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The project report

AL AKHAWAYN UNIVERSITY in Ifrane

CS 2306 04: Object-oriented programming

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-Concerning the UML diagram, we started by reading all the Instructions and filtering things between classes, attributes, behaviors and the relations between the classes.

While implementing the UML diagram after all the filtering thing, we started by creating all the classes that were mentioned in the word document, then we moved to the attributes and behaviors of each class and finally we set the relations between the classes while making sure that multiplicity also takes part in there.

And one last thing concerning the UML diagram is the fact that the general admin should be linked to approximatively everything bit it couldn’t be done in the diagram because it will ruin the look of it, so we just thought of mentioning it here only.

-Now let’s move on to the second part which is the code and how this UML diagram was implemented while coding.

We started by the source code in which we initialized by creating the classes resident, admin, account, user array in order to store the account then we moved to the login part. After that, we moved to the file part from which the program takes the data in order to compare it if a user wants to login, or when we try to update a password or add a resident the data gets updated in both the file and the program. Then we moved to the smart package in which we started by the smart streets with all their attributes (Name, ID and sensor node), we made an array for the buildings and their attributes (number of floors, ID, smart street location and an enum to precise from which type these buildings are). Now concerning the apartments, we declared all their attributes to (ID, sensor node) and these apartments are stored in an array list floor.

The next thing that we worked on were the sensor nodes, we created them one by one, and we followed the same procedure while creating them all. As we know, we can’t have real data, so we just generated it randomly. Then we moved to the appliances, we did setup them in an array of 6 because they are already known, and they have 2 arguments each, the first if the appliance is working and the second one if it exists.

Note that we didn’t add an add admin for security purposes, so that not any admin can add whoever he wants as an admin anytime he wants to. In addition to the add sensor operation because all the sensors are occupied, and in the case when it’s not occupied, it returns a null.

Finally, concerning the GUI, we started with a frame that allows us to login either in a resident mode or an admin mode as an admin or as a resident.

For the general admin mode, we have a frame that first shows all the information of the user and allows to add a resident, update the account of a resident, delete an account of the resident. He can also add smart streets, buildings and apartments. To add streets, he just needs to give ID and name. To add a building, he just needs to give the street. If he wants to add an apartment, he just needs to give the building, the street, the floor number and set up the appliances. He can also view the gateway either of the streets or the buildings note that these two options represent two physical machines, one can be accessed at gateway at streets and the other one at buildings.

For the resident mode, we have a home page where the resident have a look at all his information, he can access the different pages of the appliances to change their status and availability, and finally he can report anything he wants in case he has any complains.

At last, we did some errors management and exception especially in the admin mode, we can cite many problems for example the user can’t add a building with the same ID, can’t a street with the same ID, can’t add a resident with the same ID and a login error if the account information are wrong.

N.B: Everything is indeed saved in the files, however when it come to the GUI the information doesn’t get closed until the program is closed. We think that this problem is from the compiler as we didn’t find any solution for this problem at all.