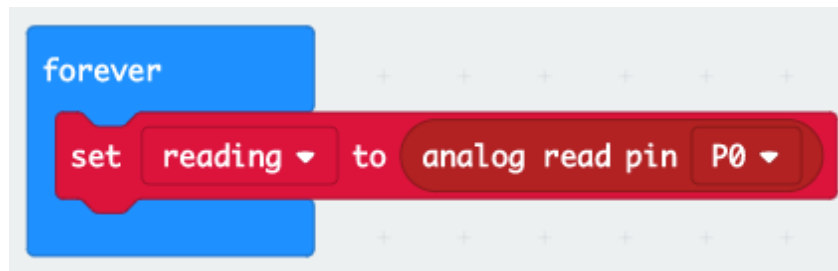


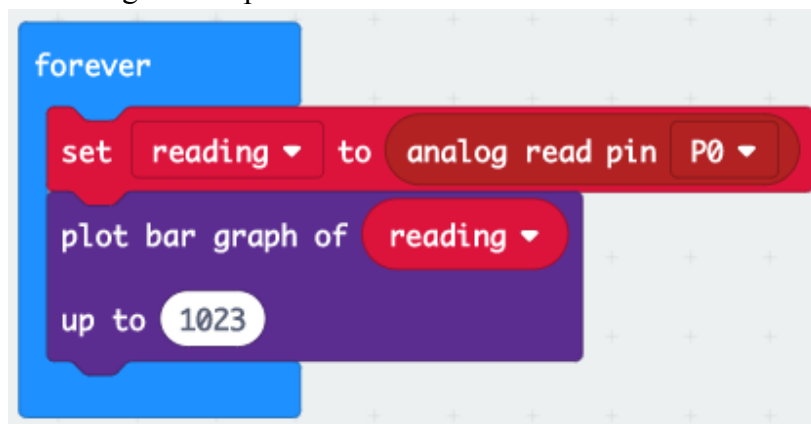
Coding Rocks – Teacher Coding Sheet.

How to Code the Micro:Bit

- Have students create a variable by clicking on the **Variables tab** and selecting **Make a Variable**. Have them name it “Reading”.
- In the “**Forever**” block drag and drop from the Variable tab the “**Set Reading to**” block. Then from the Advanced options have them drag from the Pins Tab the “**analog read P0**” block into the circle containing the number 0 located in the “**Set Reading to**” block. This sets the variable “Reading” to the analog signal strength received through the 0 pin of the Micro:bit.

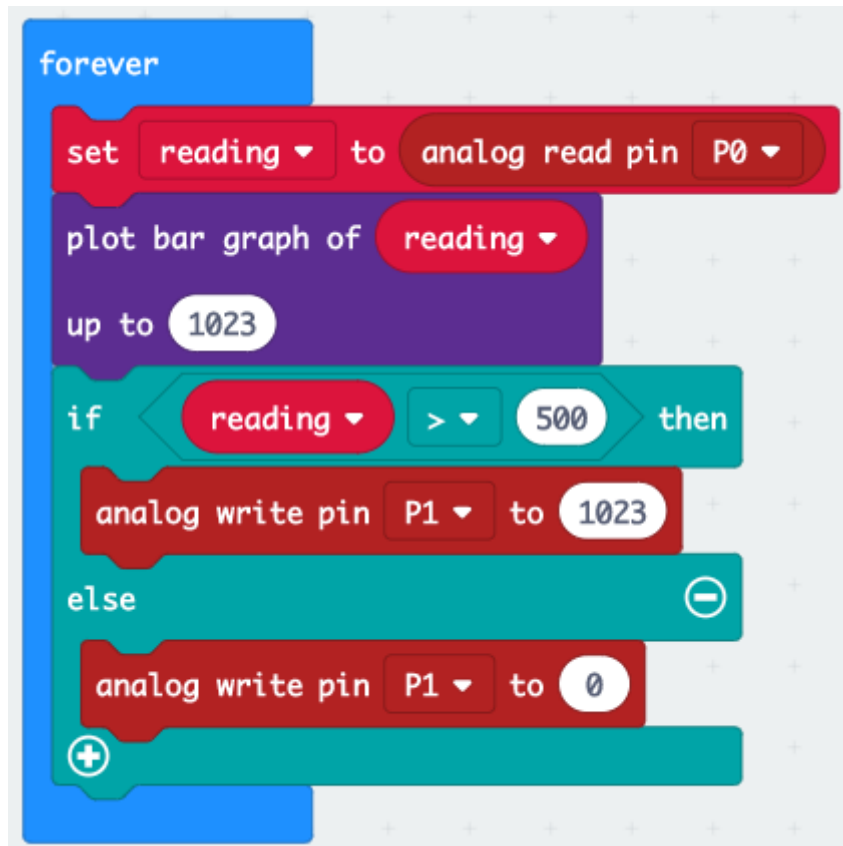


- From the **LED tab** have the students drag the “**plot bar graph of**” block and snap it beneath the “**Set Reading to**” block, then from the **Variable tab** drag the “**Reading**” variable itself into the first circle with a 0 located in the “**plot bar graph of**” block, and in the other circle with a 0 we will type the **number 1023**. The reason we plot the graph up to 1023 to have a clear visible difference on our graph when measuring conductivity. Now our program will graph the value of the variable “**Reading**” which is the value of the analog read of pin 0.



- In the Logic Tab you’ll find the “**If Then Else**” block. Drag and snap the block beneath the “**Plot bar graph of**” block, from the Math tab drag the “**0 > 0**” block into the slot

that says, “true” in the “If Then Else” block, then from the **Variables** tab drag the “Reading” variable into the first circle with a 0 and in the second circle with a zero type “500”. Inside the first section of the “If Then Else” block drag and snap the “Analog write pin” block from the **Pin** tab, on that block change the P0 to P1 and set the circle with the 0 to “1023”. In the else section of the “If Then Else” block drag another “Analog write pin” block change the P0 to P1 but leave the circle with the 0.



This set of blocks with write power to Pin 1 on our Micro:bit if our “Reading” variable is higher than 500, else it will run no power to that pin. This will allow us to turn an LED on if the material is highly conductive but ensure that the LED stays off if the material is not conductive.

- Next grab a “Pause” block from the **Basic** tab drag and snap it beneath the “If Then Else” block and set oval number 5000, this represents milliseconds meaning that we will have the Micro:bit wait 5000 milliseconds or 5 seconds before returning to the top of the code and taking a new reading of the conductivity. Then drag from the **Input** tab the “On button A pressed” block place it apart from the rest of your code. Then from the **Basic** tab drag the “Show string” block and snap it inside the “On button A pressed” block, finally from the **Variables** tab drag the “Reading” variable and put it in the oval of the “Show string” block. This combined with the “Pause” block will

allow the Micro:bit time to fully scroll the reading number that it has stored in it's variable "**Reading**" whenever someone presses the A button on the Micro:bit.

```

forever
  set reading to analog read pin P0
  plot bar graph of reading
  up to 1023
  if reading > 500 then
    analog write pin P1 to 1023
  else
    analog write pin P1 to 0
  pause (ms) 5000
on button A pressed
  show string reading
  
```

- Now we have fully programmed the Micro:bit to work as our “Conduction sensor” the next step is to wire the Micro:bit.