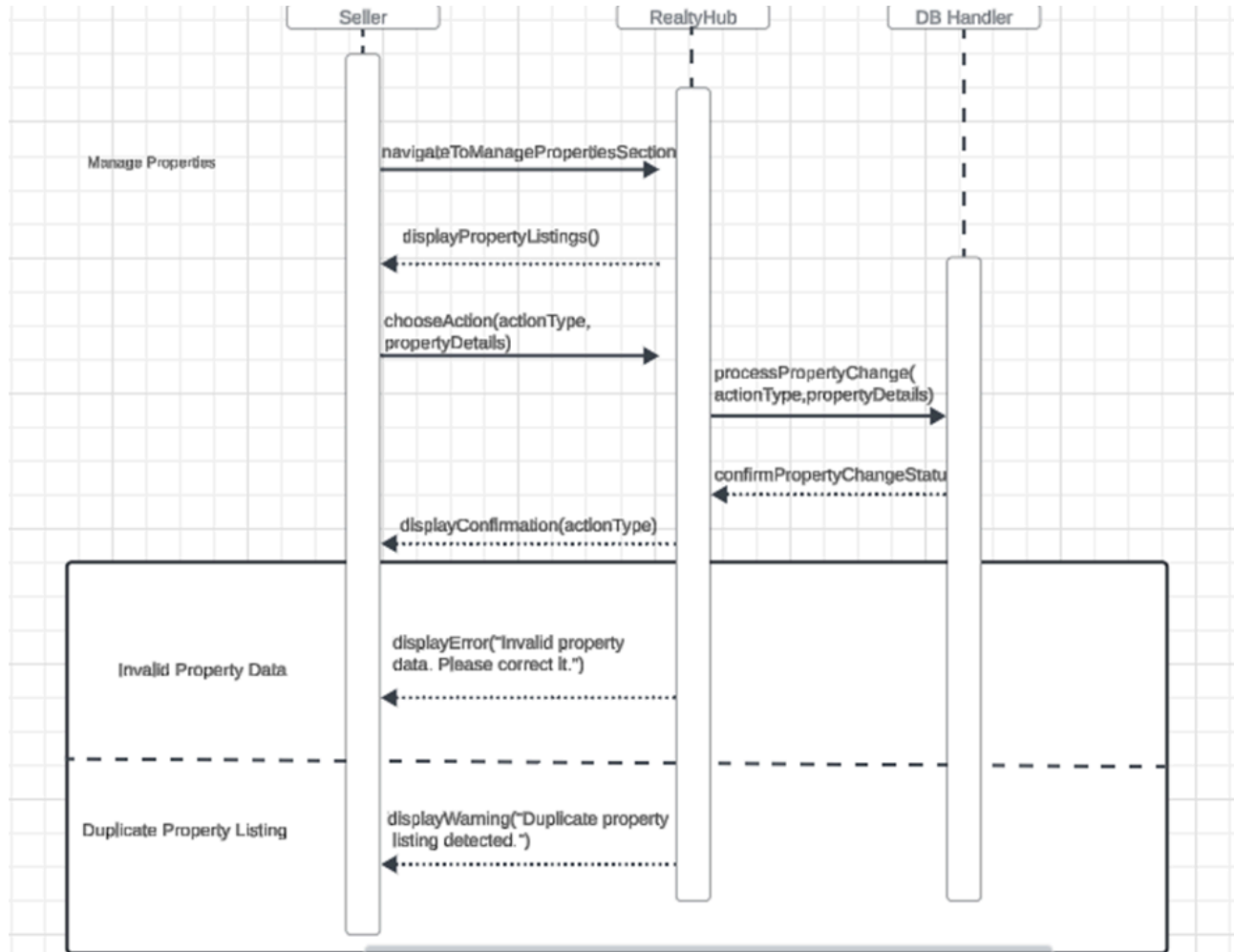
### Use Case 1



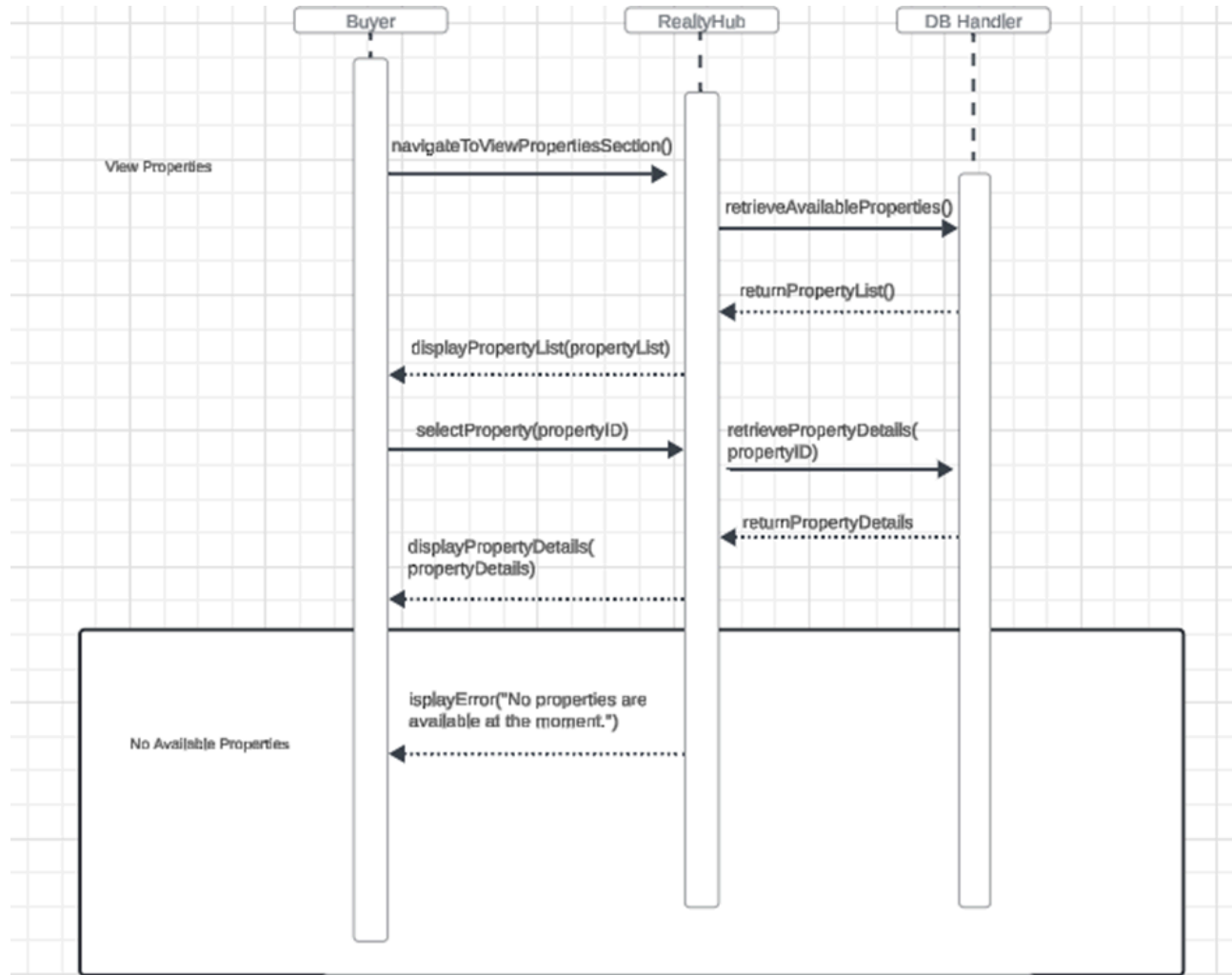
### Use Case 2



### Use Case 3

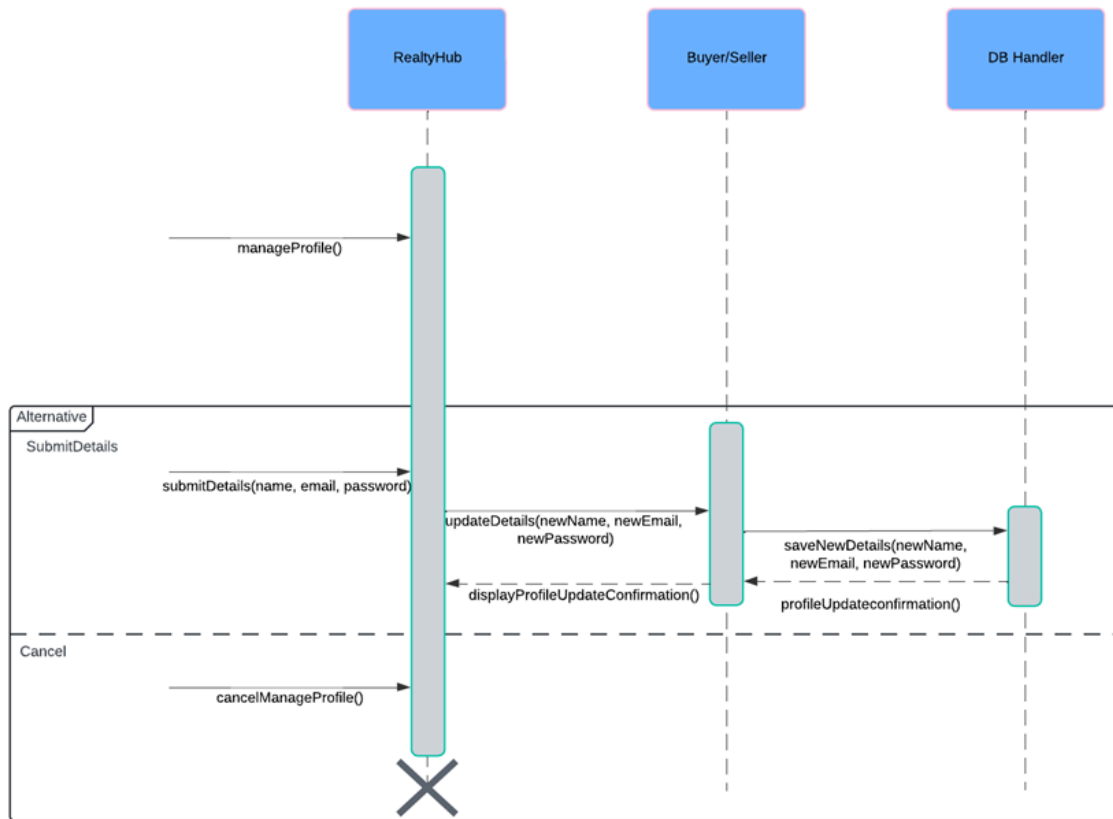


## Use Case 4

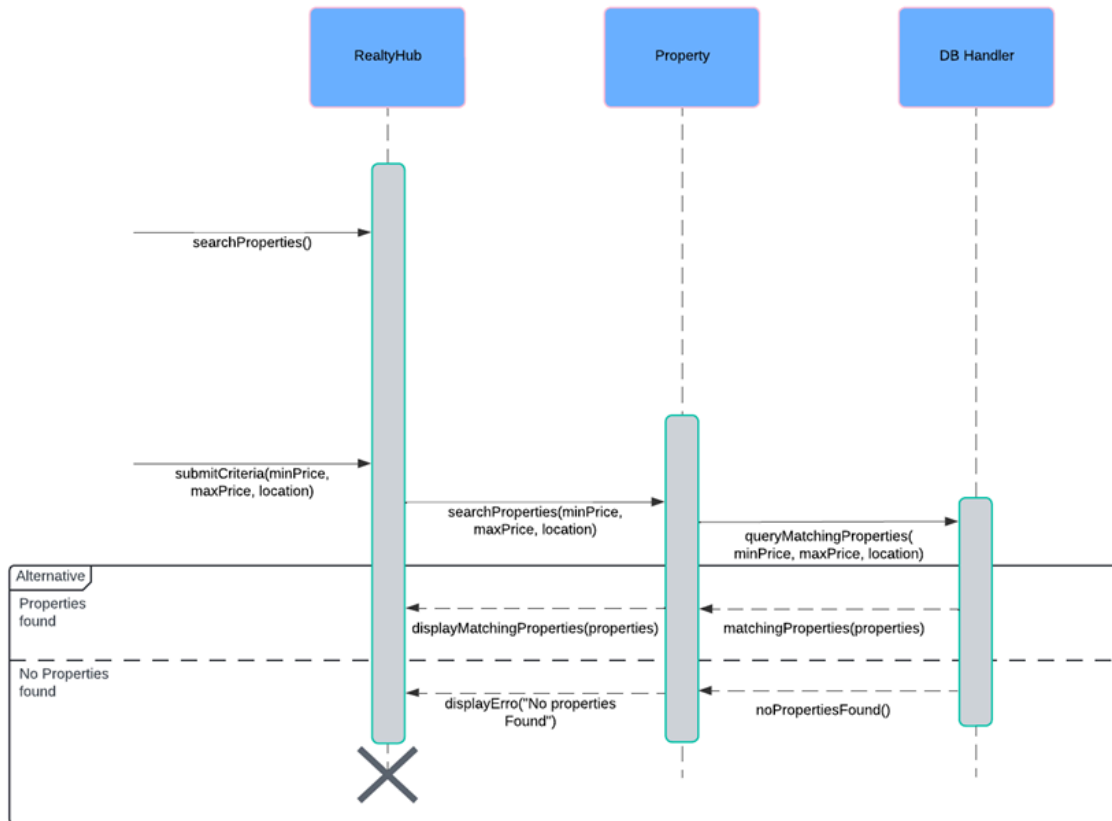


## Use Case 5

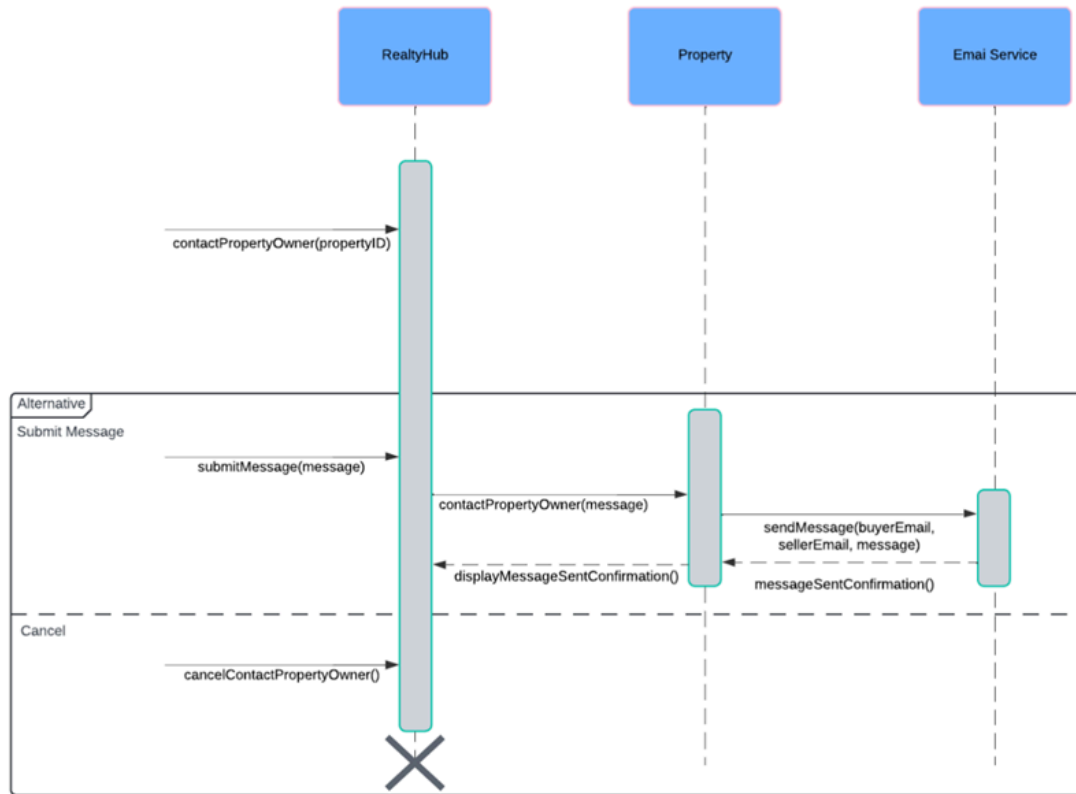




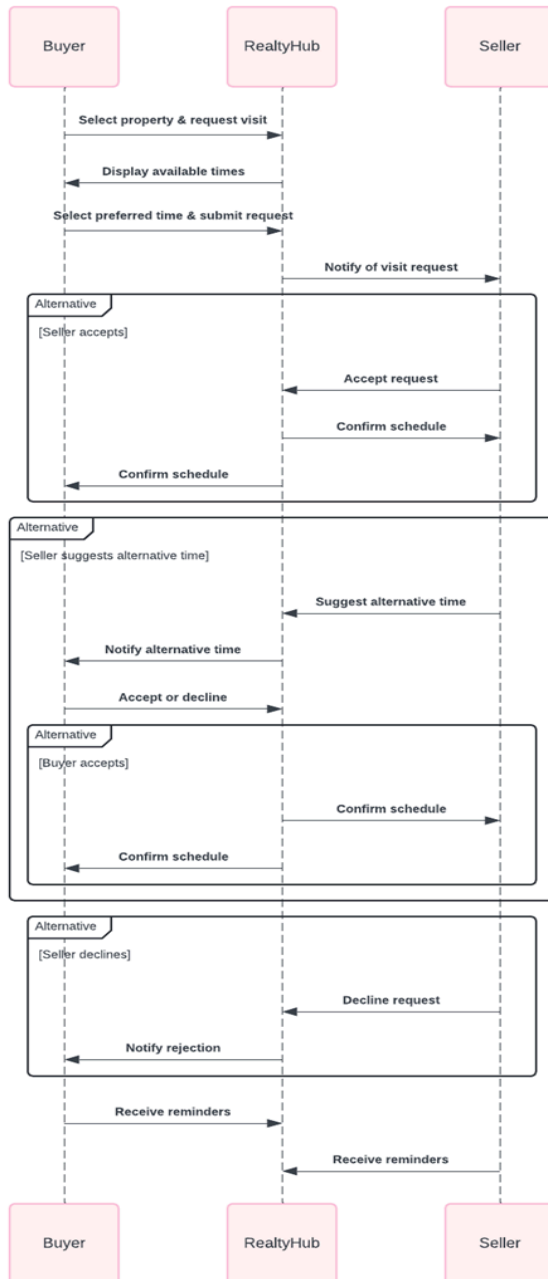
## Use Case 6



## Use Case 7

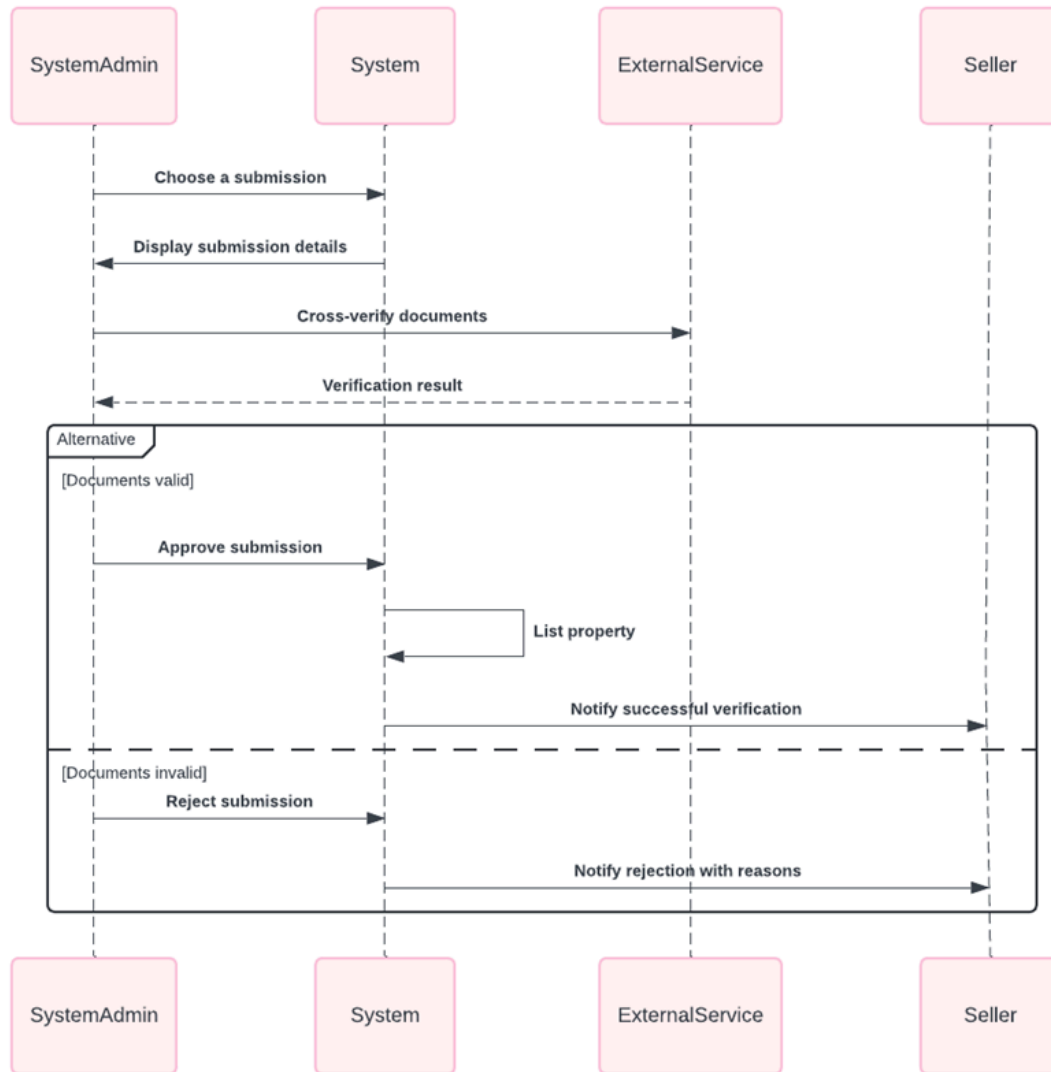


## Use Case 8

Use Case 8: Schedule  
Property Visit

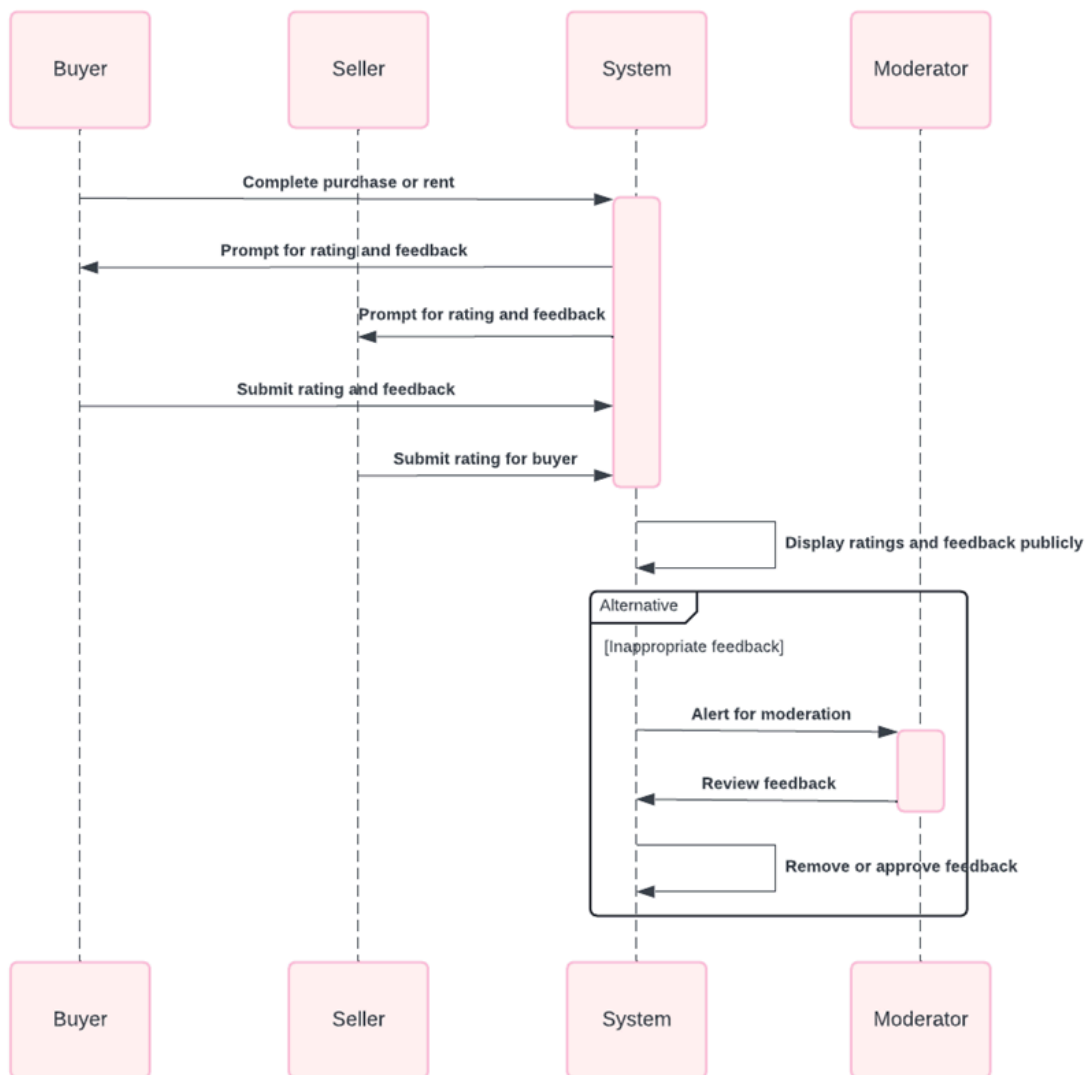
## Use Case 9

Use Case 9: Verify Property



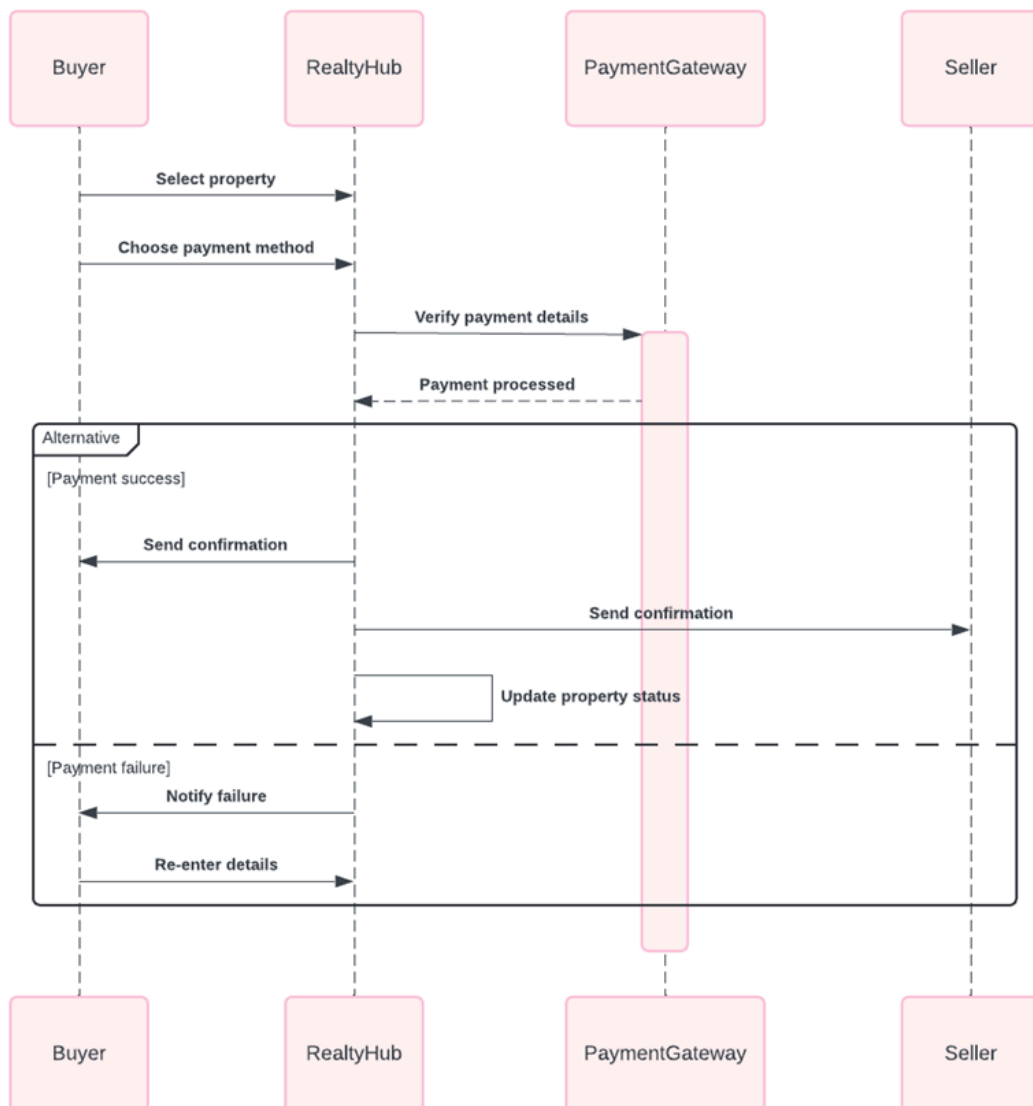
## Use Case 10

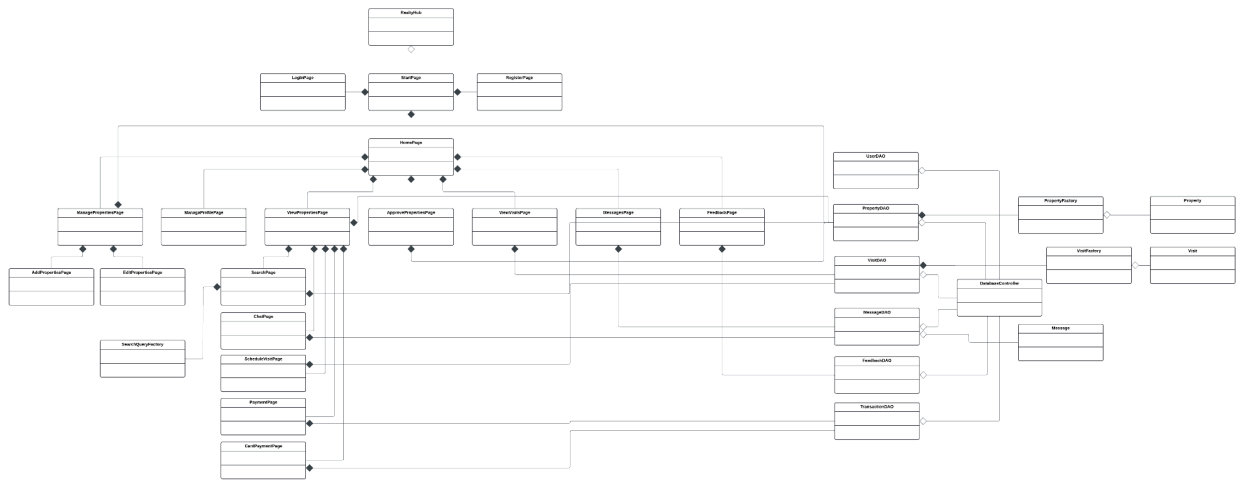
Use Case 10: Rate and Feedback



## Use Case 11

Use Case 11: Process Payment

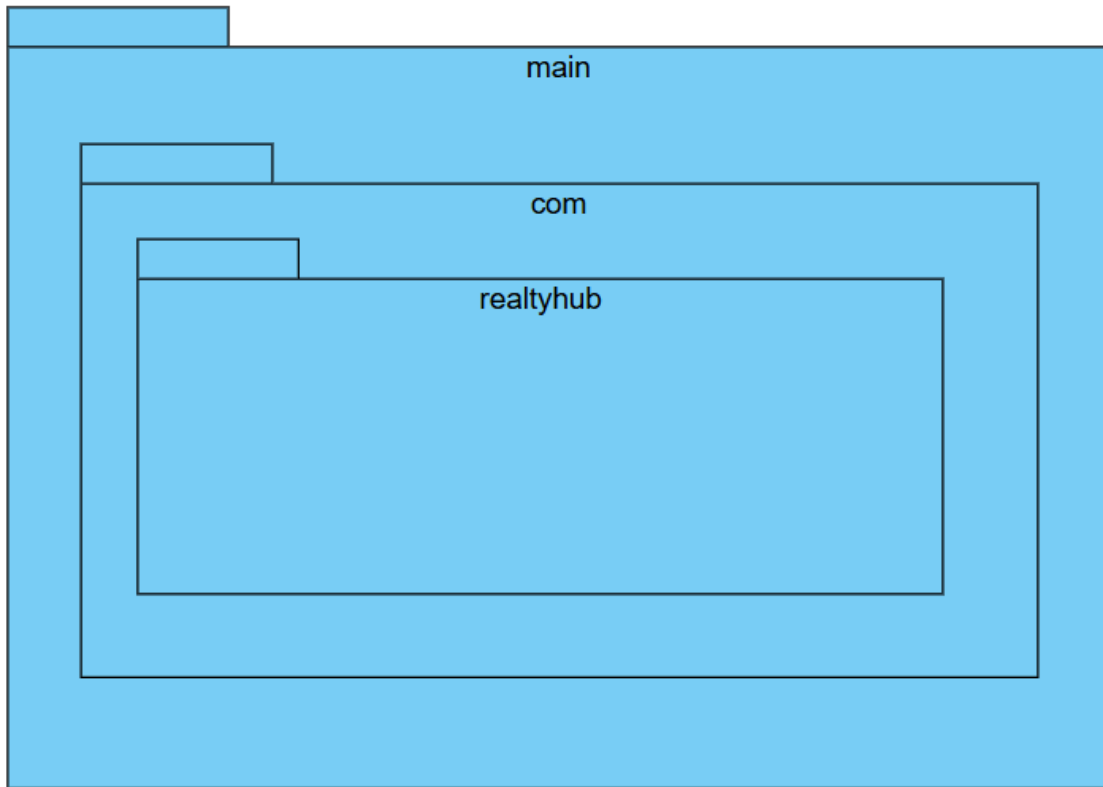






## **8. Component Diagram**

## **9. Package Diagram**



## 10. Deployment Diagram

