Automated Strength Training and Logging System

Overview
Our sponsors tasked us with creating a prototype to log fitness information similar to a personal notebook some people bring to the gym. The device had to be lightweight and not interfere with the exercising process. We wanted to make the user able to go about their normal routine without having to enter data into a phone or notebook.

Objectives
Our goal was to produce a working light weight prototype that would record data in real time during the user's workout. The data we wanted to display to the user is rep/set count, time for each rep/set and power exerted by the user.

Approach
- We began brainstorming ideas for the devices able to achieve our goals
- We had to find an alternative to a phone app for data handling, so we chose LabVIEW
- Once we had our devices we began implementing the data manipulation in LabVIEW
- With our device dimensions we began creating a housing unit in Solid Works
- We fabricated two prototypes with 3D printing
- The second prototype improved the designs from the initial prototype design
- Our accelerometer code outputted 3 axis data and sends it through the Bluetooth transmitter
- The transmitter sends the data to our Bluetooth dongle which communicates with LabVIEW
- LabVIEW takes the accelerometer data in real time and calculates the desired data

Outcomes
- Reduces the time spent recording data at the gym
- Calculates power exerted by the user which cannot be determined during by the user themselves
- The user does not need to do anything outside their normal routine to use our device
- Helps professional lifters track their data to achieve better results