SFXfridge Software

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The Case Study

"Smart Fridges" provide the normal functionality of a fridge (such as temperature control) together with extra features, such as food inventory and internet shopping. The company that you work for, EasyLiving, is developing the software for a new smart fridge from a major appliances company. The software system is called SmartFridgeX. The SmartFridgeX will be divided into two main subsystems, one deployed on the fridge (called SFXfridge) and the other one a mobile app (SFXapp).
You are a member of the team working on SFXfridge subsystem and expected to prepare a UML Class Diagram for the SFXfridge software.

Noun/verb analysis

You have been asked to produce no more than 4 of each.

Nouns list:

- Temperature: This determines what the air flow needs to be in order to maintain the internal fridge temperature. So, it is indeed a parameter needed to control the air flow. It is not a class. It is a parameter obtained via a sensor. That can be represented as an attribute of that sensor.
- LCD touch screen: This is a piece of hardware used to generate reports, make online shopping and obtain from and present information to the users. As such, it is an entity class (we need any data about it).
- User: This is used to refer to an actor, but it is an actor that the system must keep data about (name, address, etc.). Because we need to store and manipulate that data it is an entity class. **2**
- Max Product Storage Time: This declares how long the product can be stored in the fridge which presented by the LCD touch screen. Thus, it is an attribute of LCDTouchScreen entity class.

Verbs list

- Adjust Air Flow: This is needed to obtain the temperature and define the air flow required to maintain the internal temperature. So, it must definitely need to be in the diagram. This is not an association between classes, but it is the operation to maintain the appropriate or the temperature that we want.
- (user) Add (new) Product: This is something that needs to be represented in the class diagram, as it indicates how certain attributes are set or new objects are created in the system, using the Barcode Scanner. The natural choice here is to have this as the operation needed to create new objects of the type Item (it is the constructor).
- Call Maintenance - When the fridge has a fault, user can use the LCDScreen to call the maintenance. Thus, it is an operation of the LCDscreen entity class.
- Alert the User – If the door stays open more than 90 seconds, an alarm starts to notify the user in order to avoid the waste of energy. So, this is an operation which belongs to the entity class called AlarmDoor.

1 There is no need to include type information for get (), set () methods and constructors are not required either.
2 Note that not all actors have entity classes representing them. This is only the case if we need data about them.
3 This file does not include all the information of the exercise.
4 OverallConsumption: Reports must include also, all items and their corresponding amounts consumed in a week/month/year.
5 ImageProductConten*t*: There is a wide-angle camera fixed inside the fridge to share live images of the contents inside the fridge on demand with members of the fridge family app group. Then users can cross check the actual contents with their shopping list.

UML Class Diagram model