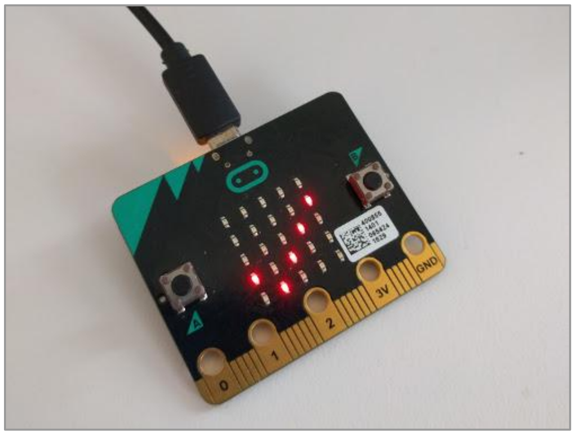
App Inventor + IoT: Micro:bit Temperature

20 min

(with Basic Connection tutorial completed)

This tutorial will help you get started with App Inventor + IoT and the temperature sensor on a micro:bit controller.



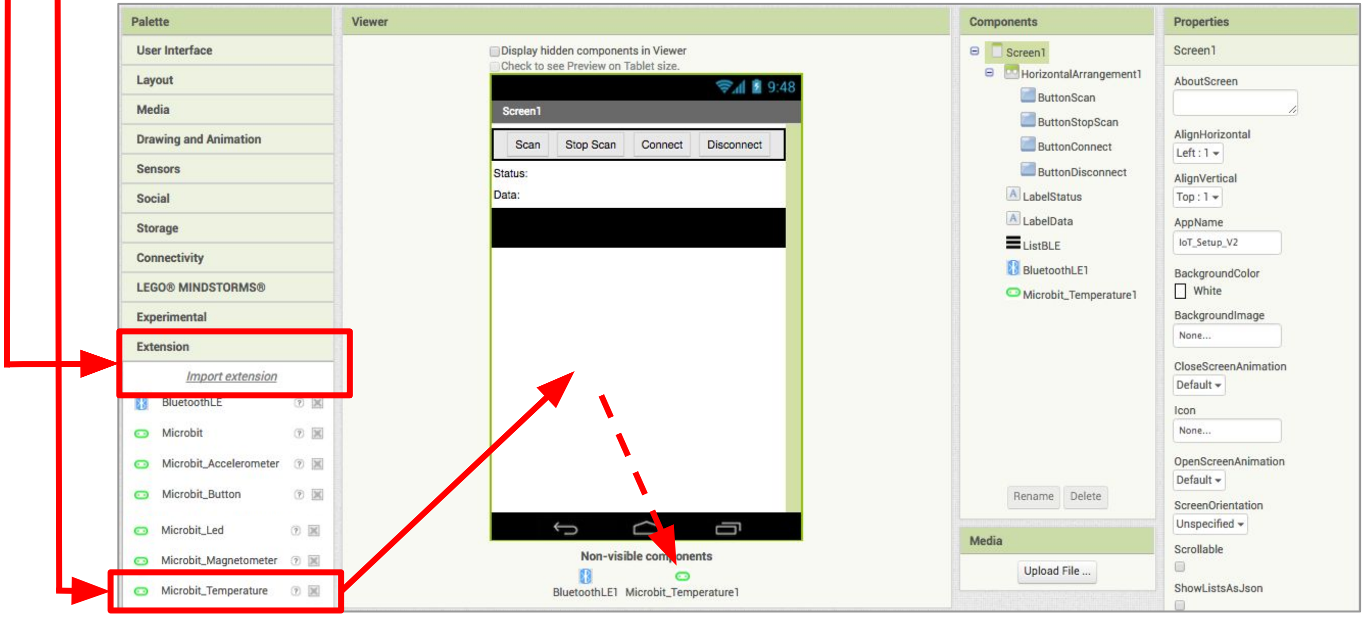
First, you will need to pair your phone or tablet to the micro:bit controller, using these directions. Your device must be paired with the micro:bit in order for the app to work.

Next, you should complete the App Inventor + IoT Basic Connection tutorial to make a basic connection to the micro:bit device. If you prefer, you can download the completed .aia file here.

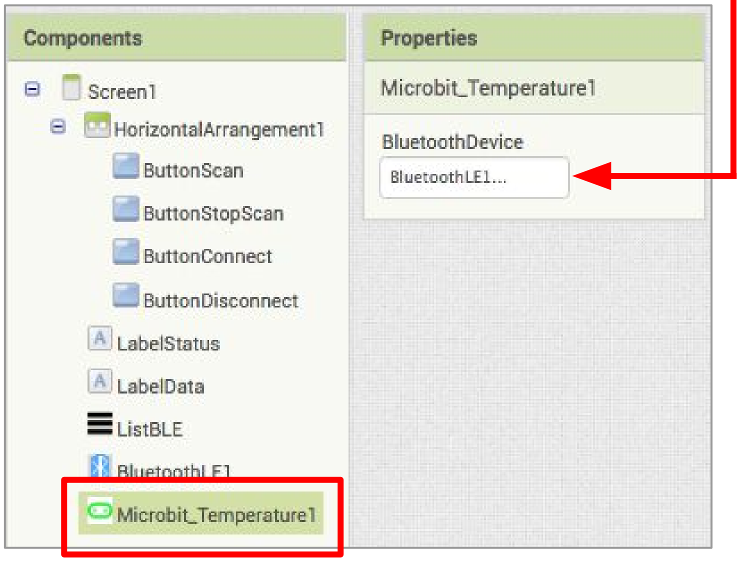
The remaining steps all build off of the the starter code for Basic Connection tutorial and .aia.

First, we need to add the necessary extension.

- In the Palette window, click on Extension at the bottom and then on "Import extension" and click on "URL".
    - Paste in this URL: http://iot.appinventor.mit.edu/assets/com.bbc.microbit.profile.aix
- Add the **Microbit_Temperature** extension to your app by dragging it onto the Viewer.

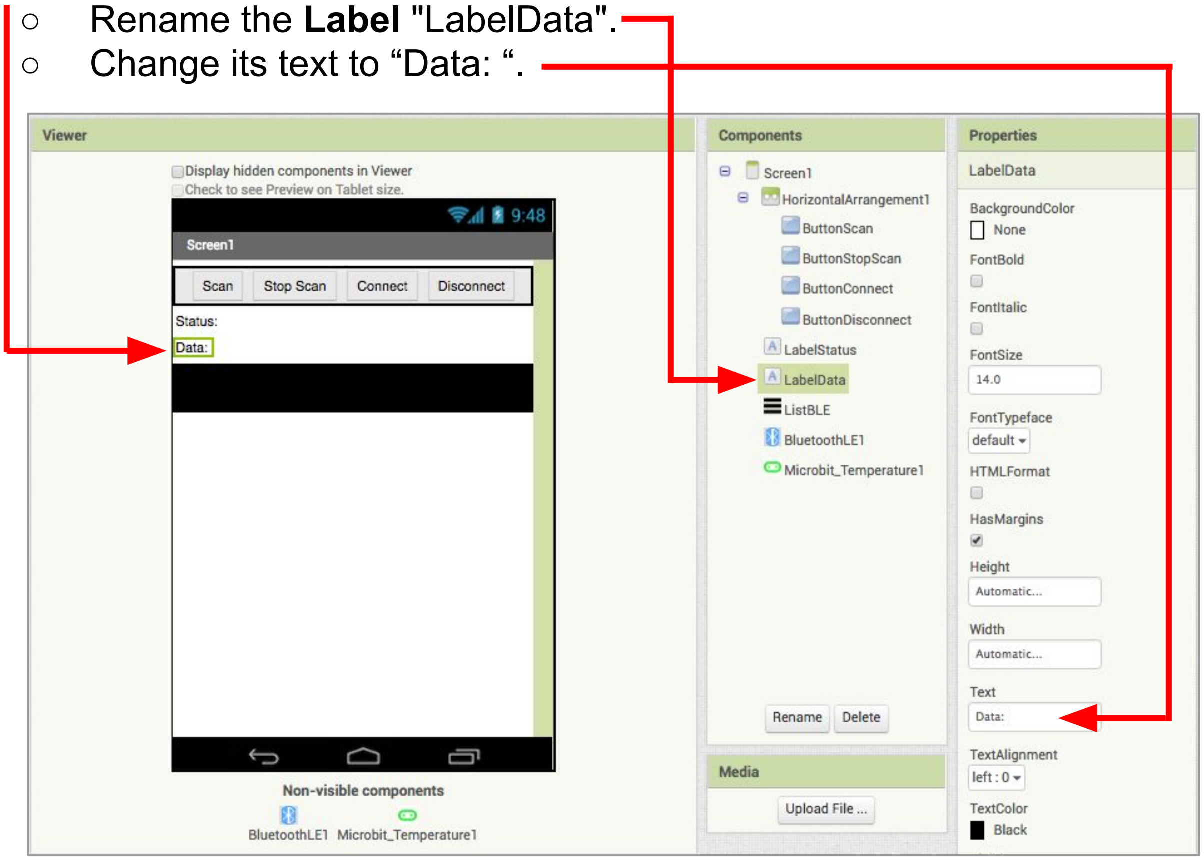


- Click on **Microbit_Temperature1** in the Components pane.
- In the Properties tab for the **Microbit_Temperature1**
  - Set *BluetoothDevice* to "BluetoothLE1".



BluetoothDevice
BluetoothLE1...

- Drag a **Label** from the User Interface Palette and drop it between **LabelStatus** and **ListBLE**
  - Rename the **Label** "LabelData".
  - Change its text to "Data: ".

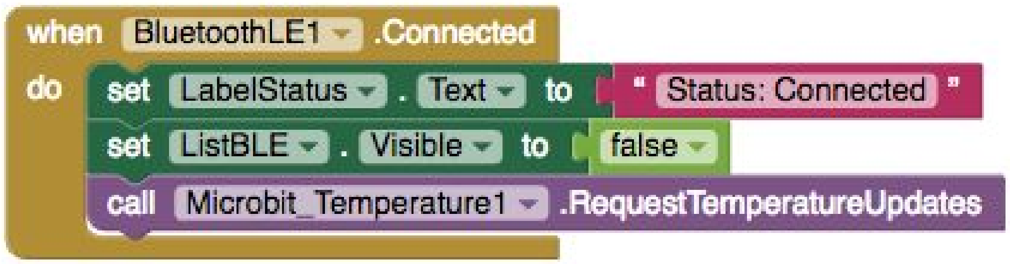


BackgroundColor
None
FontBold
FontItalic
FontSize
14.0
FontTypeface
default
HTMLFormat
HasMargins ✓
Height
Automatic...
Width
Automatic...
Text
Data:
TextAlignment
left : 0
TextColor
Black

Now switch to the Blocks Editor view

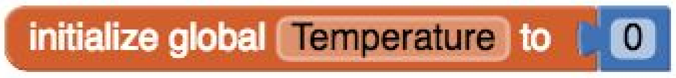
First, we want to request data updates when the sensor value on the micro:bit changes.

- from **Microbit_Temperature1** in the Blocks pane, add **call Microbit_Temperature1.RequestTemperatureUpdates** to the existing **when BluetoothLE1.Connected** block from the Basic Connection tutorial.



```
when BluetoothLE1 .Connected
do  set LabelStatus . Text to " Status: Connected "
    set ListBLE . Visible to false
    call Microbit_Temperature1 .RequestTemperatureUpdates
```

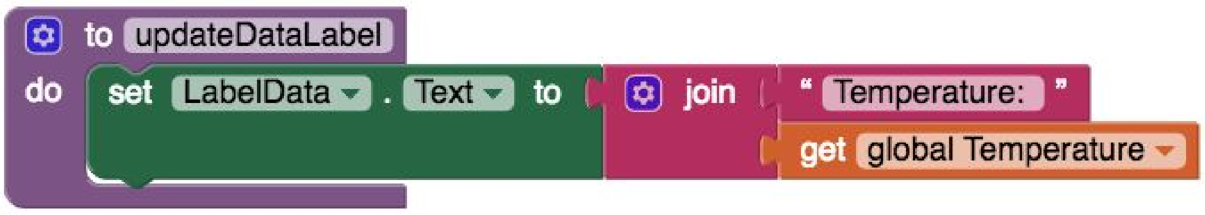
Next, we need to store the data we receive from the sensor. From the Variables drawer in the docs pane, drag an **initialize global name to** block and name it "Temperature". From the Math drawer add a number block and set it to "0". We'll use this to keep track of the sensor value.



```
initialize global Temperature to 0
```

Let's make a new procedure to display the current readings in the **LabelData** when we get new data. You can create a procedure by dragging out a purple procedure block from the Procedures drawer in the Blocks pane. Let's rename it **updateDataLabel.**

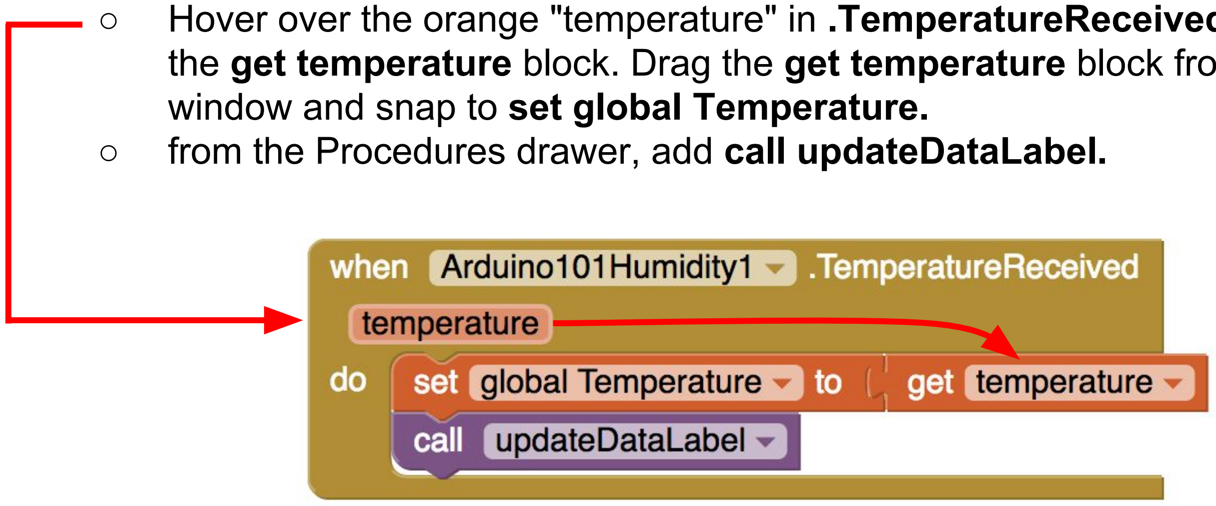
- from **LabelData** in the Blocks pane, add **set LabelData.Text to.**
- from the Text drawer connect a **join** block.
  - From the Text drawer, connect a text block and type **"Temperature: "**
  - From the Variables drawer connect a **get global Temperature.**



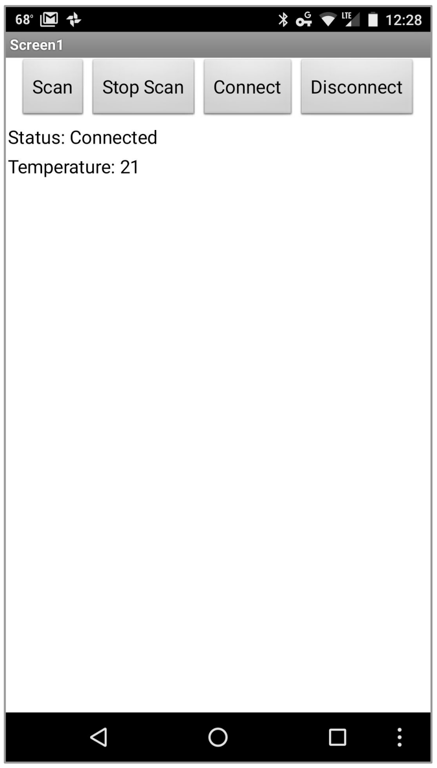
```
to updateDataLabel
do  set LabelData . Text to join " Temperature: "
                                 get global Temperature
```

Finally, we need to call the procedure when this data is received.

- From the **Microbit_Temperature1** drawer in the Blocks pane, drag **when Microbit_Temperature1.TemperatureReceived**
  - from the Variables drawer, add **set global Temperature.**
  - Hover over the orange "temperature" in **.TemperatureReceived** to see the **get temperature** block. Drag the **get temperature** block from this window and snap to **set global Temperature.**
  - from the Procedures drawer, add **call updateDataLabel.**


when Arduino101Humidity1 .TemperatureReceived
temperature
do set global Temperature to get temperature
call updateDataLabel

Your app should now be working! Connect your micro:bit device using the companion (if you haven't already). Test it out by closing your hand around the micro:bit. If it is working, you should see the data label change (but probably very slowly).



Status: Connected
Temperature: 21