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

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| **Use case UC-1：**unlock |
| **Related Requirem’ts：**REQ1,REQ3,REQ4,REQ5 |
| **Initiating Actor:** Tenant,Landlord |
| **Actor’s Goal:**  To disarm the lock and enter, and get space lighted up automatically. |
| **Participating Actors:**  LockDevice, LightSwitch, Timer, bluetooth in the moblie phone |
| **Preconditions:**   1. The set of mobile phones stored in the system database in non-empty. 2. The system displays the menu of available functions; at the door keypad the menu choice is “Lock” and at the phone menu choice is “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 Turn on Bluetooth and select 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] |

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| **Use case UC-4：**RetireUser |
| **Related Requirem’ts：**REQ7,REQ8,REQ2 |
| **Initiating Actor:** Landlord |
| **Actor’s Goal:**Retire an existing user account and disable access |
| **Participating Actors:**Landlord,database,mobile phone |
| **Preconditions:**   1. Existing tenant users exist in the database 2. The landlord's phone can see the information of all tenants 3. The landlord has the right to prohibit users from visiting |
| **Postconditions:**Tenant information removed from database |
| **Flow of Events for Main Success Scenario:**  **** 1.Landlord selects the menu item “ManageUsers” in his mobile phone  2.Landlord identification: Include Login (UC-8)   3. System (a) displays the options of activities available to the Landlord (including “Add User” and “Remove User”), and (b) prompts the Landlord to make selection   4.Landlord selects the activity, such as “Remove User”   5.System (a) delete a tenant's entry in the database, and (b) signals completion |

**3.**

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| **Test-case Identifier:**TC-1 | |
| **Use Case Tested:**UC-1, main success scenario, and UC-7 | |
| **Pass/fail Criteria:**  If the user can connect to Bluetooth and the phone number is included in the database, the test passes and the number of unsuccessful attempts is less than the maximum number allowed | |
| **Input Data:**Bluetooth in the mobile phone,identifier | |
| **Test Procedure:** | **Expected Result:** |
| Step 1:Connect an incorrect Bluetooth to the phone and try to open the door  Step 2:Connect a correct Bluetooth to your phone and try to open the door | 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 |

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| **Test-case Identifier:**TC-4 | |
| **Use Case Tested:**UC-4 | |
| **Pass/fail Criteria:**  用户成功删除租客信息后，租客无法通过蓝牙解锁，测试成功 | |
| **Input Data:**Bluetooth in the mobile phone,identifier | |
| **Test Procedure:** | **Expected Result:** |
| Step 1:用户没有删除租客信息，租客尝试用手机上的蓝牙开锁。  Step 2:用户删除了租客信息，租客尝试用手机上的蓝牙开锁。 | System flashes a green light to indicate success  System beeps to indicate failure;  records successful attempt in the database; prompts the user to try again |