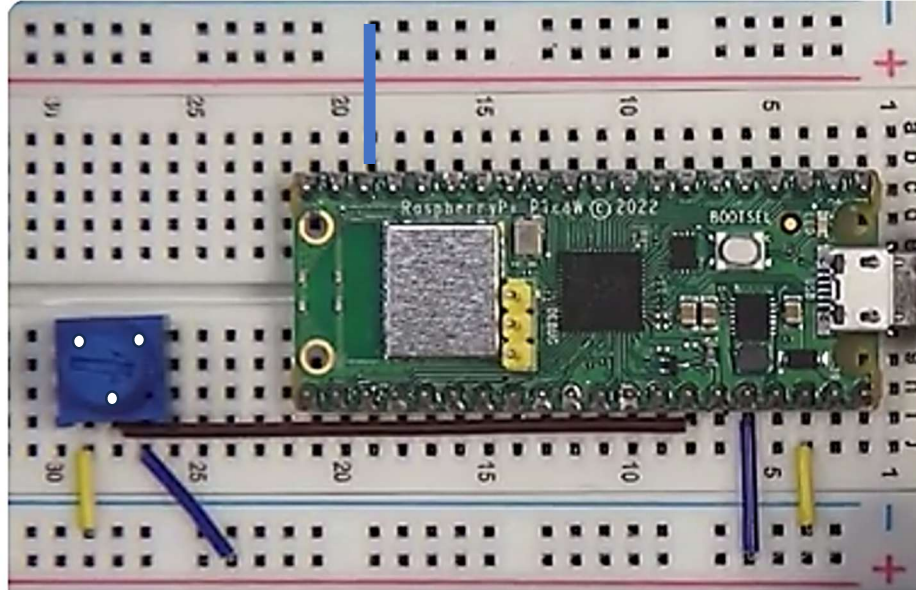


Micro-Python: Lesson 4

Build the circuit shown here:



This is the same circuit we used for the voltmeter.

Connections:

- Pin 38 to negative bus
- Pin 36 to positive bus
- Pin 34 to center pin (Leg 3) of potentiometer
- Leg 1 of potentiometer to positive bus
- Leg 2 of potentiometer to negative bus
- Pin 18 to negative bus on the other side

Run this code:

```
1 from machine import Pin,ADC
2 from time import sleep
3 potPin=28
4 myPot=ADC(potPin)
5 while True:
6     value=myPot.read_u16()
7     print(value)
8     sleep(.1)
```

Turn the potentiometer all the way to the right.
 Write down the highest value you see at the bottom of your screen.
 Turn the potentiometer all the way to the left.
 Write down the lowest value you see at the bottom of your screen.

For the next bit of code, we have to write the equation of a line. It will use the two values you just wrote down. When I write **HIGH** in the code, you type the high value you wrote down. When I write **LOW**, you type the low value you wrote down.

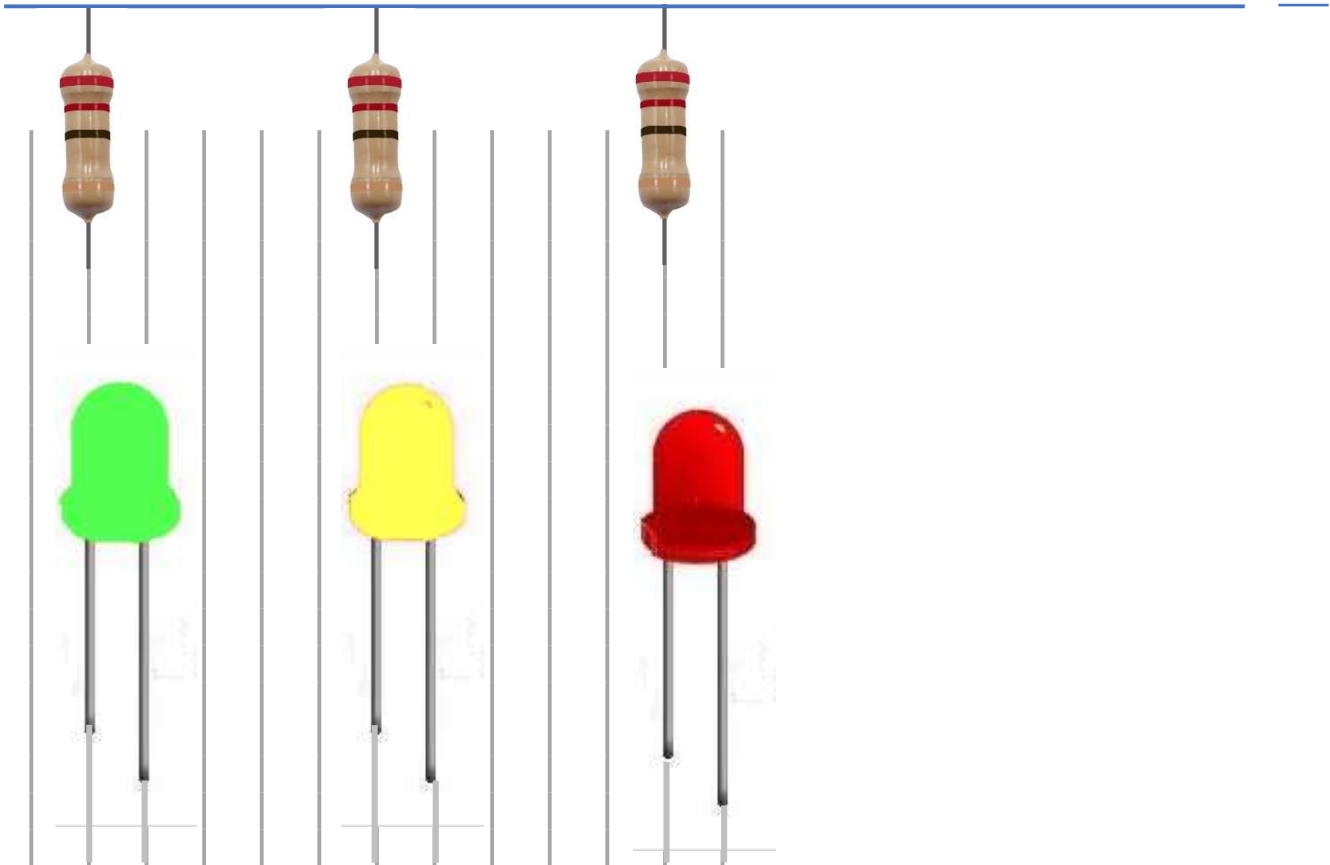
from machine import Pin,ADC	
from time import sleep	
potPin=28	
greenLED=3	
yellowLED=9	
redLED=15	
myPot=ADC(potPin)	
myGreen=Pin(greenLED,Pin.OUT)	
myYellow=Pin(yellowLED,Pin.OUT)	
myRed=Pin(redLED,Pin.OUT)	
while True:	
potVal=myPot.read_u16()	
myVal=(100/((HIGH-LOW))*(potVal- LOW))	
print(myVal)	
sleep(.1)	
if myVal<80:	
myGreen.value(1)	
myYellow.value(0)	
myRed.value(0)	
if myVal>=80 and myVal<95:	
myGreen.value(0)	
myYellow.value(1)	
myRed.value(0)	
if myVal>=95:	
myGreen.value(0)	
myYellow.value(0)	
myRed.value(1)	

The math that we just did converts your high and low values to 0 and 100.
 The program you just typed will cause 3 LEDs to light up.
 If the value is less than 80, the green light will shine.
 If the value is greater that 80 and less that 95, the yellow light will shine.
 If the value is equal to 95 or greater, the red light will shine.

Now let's make the circuit!

You are going to wire up 3 LEDs. In the photo on the next page, they are all crammed together and it's hard to see the circuit. This is what you are going to do with each LED:

Pay attention to the long leg/short leg of the LED. The short leg has to be in the same column as the resistor.

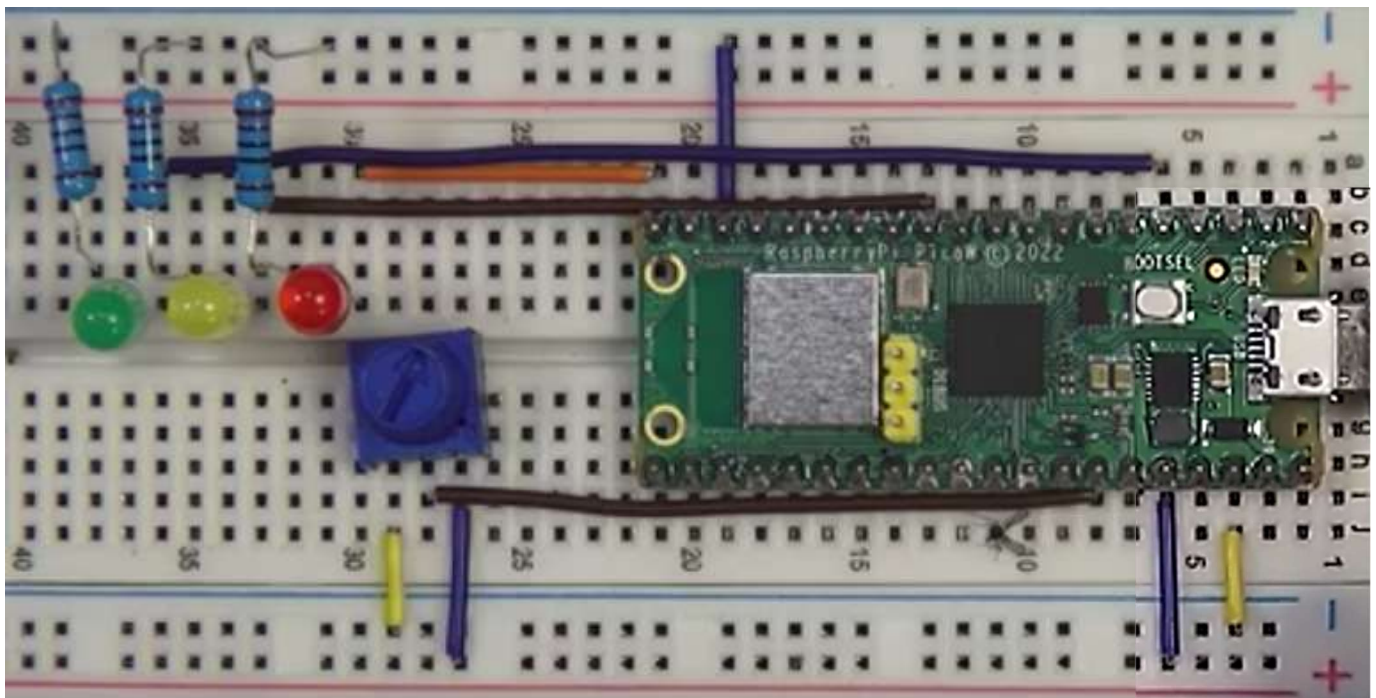


LED Connections:

- + side (long leg) of Red LED to Pin 20
- side (short leg) of Red LED to 220Ω resistor
- other side of resistor to negative bus

- + side of Yellow LED to Pin 12
- side of Yellow LED to 220Ω resistor
- other side of resistor to negative bus

- + side of Green LED to Pin 5
- side of Green LED to 220Ω resistor
- other side of resistor to negative bus



Run the code.

Turn the potentiometer.

If any of your LEDs don't light, try turning them around 180°. You probably got the long leg and short leg mixed up.

Bring this circuit to class next week and show me that it works.