**ASSIGNMENT 3**

**Standard Task:**

- Login– a user can log in using their unique email and password.
- Toggling lights on and off – a user can turn on or off the lights by clicking on the virtual light bulb on the website.
- Viewing gallery for pictures taken – a user can view pictures in the gallery on the website taken by the camera.
- Viewing temperature status – a user can view the recorded temperature on the website

## Informed Consent Form

**Brief Explanation:** Home Automation and Security involves being able to control your home remotely and having minimal human intervention by introducing control systems. As an example lights could be turned on and off without even being inside your house. If an intruder were to get into your house, you would get a notification of that instance as well as a picture of said intruder, and you would be able to get help.

We would like you to test out the provided prototype of the system to see if you can perform certain tasks and give feedback.

I ,the undersigned, hereby declare that:

| | Yes | No |
|---|---|---|
| I voluntarily agree to participate in the research | | |
| I have understood the information about the project | | |
| I understand that I will not get paid to participate in the research | | |
| I understand that participating in this study poses no threat to my well being | | |
| I consent to having my videos and or recordings taken during the study | | |
| I understand I have the right to refuse to participate in the study should I choose to do so in the process of it with no penalty whatsoever. | | |
| I understand that other researchers will have access to this information only if they agree to preserve the confidentiality of the information gathered. | | |
| I would like to use my name and understand that what I have said will be used in reports, and possibly other research outputs. | | |

Provide your name here if you answered yes to the last question:
Name:

### Researchers are bound by a *code of ethics* that includes the following protections for subjects

***Protected from physical or psychological harm (including loss of dignity, loss of autonomy, and loss of self-esteem)***
***Protection of privacy and confidentiality***

***Protection against unjustifiable deception***
***The subject must give voluntary informed consent to participate in research. Guardians must give consent for minors to participate. In addition to guardian consent, minors over age 13 (the age may vary) must also give their consent to participate.***

**Signature:**

**//END OF FORM**

**Selecting users**

We gathered three users, all from the University of the Western Cape and asked them if they could perform 4 tasks using the prototype for our system. We had them read and sign the above consent form before participating. The study took place in the university premises.

**Problems each user encountered and time taken to complete tasks**

The users were all able to navigate through the interface quite quickly, they said the interface was easily understandable, however there were a few problems

User 1: Logging in wasn't a problem, neither was doing the tasks but the pictures on the gallery suggest that they are clickable and then don't lead anywhere or do anything when clicked on. The user kept clicking on them expecting them to lead somewhere.
Time: 1min 9secs

User 2: Logging in wasn't a problem and doing the other tasks wasn't a problem
User kept on clicking on the “home” button which is on the home page so it didn't take them anywhere because they were already on the home page. This seemed frustrating to them.
Time: 1min

User 3: Logging in wasn't a problem
This user couldn't see the “click me to turn on or off” sign on the light toggle/switch upon entering the light sensor page. So he they did not know how to do that task until they were shown.
After clicking on the camera sensor icon to view the gallery of pictures, user expressed wanting to be able to see a bigger image of the pictures when they are clicked on.
Time: 1min 13secs

**Field or Controlled Study?**

We are planning for a field study. The reason we chose this and not the controlled study is because our study takes place in a natural setting, where we observe users interacting with the system and thereafter take notes on the problems they encountered while doing that, and further ask them a bit about their experience with using/ interacting with the system.
***Planning:*** Approach different users instead of collecting them into one room, to avoid making them extremely uncomfortable.
Ask for user consent, read to them or give them the consent form to read, understand and sign.
Inform them if we intend to take videos or recordings so that they can either agree or disagree to it. This is to avoid violating the user in any way.
Decide what recording technique we will use, either to go traditional(handwritten/typed out

notes) or use videos/ audio recordings. We would most likely go the traditional route because it's easier and no hassle to set up.
***Things to take into account:*** Whether or not the user is comfortable, whether or not they understand the study they are participating in. We would also need to make sure neither we or our equipment is not getting in the way of the user.
***Data collected:*** The users interacting with the system(videos, if consent is provided), and feedback about their experience using the system. This information would be summarised and presented in form of a report.

**Benefits and Disadvantages of Field Study**

***Benefits:***
Can capture context of use.
Provides useful insight.
Can determine how the product will impact user's lives.
***Disadvantages:***
Difficult to conduct.
Does not always generate accurate data.
Difficult to pinpoint the problem of usability.
Can be difficult to measure performance of specific components of the system

**Application of Software Engineering:**
Principles:

- Abstraction – reduces complexity such as the user having to interact with the web-application user interface and not see the complexity behind with sensors.
- Consistency – familiarity with the functions, type of icons used and the position of functions such as the logout page.
- Hiding – a secondary user has functions they cannot access for security reasons such as adding another user, only and admin can do so.

Umbrella Activities:

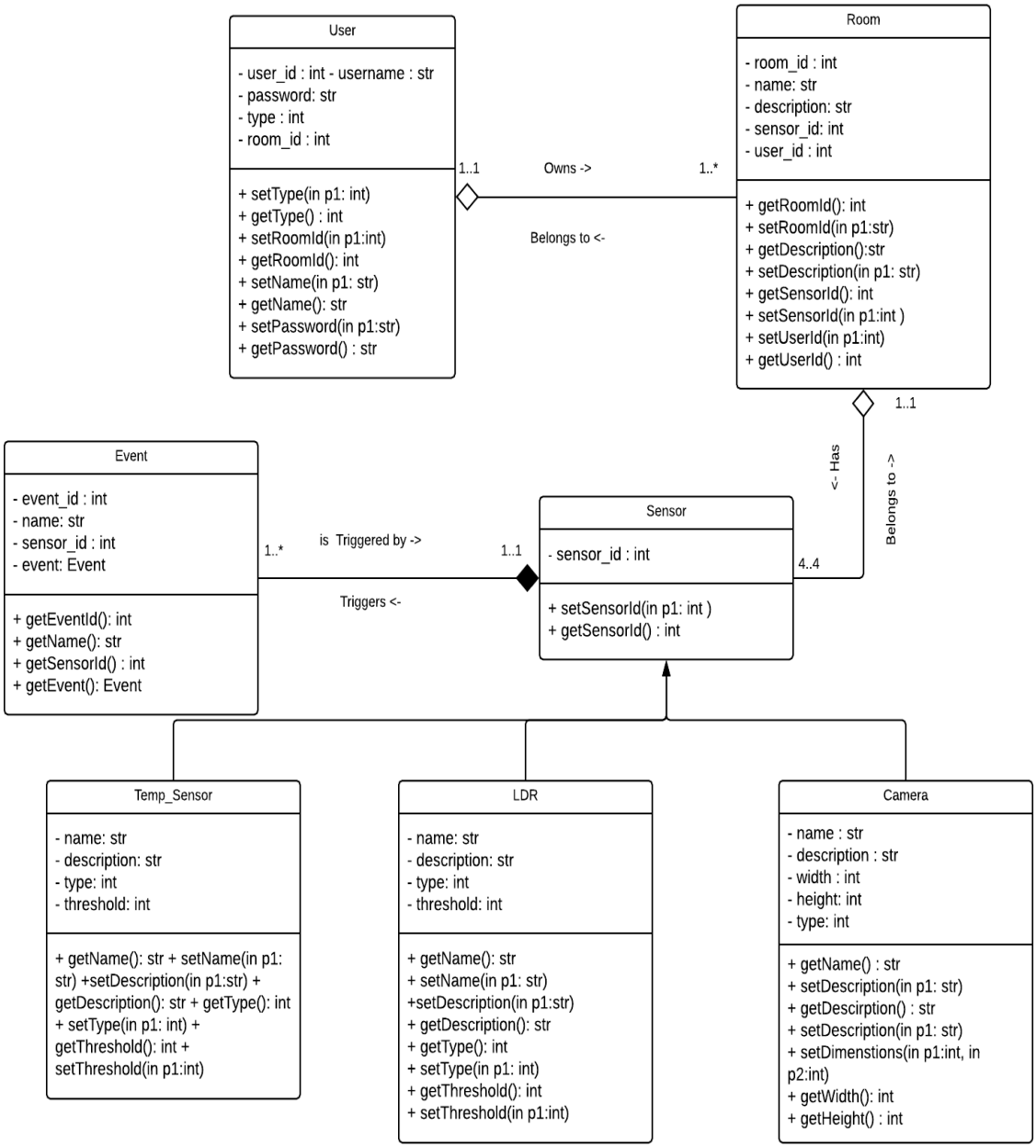
- Project Tracking - we using an online communication tool and we have regular meetings to track the progress of the project and keep up to date.
- Technical Reviews - technical issues that / may arise are discussed in the meetings we conduct.
- Work Product Preparation and Production – we used forms to engage with the users.

Goals:

- Understandability – the interface is easy to interact with.
- Portability – the system is portable because it can be accessed anywhere since it's web-based.
- Security – using login details, password and email to access the system.

Process – Agile Process, the team is self-organized, cross-functional and we have a collaborative effort with end-users in a sense that we ask for their input.

## UML Class Diagram



## Database

### Entities

1. User
2. Room
3. Sensor
4. Event

### Business Rules

- 1 User owns Many Rooms, at least one
- 1 Room is owned by 1 User, exactly one
- 1 Sensor is associated to 1 Room, exactly one
- 1 Room has Many Sensors, at least 4
- 1 Event is triggered by 1 Sensor, exactly one
- 1 Sensor triggers Many Events, at least one

# ERD_CapstoneProject-Group8

Onke | October 13, 2019