Function Proposal

Hardware

- Inputs
    - Pushbuttons
        - Function - Control navigation and states of the device
            - Up - Allows user to navigate menus and increase settings
            - Down - Allows user to navigate menus and decrease settings
            - Select - Allows user to confirm menu selections or return to home screen
        - Source: https://learn.sparkfun.com/tutorials/sik-experiment-guide-for-arduino---v32/experiment-5-push-buttons
    - Slide Switch
        - Function - A slide switch will allow the user to power up/down the device.
        - Source: https://www.sparkfun.com/products/14330?_ga=2.256879747.980454918.1513806566-2145733426.1491532409
    - Voltage Divider - Allows the users to use alligator clips to connect to various external power sources for voltage sampling.
        - Source: http://www.electroschematics.com/9351/arduino-digital-voltmeter/
- Processing
    - Arduino Pro Micro - This device provides a good number of inputs/outputs required for the multiple buttons and sensors required for this project.
        - Source: https://learn.sparkfun.com/tutorials/pro-micro--fio-v3-hookup-guide#resources--going-further
- Outputs - *What outputs will your device use communicate with the user?*
    - OLED Screen (0.96” Two Color) - This small screen utilizes the I2C protocol which keeps the number of wired connections to a minimum (2 wire). It includes yellow and blue pixels which allow the interface to differentiate between settings and values in the graphic interface. It is also compatible with the Adafruit GFX and OLED libraries, making it simple to program.
        - Source: https://www.amazon.com/gp/product/B01G6SAWNY/ref=oh_aui_detailpage_o04_s01?ie=UTF8&psc=1
    - Piezo Speaker - An embedded piezo speaker allows for audible feedback and alarms to be integrated into the system.
        - Source: https://learn.sparkfun.com/tutorials/sik-experiment-guide-for-arduino---v32/experiment-11-using-a-piezo-buzzer
- Power - How will the device be powered and recharged?

    - 1200 mAh LiPo Battery - This battery will give the unit enough power to function over a reasonable span of time when testing circuits.
        - Source: https://www.adafruit.com/product/258
    - Adafruit PowerBoost 1000 - This addon circuit will provide constant power and charging capabilities to the device.
        - Source: https://learn.adafruit.com/adafruit-powerboost-1000c-load-share-usb-charge-boost/downloads

Software - Include a list of software that you will use to create code for your device. Make sure to include relevant libraries, guides, and documentation.

- Arduino IDE - This software will control communication between external sensors and the game.
    - Source: https://www.arduino.cc/reference/en/
- Adafruit GFX Library - The GFX Library allows for quick interfacing for drawing text, simple graphics, and bitmaps to screens.
    - Source: https://learn.adafruit.com/adafruit-gfx-graphics-library/overview
- Adafruit OLED Library - This library creates a simple set of commands for interfacing with 128 x 64 I2C OLED screens.
    - https://learn.adafruit.com/monochrome-oled-breakouts/wiring-1-dot-3-128x64
    - https://www.amazon.com/gp/product/B01G6SAWNY/ref=oh_aui_detailpage_o04_s01?ie=UTF8&psc=1