Project Glossary:

1. Battery
2. Voltage
3. Current
4. Circuit
5. Transistor
6. Temperature
7. Sensor
8. Fan
9. LCD Screen
10. Button

Requirements:

1. Regulate the battery's voltage so it does exceed safe operating specs (risking fire are/or electrical damage) or dip below the minimum power threshold.
2. Monitor the current of the circuit, and switch between 'buck' and 'boost' mode appropriately.
   a. When the current is high the circuit will enter 'buck' mode and begin charging the battery.
   b. When the current is low the circuit will enter the 'boost' mode and begin running off of battery power.
3. Based upon inputs (voltage, temperature, current, etc…) determine and activate the appropriate transistor. This must be down within a reasonable timeframe to ensure both the efficiency and safety of the circuit.
4. Determine the data from input/output current and voltage. The data is received from electrical inputs and will need to be interpreted into a useable format.
5. Display current and voltage information to LCD in a human readable format.
6. Accurately determine temperature based on sensor input.
7. Regulate fan speed based off the temperature of the circuit.
   a. Fan should spin faster as the temperature rises so that the circuit can cool down.
8. Change the LCD screen by pressing a button. The first screen will be the "Input Current and Voltage" and the second screen will be the "Output Current and Voltage"

9. Program switch debounce. When the physical buttons are pressed, the ensure that the system ignores button bounce-back that could lead to multiple button signals from one press.
10. Display on the LCD screen whether the battery is charging or discharging. This should be displayed on both input/output screens.
11. Display the current temperature of the circuit on the LCD screen. Temperature should be displayed on both input/output screens .