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***Proposal for the development of 180-Switch***

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*Computer Engineering Technology Students*https://github.com/PRana02/USB-Microphone-Alexa-Skills-Based-

**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 . The database will store . The mobile device functionality will include and will be further detailed in the mobile application proposal. I will be collaborating with the following company/department . 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 . 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 . A bit of background about this topic is .

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.

**Skills**

Over the years in taking Computer Engineering, various courses have provided us with skills such as

* Creating & maintain a database,
* Implementing instructions in both Java, C, & php
* Understanding the logic behind computers.
* Debugging & trouble shooting.
* Android development.

The skills above are just examples of some skills we will be bringing towards this project. With these skills and more we are confident in our ability to produce a fully working Application/Device.

**Methodology**

Our focus in the approaching weeks will be following these 5 Steps as a base towards completing our project:  
 Step 1 Adjusting the database.

Step 2 Connecting devices.

Step 3 Implementing commands.

Step 4 Testing & Corrections.

Step 5 Demo.

**Step 1 Adjusting the database**

Our first step is going to be modifying the database, providing more compatible information with our device. For example, the information being stored, such as users’ names, emails, commands used, history, etc.

**Step 2 Connecting devices.**

Making a proper connection between our mobile device and our amazon Alexa so data sent is received from both ends.

**Step 3 Implementing commands.**

Creating a set of built in commands to allow both devices to communicate between each other easily.

**Step 4 Testing & Corrections.**

Analyzing the near end result, making any required adjustments and fixes.

**Step 5 Demo.**

Demonstrate our final project to both professors and classmates.

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

The brief description below provides rough effort and non-labor 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.

Raspberry pi from Amazon : CAD $90,

USB Microphone from Amazon : CAD $10 and

Speakers from The Source : CAD $30

**Concluding remarks**

This proposal presents a plan for providing an IoT solution for . 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]

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

[3]