



| Use Case UC-1:    Unlock                         |   |
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| <b>Related Requirements:</b>                     | REQ2, EQ3, REQ7, REQ9   |
| <b>Initiating Actor:</b>                         | Any of: Tenant, Landlord  |
| <b>Actor's Goal:</b>                             | To disarm the lock and enter, and activate household devices  |
| <b>Participating Actors:</b>                     | LockDevice, LightSwitch, Timer  |
| <b>Preconditions:</b>                            | <ul style="list-style-type: none"> <li>• The set of valid keys stored in the system database is non-empty.</li> <li>• The system displays the menu of available functions; at the door keypad the menu choices are "Lock" and "Unlock."</li> <li>• The system provides household devices activation function</li> </ul> |
| <b>Postconditions:</b>                           | The auto-lock timer has started countdown from autoLockInterval.  |
| <b>Flow of Events for Main Success Scenario:</b> |   |
| →  | 1. <b>Tenant/Landlord</b> arrives at the door and selects the menu item "Unlock"  |
|  | 2. <u>include::AuthenticateUser (UC-7)</u>  |
| ←  | 3. <b>System</b> (a) signals to the <b>Tenant/Landlord</b> the lock status, e.g., "disarmed," (b) signals to <b>LockDevice</b> to disarm the lock, and (c) signals to <b>LightSwitch</b> to turn the light on   |
| ←  | 4. <b>System</b> signals to the <b>Timer</b> to start the auto-lock timer countdown   |
| →  | 5. <b>Tenant/Landlord</b> opens the door, enters the home [and shuts the door and locks]  |

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| <b>Use Case UC-4:</b> RetireUser                 |   |
| <b>R e l a t e d Requirements:</b>               | REQ7  |
| <b>Initiating Actor:</b>                         | Landlord  |
| <b>Actor's Goal:</b>                             | To retire an existing user account and disable access               |
| <b>P a r t i c i p a t i n g Actors:</b>         | Database  |
| <b>Preconditions:</b>                            | • The database stores the accounts that allowed to unlock the lock. |
| <b>Postconditions:</b>                           | The removed accounts cannot unlock                                  |
| <b>Flow of Events for Main Success Scenario:</b> |   |
| →  | 1. <b>Landlord</b> access database                                  |
|  | 2. <u>include::AuthenticateUser</u>                                 |
| ←  | 3. <b>System</b> shows existing accounts                            |
| →  | 4. Landlord retires an existing account                             |
| ←  | 5. Database disable access  |

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| <b>Test-case Identifier:</b>                                       | TC-1   |  |
| <b>Use Case Tested:</b>  | UC-1, main success scenario, and UC-7  |  |
| <b>Pass/fail Criteria:</b>   | The test passes if the user shows the mobile phone that is contained in the database, with less than a maximum allowed number of unsuccessful attempts |  |
| <b>Input Data:</b>   | keycode, door identifier   |  |
| <b>Test Procedure:</b>   | <b>Expected Result:</b>  |  |
| Step 1. Show an incorrect mobile phone and a valid door identifier | System beeps to indicate failure; records unsuccessful attempt in the database; prompts the user to try again  |  |
| Step 2. Show an correct keycode and door identifier                | System flashes a green light to indicate success; records successful access in the database; disarms the lock device                                   |  |

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| <b>Test-case Identifier:</b>          | TC-4  |
| <b>Use Case Tested:</b>               | UC-4, main success scenario   |
| <b>Pass/fail Criteria:</b>            | The test passes if the landlord retires an account that is contained in the database  |
| <b>Input Data:</b>                    | existing user account   |
| <b>Test Procedure:</b>                | <b>Expected Result:</b>   |
| Step 1. Retire a non-existent account | The system emits an error beep indicating that the account does not exist.  |
| Step 2. Retire an existent account    | The system asks for confirmation to delete the account and, upon receiving a second confirmation, proceeds to delete the account and close its access privileges. |