Summary
On the UC Davis campus, there is a chicken coop used for housing of chickens that lay eggs. With this chicken coop, there are a couple of problems that we plan to address through our electronic systems. The first problem that needs to be addressed is how to best keep track of the chickens as they enter and leave the chicken coop. Chickens are unpredictable in how they move about so it is difficult to predict the patterns with which they go in and out of the chicken coop without a specific tracking scheme in place. Due to this, it is hard to keep track of chickens when they are lost from the coop and do not return. A tracking system would help keep track of how many chickens are in the coop at a given time and if the number of chickens is decreasing over a period of time. In addition, it is desirable to keep track of certain characteristics of the chicken coop such as the temperature, humidity, and ambient light. It is necessary to keep track of these characteristics in order to make sure the chickens are kept in a climate that is suitable for their living habits.

Methodologies
Our chicken counter was tested and verified by setting up the system on a wooden frame that was an analog to the chicken coop entrance. Our tags were then placed on an analog of the chicken in order to make sure that the counter could count the tags as they walked into and out of the coop. Through this, it could be verified from the SD card data that the correct chickens were being recorded as well as whether they were walking in or out of the coop.

Results
Our project was able to implement both the environmental monitor and chicken counter parts of our project. Our environmental tracker has been shown to be able to successfully measure the humidity, temperature, and light of the environment (graphs right). This device could be used in many applications beyond a chicken coop in order to monitor the ambient environmental conditions. We have a Matlab script that will generate the graphs from the raw data so that the researchers can easily see any correlation between ambient environmental conditions and coop exit and entering behavior.

Hardware

- Vishay TSOP34338
- Osram SFH 4045N
- Sparkfun ID-12LA
- Honeywell HIH6030

Mobile Application
Our mobile application displays the current data being collected by the device (the same data that is being stored on the micro SD card). The most interesting part of this application is its ability to switch BLE connection. Since we have two devices with BLE (data logger and chicken counter), we had to develop a way to connect to one, read the data, disconnect, and then connect to the other.

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