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| Initiator | Initiator’s Goal | Participants | Use Case Name |
| Tenant | Unlock and enter home | Lock,Household,Devices, Database,Bluetooth | Unlock (UC-1) |
| Landlord | Retire an existing user account and disable access | Database | RetireUser (UC-4) |

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| Use Case UC-1: Unlock  Related Requirements: 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,Bluetooth  Preconditions: The set of valid mobile phone 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.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] |
| Use Case UC-4: RetireUser  Related Requirements: REQ6 in Table 2-1  Initiating Actor: Landlord  Actor’s Goal: Retire an existing user account and disable access.  Participating Actors: Database  Preconditions: The set of valid mobile phone 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.” The landlord can remove the user account  Postconditions: an existing user account was be retired and access was be disabled. The tenant can not use his mobile phone to enter the room.  Flow of Events for Main Success Scenario:  → 1. Landlord retire an existing user account and disable access.  → 2. Tenants using his own mobile phone to unlock the door.  ← 3. System beeps to indicate failure and tenants can not enter the room. |
| acceptance tests for UC-1  Test-case Identifier: TC-1  Use Case Tested: UC-1，main success scenario  Pass/fail Criteria: The test passes if the user unlock the doors by using his own mobile phone，the system will block when it detects multiple lock-phone pairing failures.  Input Data: mobile phone，door identifier  Test Procedure: Step 1. Using incorrect mobile phone and a valid door identifier. Step 2. Using correct mobile phone and door identifier.  Expected Result: System beeps to indicate failure; records unsuccessful attempt in the database; prompts the user to try again System flashes a green light to indicate success; records successful access in the database; disarms the lock device. |
| acceptance tests for UC-7  Test-case Identifier: TC-7  Use Case Tested: UC-1，main success scenario  Pass/fail Criteria: The tenant can no longer enter the room after the tenant has deleted the mobile phone account in the database.  Input Data: mobile phone，door identifier  Test Procedure: The tenant using his own mobile phone to unlock the doors. The tenant using his own mobile phone to unlock the doors.  Expected Result: System using the Bluetooth network to detect the proximity of user’s phone and beeps to indicate failure，the tenant can not enter the room. System flashes a green light to indicate success; records successful access in the database; disarms the lock device. |