**Cloud-Based Light Switch Charter**

**Project Overview:** The purpose of this project comes in two forms. The first, will allow users to easily control lights within their household from anywhere. The second, will allow users to save on electricity bills by reducing wasteful use of light. Since people almost always carry their smartphone around with them, especially when out of the household, it becomes convenient to control the lights in their household from their smartphone from anywhere in the world. Giving users this level of control of their lights in their household will allow them to reduce their electricity bill because wasteful use of light bulbs can be reduced. By being able to turn off the lights of any room from anywhere, energy footprint can also be reduced. The days of wasting energy on lightbulbs when not needed could soon be a thing of the past.

**Project Approach:** The driving force of this project is product price point. Current solutions have an average price of $25 - $40. Even so, some solutions require users to buy proprietary products. This makes it inflexible for users when choosing light bulbs for their home as they have to buy company-specific products. This project interfaces with any lightbulb that may be currently installed in the user’s home. The project will utilize these components: Arduino Pro Mini 3.30V ($5.49), ESP8266 ($6.55), Android smartphone (User Provided). These leaves the major components costing at $12.04. The Arduino will interface with the lightswitch and ESP8266. The ESP8266 will communicate with the cloud via home router to send commands to the Arduino. The Android smartphone will communicate with the cloud directly to send commands to the ESP8266 which will parse and relay those commands to the Arduino.

**Project Objectives:**

* Milestone 1: Interface Arduino and WiFi communication (April 19, Week 4)
* Milestone 2: Interface Wifi chip and router communication (April 26, Week 5)
* Milestone 3: Light-switching mechanism (May 3, Week 6)
* Milestone 4: Interface cloud-based communication (May 17, Week 8)
* Milestone 5: Android application/Final Product (May 26, Week 9)

**Project Hazards:**

* Compatibility between ESP8266 and Arduino. Key features might not be supported such as communication from cloud.
* Arduino might not be able to handle power output from wall.