Harris Water Meter Project

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Objectives

- Measure the amount of water the user drank throughout the day
- Report that information via Bluetooth to a Smartphone Application
- Make an Android smartphone application so the user can see their progress for the day. It will then tell you how much more they need to drink for the day, based on the weight and workout level that the user inputs.

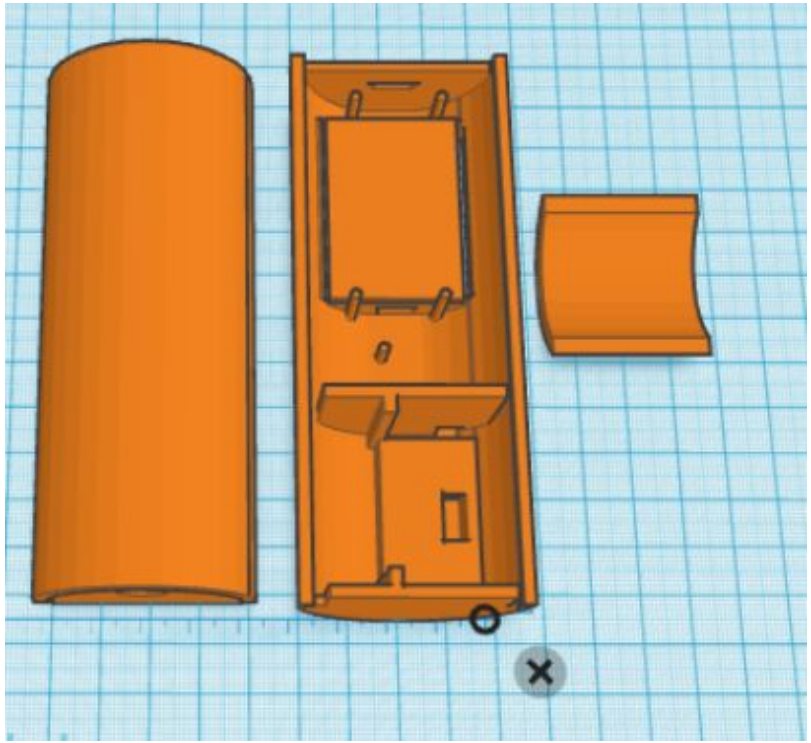
How we did it

- Used a hall effect water flow sensor that indicates the volume of liquid passed as pulses in a signal. After testing the sensor, we found the pulse rate to be 0.16ml/pulse.
- Used a microprocessor to count the number of pulses given by the sensor to determine the amount of water that passed through
- Used Android Studio for the smartphone application, programming the application to display the total volume for the day as both a graph and logging system, and display the amount left to the daily goal as a “toast” notification.

How we can improve it

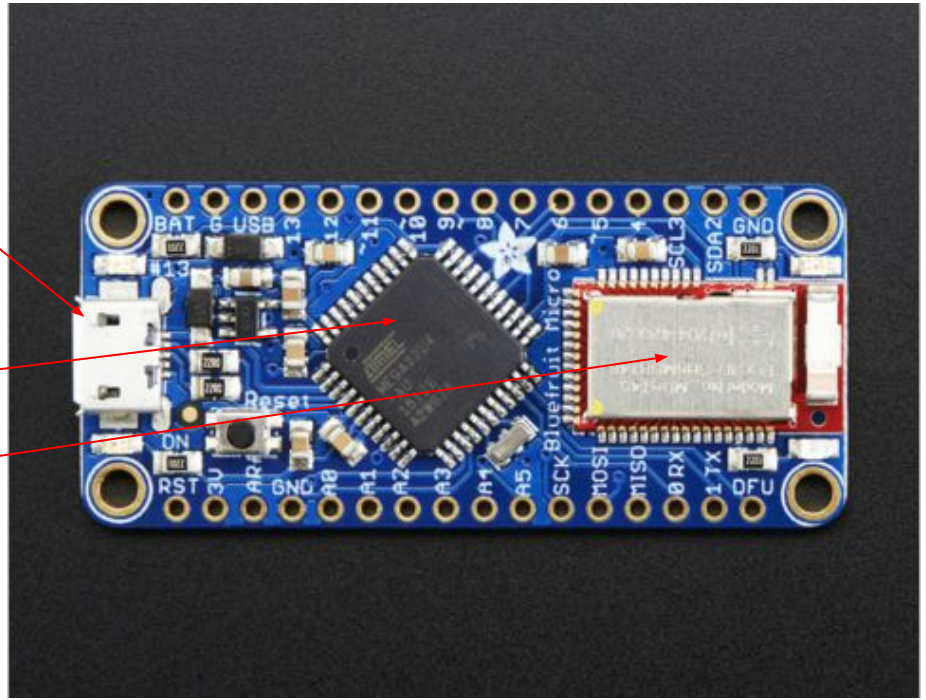
- Enable the user to select a time on the phone app for when he/she would like to receive push notification for how much more water to drink to reach their daily goal.
- Update our system to use the latest version of the Adafruit Bluefruit (we used the LE Micro but Adafruit recently came out with the Feather)
- Use a smaller custom sensor so that we can save space.
- Integrate our finished device into a water bottle for marketable purposes.

Casing Design using TinkerCad

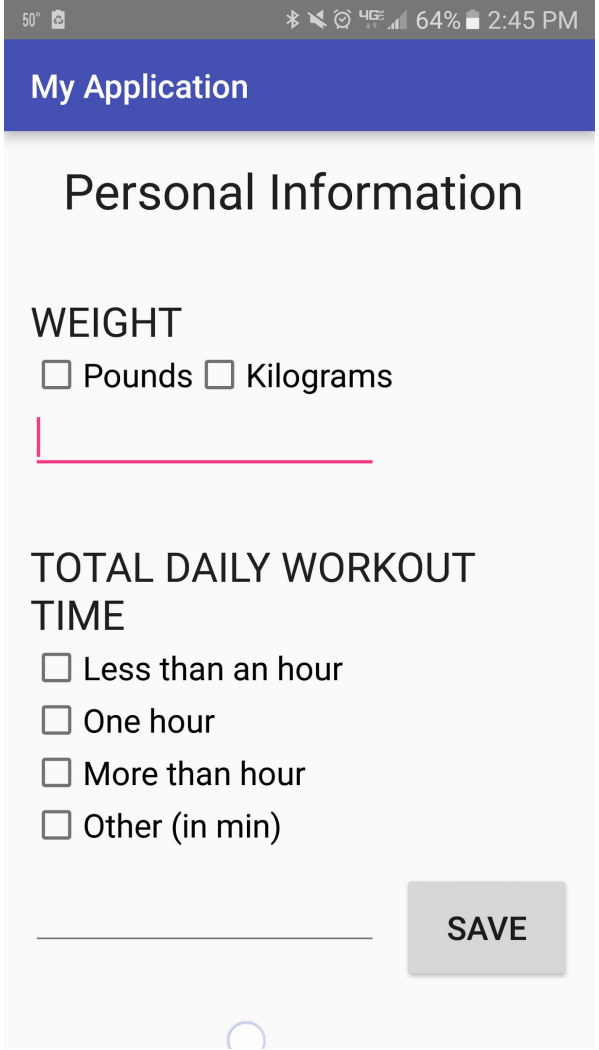


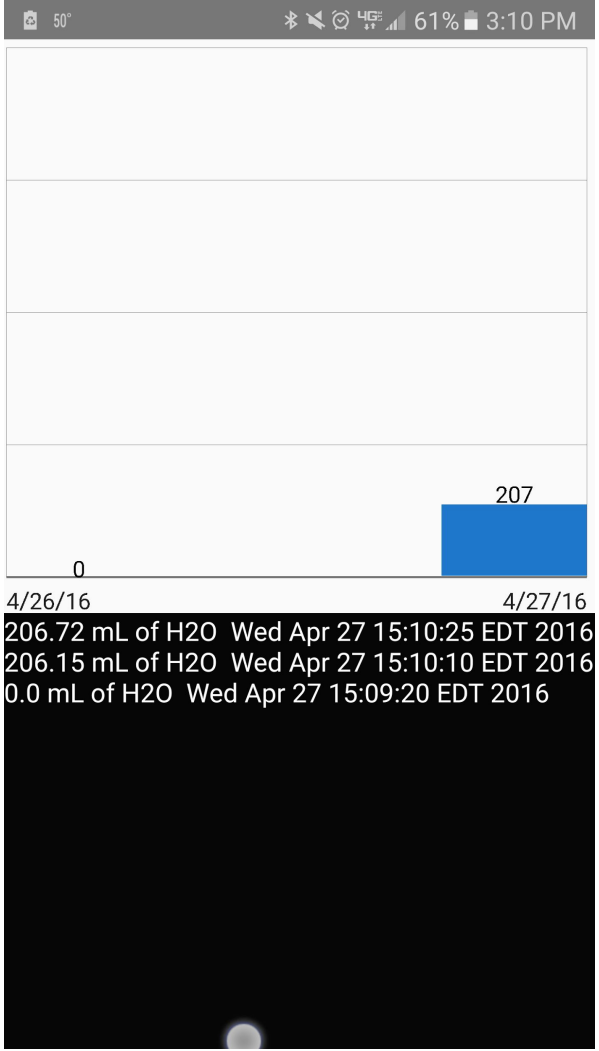
Adafruit Bluefruit LE Micro

- Built-in USB bootloader
- Programmable using the Arduino IDE
- ATmega32U4 Microcontroller
- Bluefruit LE Module



Hall Effect Water Flow Sensor


64% 2:45 PM
My Application
Personal Information
WEIGHT
Pounds
Kilograms
TOTAL DAILY WORKOUT TIME
Less than an hour
One hour
More than hour
Other (in min)
SAVE


61% 3:10 PM
207
0
4/26/16
4/27/16
206.72 mL of H2O Wed Apr 27 15:10:25 EDT 2016
206.15 mL of H2O Wed Apr 27 15:10:10 EDT 2016
0.0 mL of H2O Wed Apr 27 15:09:20 EDT 2016

Source Codes for the System

https://github.com/josera2594/H.W.-B.P

Things included:

Senior Project Final Presentation (Pdf)

Senior Project Final Report (Pdf)

Arduino Code (pulse counter/amount of water consumed)

Android Studio Application Code