STEMpedia

Motion Detection Sensor

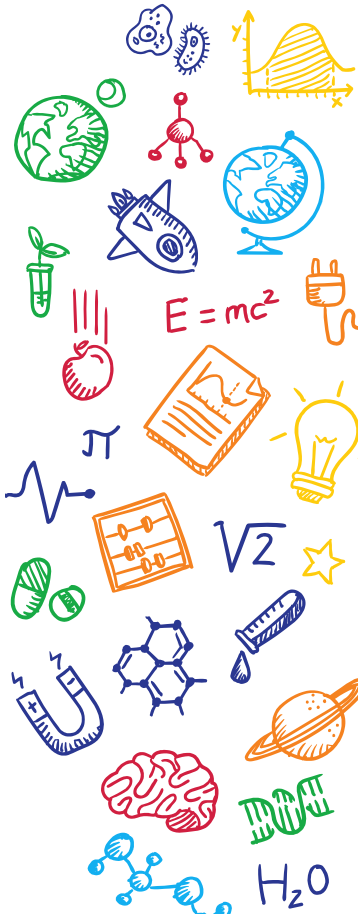
What is PIR Sensor?

PIR Sensor

- PIR sensors allow you to sense motion and is used to detect whether a human has moved in or out of the sensors range.
- They are small, inexpensive, low-power, easy to use and don't wear out.
- For that reason, they are commonly found in appliances and gadgets used in homes or businesses.

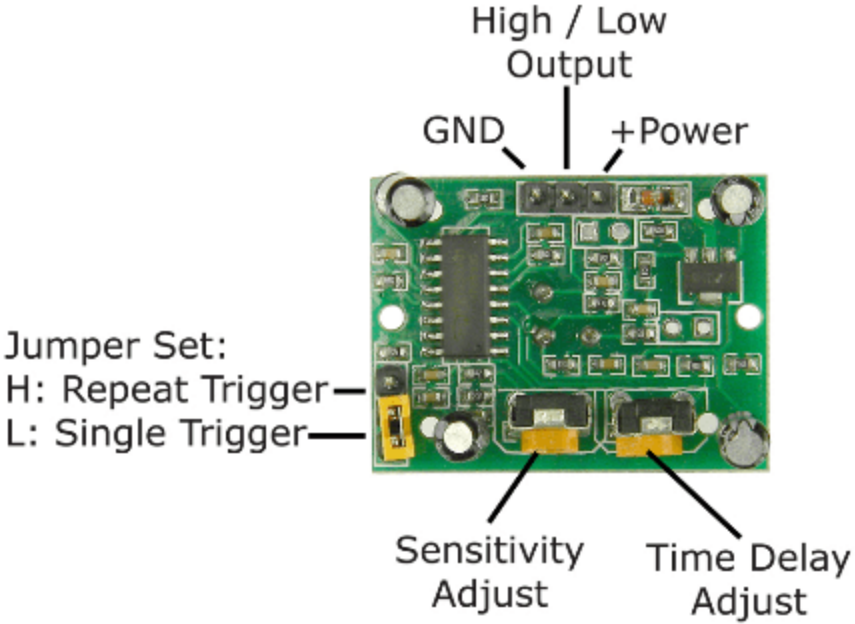
Working of PIR motion sensor

- Every object above absolute zero temperature emits radiation, infrared radiation depending upon the temperature of the object. This is detected by the sensor.
- How? Suppose the sensor initially faces something when a human body passes in front of it, its temperature rises and then drops as the body temperature is higher than room temperature, this phenomena triggers a change in the output voltage which triggers the detection.



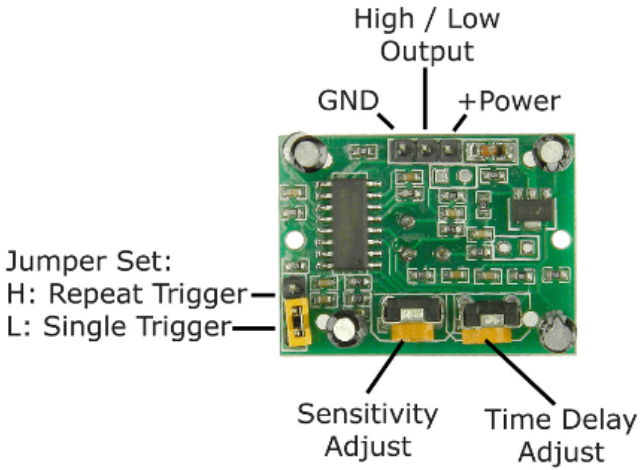
The HC-SR501 PIR sensor module

- The module has just three pins, a Ground and a VCC for powering the module and an output pin which gives high logic level if an object is detected.



The HC-SR501 PIR sensor module

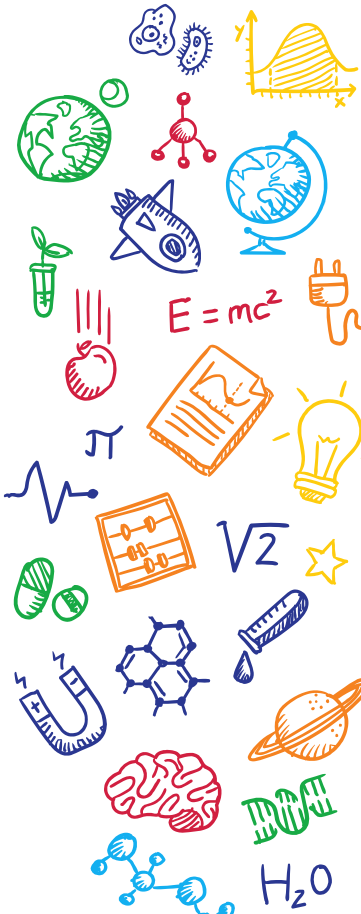
- Also, it has two potentiometers:
  1. One for adjusting the sensitivity of the sensor.
  2. And the other for adjusting the time the output signal stays high when the object is detected.
- This time can be adjusted from 0.3 seconds up to 5 minutes.



Mode of Operation

- The module has three more pins with a jumper between two of them. These pins are for selecting the trigger modes.

1. The first one is called "**non-repeatable trigger**" and works like this: when the sensor output is high and the delay time is over, the output will automatically change from high to low level.
2. The other mode called "**repeatable trigger**" will keep the output high all the time until the detected object is present in the sensor's range.



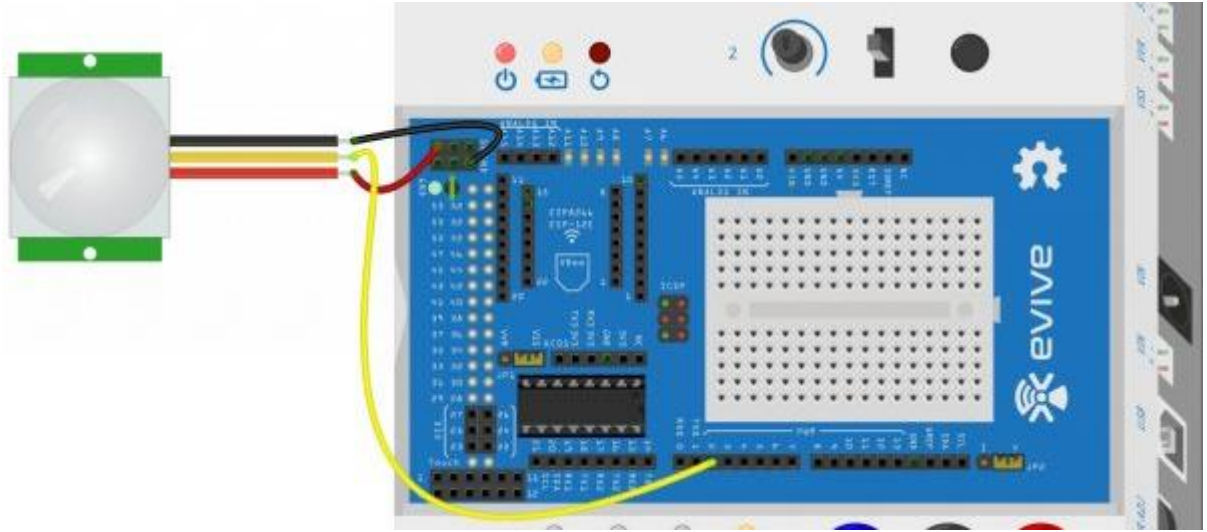
STEMpedia

Activity

Interfacing PIR Sensor with evive

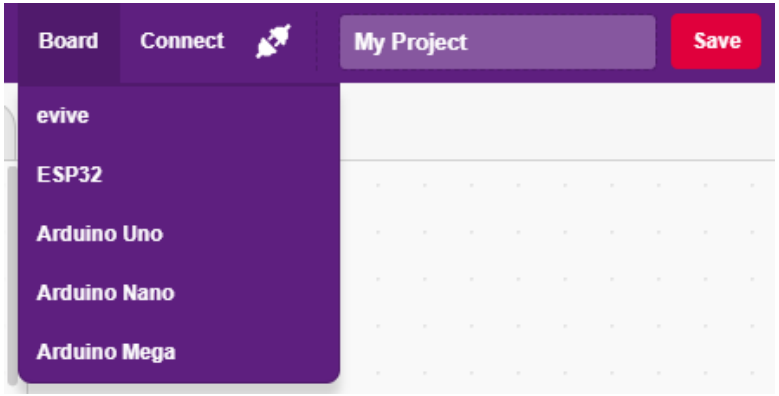
Circuit Diagram

- Connect “VCC” of “PIR” sensor module to “VCC” of evive
- Connect “GND” of “PIR” sensor module to “GND” of evive
- Connect “Dout” of “PIR” sensor module to digital pin number 2 of evive



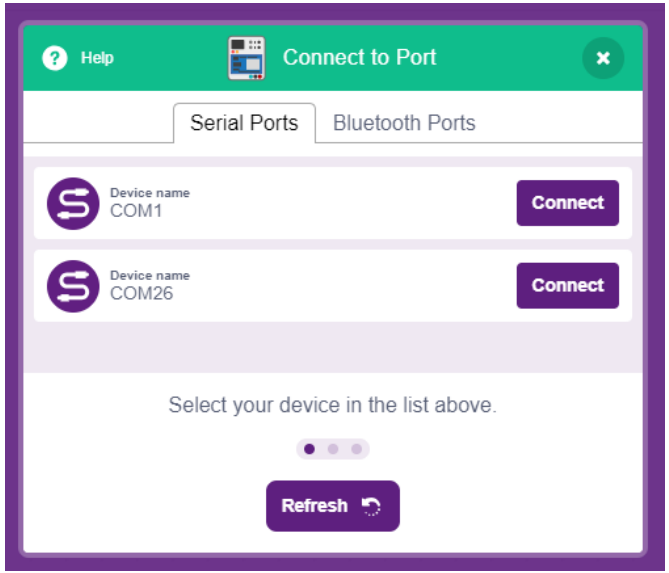
Interfacing evive with PictoBlox

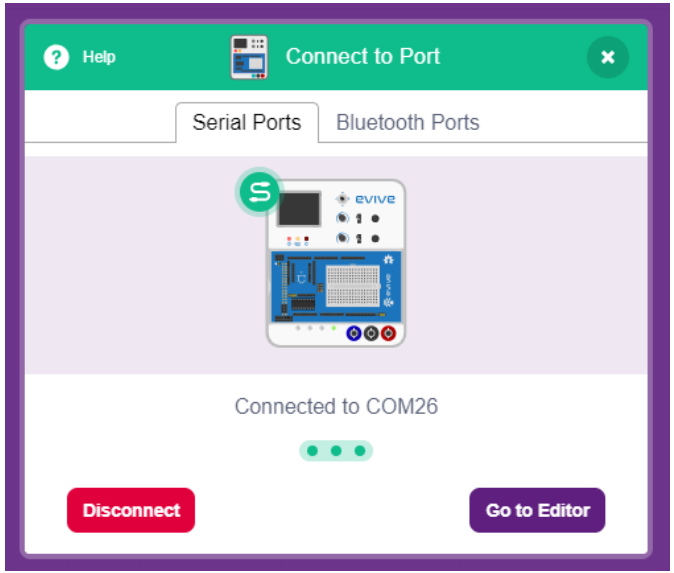
- Connect evive to your laptop/PC and open PictoBlox.
- In PictoBlox, go to the menu and click on the Boards Select the evive.



Interfacing evive with PictoBlox

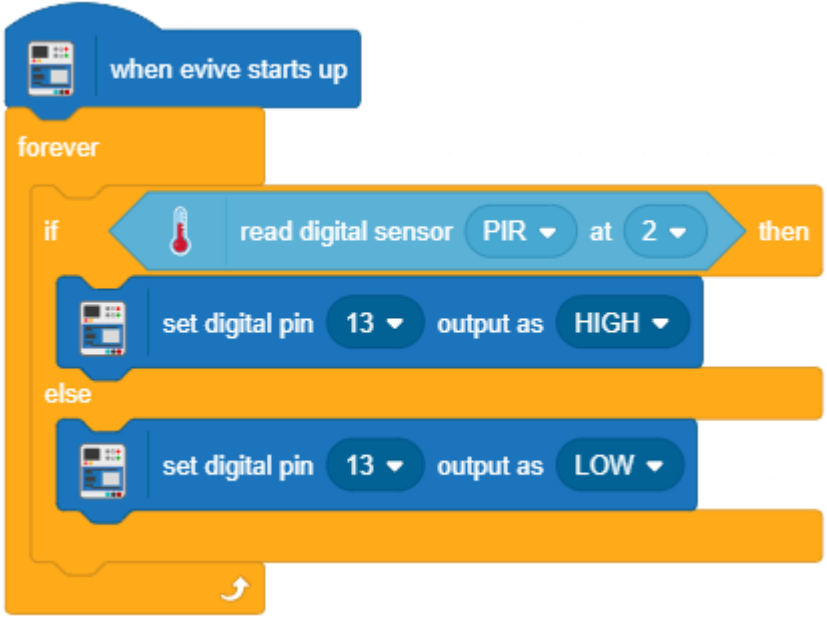
- Once you've selected the board, click on the Connect tab and connect the board.





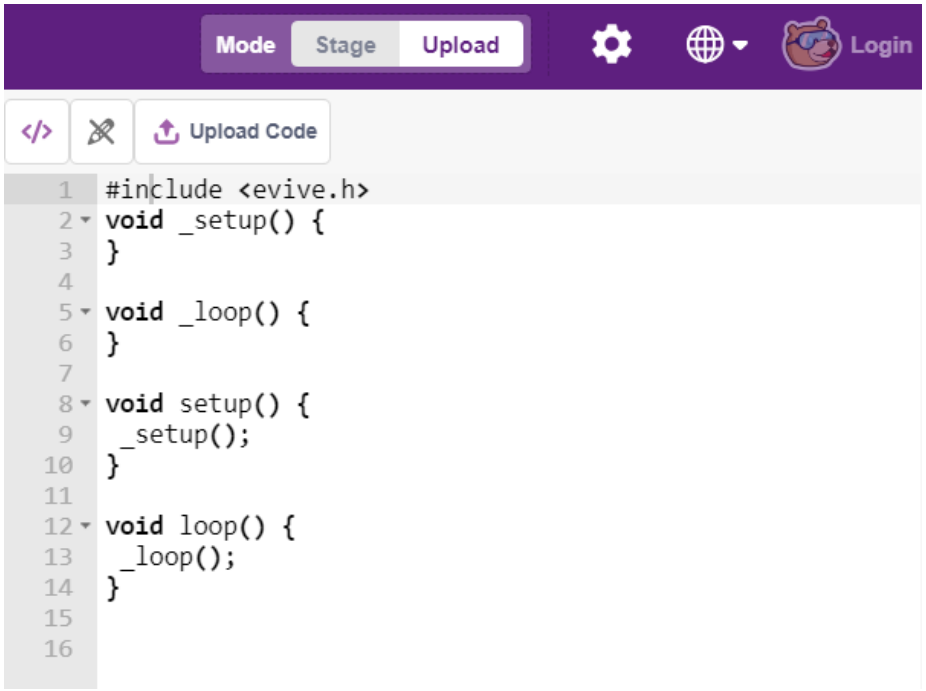
PictoBlox Script

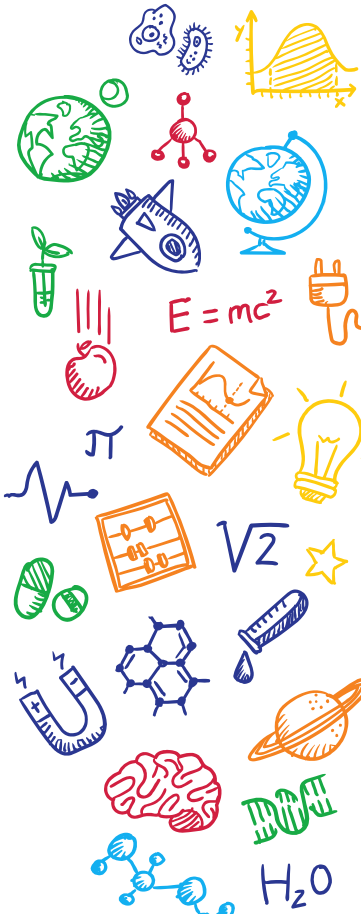
- Make the Script.
- Read digital sensor () at (), returns true if PIR is activated otherwise false if PIR is not activated.



PictoBlox Script

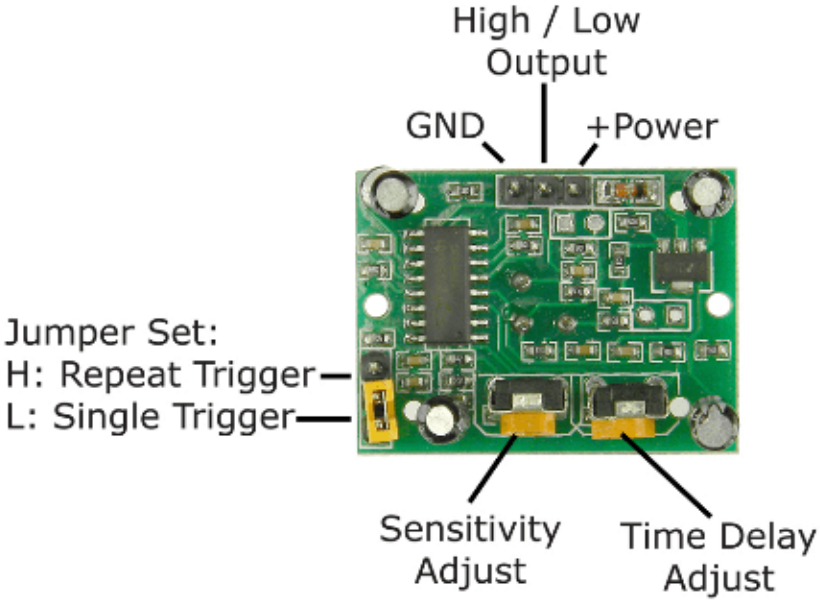
- Upload the code onto evive by clicking on the Upload Code Button:





Testing

- Keep the sensor in the **repeatable trigger** mode.
- You might have to calibrate the two potentiometers to get the desirable results.



STEMpedia