EC 450 Project Design Specifications

* Turn on
  + Unless no calibration data found, automatically use existing calibration data in flash memory
  + Button press to indicate desire to switch to calibration mode
* Calibration Mode (in general for both photoresistors):
  + **Low** – low hand reading (as low or lower than you may go) – button push to set
  + **Medium** – slightly higher hand reading (as high as your hand may go on the downbeat) – button push to set
  + **High** – no hand reading, set based off of ambient light – button push to set
  + **Indicator Lights:**
    - Low – red
    - Medium – green
    - High – both red and green
* Volume Control Photoresistor
  + Use range from High to Low to calculate volume levels you can step between.
* Tempo Control Photoresistor
  + If reading is between Low and Medium, a downbeat has occurred.
  + Need some sort of time cushion or light level threshold.
  + Downbeat = when the light sensor value reaches a minimum between Low and High.
  + Possibly a filter function
* Still need to figure out:
  + How to use tempo “readings” to integrate into music playing
    - BPM?
    - Possible fourth calibration variable?
  + Additional vertical photoresistor contraption?
  + Music player specifics
* If person stops conducting: (FIGURE OUT LATERRRR)
  + Have a timeout variable – turns music off after certain period of inactivity
* Calculate the length of a quarter note from difference between two “beats” (hitting a low light threshold on the photoresistor)
  + Start song with a default quarter note length so playing can start from first downbeat
  + Use quarter note length as a “multiplier” and have note lengths in song as corresponding durations (i.e. QN = 1, WN = 4, DHN = 3, etc.)
* Have the two photoresistors on separate breadboards so the light signals don’t interfere with each other