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Milestone 1 Project Proposal and High-level description

CEN 4010 Principles of Software Engineering, Spring 2018

Group 2, SmartLab

By

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1. Executive Summary

The College of Engineering and Computer Science has proposed a project to streamline students’ access to the labs and lab equipment. The project would aim to create a more secure lab environment by requiring users to verify their credentials in order to access the lab and lab equipment. Through the use of smart power outlets, it is possible to control which lab stations will be able to be used. Our project, titled SmartLab, aims to satisfy and exceed the project requirements. In order for a user to be allowed access to a lab they must either be taking a lab access required class, or demonstrate to an administrator that they are able to use the lab equipment responsibly. Once a user has been given permission to use the lab and lab equipment, the user is then able to use the SmartLab interface to request a workbench. After being assigned to a workbench, the user is required to verify the condition of the workbench. The SmartLab interface will show the user a picture, taken by the previous user, of the workbench and will then ask the user to confirm the workbench was left in an acceptable condition. Only after the user confirms that the workbench was left in an acceptable condition will the user be able to use the workbench. On the SmartLab interface, the user will be constantly reminded of their remaining time and will be able to request more time if needed. After the user is finished using the workstation, the SmartLab interface will require the user to take a picture of the workstation, so the next user will be able to verify the condition. The SmartLab interface will combat the issues of unauthorized lab use and damaged equipment by directly making users accountable for their workstations. SmartLab can also be adapted to suit other labs security needs, making SmartLab very versatile in terms of applications. SmartLab aims to enhance the lab experience by making it more streamlined, safe, and clean for everyone.

2) Competitive analysis

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Products | SmartLab | Amazon Alexa | Apple Homekit | Google Assistant |
| Key features | Allows control of various wi-fi enabled workstation devices | Allows control of various wi-fi enabled home devices | Allows control of various wi-fi enabled home devices | Allows control of various wi-fi enabled home devices |
| Compatibility | Android, IOs | IOs, Android | IOs, Android | IOs, Android |
| Mobile/ desktop? | both | mobile | mobile | both |

Planned advantages are the simple fact of customized software versus general use. We will be able to tailor and integrate a workstation app instead of working around pre-existing software designed for home. Also must be available through mobile app and desktop use.

3) Data definition

SmartLab- As of right now this is the title of our project. Subject to change.

4) Overview, scenarios and use cases

Main Use Cases would include:

User: The user can request permission from a TA or admin for school or personal use, they login to access the bench. The user will verify the bench is in operable condition before beginning work. When they finish or run out of time, they can either request more time or finish use by taking a picture of the bench as it was left.

TA: Receives requests from users to access a bench for school or personal use and sets up class lab time access.

Admin: Receives requests for lab time and can flag students to revoke lab privileges.

Super Admin: Appoints admins, controls access levels

5) Initial list of high-level functional requirements

1.) The device shall have the application to confirm access via OIT password

2.) The device shall authorize a student or group access to equipment

3.) The device shall have a time-out and shutoff if the equipment is not reactivated via smart phone before timeout

4.) The device shall provide a photo of the bench/equipment and ask user if the bench looks like the photo. No access granted until answered

5.) The device shall have Locked and Encrypted Wifi Communications

6.) The device shall allow the Access & Time assignments by staff/faculty only

7.) The device shall be available for mobile phones and university computers

6) List of non-functional requirements

1) SmartLab will be able to accept two different kinds of requests for access; personal and school.

2) The student’s z number will be how the users log into SmartLab.

3) SmartLab will be polling the devices for their states every 30 seconds in case of an outage. Once the outage is resolved the site will be able to check the conditions of workbenches before the outage and restore power respectively.

4) There are four levels of access: User, TA, Admin, Super Admin

5) SmartLab will remind users of their remaining time at the 30,15,10,5, and 1 minute mark.

6) Users will also be able to be flagged by TA, Admin, Super Admin and lose their lab privileges.

7) SmartLab should be designed for mobile use, but will also work on University computers.

8) SmartLab will be used to control access to roughly 200 devices located in Engineering East and West.

9) It is required to recode the Wifi modules of the devices to be protected from unauthorized use.

10) SmartLab requires the user to take a picture to verify the condition of the workstation after use.

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High-level system architecture

1. Sonoff module
2. EWeLink app
3. Html
4. Css bootstrap layout
5. phpMyAdmin
6. Camera
7. Team

Kirk Shields: Scrum Master

Hunter Craig: Product Owner

Nicholas Gacharich: Development Team

1. Checklist

a) Team decided on basic means of communications : DONE

b) Team found a time slot to meet outside of the class : DONE

c) Front and back end team leads chosen : DONE

d) Github master chosen : DONE

e) Team ready and able to use the chosen back and front-end frameworks : ON TRACK

f) Skills of each team member defined and known to all 3 : DONE

g) Team lead ensured that all team members read the final M1 and agree/understand it before submission : DONE