STEM - Smart Robot v2 - Altronics Z6454

Lesson 3.4 - LED Neopixel Module Control Experiment 4

Scan QR code for Lesson 3.4 Simulation

Simulation of this lesson can be found at https://makecode.microbit.org/12086-93822-28126-97044

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

Goal for this lesson

Learn to control the Neopixel RGB LED on the Smart Robot and make random colour adjustments that repeat indefinitely.

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 – top right
d. Press Extensions
e. Add repository found using link below.
https://github.com/AltronicsAUKits/Z6454-Robot-Kit-v2_KS0426
f. On start up both **"on start"** & **"forever"** will be in your work space, move **"forever"** block below **"on start"** block.

Step 2 *As per Figure 2*

a. Press **"Neopixel"** Tab
b. Drag **"set strip to NeoPixel at pin P0 with 24 leds as RGB (GRB format)"** into **"on start"** field.
c. Above item may read **"set strip 2"**, If need be change to **"set strip"**
d. Adjust **pin P0** to **pin P5**
e. Adjust **24 leds** to **18 leds**
f. Press **"Variables"** Tab
g. Press "Make a Variable" - Create **"B" "G" "R"**
*Please note below items may be **"set R to 0"** or **"set G to 0"** on your system*
h. Drag **"set B to 0"** into **"on start",** Adjust to **set B** to **set R**
i. Drag **"set B to 0"** into **"on start",** Adjust to **set B** to **set G**
j. Drag **"set B to 0"** into **"on start"** Adjust to **set B** if required
k. Press **"Loops"** Tab
l. Drag **"for index from 0 to 4"** into **"forever"** field
Adjust **"for index from 0 to 4"** to **17**
m. Press **"Variables"** Tab
n. Drag **"set index to 0"** into **"for index from 0 to 17"**
Adjust to **index** to **set R**
o. Drag **"set index to 0"** into **"for index from 0 to 17"**
Adjust to **index** to **set G**
p. Drag **"set index to 0"** into **"for index from 0 to 17"**
Adjust to **index** to **set B**

Step 3 *As per Figure 3*

a. Press **"Neopixel"** Tab
b. Drag **"strip clear"** into **"for index from 0 to 17"**
c. Press **"Neopixel"** Tab then Press **"...more"** Tab
d. Drag **"strip set pixel color at 0 to red"** into **"for index from 0 to 17"** field
e. Drag **"red 255 green 255 blue 255"** into **"red"** on **"strip set pixel color at 0 to red"**
f. Press **"Variables"** Tab,
g. Drag **"index"** into **0** position on **"strip set pixel color at 0 to red 255 green 255 blue 255**
h. Drag **"R"** into **"red 255"**
i. Drag **"G"** into **"green 255"**
j. Drag **"B"** into **"blue 255"**
k. Press **"Basic"** Tab
l. Drag **"pause (ms) 100"** into **"forever"** field, Adjust to **"500"** milliseconds
m. Press **"Neopixel"** Tab
n. Drag **"strip show"** into **"for index from 0 to 17"**

Step 4 *As per Figure 4*

a. Press **"Math"** Tab
b. Drag **"pick random 0 to 10"** into **0** position **"set R to 0"** in **"for index from 0 to 17"**
Adjust **"pick random 0 to 10"** to be **"10 to 255"**
c. Drag **"pick random 0 to 10"** into **0** position **"set G to 0"** in **"for index from 0 to 17"**
Adjust **"pick random 0 to 10"** to be **"10 to 255"**
d. Drag **"pick random 0 to 10"** into **0** position **"set B to 0"** in **"for index from 0 to 17"**
Adjust **"pick random 0 to 10"** to be **"10 to 255"**
e. Download the code to the micro:bit

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

Figure 1

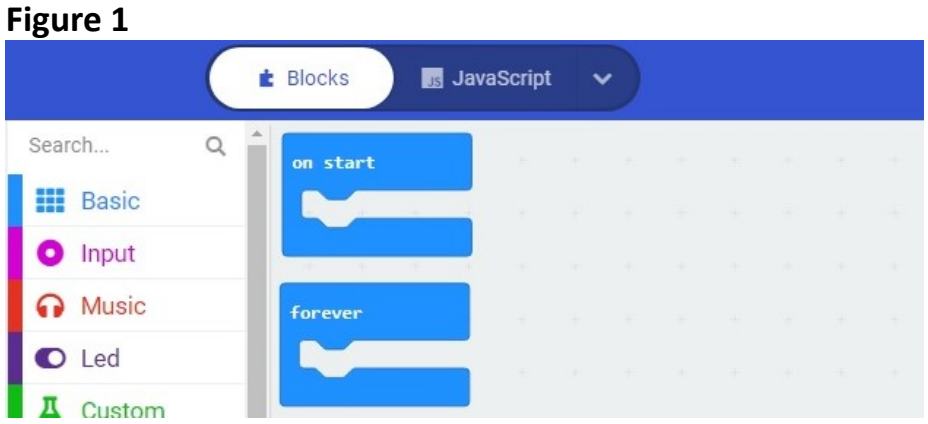

Figure 2

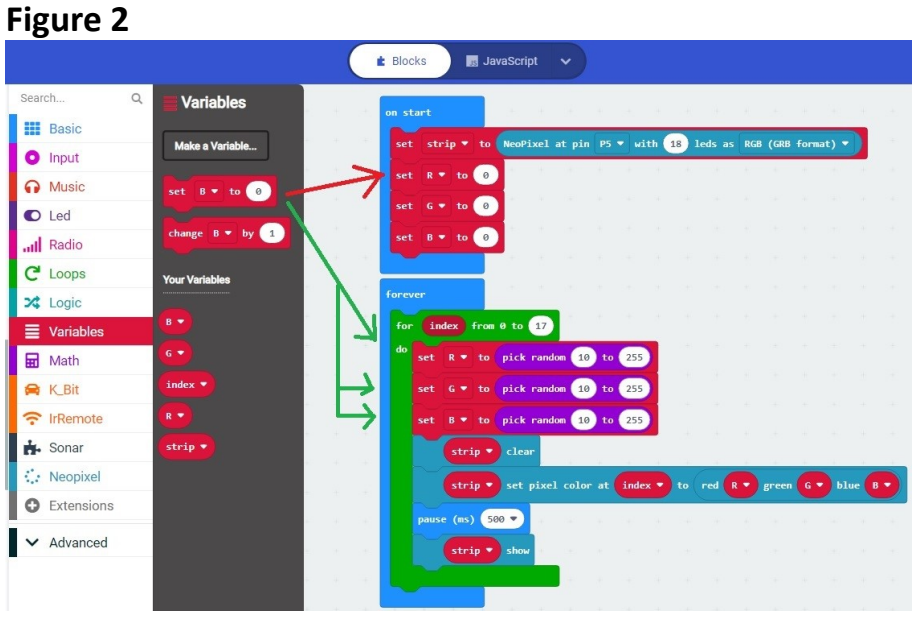

Figure 3

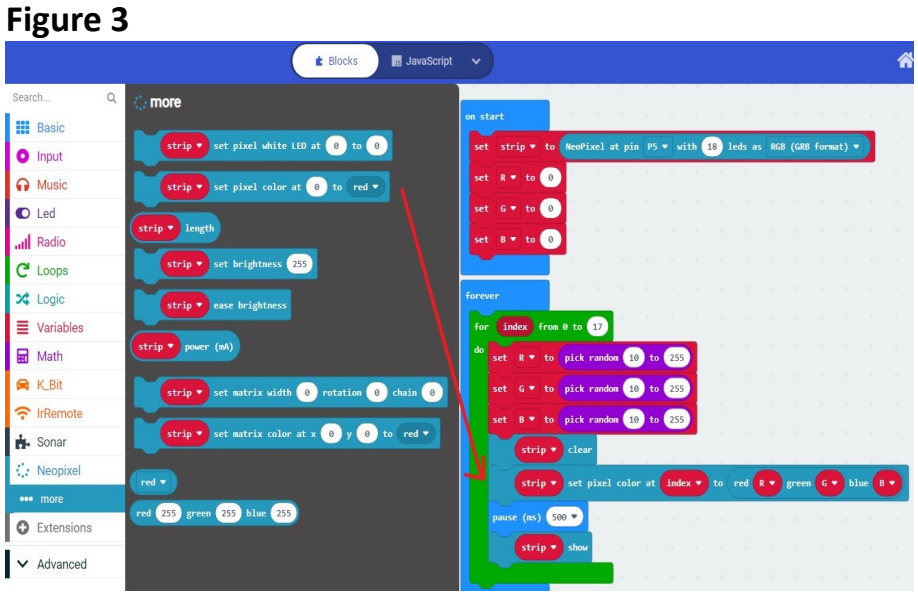

Figure 4