STEM - Smart Robot v2 - Altronics Z6454

Lesson 2.2 - RGB LED Variable Brightness Control

Scan QR code for Lesson 2.2 Simulation

Simulation of this lesson can be found at https://makecode.microbit.org/49566-93471-52442-44627

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

Goal for this lesson

Learn to control RGB LED's using a repeat cycle and have the LED vary intensity.

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*

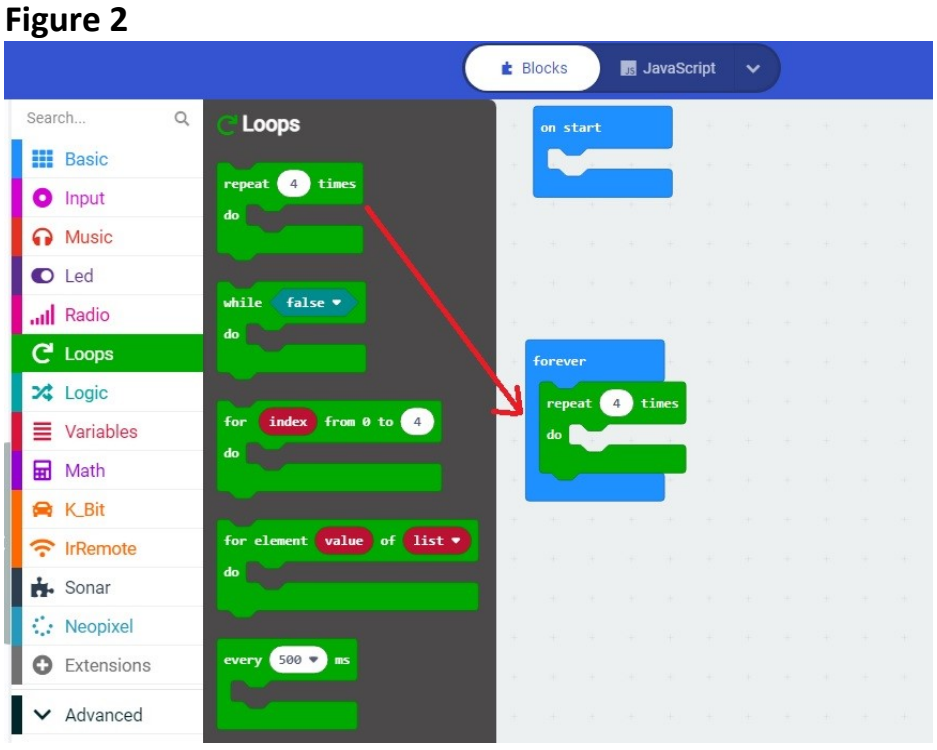
a. Goto URL https://makecode.microbit.org/#
b. Create **"+New Project"** & give it a name
c. Press **Gear** symbol – top right
d. Press Extensions
e. Add repository found using link below.
https://github.com/AltronicsAUKits/Z6454-Robot-Kit-v2_KS0426
f. On start up both **"on start"** & **"forever"** will be in your work space, move **"forever"** block below **"on start"** block.

Figure 1

Step 2 *As per Figure 2*

a. Press **"Loops"** Tab
b. Drag **"repeat 4 times"** into **"forever"** field.
c. Adjust variable **"repeat 4 times"** to **51**.

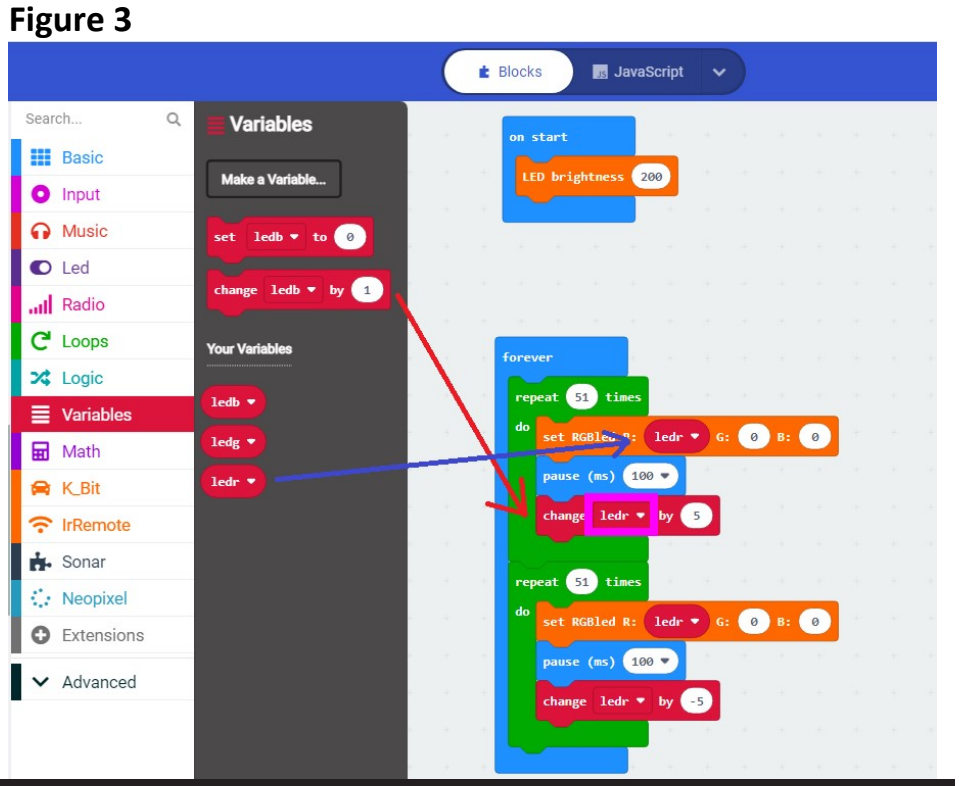
Figure 2



Step 3 *As per Figure 3*

a. Press **"K_Bit"** Tab
b. Drag **"LED brightness 0"** into the **"on start"** field
Adjust brightness to **"200"**
c. Drag **"set RGBled R: 0 G: 0 B: 0"** in to **"repeat 51 times"** field.
d. Press **"Basic"** Tab
e. Drag **"pause (ms) 100"** into **"forever"** field below
"set RGBled R: 0 G: 0 B: 0"
f. Press **"Variables"** Tab
g. Press **"Make a Variable"** and type **"ledb"**
h. Repeat as above for **"ledg"** & **"ledr"**
i. Drag **"ledr"** into **R:0** position on **"set RGBled R: 0 G: 0 B: 0"**
j. Drag **"change ledb by 1"**
Adjust **ledb** for appropriate LED colour, in this case use **ledr**
ledr = Red, **ledg** = Green, **ledb** = Blue
Adjust **"change ledr by 1"** to **5**

Figure 3



Step 4

a. Repeat **Step 2 & Step 3** for each LED set figure.
This time Adjust **"change ledr by 1"** to **-5**
This will bring the led back to its original starting point.

Step 5

a. Repeat **Step 2** through to **Step 4** for Green & Blue LED's.
b. Download the code to the micro:bit.

Example RGB LEDExperiment 2.2 can be found at
https://makecode.microbit.org/49566-93471-52442-44627

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