Max-min thermometer

Step 1: Make it

What is it?

Track highest and lowest temperatures by leaving this program running on a micro:bit.

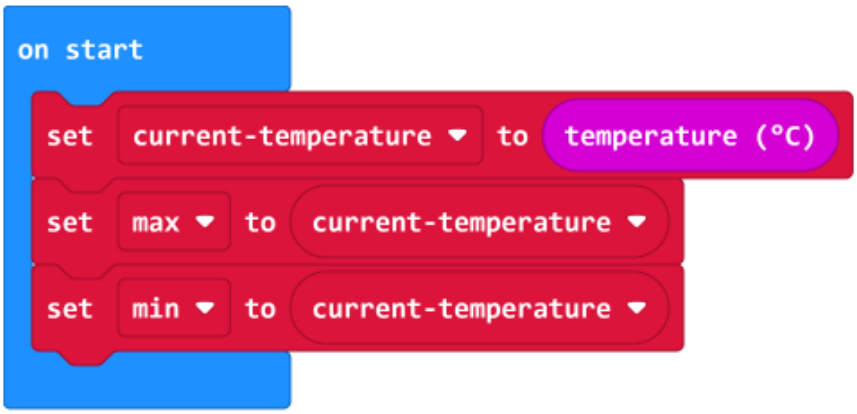
How it works

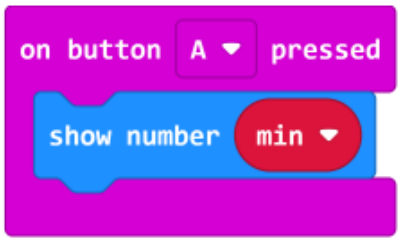
- Like the Thermometer project, this uses the temperature sensor inside the micro:bit's CPU (central processing unit) to measure the temperature in °C (Celsius).
- This program keeps track of the lowest and highest temperatures recorded by using 3 **variables**: **currentTemp** is the current temperature reading, **max** is the maximum and **min** is the minimum.
- At the start of the program they are all set to the same value; an infinite (forever) **loop** ensures that every two seconds it takes a reading, and the program compares the current temperature with the **max** and **min** variables.
- If the current temperature is **less than (<)** than the value stored in the **min** variable, it changes the **min** variable to be the same as the current temperature.
- If the current temperature is **greater than (>)** the **max** variable's value, it changes the **max** variable to be the same as the current temperature.
- The program also flashes a dot on the LED display every time the infinite loop runs so that you know it's working.
- Press button A to show the minimum and button B to show the maximum temperatures recorded.
- You could leave the micro:bit running for 24 hours, record the maximum and minimum temperatures and plot on a chart at the same time every day and then reset.

What you need

- micro:bit (or MakeCode simulator)
- MakeCode or Python editor
- battery pack (optional)
- a source of heat or cooling, like a fan, if you want to see the temperature change quickly – or take the micro:bit outside
- graph paper if you want to keep a chart of temperatures over time

Step 2: Code it





Step 3: Improve it

- Compare the reading with another thermometer. How accurate is the micro:bit? Do you need to modify the micro:bit reading to get the air temperature? How could you do that?
- Convert the temperature to Fahrenheit.
- Use radio to send temperature readings to another micro:bit.