Group 18: The Dark Knights

Client Meeting 3: Prototype 1

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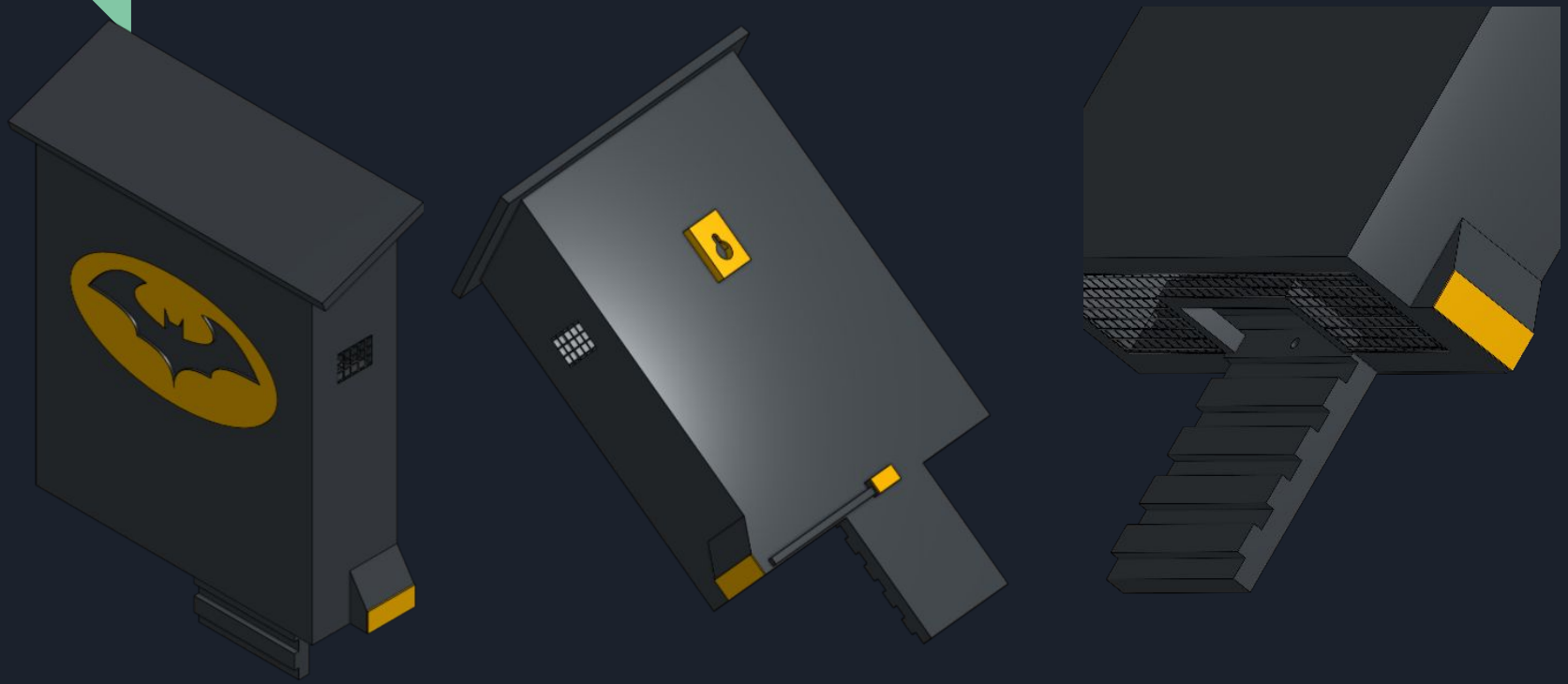
Goals of Client Meeting 3:

- Show our first prototype to Client and Classmates, which includes our bat box structure, the tracking/storing device and the power and coding functionality.
- Receive feedback from Client and Classmates

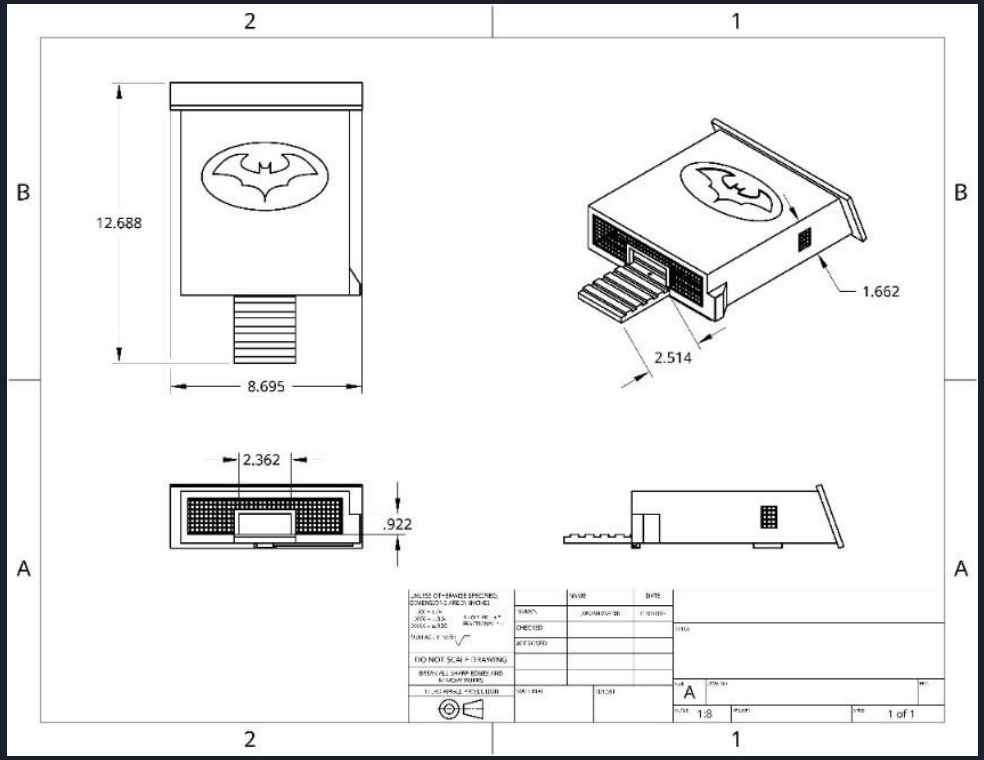
Bat Box Structure

- The following bat box design includes a housing system for tracking devices and a laser sensor, along with an adjusted entrance and square patterned mesh to enhance functionality.
- A small side box holds the tracking system, while a laser setup tracks bats entering the box.
- The box meets all client requirements, with the next steps focussed on creating a laser cutting template.

Bat Box Structure

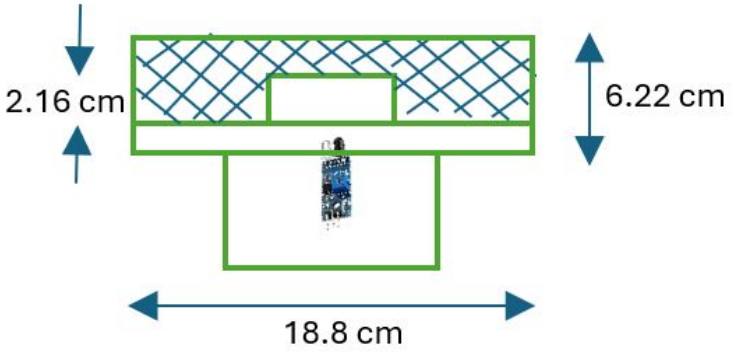


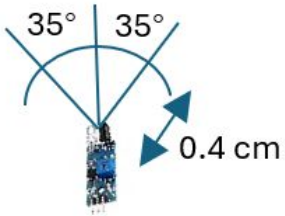
Bat box structure



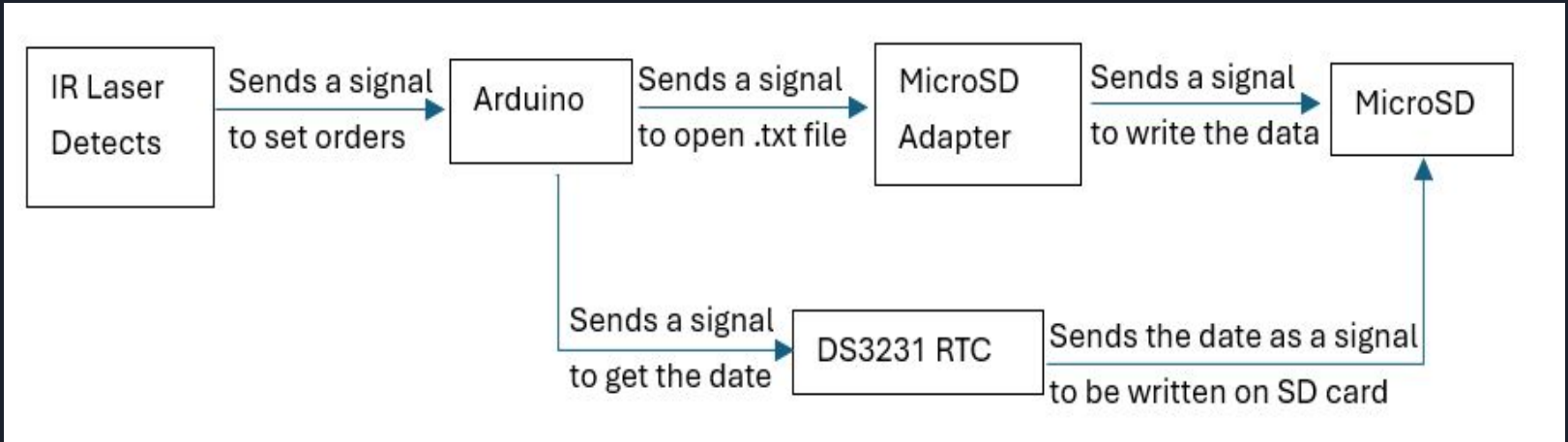
Tracking/Storing Device

- Uses an infrared laser sensor at the entrance to detect and record each bat, storing the data with precise date and time stamps via an Arduino and microSD card.
- Laser sensor is adjusted for optimal detection at 2 cm due to sunlight and bat guano, and a green LED verifies the system's functionality.
- Data is stored in four files on the microSD card over 5 months, tracking daily, monthly, and total bat counts, with the total divided by two to estimate unique bats using the box.


2.16 cm
6.22 cm
18.8 cm


35°
35°
0.4 cm

How the different components interact within the tracking system



Power and Coding Functionality

- The system is powered by a 12V AC/DC power supply connected to the Arduino Unos external power input.
- The Arduino board converts 12V to 5V to power the laser sensor, microSD adapter, and RTC module in parallel.
- This setup ensures all components receive the required 5V, aligning with voltage specifications for stable operation.