

Extract product line from Smart Home specifications

cdql

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1 Scenario CDQL-SC01

1.1 Description:

This scenario allows the home owner to register new inhabitants. In this way, the policies for getting access in the home are applied

1.2 Flow of events

Code	Feature	User Action	System Response
CDQL-SC01.1	-	The home owner selects the register inhabitant option in the security configuration menu	The inhabitant personal form is displayed.
CDQL-SC01.4	-	The home owner selects the proceed option.	The system asks the home owner her configuration password.
CDQL-SC01.5	-	The home owner fills in the configuration password and selects the proceed option.	The system register the new inhabitant, allowing she to get access to the smart house.

2 Scenario CDQL-SC02

2.1 Description:

This scenario allows a registered inhabitant to enter into the house.

2.2 Flow of events

Code	Feature	User Action	System Response
CDQL-SC02.4	-	-	The system displays the message of successful authorization.
CDQL-SC02.5	-	-	The system opens the front door and register the occurrence.
CDQL-SC02.6	-	-	After ;TimeToClose;, the front door is closed.

3 Scenario CDQL-SC03

3.1 Description:

This scenario allows a guest to enter into the house, but there is no resident there. This scenario is useful, for example, when the home owner family is traveling but an employee, a relative or a closer friend needs access to the house

3.2 Flow of events

Code	Feature	User Action	System Response
CDQL-SC03.1	-	The guest request access to the home at the main entrance.	The system asks the guest name and the reason for requesting access to the house.
CDQL-SC03.2	-	The guest fills in the requested information.	The system takes a guest photograph and sends one message to the home owner mobile device.
CDQL-SC03.3	-	-	The system asks for the guest to wait a few minutes.
CDQL-SC03.4	-	The home sends an authorization allowing the guest to enter into the house.	The system receives the authorization message.
CDQL-SC03.5	-	-	The system displays the message of successful authorization.
CDQL-SC03.6	-	-	The system opens the front door and register the occurrence.
CDQL-SC03.7	-	-	After \uparrow TimeToClose \downarrow , the front door is closed.

4 Scenario CDQL-SC04

4.1 Description:

This scenario describes the behavior that is triggered when an event of attempting to intrude the house is detected.

4.2 Flow of events

Code	Feature	User Action	System Response
CDQL-SC04.1	-	The presence sensor identifies that someone (or something) is trying to intrude into the smart home. This might be deduced by observing any suspect event (forcing or braking) in the external doors and windows	The system emits the configured internal sound alarm.
CDQL-SC04.2	-	-	The system places a call to the police department.

5 Scenario CDQL-SC05

5.1 Description:

This scenario describes the behavior that have to be triggered when an event that might characterizes fire or smoke in the smart home is detected.

5.2 Flow of events

Code	Feature	User Action	System Response
CDQL-SC05.1	-	The fire sensor identifies a possible fire occurrence (based on smoke or temperature variation).	The system emits the configured internal sound alarm.
CDQL-SC05.2	-	-	The system places a call to the fire guard department.

6 Scenario CDQL-SC01-ADV-FINGERPRINT

6.1 Description:

Access Controller for Fingerprint

6.2 Pointcut:

cdql-SC01.1

6.3 Flow of events

Code	Feature	User Action	System Response
CDQL-SC01.2(B)	-	The home owner fills in the inhabitant personal form and selects the proceed option.	The system asks the inhabitant to capture her fingerprint.
CDQL-SC01.3(B)	-	The new inhabitant put her finger in the fingerprint reader.	The system captures the mark of the inhabitant fingerprint and asks the home owner to proceed.

7 Scenario CDQL-SC01-ADV-PASSWORD

7.1 Description:

Access Controller for Password

7.2 Pointcut:

cdql-SC01.1

7.3 Flow of events

Code	Feature	User Action	System Response
CDQL-SC01.2(A)	-	The home owner fills in the inhabitant personal form and selects the proceed option.	The system asks for the inhabitant password (and password confirmation) that allows her to get access to the home.
CDQL-SC01.3(A)	-	The new inhabitant fills in the password (and confirmation password) for getting access to the home.	The system verifies that the password and confirmation password are equal. The system asks the home owner to select the proceed option.

8 Scenario CDQL-SC02-ADV-FINGERPRINT

8.1 Description:

Access Controller for Fingerprint

8.2 Pointcut:

cdql-SC02.4

8.3 Flow of events

Code	Feature	User Action	System Response
CDQL-SC02.1(B)	-	The inhabitant request access to the home at the main entrance.	The system asks the inhabitant to capture her fingerprint.
CDQL-SC02.2(B)	-	The new inhabitant put her finger in the fingerprint reader.	The system recognizes the fingerprint impression.

9 Scenario CDQL-SC02-ADV-PASSWORD

9.1 Description:

Access Controller for Password

9.2 Pointcut:

cdql-SC02.4

9.3 Flow of events

Code	Feature	User Action	System Response
CDQL-SC02.1(A)	-	The inhabitant request access to the home at the main entrance.	The system requests to the user to pass the smart card.
CDQL-SC02.2(A)	-	The inhabitant inserts the smart card into the card reader.	The system asks the inhabitant's password, in order to authorize her access to the smart home.
CDQL-SC02.3(A)	-	The inhabitant informs her password.	The system verifies that the password is valid for the registered inhabitant.

10 Scenario CDQL-SC04-ADV-LIGHTSON

10.1 Description:

Security Mechanism ι Action ι Switch the lights ON

10.2 Pointcut:

cdql-SC04.3(a)

10.3 Flow of events

Code	Feature	User Action	System Response
CDQL-SC04.4(A)	-	-	The system turns on the external and internal lights.

11 Scenario CDQL-SC04-ADV-LOCKDOOR

11.1 Description:

Security Mechanism ι Action ι Lock Door

11.2 Pointcut:

cdql-SC04.2

11.3 Flow of events

Code	Feature	User Action	System Response
CDQL-SC04.3(A)	-	-	The system locks the access to the bedrooms.

12 Configuration Knowledge

Expression	Transformations
SwitchTheLightsOn	evaluate advice cdql-SC04-ADV-LightsOn
TimeToClose	bind parameter TimeToClose
Fingerprint	evaluate advice cdql-SC02-ADV-Fingerprint, cdql-SC01-ADV-Fingerprint
LockDor	evaluate advice cdql-SC04-ADV-LockDoor
FireDetection	select cdql-SC05
Password	evaluate advice cdql-SC02-ADV-Password, cdql-SC01-ADV-Password
SmartHome	select cdql-SC01, cdql-SC02, cdql-SC04
GuestAuthorization	select cdql-SC03