STEM - Smart Robot v2 - Altronics Z6454

Lesson 4.2 - Robot Photosensor Demo

Scan QR code for Lesson 4.2 Simulation

Simulation of this lesson can be found at https://makecode.microbit.org/70425-35912-57266-50967

Note: *(Robot construction must be completed before this Step)*

Goal for this lesson

Learn to control and utilise the onboard photo resistor, any changes read by the photo resistor will cause the Neopixel LED strip to change colour.

Hardware Required

PC or Tablet
1 x micro USB cable
1 x Smart Robot with micro:bit & battery installed

Step 1 *as per Figure 1*

a. Goto URL https://makecode.microbit.org/#
b. Create **"+New Project"** & give it a name
c. Press **Gear** symbol & Press Extensions
d. Add repository https://github.com/AltronicsAUKits/Z6454-Robot-Kit-v2_KS0426
e. Move **"forever"** block below **"on start"** block.

Step 2 *as per Figure 2*

a. Press **"Variables"** Tab
b. Press "Make a Variable"
c. Create **"val"**
d. Drag **"set val to 0"** into **"forever"**
e. Press **"Math"** Tab
f. Drag **"map 0 from low 0 high 1023 to low 0 high 4"** to **0** spot on **"set val to 0"**
g. Adjust **"high 4" to "high 255"**
h. Press **"K_Bit"** Tab
i. Drag **"photoresistor"** into **0** spot on **"map 0"**
j. Press **"Neopixel"** Tab
k. Drag **"strip show color red"** into **"forever"**
l. Press **"Neopixel"** Tab, Press **"...more"** Tab
m. Drag **"red 255 green 255 blue 255"** into **"color red"** position
n. Press **"Math"** Tab
o. Drag **"0 -ᵛ 0"** into **"red 255"** & **Adjust "0 -ᵛ 0"** to be **"255 -ᵛ 0"**
p. Press **"Variables"** Tab
q. Drag **"val"** into **0** location of **"red "255 -ᵛ 0"**
r. Press **"Math"** Tab
s. Drag **"0 -ᵛ 0"** into **"green 255"** & **Adjust "0 -ᵛ 0"** to be **"255 -ᵛ 0"**
t. Press **"Variables"** Tab
u. Drag **"val"** into **0** location of **"green "255 -ᵛ 0"**
v. Press **"Math"** Tab
w. Drag **"0 -ᵛ 0"** into **"blue 255"** & **Adjust "0 -ᵛ 0"** to be **"255 -ᵛ 0"**
x. Press **"Variables"** Tab
y. Drag **"val"** into **0** location of **"blue "255 -ᵛ 0"**
z. Press **"Basic"** Tab
aa. Drag **"pause (ms) 100"** into **"forever"** field

Step 3 *as per Figure 3*

a. Press **"Variables"** Tab
b. Drag **"set strip to 0"** into **"on start"** , Change to **"strip" to "val"**
c. Press **"Neopixel"** Tab
d. Drag **"set strip to NeoPixel at pin P0 with 24 leds as RGB (GRB format)"** into **"on start"**
   Above item may read **"set strip 2"**, If need be change to **"set strip"**
e. Adjust **pin P0** to **pin P5,** Adjust **24 leds** to **18 leds**
f. Drag **"strip clear"** into **"on start"**
g. Download the code to the micro:bit.

Figure 1

Figure 2

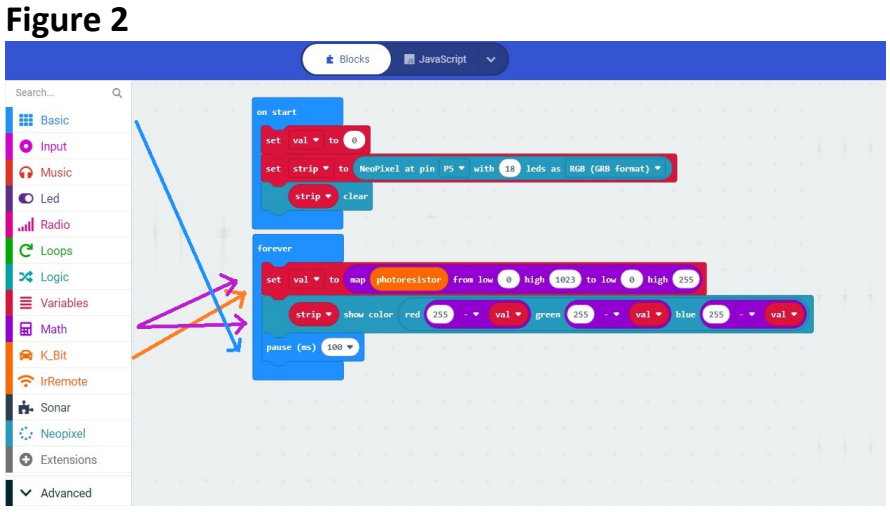
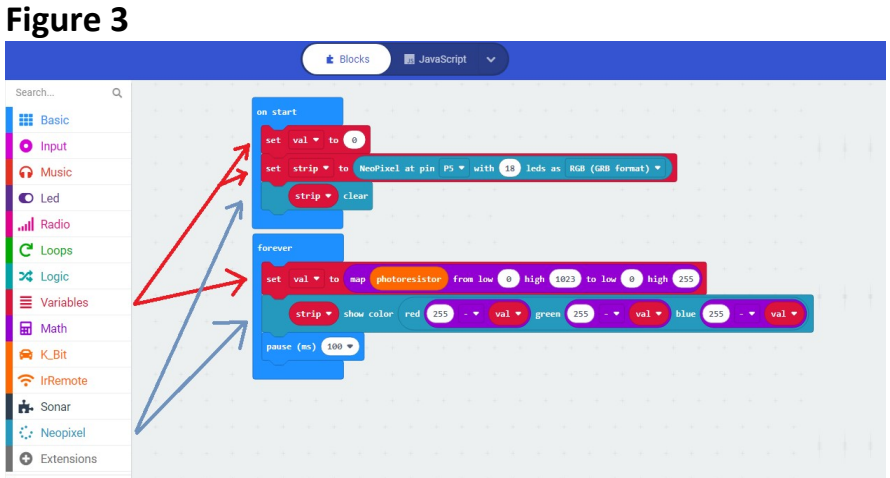


Figure 3



Example Photo sensor Demo can be found at
https://makecode.microbit.org/70425-35912-57266-50967

STEM Smart Robot can be purchase from Altronics.
https://www.altronics.com.au/p/z6454-stem-microbit-mini-smart-robot-car-v2.0/