43132

***Proposal for the development of Golden Phoenicks Locker Automation***

Prepared by Jan Stanley Go, Yohaan Anthraper, and Jeremy Rende  
*Computer Engineering Technology Students*https://github.com/stango25/lockerautomationsystem

**Executive Summary**

As a student in the Computer Engineering Technology program, I will be integrating the knowledge and skills I have learned from our program into this Internet of Things themed capstone project. This proposal requests the approval to build the hardware portion that will connect to a database as well as to a mobile device application. The internet connected hardware will include a custom PCB with the following sensors and actuators 16x2 LCD Display, DC Gear Motor, Lock Solemoid. The database will store User and Product info along with signals for products.. The mobile device functionality will include Lock, Unlock, Open, Close, Display statuses. and will be further detailed in the mobile application proposal. I will be collaborating with the following company/department N/A. In the winter semester I plan to form a group with the following students, who are also building similar hardware this term and working on the mobile application with me This is winter semester?. The hardware will be completed in CENG 317 Hardware Production Techniques independently and the application will be completed in CENG 319 Software Project. These will be integrated together in the subsequent term in CENG 355 Computer Systems Project as a member of a 2 or 3 student group.

**Background**

The problem solved by this project is During a busy day of study, students are often burdened with handfuls of learning materials that may impede their ability to open and shut their locker. This compounded with potential disabilities makes the manual unlocking and opening of a locker a day-to-day issue. Our product will solve this issue.. A bit of background about this topic is The problem solved by this project is ease of access to a locker. Access to lockers can be difficult for student with many items to carry, or those with disabilities. Currently almost all lockers are manually operated and therefore not accessible by anyone with a severe physical disability..

Existing products on the market include [1]. I have searched for prior art via Humber’s IEEE subscription selecting “My Subscribed Content”[2] and have found and read [3] which provides insight into similar efforts.

In the Computer Engineering Technology program we have learned about the following topics from the respective relevant courses:

* Java Docs from CENG 212 Programming Techniques In Java,
* Construction of circuits from CENG 215 Digital And Interfacing Systems,
* Rapid application development and Gantt charts from CENG 216 Intro to Software Engineering,
* Micro computing from CENG 252 Embedded Systems,
* SQL from CENG 254 Database With Java,
* Web access of databases from CENG 256 Internet Scripting; and,
* Wireless protocols such as 802.11 from TECH152 Telecom Networks.

This knowledge and skill set will enable me to build the subsystems and integrate them together as my capstone project.

**Methodology**

This proposal is assigned in the first week of class and is due at the beginning of class in the second week of the fall semester. My coursework will focus on the first two of the 3 phases of this project:  
 Phase 1 Hardware build.  
 Phase 2 System integration.  
 Phase 3 Demonstration to future employers.

*Phase 1 Hardware build*

The hardware build will be completed in the fall term. It will fit within the CENG Project maximum dimensions of 12 13/16" x 6" x 2 7/8" (32.5cm x 15.25cm x 7.25cm) which represents the space below the tray in the parts kit. The highest AC voltage that will be used is 16Vrms from a wall adaptor from which +/- 15V or as high as 45 VDC can be obtained. Maximum power consumption will be 20 Watts.

*Phase 2 System integration*

The system integration will be completed in the fall term.

*Phase 3 Demonstration to future employers*

This project will showcase the knowledge and skills that I have learned to potential employers.

The brief description below provides rough effort and non-labour estimates respectively for each phase. A Gantt chart will be added by week 3 to provide more project schedule details and a more complete budget will be added by week 4. It is important to start tasks as soon as possible to be able to meet deadlines.

Already purchased for previous course. We might get some supplies under 20 dollars for connecting devices.

**Concluding remarks**

This proposal presents a plan for providing an IoT solution for Our product is a culmination of our past three products (Lock, Display, and DC Motor). This will be used to create an automated locker system that will solve any underlying issue that prevents a student from controlling the locker manually.. This is an opportunity to integrate the knowledge and skills developed in our program to create a collaborative IoT capstone project demonstrating my ability to learn how to support projects such as the initiative described by [3]. I request approval of this project.

**References**

[1] Electronic Lockers. (n.d.). Retrieved February 01, 2018, from http://www.tiburonlockers.com/storage-solutions/electronic-lockers.php

[2] Institute of Electrical and Electronics Engineers. (2015, August 28). IEEE Xplore Digital Library [Online]. Available: https://ieeexplore.ieee.org/search/advsearch.jsp

[3] V. Stangaciu, V. Opârlescu, P. Csereoka, R. D. Cioargă and M. V. Micea, "Scalable interconnected home automation system," 2017 21st International Conference on System Theory, Control and Computing (ICSTCC), Sinaia, 2017, pp. 169-174.