Preliminary Design Questions

1. **What computational platform(s) do you plan to use (BBBw, Atmel, etc)? How many of each type do you plan to have in your system? Why did you choose this platform? Extremely important considerations include:**
   a. **BBBw uses 100x more power than typical microcontroller**
   b. **Do you need wifi, Bluetooth, etc?**
   c. **BBBw requires 2 minutes to boot up and must be shut down carefully...is this a problem for your end user?**

We plan to use the BBBw platform for our system. We chose this system because we plan on utilizing the Bluetooth function as a major component of our system. There is no issue with the long startup time, however power consumption is looking like it's going to be an issue due to the constant polling that is organic to the nature of the system.

2. **What sensors do you plan to use? Please be specific and include links to parts (when applicable).**

As far as sensors go, the only one that we require would be a motion sensor.

https://www.digikey.com/product-detail/en/panasonic-electric-works/EKMC2603112K/255-6283-ND/9356927

3. **What outputs/actuators do you plan to use? Please be specific and include links to parts (when applicable).**

LED panel in the form of a strobe light.

https://www.amazon.com/RETROFIT-Halogen-fixtures-7000Lumens-33Watts/dp/B01BHDDOEW

Speaker

https://www.digikey.com/product-detail/en/cui-inc/CMS-28528N-L152/102-3841-ND/6137734

Bluetooth

Would we be able to use the built in WIFI or would we need to buy a bluetooth adapter?

4. **How do you plan to power each component? Do you need external power supplies? Voltage regulators b/c you are powering multiple components? Please be specific and include links to parts (when applicable).**

External power supply via power brick

https://www.amazon.com/Portable-RAVPower-22000mAh-Li-polymer-Smartphone/dp/B01G1XH46M?ref_=fsclp_pl_dp_5

Voltage regulator

https://www.amazon.com/dp/B07C2QF1T1/ref=psdc_10967761_t1_B01GJ0SC2C

5. How do you plan to connect these components? This includes physical connection (Ethernet cable, Wifi, individual wires, etc), protocol (TWIM, SPI, TCP/IP, UDP, ADC, DAC, GPIO, etc), and interface (Web Sockets, ThingSpeak, TWIM interface described in sensor data sheet, etc).

Motion Sensor - GPIO

LED - GPIO

Speaker - GPIO

6. How do you plan to package/encase your devices? Will devices need to be weatherproof? How do you mount or install your devices? Will you need to use a 3D printer?

We will 3D print mounts for the LED, motion sensor, and speaker, beaglebone, and battery brick. It will have to be weatherproof.

7. Draw a complete block diagram of your system. In addition to the standard components of block diagrams, show how each component will be powered. For each device that is connected, show the physical connection type, protocol, and interface definition on the lines that connect devices. In cases where you have multiple controllers (computational platforms), make sure to show how they are connected with each other and include all systems on a single diagram.
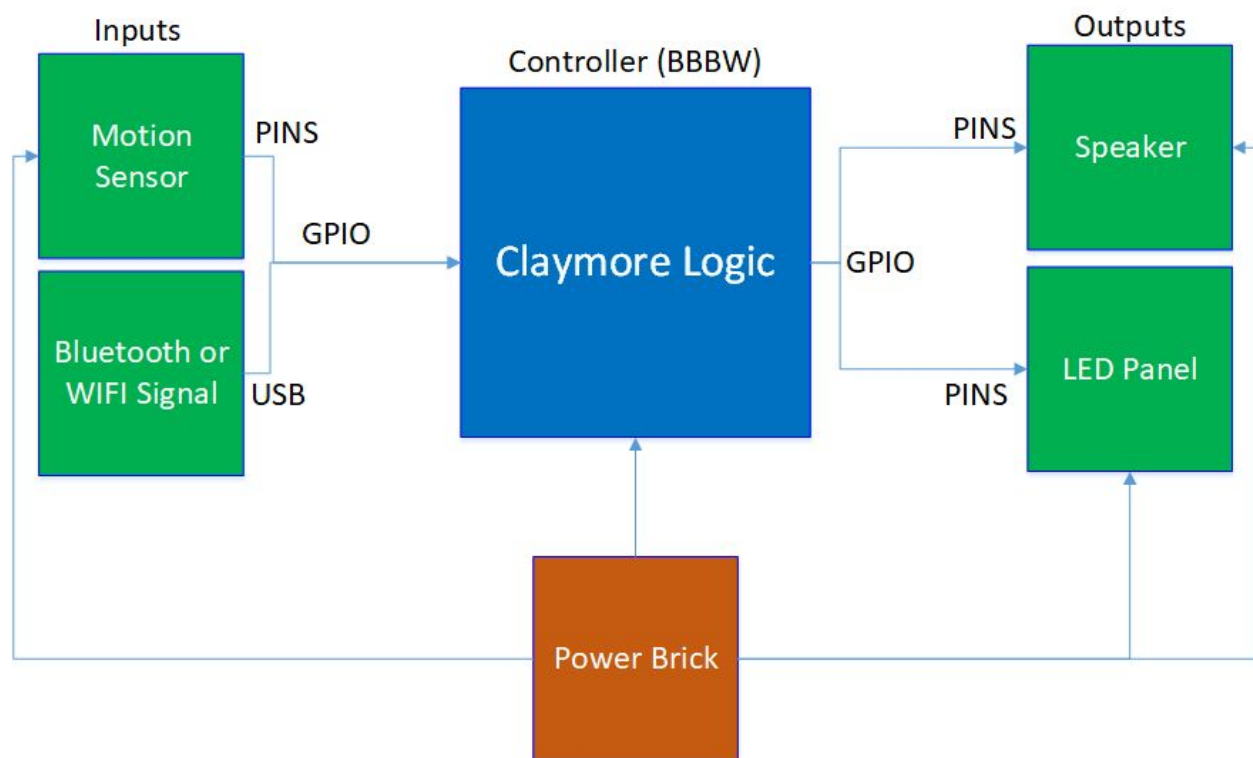
8. What programming language(s) do you plan to use? What drivers or ASF modules will you need?

We will write the code in C. No ASF modules will be needed.

9. If your project will utilize a web display, what software technologies will you use to accomplish this?

Some kind of phone application software will have to be written to give the user an interface on their smartphone to communicate with the board.

10. Please list any other details or topics that are not covered by the questions above.