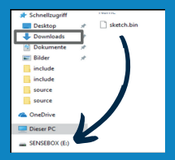
Info:
Uploading the program code

Compile the code

Press 2x Reset Button



Transfer the program code via drag-and-drop

Alternative: senseBox Connect App
Instructions for transferring the program code with a tablet

senseBox

Motion Detector for Nature Reserves

Blockly | Level: ★★☆ | 20 min.

Certain places are closed to the public for nature conservation reasons, but people still visit them. A motion detector is often enough to prevent these unwanted visitors. Of course, the light should only stay on until the person has left. Find out how this works in this project!

The code isn't working? Troubleshooting tips

- Are your cables plugged in exactly as shown in the illustration?
- Are your command blocks really connected like small "puzzle pieces"?
- Have you deleted all blocks that are not connected to your main block?
- Have you compiled the latest version of your program code and, after making changes in Blockly, uploaded it again?

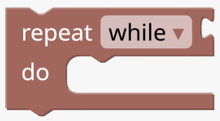
Still having trouble?
Then get in touch with a mentor!

iCODE
Loops

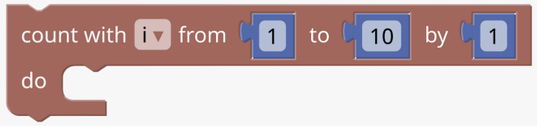
INFO: FOR-LOOPS OR REPETITIONS

Loops are useful control structures in computer science for defining how long the motion detector should remain active.
They are helpful whenever you want to execute one or more instructions for a specific period of time or repeat them a defined number of times.
There are different types of loops:

Everything within the loop is repeated 10 times. Afterwards, everything before/after the block is executed again.



Everything within the loop is executed while the condition is true. As soon as the condition is false, the loop stops.



A variable is defined with a start value and a limit value. Each step increases it by a set amount, and it can be used inside the statement.

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Kofinanziert von der Europäischen Union
Ministerium für Wirtschaft, Industrie, Klimaschutz und Energie des Landes Nordrhein-Westfalen

Motion Detector for Nature Reserves

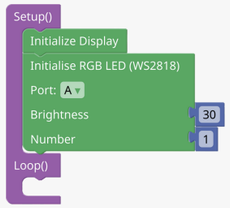
Connect the OLED display and the sensors to the microcontroller.
1) Create a program that displays the measured values from the brightness and distance sensors on the screen.
2) Extend the program code so the RGB LED lights up and a warning appears on the display when it is dark and people are nearby.
.

Step 1A

1. For programming: blockly.sensebox.de

2. In Setup, some components need to be activated once at the beginning of the program.

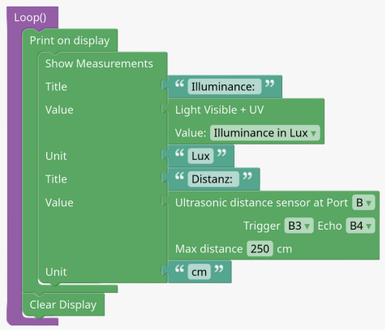
3. Both the display and the RGB LED (on board) must be initialized in the setup:



Step 1B

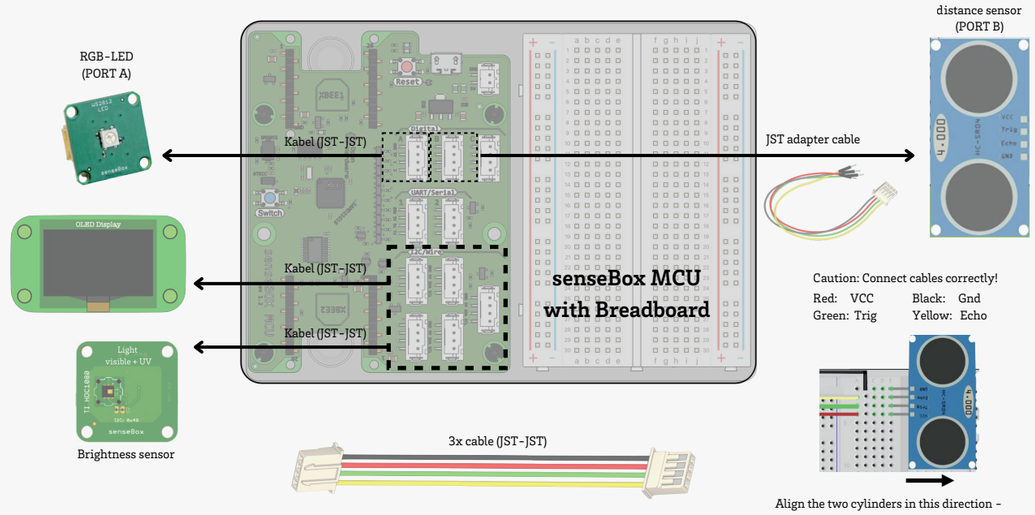
1. To display the measurements on the screen, use the "Print on display" and "Show Measurements" blocks inside the infinite loop.

2. Now use the brightness and distance sensors blocks to read the values, and label each value with a title and a unit:



Test your code!

Hardware-Setup

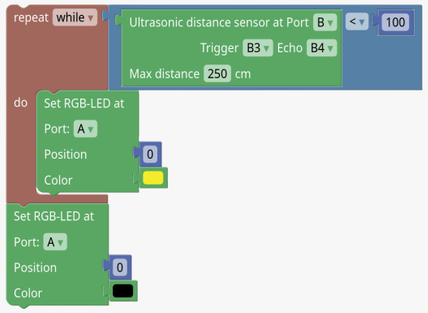


Step 2A

To keep the LED on while someone is near the nature reserve, use a loop:

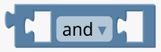
Repeat while: the distance of the distance sensor is less than (<) 100 cm
Do: The RGB LED lights up yellow.

When the program leaves this loop, the LED should be turned off.



Step 2B

1. Now, the condition must be extended with an AND (category logic) so that the RGB LED only lights up when it is dark and people are close to the distance sensor.



2. On the left side of the operator is the statement that the brightness is < 10 lux. On the right side is the statement about distance that has already been used in step 2A.

3. While this condition is true, show a warning on the display in addition to the lit LED. For this, use the "Print on display" and "Show Text/Number" blocks. The text field for "STOP!" can be found in the Text category.

4. Now combine all the programming steps and test your code!

You can change the brightness and distance by covering the brightness sensor with your hand or holding a sheet of paper at different distances in front of the distance sensor.

Test your code!