Project Status Check 1

1. Which parts of the project have you begun constructing to get to the final working solution?
   We have not begun any physical process yet, however we have discussed our programming logic and have ran coding simulations online for the basic timing system.
2. Have you ordered all additional parts that will be needed? When will they arrive if they have not already?
   Yes, we have ordered all the extra parts that we needed, we have the microcontroller and an ESP already. We can manufacture anything else we may need.
3. Have you designed any of the parts that will need to be manufactured? If not, when will those designs be done?

   No, we have not designed any of the specific parts yet, because we can't really design them til we have a main chassis designed.

4. If you are able to complete the project by May 13th to your expectations, will you receive full credit in all five functional element categories (list how you meet each requirement)?
   If all goes according to plan we should be able to reach all five requirements by May 13th. The requirements are:
   - Output Display: We will accomplish this with LED's to indicate the operation status of the machine. The app that we use might also have an output display of what commands were executed and what weren't.
   - Manual User Input: We will either have button to designate the modes and time, which the user can press before leaving, or if we use the app we can have all of those inputs through the remote device
   - Automatic Sensor: We will use an ultrasonic sensor to determine whether an object (or cat, mainly) is near a toy, so that we can make the toy more vigorous and harder to catch, instead of just having the same pattern every time

- Actuators, Mechanisms, and Hardware: We will use multiple servos to move the toy, laser, door to the treats, and sensor. We will also have a DC motor to reel in the toy.
- Logic and Processing: We will either use an Arduino ESP or a Raspberry pi so that we can remotely activate this toy; we will probably use the Arduino for budget reasons. The processor will work locally by itself, with activation from a remote device.

5. What are the three most significant design challenges you foresee for this project?

   The hardest aspect of the code side of this project is going to be implementing the wireless control application of whichever microcontroller we go with, leaning towards raspberry pi currently. On the flip side, the hard design aspect of the physical design is going to be the cat toy wand, having it move around and reel a cat toy in and out is going to be challenging, and the cat treat release door might be a challenge to make sure that the door is limited to one cat treat.