

## **Group 3**

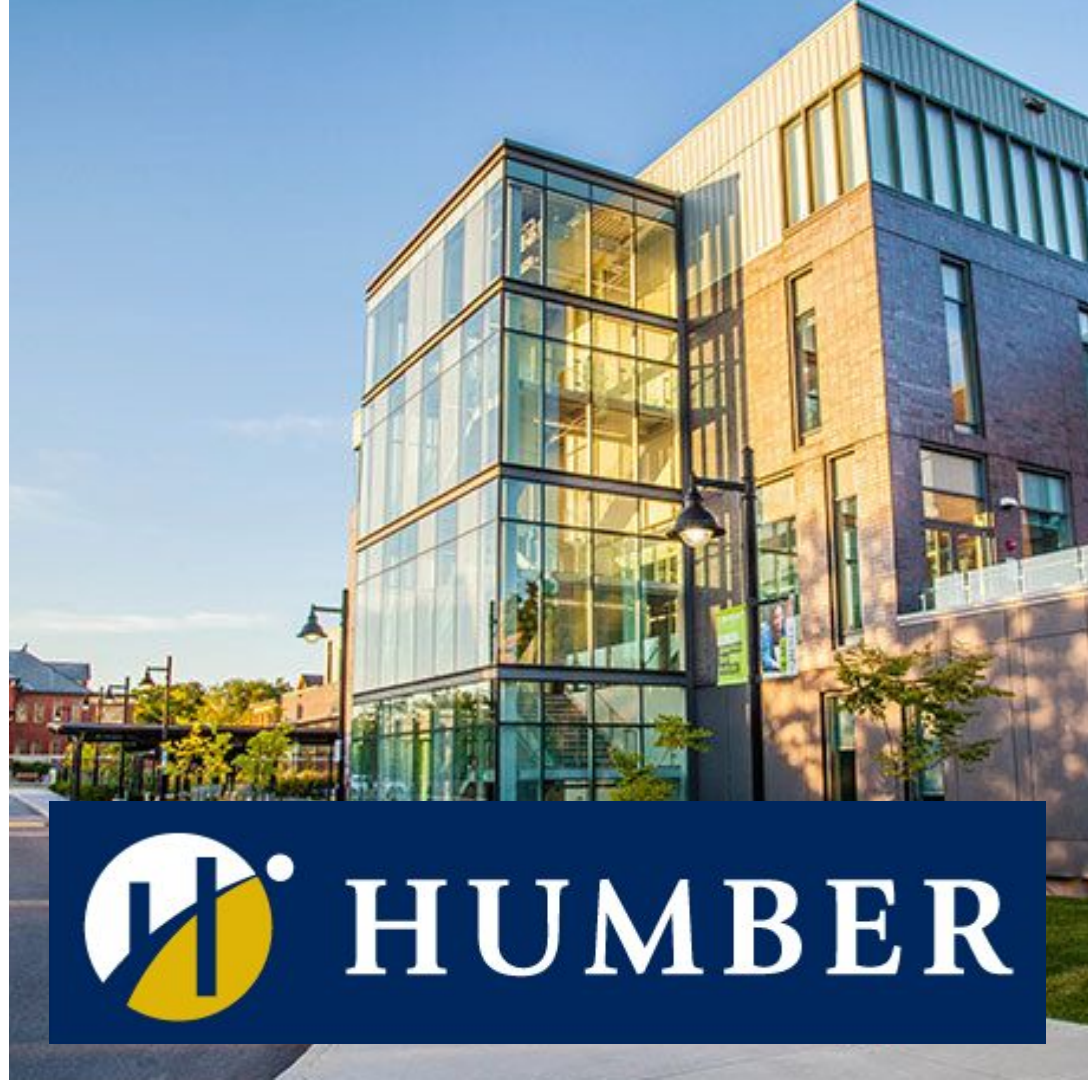
**Priyam Desai**

**Sarah Tadele**

**Pruthvirajsinh Solanki**

**Sion Lee**

**Yejun Son**



**Weather**

# Weather

Our plan is to add a weather system to Lego City. The weather system would include the addition of various seasons, sounds and lighting.



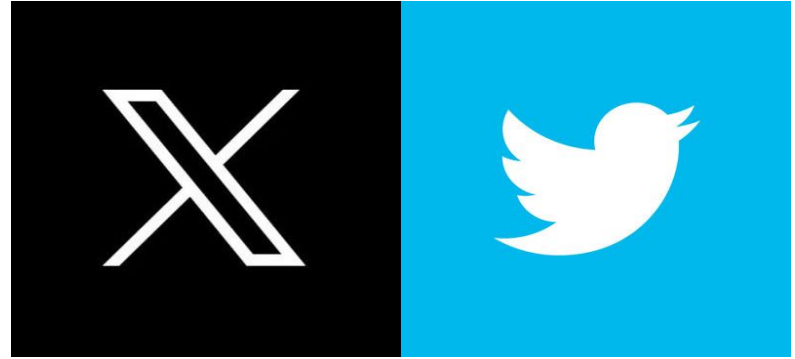
# Functionality

- Light will be dimmed/brightened and weather will be randomized in 4 hour intervals
- Snow plow trucks (when it's gloomy/winter)
- Leaf blower comes out for autumn
- Sound (speakers around the city)
  - birds chirping
  - rain falling
  - thunderstorm
  - wind
- Music (according to the season, the weather system will send a message to the radio system to play songs accordingly)



# Dependency

- Radio System (to play music according to seasons)
- A speaker system (different from radio) to play seasonal sounds (i.e birds chirping)
- Twitter API (daily weather reports)

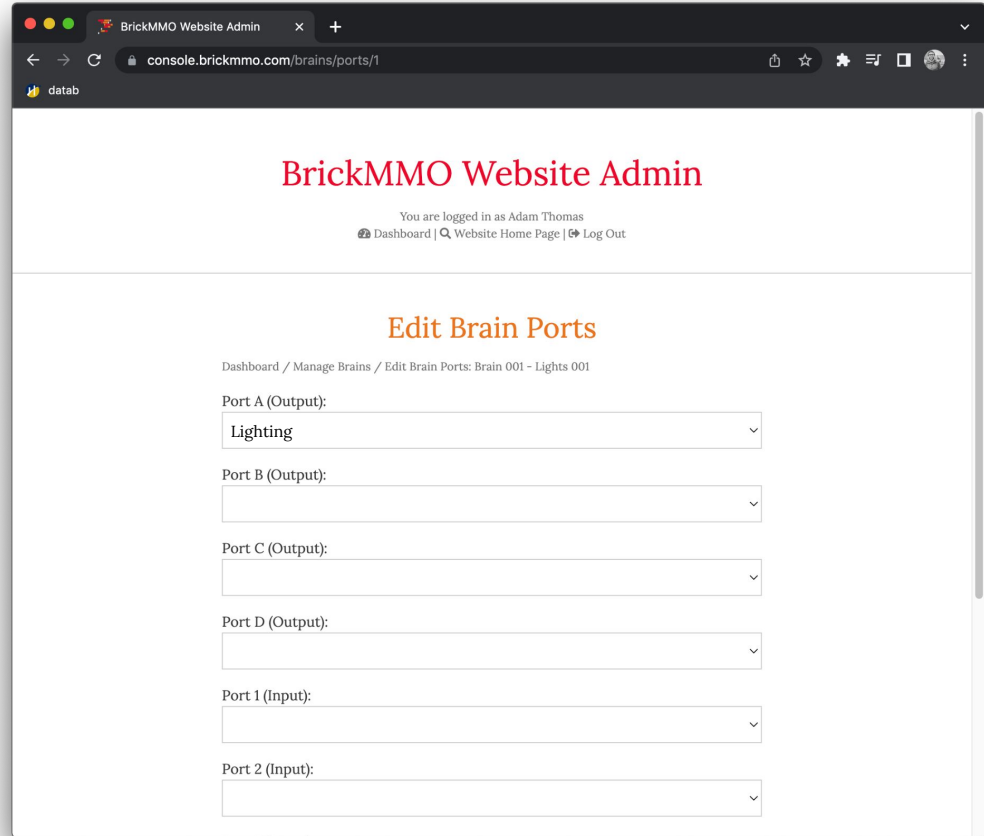


### **3. Settings and Info**

# Module: light

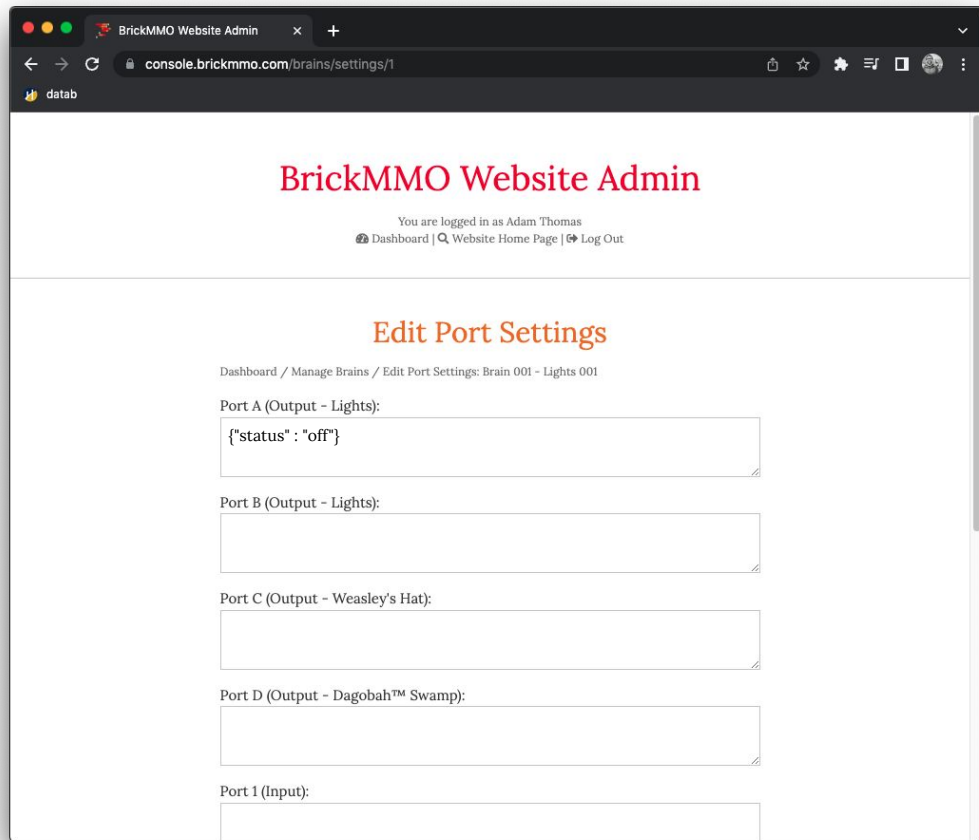
Can be connected to all the different light ports.

We will have external lighting around the perimeter of the city and street lights inside the city.



# Module Settings

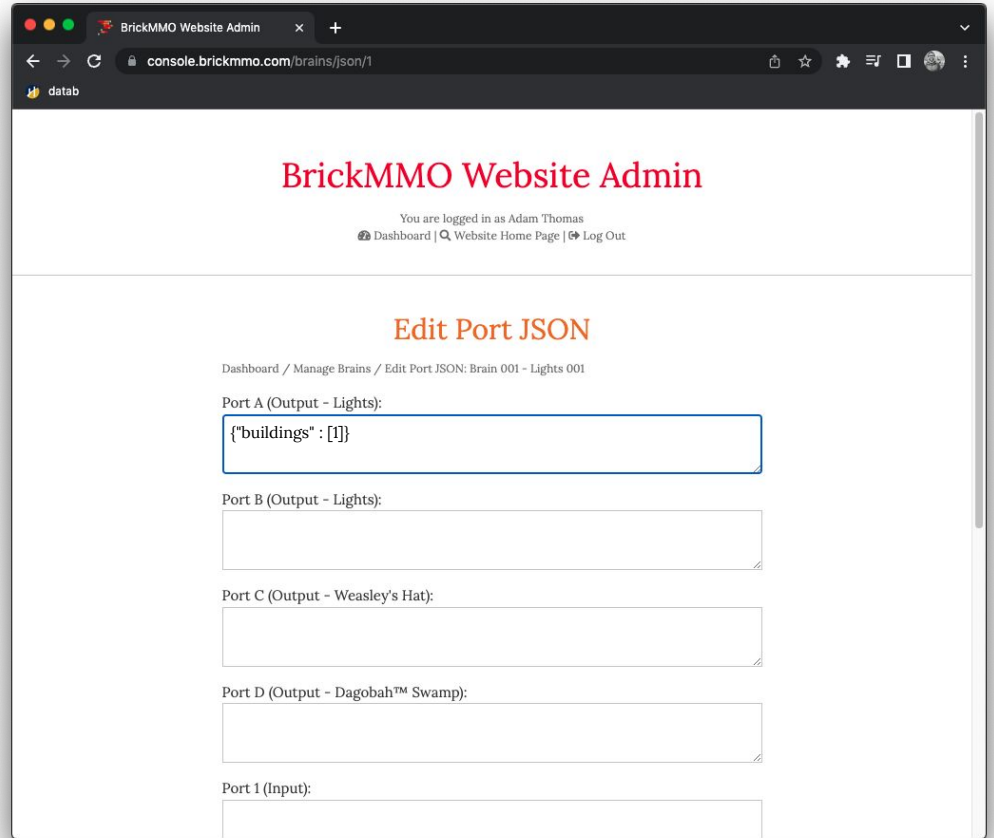
Lights can be turned on, off.





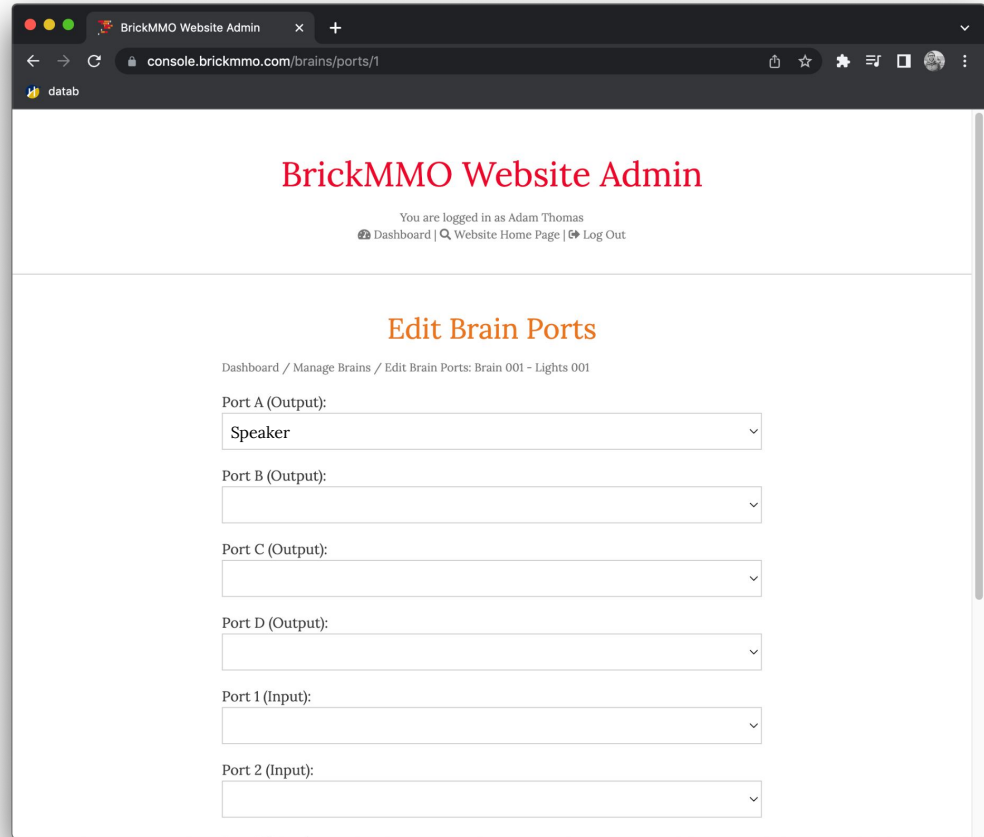
# Module JSON

Additional information will include how long the light has been on for.



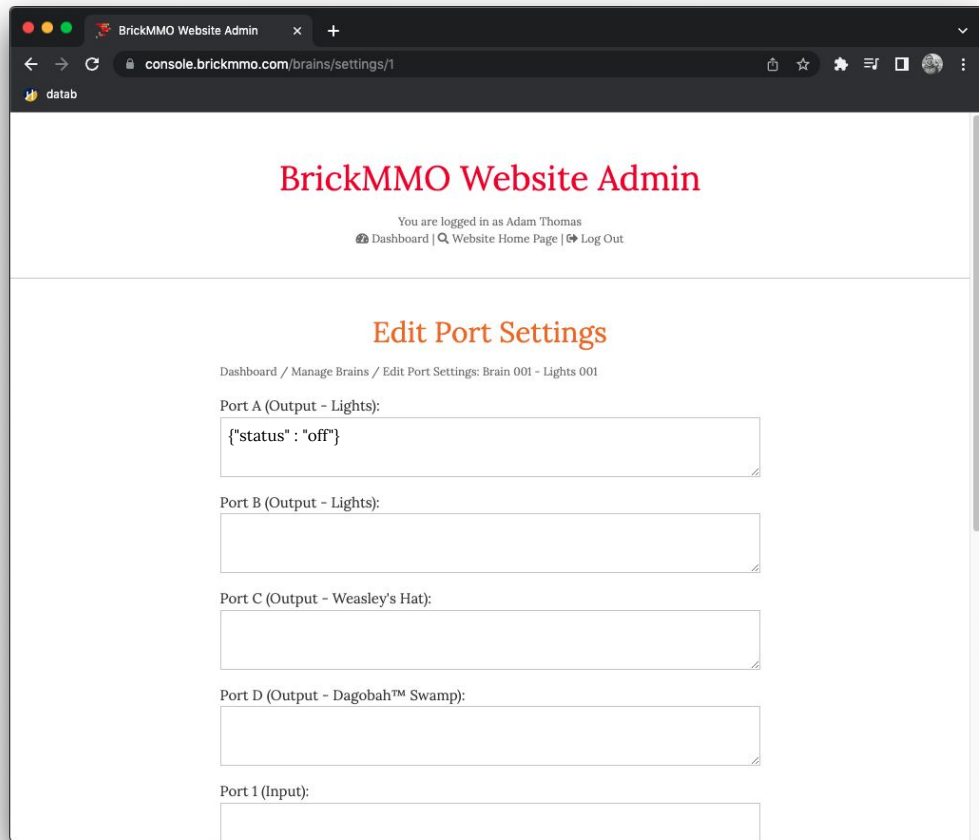
# Module: Speaker

External speakers will be connected to ports.



# Module Settings

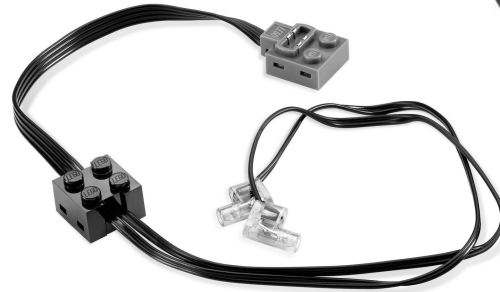
Speakers can be turned on, off.



## **4. Ports, Motors, and Settings**

# Batteries

Power function lights will be to EV3 Hubs using  
converters. connected



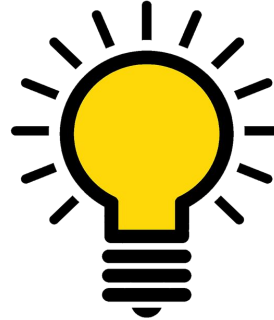
# Sensors and Motors

Connect the lights to EV3 and set timers.



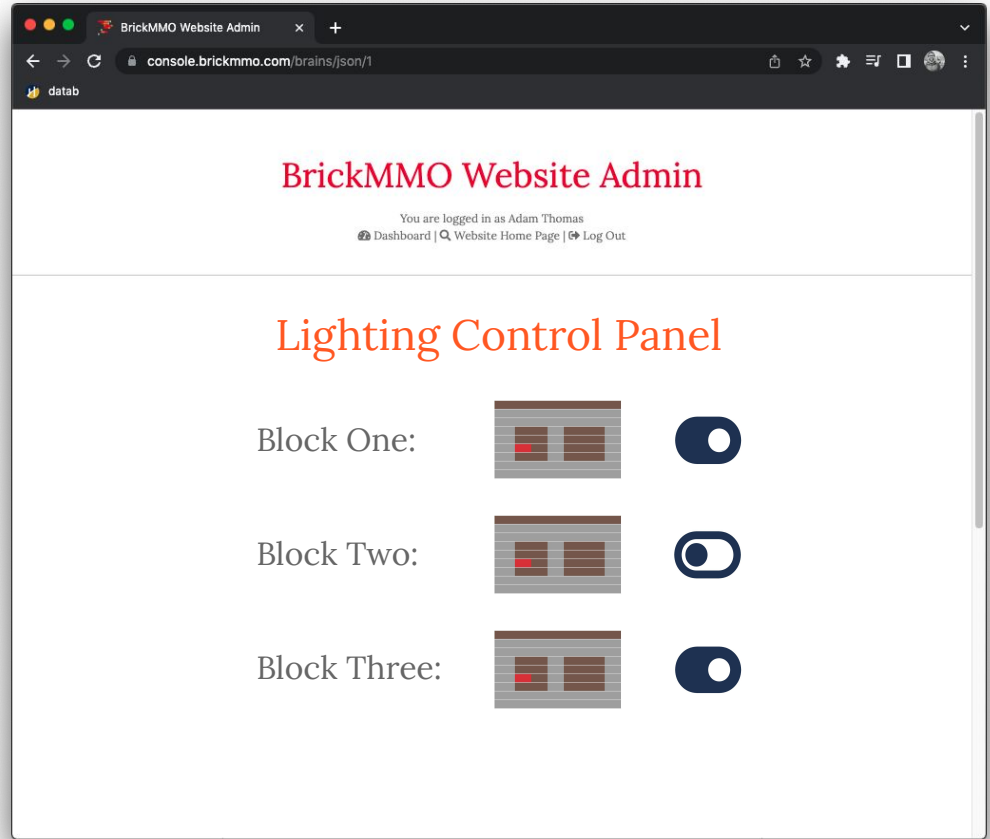
# Non-LEGO® Components

- External speakers for seasonal sounds
- External lighting to mimic day, night, gloomy weather etc.
- Control of external speakers (external computer)



# Admin Control Panel

Admin will have a control panel to change the status of the lights. You will be able to turn the light on or off.





## **5. Pseudocode**

# IOT Loop

```
While True
If (timeInterval >= 0 && timeInterval <= 4){

    streetLights = off;

    adjustAdaptiveLights(timeInterval)

} else if(timeInterval >= 5 && timeInterval <= 8){

    adjustAdaptiveLights(timeInterval)

    Streetlight = on

}
```



The LEGO Group. (n.d.). Diagon Alley™. Retrieved 2022, from <https://www.lego.com/en-ca/product/diagon-alley-75978>.

# IOT Loop

```
Function SetSeason () {  
  
    Set Season = random number (1-4)  
  
    If Season == 1 {  
  
        PlayRainSound(), SendSignal()  
  
    Else If Season == 2 { PlayBirdSound(),  
SendSignal}  
  
    Else if Season == 3 { PlayLeavesSound(),  
SendSignal }  
  
    Else if Season == 4 {  
PlaySnowPlowerSound(), SendSignal }
```



The LEGO Group. (n.d.). Diagon Alley™. Retrieved 2022, from <https://www.lego.com/en-ca/product/diagon-alley-75978>.

# API Endpoints

/api/season

**Will return a season name**

/api/time

**Will return a time interval**



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