STEM - Smart Robot v2 - Altronics Z6454

Lesson 7.2 - Ultrasonic Following Smart Robot

Simulation of this lesson can be found at https://makecode.microbit.org/30208-23040-06686-72445

Scan QR code for Lesson 7.2 Simulation

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

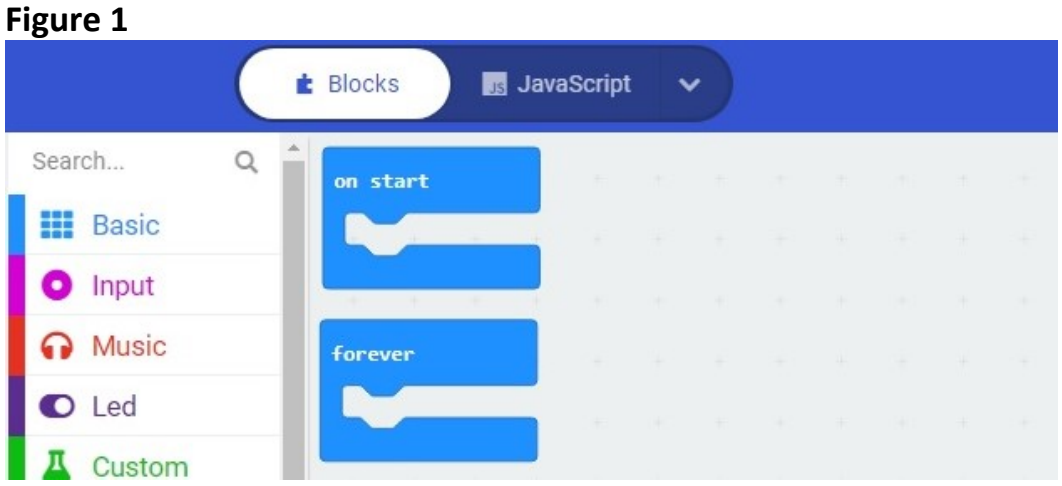
Goal for this lesson
Learn to use the Ultrasonic sensors to control the robot motors and follow an object.

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

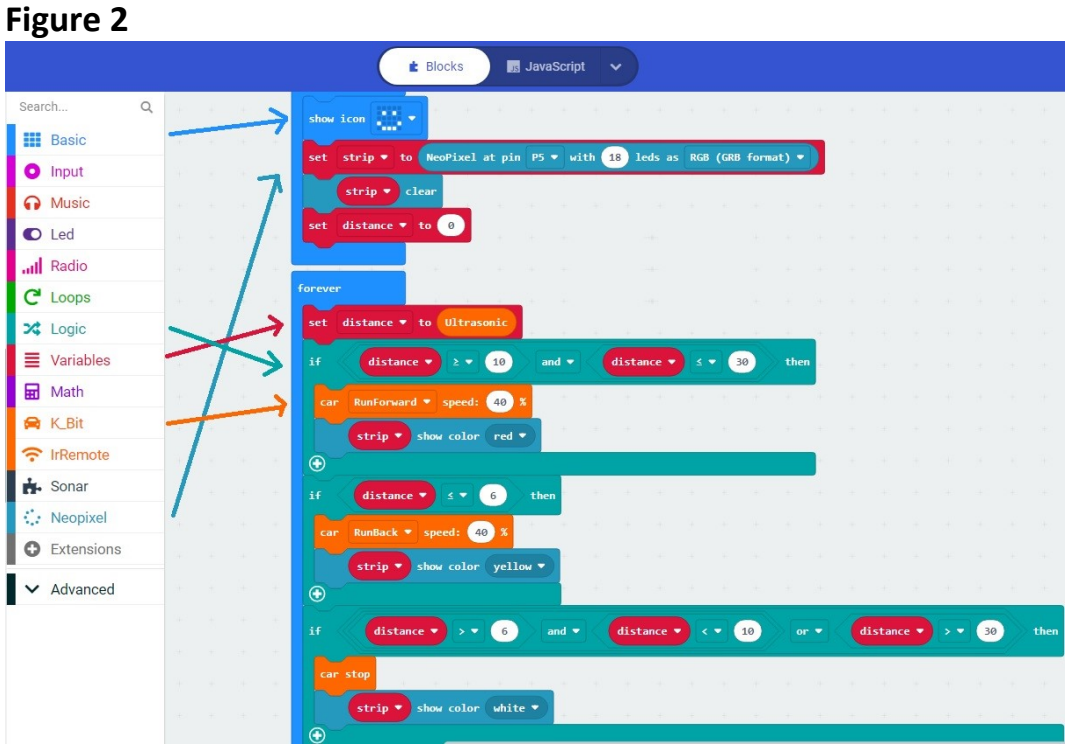


Step 2 *as per Figure 2*

Moving forward we will only highlight the locations for the required modules to produce the desired code.

a. We will be utilising the **"Basic"** Tab
b. We will be utilising the **"Logic"** Tab
c. We will be utilising the **"Variables"** Tab
d. We will be utilising the **"K_Bit"** Tab
e. We will be utilising the **"Neopixel"** Tab
f. Download the code to the micro:bit

Figure 2



Expected Result!

a. Once the code has been written to the micro:bit.
b. Insert the micro:bit into the robot & power on.
c. The robot will display a smiley face on the matrix display.
d. If the robot detects movement in front of the Ultrasonic sensors that has a distance between 10 & 30 it will begin to move forward towards the object and turn the Neopixel display RED.
e. If an object is detected that has a distance between 0-6 the robot will move backwards until the object has a distance above 6 and turn the Neopixel display Yellow.
f. If no objects are detected at a distance between 6 and 10 and no object can be found at a distance greater than 30 then the robot will stop and the Neopixel will turn White.
g. If no objects are found within the required distance field the robot will stay stopped and the Neopixel display will stay White.

Example Ultrasonic Following Smart Robot can be found at
https://makecode.microbit.org/30208-23040-06686-72445

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