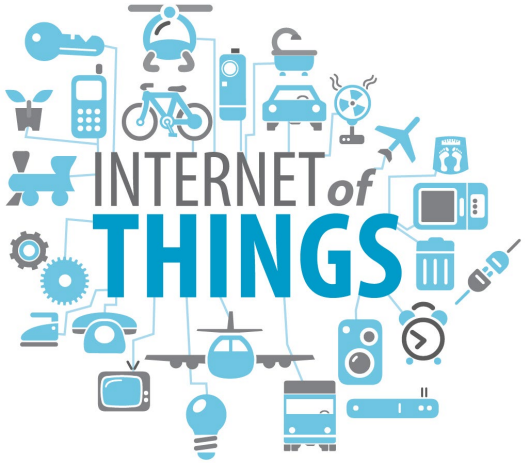
Lesson 30

Air Quality Sensor

arm School Program

IoT

- Who can remember what the **IoT** is?
- Thinking back to the rock:paper:scissors game – who can remember how two different micro:bits can communicate with each other?
- Today you are going to create an air quality **sensor**
- At times you may wish to take air quality readings in one room but display the results in another – this is why we will be using two different micro:bits

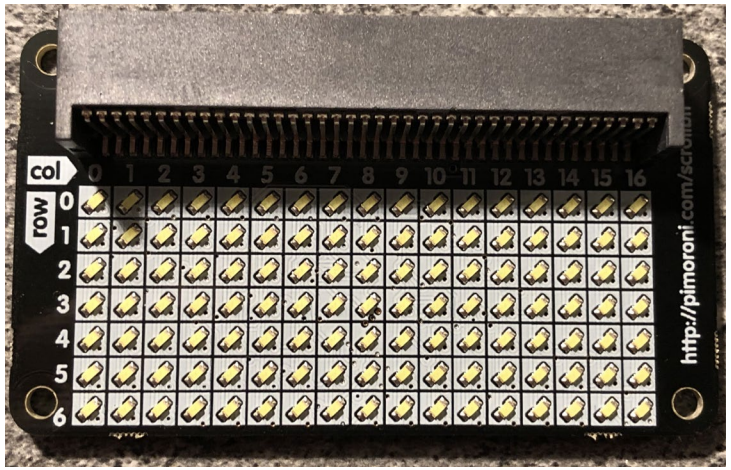


Usability

- What output device has been used to display data to the user?
- Throughout the course you have been using the LED display on the micro:bit. Can you think of any issues with this?
- What is the main difference between other LED screens and the one on the micro:bit?

scroll:bit

- The **scroll:bit** can be used to provide a much bigger screen for the micro:bit
- The scroll:bit contains 119 extremely bright LEDs
- This makes it much easier to display data to the user which increases the **usability** of the device



Making Task

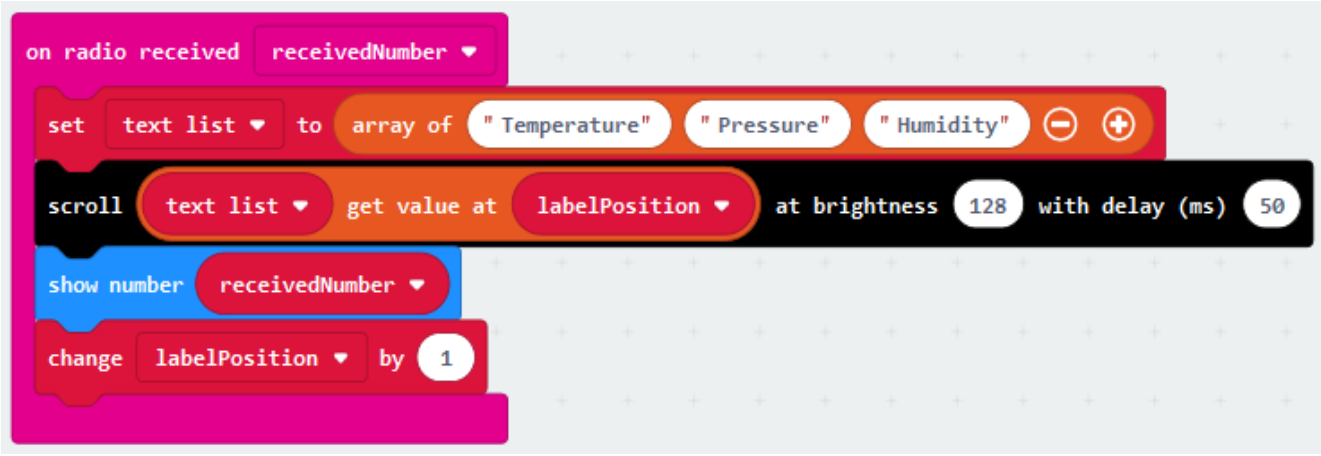
- You should now pair up
- One person will be developing the scroll:bit and the other the **enviro:bit**
- You are going to produce two holders for your devices
- Remember that the two devices together form one system so there should be similarities in the design for the two cases
- When producing the case for the enviro:bit you should remember to leave the sensors exposed so that they can take accurate readings

Arrays

- The scroll:bit will **receive** three numbers from the enviro:bit
- If we were to just display the three numbers we wouldn't know what each related to
- We need to display a label before the number
  - The first number that is displayed will be the Temperature so we display the text 'Temperature' on the scroll:bit and then the reading on the micro:bit
  - The second number will be the 'Pressure' so we display this label before the number
- An **array** allows us to hold all of these labels in one data structure

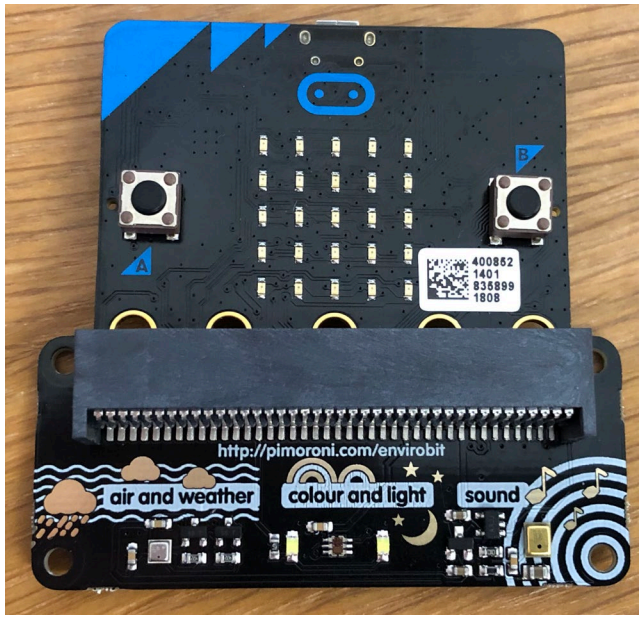
Arrays (Part 2)

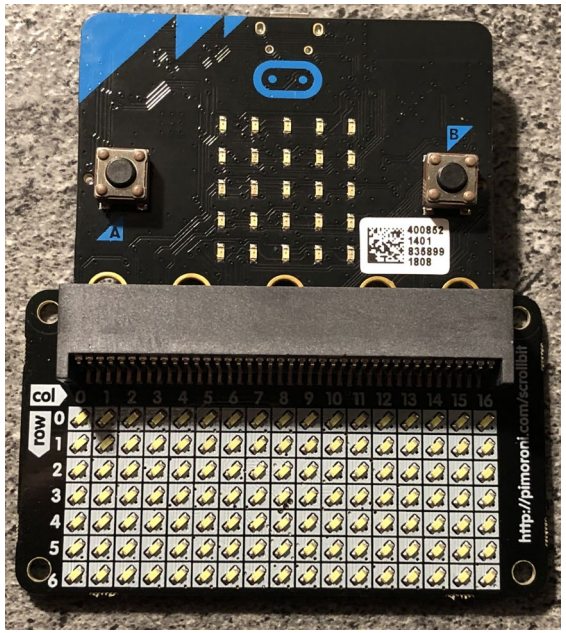
- When we display an item from an array we refer to its position
- If we print item[0] it will print ‘Temperature’
- If we print item[1] it will print ‘Pressure’
- If we print item[2] it will print ‘Humidity’
- By changing the label position each time we receive a number we will move through the array of labels



scroll:bit and enviro:bit Programming Task

- Insert one micro:bit into each scroll:bit and enviro:bit
- You should then work through the scroll:bit and enviro:bit worksheet to develop the base code





Stretch Task

- The code that has been produced to measure the air quality is run when Button A is pressed
  - Can you extend the code so that when the Button B is pressed the ambient light levels are displayed? The data should be displayed on the scroll:bit.
  - Can you produce a test plan to check whether all of you code is functioning as planned?

Thank You
Danke
Merci
谢谢
ありがとう
Gracias
Kiitos
감사합니다
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