1.

Use case diagram showing Tenant and Landlord actors connected via «initiate» to UC1 Unlock and UC4: RetireUser use cases, which connect via «participate» to LockDevice, Household Device (Lightswitch, Timer, AlarmBell), and Database.
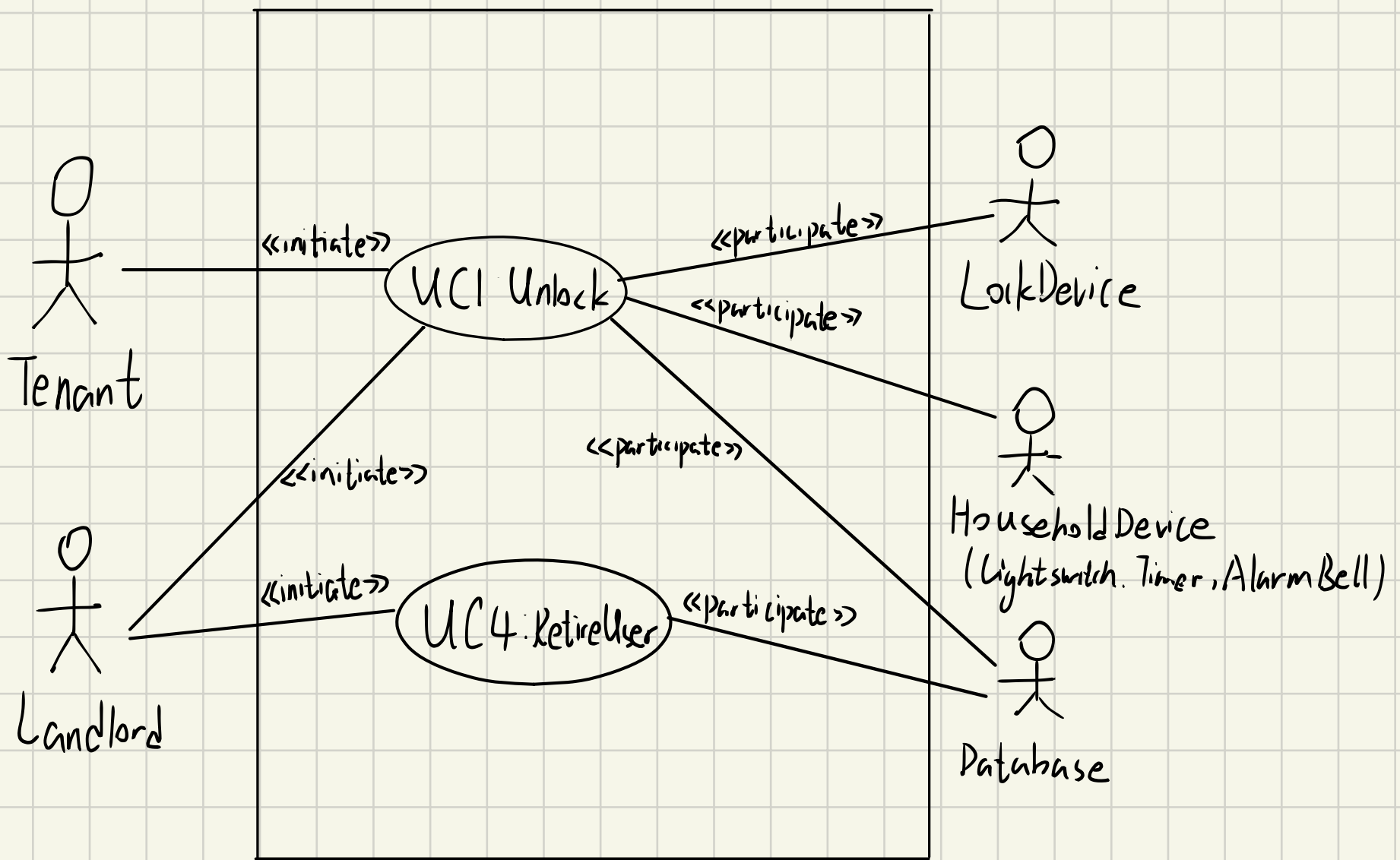
2.

Use Case UC-1 : Unlock	
Related Requirements:	REQ1 , REQ2, REQ3, REQ4, REQ5 , REQ8, REQ9
Initiating Actor	Any of : Tenant, Landlord
Actor's Goal	To disarm the lock and enter, and get space lighted up automatically
Participating Actors :	Lock Device, Household Device (LightSwitch, Timer, AlarmBell), Database
Preconditions	• The set of valid user mobile phone account and Bluetooth device identifier 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"

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. System prompts the actor for Bluetooth device identifier

→ 3. Tenant/Landlord supplies a valid Bluetooth device (their mobile phones) identifier
← 4. System (a) vertifies that the identifier is valid, and (b) signals to the Tenant/
       Landlord the lock status, e.g "disarmed" (c) signals to Lock Device to disarmed
       the lock, and (d) signals to Household Device (Light Switch) to turn the light on

→ 5. Tenant / Landlord opens the door, enters the home [and shuts the door and locks]

Flow of Events for Extensions (Alternate Scenarios):
2a. Tenant/Landlord uses someone else's mobile phone to unlock via Bluetooth

← 1. System (a) detects error, (b) marks a failed attempt, and (c) signals to the actor
         System (a) detects that the count of failed attempts exceeds the maximum
←   1.a allowed number, (b) signals to sound Alarm Bell

       2. Tenant/Landlord uses their own mobile phones to unlock
       3 Same as in Step 4 above

Use Case UC-4 Retire User

Related
Requirem'ts: RE27

Initiating: Landlord
Actor

Actor's Goal: To remove the user account from the Database.

Participating: Database
Actors

Preconditions: • The sets of user accounts and landlords accounts stored in the system database is non-empty

• The system displays the menu of available function "Retire User"; On the mobile phone the option is "RetireUser"

Postconditions: specific user accounts in the Database have been removed.

Flow of Events for Main Success Scenario:

→ 1. Landlord uses his own mobile phone's Bluetooth connection to access the system (e.g. tap the on-screen option "RetireUser".

← 2. System (a) vertifies that the Bluetooth identifier of the requesting mobile phone is vaild, and (b) displays the list of usernames to the Landlord.

→ 3. Landlord selects the usernames to be removed and tap "Confirm" to submit them to the system

← 4. System(a)removes these user accounts from the Database and (b) signals to the Landlord the Execution result, e.g. "Successfully removed".

Flow of Events for Extensions (Alternate Scenarios):

→ 1. Landlord uses someone else's mobile phone's Bluetooth connection to access the system (e.g. tap the On-Screen option "RetireUser")

← 2. System detects error and signals to the actor

→ 3 Landlord uses his own mobile phone
← 4 Same as in step 2 above

3.

Test-case Identifier: TC-1	
Use Case Tested :	UC-1
Pass/fail Criteria :	The test passes if the user's Bluetooth device (mobile phone) identifier is contained in the database, with less than a maximum allowed number of unsuccessfully attempts
Input Data :	Unlock requests from unauthorized Bluetooth device (mobile phone)

Test Procedure :	Expected Result:
step1 use an unauthorized mobile phone to unlock	System beeps to indicate failure; records unsuccessful attempt in the database; prompts the user to try again
Step2: use tenant's or landlord's mobile phone to unlock	System flashes a green light to indicate success; records successful access in the database; disarms the lock device.

Test-case Identifier : TC-4	
Use Case Tested :	UC-4
Pass/fail Criteria	The test passes if the user uses Landlord's mobile phone.
Input Data	Remove requests from someone else's mobile phone (unauthorized Bluetooth device)

Test Procedure:	Expected Result:
step1: use an unauthorized mobile phone to request	System refuses the access request; informs the user of inadequate permissions.

Step1: use Landlord's mobile phone to request	System displays a username list to user
Step2.1 : Use Landlord's Mobile phone to retire some Users	System removes the selected user accounts from the database; informs the user of execution result "Successfully removed".