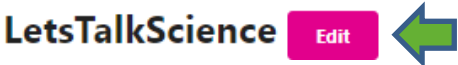
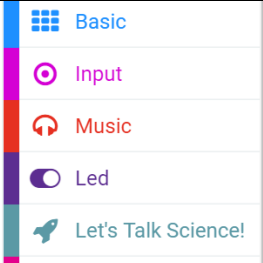



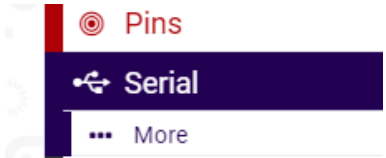
Living Space

Coding the Sensor Array – Level 1
For micro:bit



Goal: To code the class sensor array using buttons to display readings.

Instructions - Part 1: Get Let's Talk Science Blocks	Blocks
<p>Go to http://bit.ly/LTS-COZIR or https://makecode.microbit.org/28908-31820-65101-57564</p>	
<p>Click on the <i>Edit</i> button beside the word Let'sTalkScience</p>	
<p>You should now see <i>Let's Talk Science</i> with a rocket ship icon appear in the block selector menu below <i>Basic</i>.</p> <p>Here you will find blocks specially coded for this project.</p>	

Instructions - Part 2: Coding the Sensor Array	Blocks
<p>On the sensor array there are arrow symbols with corresponding pins:</p> <p>↑ indicates the Transmit (TX) pin – it is the arrow pointing away from the middle of the board.</p> <p>↓ indicates the Receive (RX) pin – it is the arrow pointing towards the middle of the board.</p>	
<p>You will need to set the serial input and output to the micro:bit pins that connect to ↑ (TX) and ↓ (RX).</p> <p>Click on the down arrow beside <i>Advanced</i> and then select <i>Serial</i>.</p>	



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<p>Drag the serial redirect to block inside the on start block.</p> <p>Select P0 from the dropdown menu for TX Select P1 from the dropdown menu for RX Select 9600 for at baud rate</p> <p>Make sure your alligator clips connect the proper pin on the micro:bit to the correct arrow (see the Sensor Array Set-up Instructions).</p>	
<p><i>Did you know?</i> The baud rate is the rate at which information is transferred in a communication channel. In the serial port context, "9600 baud" means that the serial port is capable of transferring a maximum of 9600 bits per second.</p>	
<p>Under <i>Input</i>, select the on button A pressed block.</p>	
<p>Under <i>Basic</i>, select a show number block. Place it in the on button A pressed block.</p>	
<p>Under <i>Math</i> select the round block and snap it into place where the 0 is currently showing inside the show number block. This will round the value from the CO2 sensor so that it will appear as a whole number on the LED display.</p>	
<p>Under <i>Let's Talk Science</i> select the CO2 (PPM) block and snap it into the place where the 0 is currently. This will allow the program to access the data from the CO2 sensor.</p>	



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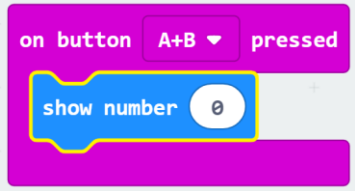
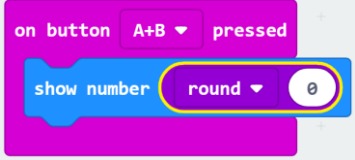
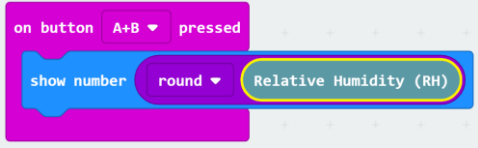
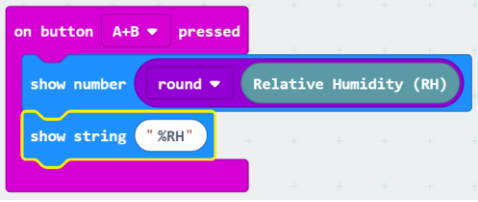
<p>Under <i>Basic</i>, select a <i>show string</i> block. Place it beneath the <i>show number</i> block. Type "PPM" where it says "Hello!" This will display the CO2 value with the CO2 measurement unit.</p>	
<p>You have now finished the code for the first button – two more to go!</p>	
<p>Under <i>Input</i>, select the <i>on button A pressed</i> block and drag it into an empty space on your working area. In the pull-down menu, change on button "A" pressed to on button "B" pressed.</p>	
<p>Under <i>Basic</i>, select a <i>show number</i> block. Place it in the <i>on button B pressed</i> block.</p>	
<p>Under <i>Math</i> select the <i>round</i> block and snap it into place where the 0 is currently showing inside the <i>show number</i> block. This will round the value from the temperature sensor so that it will appear as a whole number on the LED display.</p>	
<p>Under <i>Let's Talk Science</i> select the <i>Temperature (°C)</i> block and snap it into the place where the 0 is currently. This will allow the program to access the data from the temperature sensor.</p>	
<p>Under <i>Basic</i>, select a <i>show string</i> block. Place it beneath the <i>show number</i> block. Type "C" where it says "Hello!" This will display the temperature value with the temperature measurement unit (Celsius).</p>	
<p>You have now finished the code for the second button – one to go!</p>	



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Coding the Sensor Array – Level 1
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<p>Under <i>Input</i>, select the <i>on button A pressed</i> block and drag it into an empty space on your working area. In the pull-down menu, change <i>on button "A" pressed</i> to <i>on button "A+B" pressed</i>.</p>	
<p>Under <i>Basic</i>, select a <i>show number</i> block. Place it in the <i>on button A+B pressed</i> block.</p>	
<p>Under <i>Math</i> select the <i>round</i> block and snap it into place where the 0 is currently showing inside the <i>show number</i> block. This will round the value from the humidity sensor so that it will appear as a whole number on the LED display.</p>	
<p>Under <i>Let's Talk Science</i> select the <i>Relative Humidity (RH)</i> block and snap it into the place where the 0 is currently. This will allow the program to access the data from the humidity sensor.</p>	
<p>Under <i>Basic</i>, select a <i>show string</i> block. Place it beneath the <i>show number</i> block. Type "%RH" where it says "Hello!" This will display the relative humidity value with the relative humidity measurement unit (%RH).</p>	
<p>Did you know? <i>Relative humidity is the amount of water vapor in the air given as a percentage of the maximum amount of water that the air could hold at the given temperature.</i></p>	
<p>Test your work on the micro:bit simulator then save your work and upload the code to the micro:bit</p>	

