

5. CLAP ON

Sound is produced by vibrating objects. Sound waves require a medium for travel, while light travels through empty space. There are some mediums, such as a solid wall, that light can not pass through, but sound travels through all substances.

The Clapper® is a sound activated product created in the 1980's. This device makes it possible to turn lights on and off by simply clapping your hands. In this activity you will program your `//code.Node` to turn on the RGB LED light by clapping your hands.

Objectives

- Create clearly named variables that represent different data types and perform operations on their values.
- Replicate and use existing code to create a new program.

Materials and Equipment

- Data collection system
- `//code.Node`

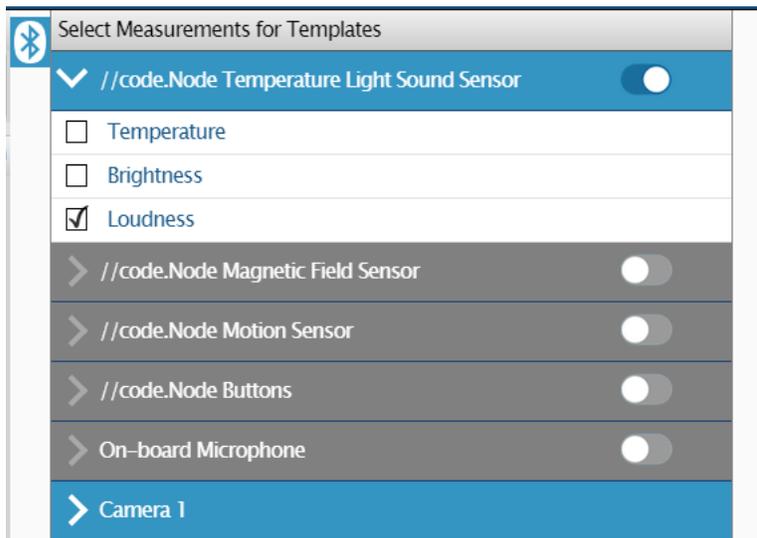
Safety

Follow your normal classroom safety procedures.

Procedure

Part 1 – Loudness of a Clap

1. Select Sensor Data in SPARKvue.
2. Connect your `//code.Node` to your device.
3. Select only Loudness under Measurements and disable all other sensors.

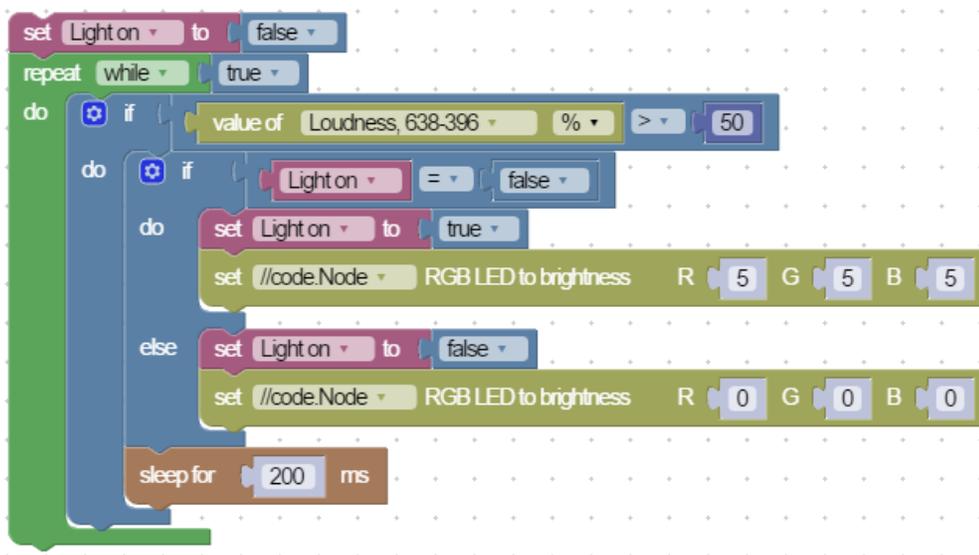


4. Select the Graph display under Templates.

- Click Start and clap, at a normal level, at least 10 times over the //code.Node sound sensor. This will help you identify a minimum level to use in your program.
- After clapping, at least 10 times, click Stop and analyze your data. Enter the level for % Loudness that you will use in your program here _____.

Part 2 – Clap On

- Click the menu tap and Start New Experiment.
- Repeat steps 1 - 4 from Part 1.
- Click on the Code icon .
- Replicate the following code using the blocks found on the left-hand side of the screen. Enter the % Loudness that you identified in Part 1. For this example, we used 50% for our conditional.



```

set Light on to false
repeat while true
do
  if value of Loudness, 638-396 % > 50
  do
    if Light on = false
    do
      set Light on to true
      set //code.Node RGB LED to brightness R 5 G 5 B 5
    else
      set Light on to false
      set //code.Node RGB LED to brightness R 0 G 0 B 0
    end
  end
  sleep for 200 ms

```

- If your code was correct, when you clap your hands, the RGB light will come on. When you clap again, the RGB light will turn off.

Part 3 - Modify your program

- What other outputs can you program to turn on and off when you clap your hands? Add at least one output and share the results of your modified program with the class.

