Course Assignment 1

更改：身份验证基于使用蓝牙网络检测用户手机的接近度。

Identifier	User Story	Size
REQ-1	As a user, I can be sure that the doors by default will be locked.	4 points
REQ-2	As a user, I will be able to unlock the doors using a mobile phone	7 points
REQ-3	An intruder will not be able to unlock the doors by using his own mobile phone; the system will block when it detects multiple lock-phone pairing failures	7 points
REQ-4	As a user, I can be sure that the doors will be automatically locked at all times.	6 pts
REQ-5	The door keypad will be backlit when dark for visibility.	3 pts
REQ-6	Anyone will be able to lock the doors on demand.	3 pts
REQ-7	As a user, I will be able to manage additional user accounts (in terms of user mobile device info, e.g., phone number)	10 pts
REQ-8	As a user, I will be able to view the history of accesses to my home.	6 pts
REQ-9	As a user, I will be able to configure the preferences for how my household devices will be activated on my arrival.	6 pts

Deriving Use Cases from System Requirements

Initiator	Initiator's Goal	Participants	Use Case Name
Tenant	Unlock and enter home.	Lock, Household Devices, Database	Unlock (UC-1)
Tenant	Lock the door.	Lock, Household Devices, Database	Lock (UC-2)
Landlord	Create a new user account and allow access to home.	Tenant, Database	AddUser (UC-3)
Landlord	Retire an existing user account and disable access.	Database	RetireUser (UC-4)
Tenant	Review the history of home accesses.	Database	ViewHistory (UC-5)
Tenant	Configure the operational preferences for household devices.	Database	SetDevicePrefs (UC-6)
Visitor	Visit a resident's home.	Lock, Database	AuthenticateUser (UC-7)

- Initiating actors ("users") are already identified in user stories
- Participating actors identified as part of use case analysis

Initiating actors (“users”) are already identified in user stories

初始参与者（“用户”）已在用户案例中确定

Participating actors identified as part of use case analysis

被确定为用例分析一部分的参与者

Initiator	Initiator's Goal	Participants	Use Case Name
Tenant	Unlock and enter home.	Lock Household Devices Database	Unlock(UC-1)
Tenant	Lock the door.	Lock Household Devices Database	Lock(UC-2)
Landlord	Create a new user account and allow access to home.	Tenant Database	AddUser(UC-3)
Landlord	Retire an existing user account and Disable access.	Database	RetireUser(UC-4)
Tenant	Review the history of home access.	Database	ViewHistory(UC-5)
Tenant	Configure the opreational preferences for household devices.	Database	SetDevicePrefs(UC-6)
Visitor	Visit a resident's home.	Database	AuthenticateUser(UC-7)

Initiator 发起者

Tenant 房客

Landlord 房东

- Derive UC-1 (Unlock) and UC-4 (RetireUser)

派生 UC-1（解锁）和 UC-4（用户）

Initiator	Initiator's Goal	Participants	Use Case Name
Tenant	Unlock and enter home.	Lock Household Devices Database Mobile Phones	Unlock(UC-1)
Landlord	Retire an existing user account and Disable access.	Database	RetireUser(UC-4)

- Give the use case schemas of UC-1 and UC-4

给出 UC-1 和 UC-4 的用例模式

Use Case UC-1	Unlock
Related Requirements	REQ-1 REQ-2 REQ-3 REQ-5
Initiating Actor	Tenant Landlord
Actor's Goal	使用移动手机给门开锁，进门会自动开灯
Participating Actors	LockDevice LightSwitch Timer Mobile Phones
Preconditions	1. 存储在 Database 中录入的手机 Valid keys 非空 2. 手机上有 NFC 开启，在一定范围内会被门锁识别 3. 门锁上有 Lock 和 Unlock 两个按钮
Postconditions	1. 室内灯光系统会在门解锁瞬间将 LightSwitch 切换为 On 状态 2. 在门外处于黑暗状态时，门锁 KeyPad 会打开背光 3. Timer 会在多次匹配失败后启动
Flow of Events for Main Success Scenario	→1.房客/房东到门口，按下门锁上的 Unlock 按钮，并将手机贴在门锁上的 NFC 识别处 ←2.系统 a 给房客/房东的手机发送 Unlock 成功的信息， 系统 b 给 LockDevice 发送信号去开门， 系统 c 给 LightSwitch 发送信号去开灯 →3.房客/房东打开了门 ←4.房内的灯光切换为 On 状态 →5.房客/房东进入房内并手动关门

Use Case UC-4	RetireUser
Related Requirements	REQ-7
Initiating Actor	Landlord
Actor's Goal	从 database 中 retire 对应 User 对门的 access 权限
Participating Actors	Database
Preconditions	1. 存储在 Database 中录入的手机 Valid Keys 非空 2. 只有房东具备访问该 Database 的权限
Postconditions	房东在 Database 删除指定用户的 Key 后， 该用户将无法 Unlock 门
Flow of Events for Main Success Scenario	→1.房东输入用户名和密码， 连接到对应 Database ←2.系统检验用户名和密码， 确认正确后开放连接 →3.房东在搜索栏中输入房客 ID ←4.系统返回该房客 ID 所关联的移动设备的信息 →5.房东手动删除该房客 ←6.系统清理该用户 ID 下设备的匹配密钥值，系统 b 在 a 清理结束后给房东返回已成功删除的信息

- Give the acceptance tests for UC-1 and UC-4

对 UC-1 和 UC-4 进行验收测试

Test-case Identifier	TC-1
Use Case Tested	UC-1 UC-7
Pass/Fail Criteria	会在房客手机 NFC 密钥与系统 Database 匹配时测试成功，并且在没有多次 NFC 密钥不匹配的前提下
Input Data	NFC 密钥 data，door identifier
Test Procedure	Expected Result
1.按下 Unlock 按钮，并将移动手机贴在 NFC 识别区，NFC 传入一个 Valid Key	系统会将门 Unlock 并记录成功 Unlock 信息
2.按下 Unlock 按钮，并将手机贴在 NFC 识别区，NFC 多次传入 Invalid Key	系统记录解锁失败的信息，并在多次失败下拒绝 Unlock，Timer 启动，30 分钟内无论是否是 Valid Key，都无法 Unlock

Test-case Identifier	TC-2
Use Case Tested	UC-4
Pass/Fail Criteria	被删除信息的用户试图用 NFCUnlock 的时候，会被拒绝开锁即测试成功
Input Data	NFC 密钥 data，door identifier
Test Procedure	Expected Result
1.房客在租时，按下门的 Unlock 按钮，并贴手机到 NFC 感应区	系统会将门 Unlock
2.房东删除了该租户的设备信息	系统将该房客设备对应的 Key 从 Database 中移除
3.已被删除设备信息的房客再次按下门上的 Unlock 按钮，并贴手机到 NFC 感应区	系统在 Database 中找不到该房客设备的 Key，并传送给该用户拒绝 Unlock 的信息