

Come to the Dark Side ... We Have Cookies!

Objective: Get more experience working with analog devices.

Overview: You will create an IoT device that will monitor the temperature, both reporting its value and characterizing it as either warmer or colder than average.

Components: Connect a switch, TMP 36, 2 LEDs (Red and Blue) and a mini photocell to your Photon. See Photon Analog IO slide # 14 to indicate how to wire up the mini photocell. We have deliberately not specified pin numbers: just choose sensible values.

Behaviour: Record the temperature in either degrees Celsius, Fahrenheit, or Kelvin, and store both the numerical value and the units in the cloud, using `Particle.variable()`. Use temperature and units as the Particle variable name. Initially temperature should be recorded in Celsius. Each time the switch is pressed, the units will change. On the first press, the units will change to Fahrenheit; on the second press, to Kelvin; subsequent presses will continue to change the units, always in the order Celsius > Fahrenheit > Kelvin.

The mini photocell will be used to determine if it is day (if voltage ≥ 1.5) or night (voltage < 1.5). During the day, a temperature exceeding 22 means it is warm, otherwise it is cold.

During the night, a temperature exceeding 18 means it is warm, otherwise it is cold.

If it is warm, light the red LED; if it is cold, light the blue LED.

Submission: Upload your code, and show your project to the TA during a help session.

Remarks: In your code, include, in a comment, the relevant URLs for fetching temperature and units.

Take care to write your code as neatly as possible. You will be partially graded on the appropriate use of functions to modularize your solution (e.g., don't do everything in `loop()`).

Also, try and construct your circuit as neatly as possible: it may get a little crowded, but it can be done!