

Interacção Pessoa-Máquina

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SmartDomotic

Stage 4: Computer Prototype



Realizado por:

50870, Daniela Santos
51171, David Mealha
49507, Vladislav Pinzhuro

Lab class Nº 4

Professor:
Teresa Romão

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1 Startup Instructions

In order for you to run our prototype, you need to download the html pages, containing all the code to execute the prototype, corresponding to the application.

It's possible to obtain from the following page:

<https://github.com/DavidMealha/domoticlPM>

Click on the option "Download", and you will have a .zip file with all the repository files, including the documentation.

The folder "Prototype" contains all the html pages to test the application, you just need a web browser to run it. We suggest you open the index page first (Index.html), which corresponds to the main page with the logging form, as defined in the previous stage. After that, just follow the task scenarios.

2 Briefing

This application's purpose is to provide the users with a simple and intuitive home automation system.

The users are able to control the floors, divisions and equipment by accessing the application from any platform by using a web browser.

The main user (the administrator) has full control over the system. He can add new floors to the system and modify/remove the existing ones. He can also customize each floor by splitting it into various divisions representing bedroom, kitchen, bathroom, etc. This whole process is as intuitive and simple as possible, and it resembles making a simple drawing in the MS Paint application. Lastly, the administrator user is able to add equipment to each division. The application comes with a set of controllable equipment that the user can choose from. The set includes such equipment as: Lamps, windows blinders, doors, TVs, air conditioners, and kitchen stoves, among others.

In order to control the access of different types of users like children, the administrator user can define new user roles, for which they can impose numerous restrictions, such as allowing the target user to control only a subset of available equipment while forbidding all other, or forbidding access to some device functionalities, such as scheduling.

3 Task and Scenarios

1. Adding my house with all the existing equipment to the automation system.

1.1. Firstly, I logged in as an administrator, with the password 'admin'.

1.2. I decided to add my 2-floor house, with 4 divisions on the 1st floor and 3 divisions on the 2nd floor, to the automation system. I opened the application, and added two floors to the system.

1.3. Now I needed to add the divisions to the floors, so I proceeded to add various the divisions in accordance with the paper house plan. I repeated the same process for each floor, by adding 4 division to the first and 3 to the second.

1.4. After having the complete house plan added to the system, I proceeded to add all of my equipment to the appropriate divisions. I started by placing 2 air conditioners, 2 doors with electric lockers, and a TV in my living room. Then I filled all other divisions with the appropriate equipment.

2. Toggling the first floor kitchen lights

3. I decided to set the air conditioner in my bedroom on the 2nd floor to turn on every morning at 8 o'clock, at 22 degrees Celsius.

On the next day, I woke up a little bit cold and realized that I should set the room temperature higher, to 25 degrees.

4. In order to allow my children to access the application, I had to configure a user role for them, such that it would be only allowed for them to change the state of some equipment. In my case I wanted to let them control the lamps, the TV and the air conditioner.

After settings up the user role, my children are able to login into the automation system and make the changes that are allowed to them.

4 Observations

Being this a prototype, it's just meant to be a proof of concept, so not every predicted functionality was implemented, such as some extra equipment, because in general all the equipment work and interact the same way, they just have some variations, so we just implemented some of the proposed equipment. Per example, the windows blinds weren't implemented.

As for the functionalities presented in the task analysis, all the tasks can be done in the system, even though we changed a bit the interaction between the user and the system. Now, the users have two separates workflows when they are manipulating the house plant. First, they can draw the divisions and drag the equipment to the respective places. This consists in the Configuration/Drawing Mode. On the other side, we have the controlling part, where is possible to change the state of the equipment.

When testing the application, just consider the first floor of the house, because configuring the 2nd floor is pretty much the same. Also, in the Scenarios, the user is supposed to follow the house plant which will be on the project folder, with the name "plant.png".

As it's possible to observe, the drawing and configuration pages are separated, there is no correlation between them, this is due to the difficulty of mapping them together in such a short time. In the real application, the user should draw the plant with the equipment, and it would appear the plant with the equipment positioned to control their state.

5 Implementation

As mentioned in the beginning of this project, the objective was to do a web application, the most interactive and intuitive possible, in order to make the home controlling the easiest possible to use.

It was developed a web system, with technologies such as HTML, CSS and JavaScript, with no connection to a database. We focused mainly on the design/visualization and interaction between the application and the user, so there is no need to persist data. This leads to a problem, most of the changes aren't stored in the application, but since the main focus is in the usability of the system we believe the person who will test it, will have a good feel how the application should work.