Université Catholique de Louvain

LINGI2252

Software Maintenance and Evolution

Mission 1: First prototype

Authors:
Group G
Gustin Simon
1171-14-00
Hallet Adrien
3276-13-00

Professor:
Mens Kim
Assistant:
Duhoux Benoît

October 17, 2018

1 Introduction

For the course *LINGI2252 – Software Maintenance and Evolution*, we were asked to conceptualize and implement a (simulated) system for home automation and domotics. We already delivered a feature model, along with a lexicon and an example of usage scenario, provided here as well.

In this document, we provide a new scenario, a (conceptual) class diagram of the code we implemented and a discussion of variablility points.

The source code we implemented will be demonstrated later on in the year.

2 Lexicon

The following lexicon defines the meaning of words you can find in our feature model, class diagram and (to some extent) in our code.

Sensor Physical device that measures the magnitude of real-life variables.

Light sensor Sensor that measures the quantity of light in a room (lights being off or on).

Consumption sensor Sensor that detects and records the consumption of different resources (power, water, etc).

Clock Sensor that measures the time flying by (and can be used to set alarms at certain times).

Actuator Physical device that is able to take actions in the physical world (make noise, light, move, etc).

Heavy appliance Home systems that use lots of electricity (washing machine, dishwasher, oven, etc).

IoT Internet of Things, the use of the internet for appliances like watches, clothes, ...

Hub Physical and/or digital system to centralize a group of systems.

3 Scenarios

3.1 First scenario

Note: this scenario is the one we provided with the first deliverable (for the previous lab).

It is time to fetch the kids at school and nobody else is available to bring them back. Your baby is in his bed and you have no choice but to leave him for a moment. You know it is a bad idea but hopefully you can rely on your *Home Automation System*.

You leave home and set up the system via your smartphone. Your *smart door* locks itself up and redirects its *intercom* feed to your smartphone since your door has a *video sensor*. Because you also opted for a *motion sensor* in the entrance, the *anti-burglar* turns on and is ready to set the *alarm* off, just in case. On your smartphone, the *audio sensor* in the baby's room calibrates itself to pick any irregularity up and acts as a *babyphone*. The temperature in the baby's room will be kept constant thanks to the automatic heating system, so the baby is not too hot or too cold.

3.2 Second scenario

You come back late from work. You have had a rough day, you're stressed out and tired. You decide to relax, using your *Home Automation System*.

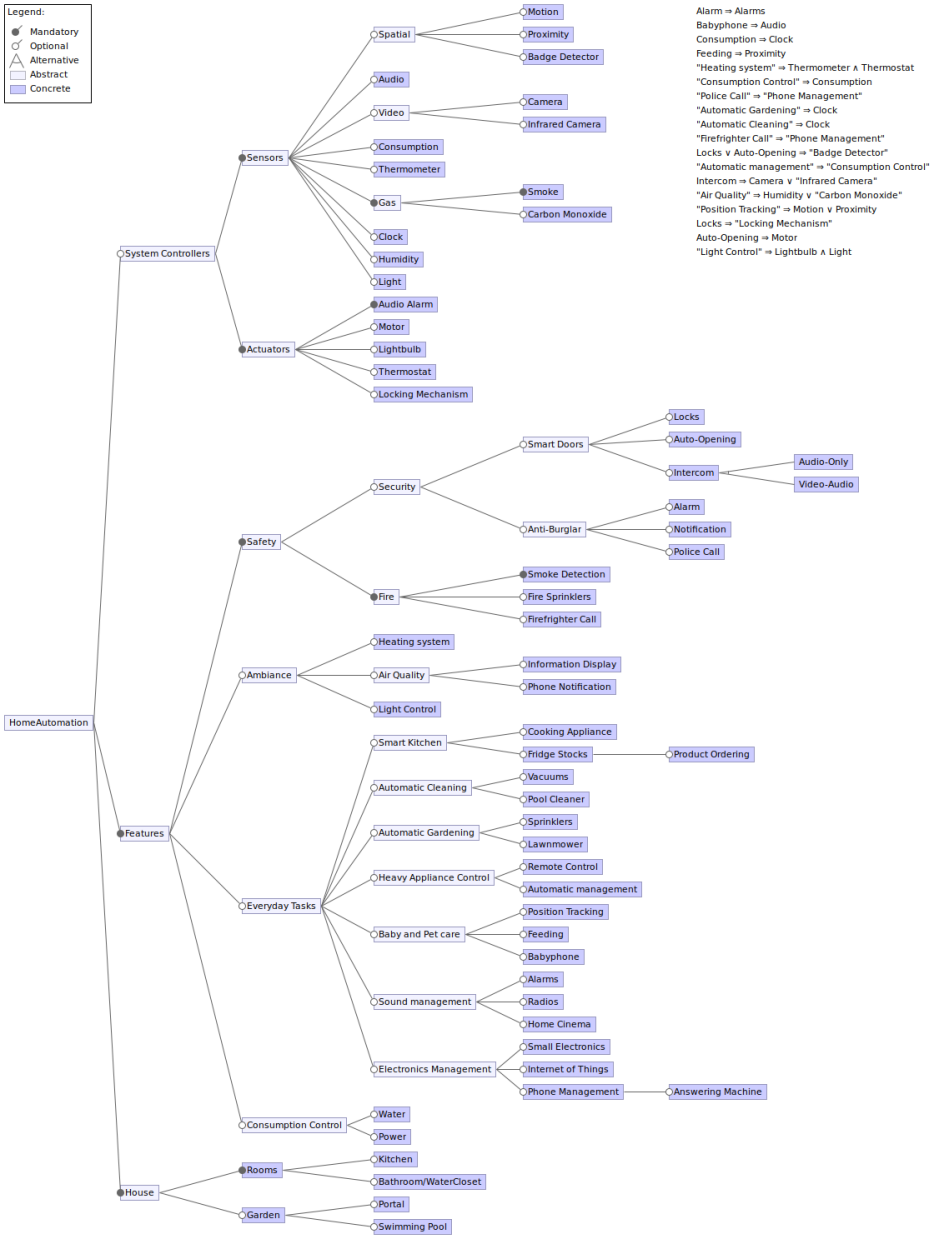
Once you are in your bedroom, you use your *vocal command* and ask your house to close the *curtains* and to turn on a dim *light*. You ask it as well to manage the *temperature* in the room so that you feel more comfortable.

After a while, you decide to take a bath. In order to not spend to much time in there, you ask your house to warn you once an hour has passed (which it can do thanks to a *clock* and an *alarm*). You can relax peacefully, knowing that your *Home Automation System* will warn you if there is any danger such as a starting fire or a burglar entering in your house. You will not even have to get out of your bath to let your cat in the house.

Isn't this great?

4 Feature model

Note: this feature model is the same we provided for the first deliverable.



5 Class diagram

This class diagram is highly conceptual (which means some internal methods and attributes, or even classes, may be missing). Nonetheless, it describes

the general architecture of our code.

6 Potential variability points

7 Conclusion

In this document, we showed several documents that describe a home automation system. As we said, we implemented this system (which will be demonstrated later on during the semester).