CS 4363 Internet of Things Development
Final Project

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December 17, 2021

Libraries Used

Libraries used in `home-monitor.py` :

1. `cherrypy` - A web framework for Python that can be used to build a functional web server.
2. `gpiozero` - A simple interface for GPIO devices.
3. `json` - A Python module that aids in encoding and decoding JSON format data. All sensor information is sent to the web dashboard in JSON format.
4. `threading` - A Python module that provides functionality for creating and managing threads in a Python environment. In this project, it is used to spawn a new thread which runs the `monitor` function in `home-monitor.py` so that `cherrypy` can continue to serve data.
5. `time` - A Python module that provides various time related functions. In this file, it is used for controlling the polling rate of sensors, controlling the duration of buzzer sounds, and providing a timestamp for alert events such as detected movement from the distance sensor.

Libraries used in `sensors.py` :

1. `gpiozero` - A simple interface for GPIO devices.
2. `os` - A Python module that facilitates various functions dealing with reading/writing files and directories.
3. `RPi.GPIO` - An interface for GPIO devices that is less abstracted than `gpiozero`.
4. `time` - A Python module that provides various time related functions. In this file, it is used for controlling the polling rate of sensors, controlling the duration of buzzer sounds, and providing a timestamp for alert events such as detected movement from the distance sensor.

Libraries used in `twitterbot.py` :

1. `Twython` - A Python wrapper for the Twitter API that supports both normal and streaming Twitter APIs.
2. `Pygame` - A set of Python modules designed for writing video games. In this file, it is used to access a connected camera and take a photo.
3. `datetime` - A Python module that supplies classes for manipulating dates and times. In this file, it is used to provide a timestamp to include in the tweet.

Sensor Connections

GPIO4	DS18B201 temperature sensor
GPIO17	Humiture sensor
GPIO22	HC-SR04 ultrasonic sensor (`echo`)
GPIO23	HC-SR04 ultrasonic sensor (`trigger`)
GPIO24	Active Buzzer
GPIO25	Button
SDA1	MPU-6050 Gyro Module (`SDA`)
SCL1	MPU-6050 Gyro Module (`SCL`)
USB port	Webcam

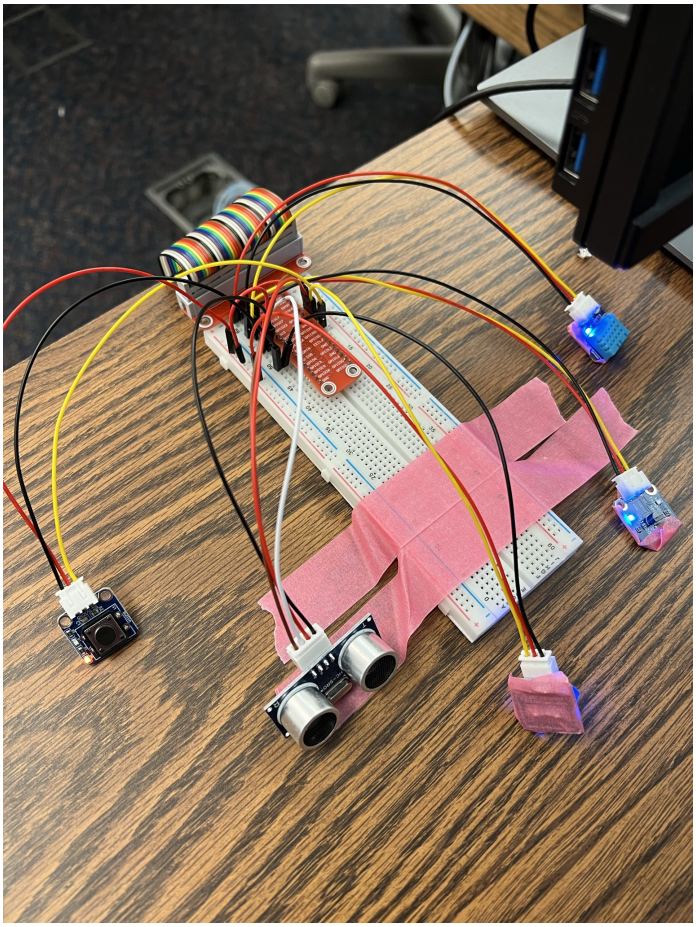

Figure 1: Sensor connections

Case Design

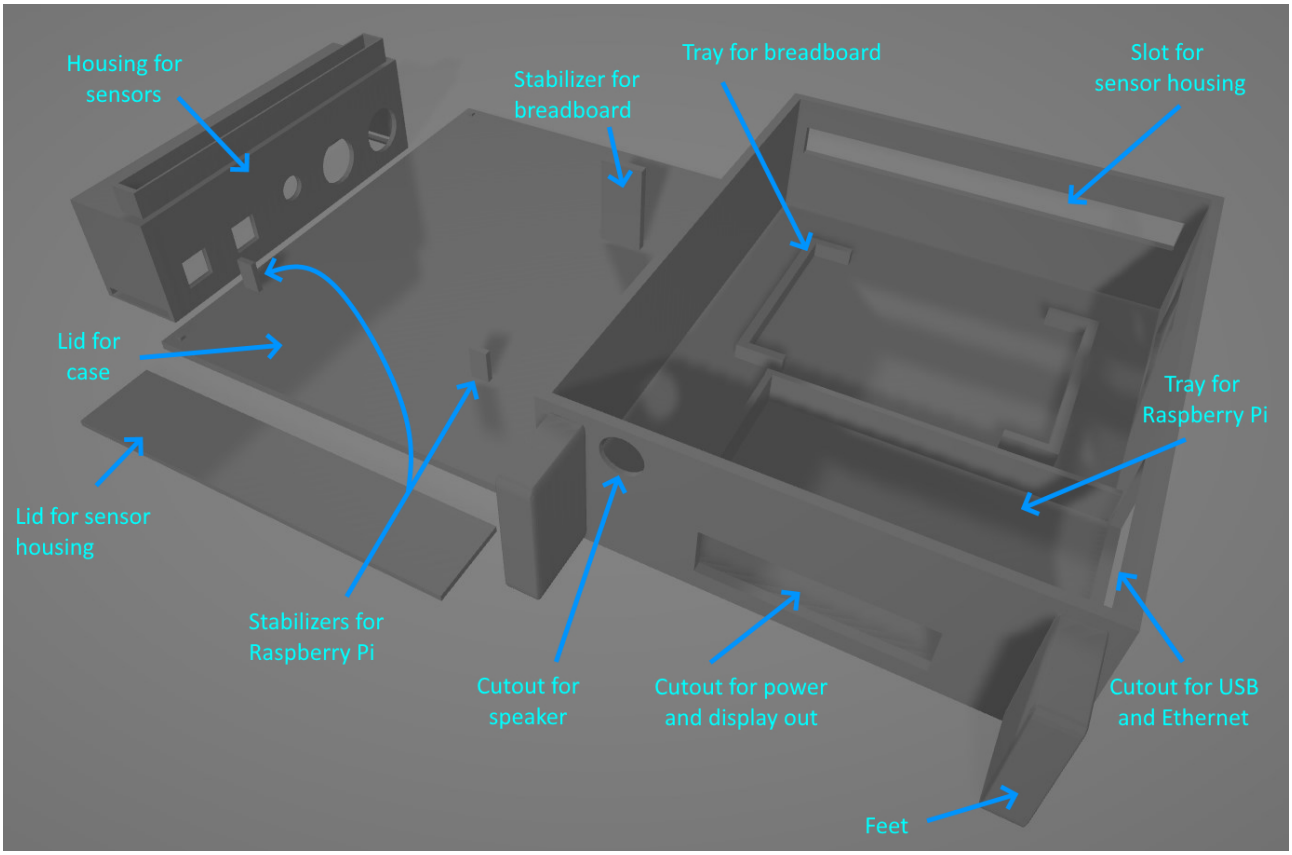

Figure 2: Case design