Lesson 8.4 - Ultrasonic & Infrared Robot Follow Demo

Simulation of this lesson can be found at https://makecode.microbit.org/12700-42347-40670-91799

Scan QR code for Lesson 8.4 Simulation

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

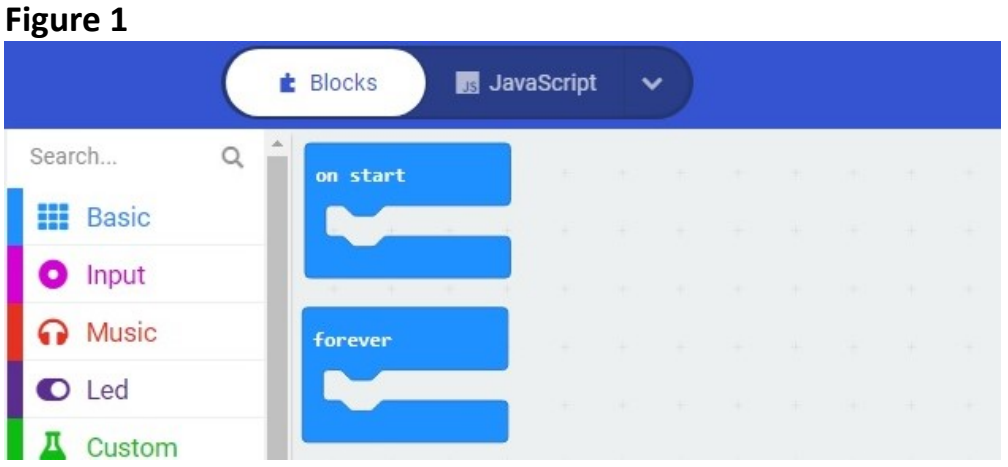
Goal for this lesson
Learn to use the obstacle avoidance sensors. Use the IR and Ultrasonic data to control the robot and follow an object.

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

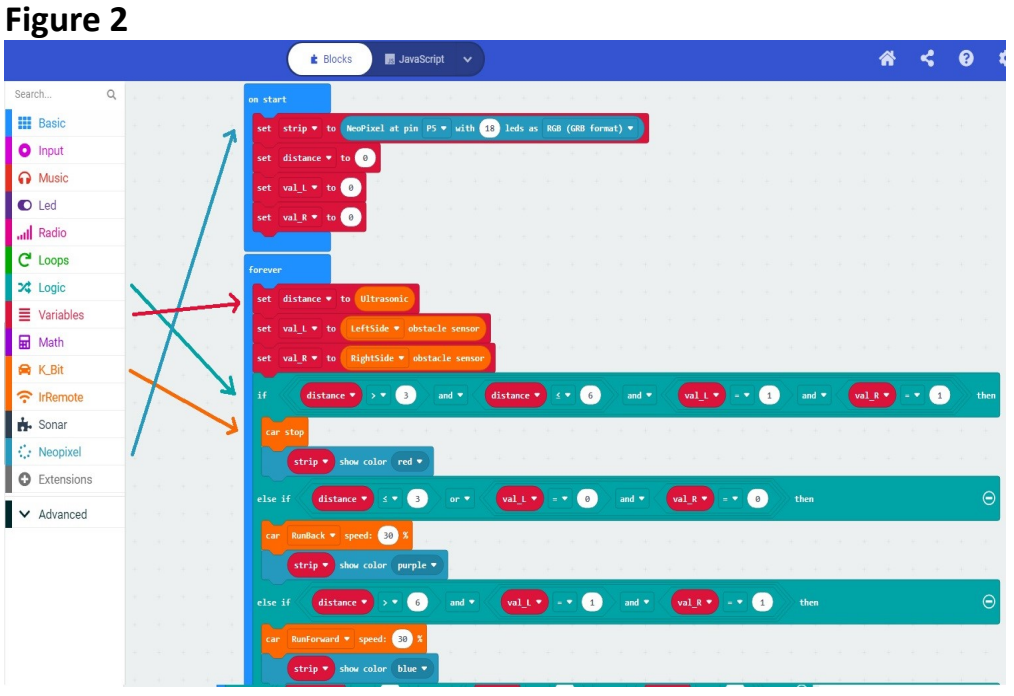


Step 2 *as per Figure 2*

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

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

Figure 2



Expected Result!

a. Insert the micro:bit into the robot & Power on
b. If the Ultrasonic sensors detects a distance between 3 and 6 but there are no objects near the obstacles sensors the robot will stop.
The Neopixel will illuminate Red.
c. If the Ultrasonic sensor detects a distance between 0 and 3 and both the obstacle sensors detect an object the robot will move backwards.
The Neopixel will illuminate Purple.
d. If the Ultrasonic sensor detects a distance greater than 6 and there are no objects near both obstacle sensors the robot will move forward.
The Neopixel will illuminate Blue.
e. If the left obstacle sensor detects an object the robot will turn left.
The Neopixel will illuminate Green.
f. If the right obstacle sensor detects an object the robot will turn left.
The Neopixel will illuminate Yellow.
g. The robot will then stop and wait to detect movement once again.

Example Ultrasonic & Infrared Robot Follow Demo can be found at
https://makecode.microbit.org/12700-42347-40670-91799

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