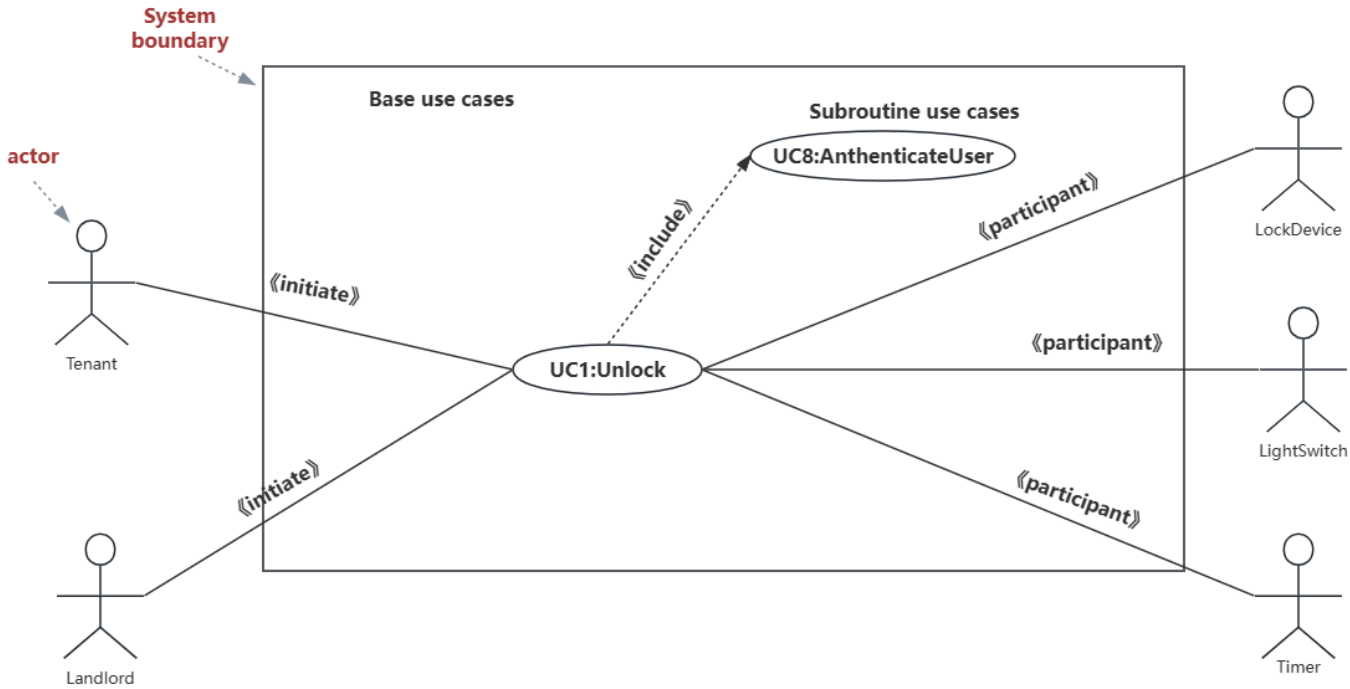
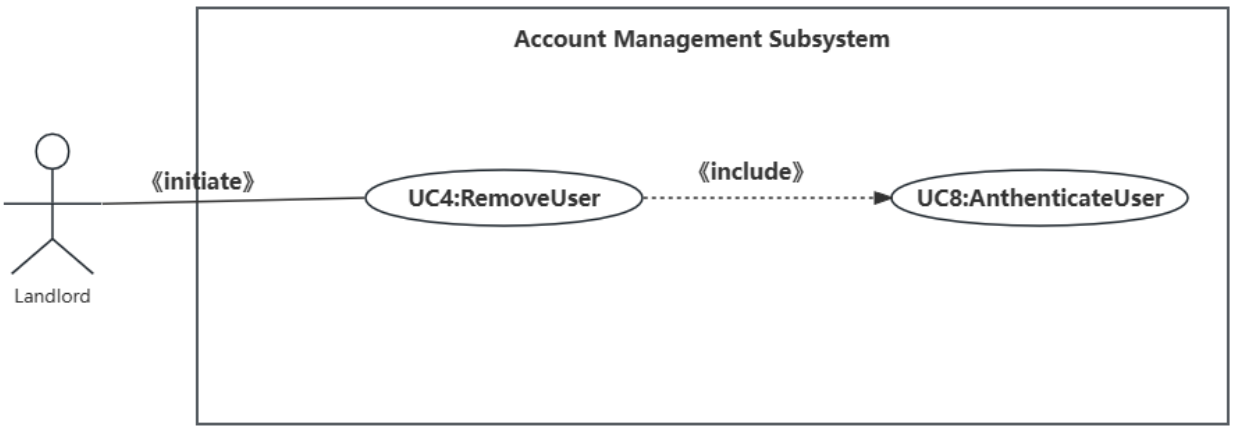
Course Assignment (Mini Project I-1)

一、Draw use case diagram for UC-1 (Unlock) and UC-4 (RetireUser)

1. UC-1



2. UC-4



二、Write the use case schemas of UC-1 and UC-4

1. UC-1

Use Case 1: Unlock

Use Case UC-1:	Unlock
Related Requiremts:	REQ1, REQ3, REQ4, and REQ5 stated in Table 2-1
Initiating Actor:	Any of: Tenant, Landlord
Actor's Goal:	To disarm the lock and enter, and get space lighted up automatically.
Participating Actors:	LockDevice, LightSwitch, Timer
Preconditions:	• The set of valid keys stored in the system database is non-empty. • The system displays the menu of available functions; at the door keypad the menu choices are "Lock" and "Unlock." • When 'Unlock' is clicked, the system's Bluetooth device opens and monitors whether a matching Bluetooth device appears.
Postconditions:	The auto-lock timer has started countdown from autoLockInterval.
Flow of Events for Main Success Scenario:	
→	1. Tenant/Landlord arrives at the door and selects the menu item "Unlock"
	2. include::AuthenticateUser (UC-7)
←	3. System (a) signals to the Tenant/Landlord the lock status, e.g., "disarmed," (b) signals to LockDevice to disarm the lock, and (c) signals to LightSwitch to turn the light on
←	4. System signals to the Timer to start the auto-lock timer countdown
→	5. Tenant/Landlord opens the door, enters the home [and shuts the door and locks]

Subroutine «include» Use Case

Use Case UC-7:	AuthenticateUser (sub-use case)
Related Requirements:	REQ3, REQ4 stated in the table of REQs
Initiating Actor:	Any of: Tenant, Landlord
Actor's Goal:	To be positively identified by the system (at the door interface).
Participating Actors:	AlarmBell, Police
Preconditions:	• The set of valid keys stored in the system database is non-empty. • The counter of authentication attempts equals zero.
Postconditions:	None worth mentioning.
Flow of Events for Main Success Scenario:	
←	1. System prompts the actor for identification, e.g., turn on Bluetooth device
→	2. Tenant/Landlord's mobile phone automatically supplies a valid lock-phone key through Bluetooth
←	3. System (a) verifies that the key is valid, and (b) signals to the actor the key validity
Flow of Events for Extensions (Alternate Scenarios):	
2a. Tenant/Landlord enters an invalid lock-phone key	
←	1. System (a) detects error, (b) marks a failed attempt, and (c) signals to the actor
←	1.a System (a) detects that the count of failed attempts exceeds the maximum allowed number, (b) signals to sound AlarmBell, and (c) notifies the Police actor of a possible break-in
→	2. Tenant/Landlord supplies a valid lock-phone key
	3. Same as in Step 3 above

2. UC-4

Use Case UC-4:	RetireUser
Related Requiremt's:	REQ1, REQ2, REQ3, and REQ7 stated in the table of REQs
Initiating Actor:	Any of: Landlord
Actor's Goal:	To delete the tenant's information, and ensure that the correct tenant or landlord can open the door.
Participating Actors:	Database
Preconditions:	• Landlord has the right to access the database and modify the data.
Postconditions:	Insert, delete, update and select from databases
Flow of Events for Main Success Scenario:	
→	1. Actor click the "log in" to enter the database backend.
←	2. After verifying the identity of the Landlord in the database, a prompt appears, eg: delete
→	3. The landlord clicks on the "delete" button and enters the tenant's phone number.
←	4. System searches the database for the tenant's phone number and match it with the landlord's room number. If the match is successful, it deletes the phone number and related information.
←	5. The system returns the message 'successfully deleted'.

三、Write the acceptance tests for UC-1 and UC-4

1. UC-1

Test-case Identifier:	TC-1
Use Case Tested:	UC-1
Pass/fail Criteria:	The test passes if the user inputs the correct phone that is contained in the database, with less than a maximum allowed number of unsuccessful attempts
Input Data:	Numeric keycode, door identifier(lock-phone)
Test Procedure:	**Expected Result:**
Step 1. Type in an incorrect keycode and a valid door identifier	System beeps to indicate failure; records unsuccessful attempt in the database; prompts the user to try again
Step 2. Type in the correct keycode and door identifier	System flashes a green light to indicate success; records successful access in the database; disarms the lock device

2. UC-4

Test-case Identifier:	TC-4
Use Case Tested:	UC-4
Pass/fail Criteria:	The test passes if tenant's information cannot be selected from the database, and the tenant is unable to unlock by using his/her lock-phone.
Input Data:	Bluetooth signal, user identifier(lock-phone)

Test Procedure:	**Expected Result:**
Step 1. Tenants who have already retired turn on their Bluetooth devices and unlock with their phones	System beeps to indicate failure; records unsuccessful attempt in the database; prompts the user to try again
Step 2. Tenant who has not retired turn on their Bluetooth devices and unlock with their phones.	System flashes a green light to indicate success; records successful access in the database; disarms the lock device