Wristbit control Basic version hellobot car

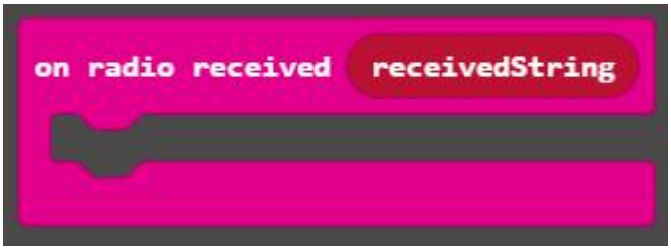
1. Learning goals

In this lesson, we will learn to use Wrist:bit control Basic version hellobot car.

2. Working principle

This course mainly uses the networking function of micro:bit to realize communication between two micro:bit motherboards. The two microbits need to be set in the same group, and the receivedStrings of the two receive the characters from the other to communicate.

In this course, we mainly use the building blocks shown in the figure below.



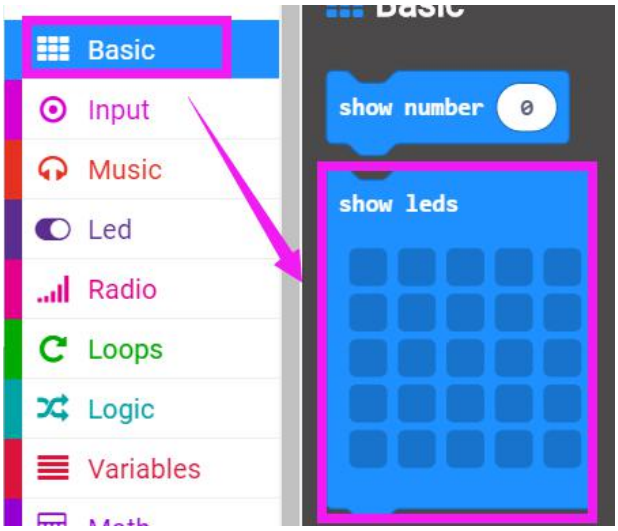
3. Programming method

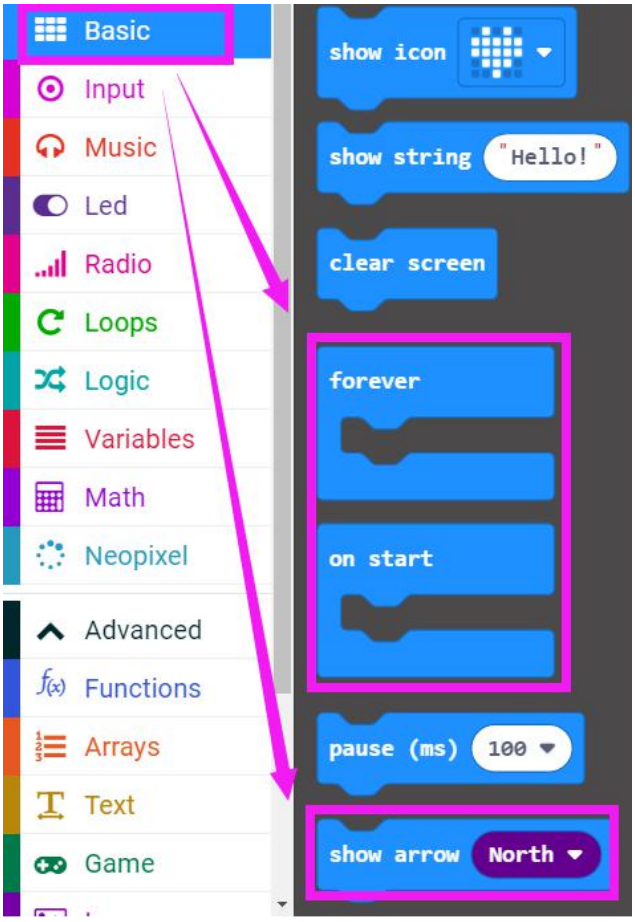
Mode 1 online programming: First, we need to connect the micro:bit to the computer by USB cable. The computer will pop up a USB flash drive and click on the URL in the USB flash drive: http://microbit.org/ to enter the programming interface to program.

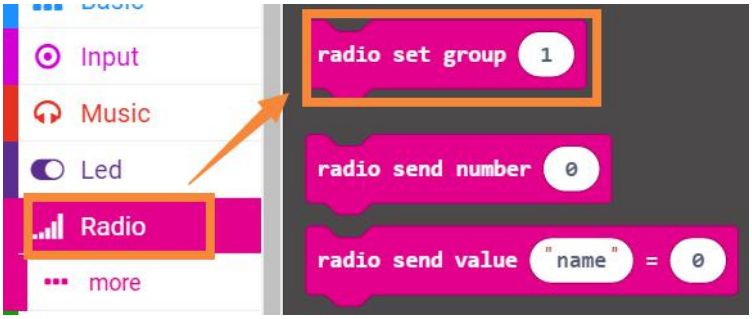
Mode 2 offline programming: We need to open the offline programming software. After the installation is complete, enter the programming interface, click【New Project】, you can program.

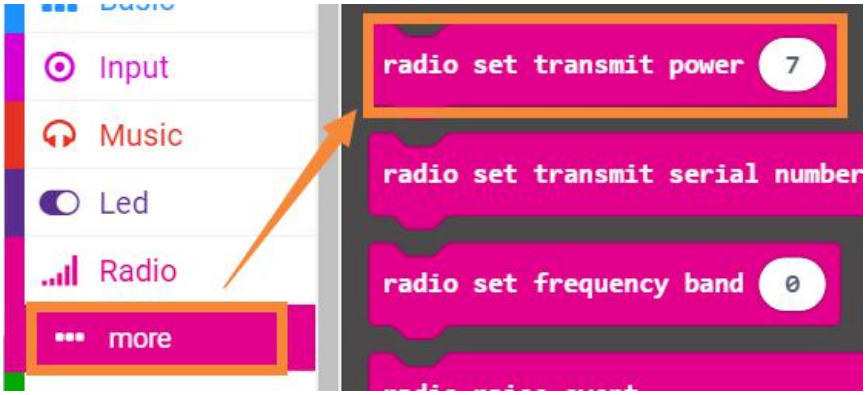
4. Looking for blocks

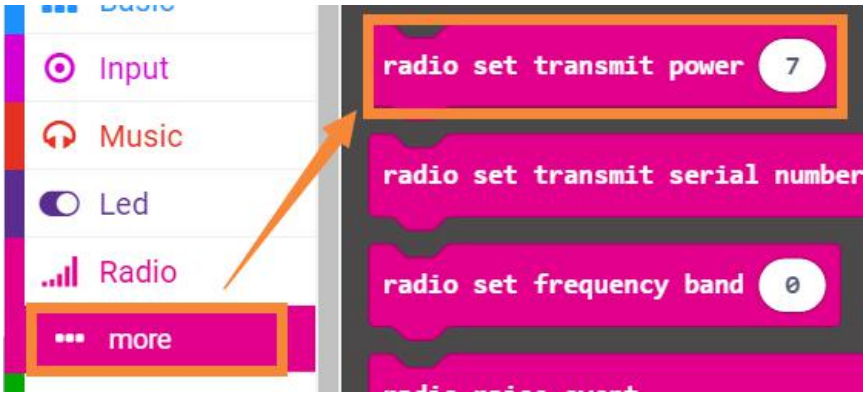
The following is the location of the building blocks required for this programming.

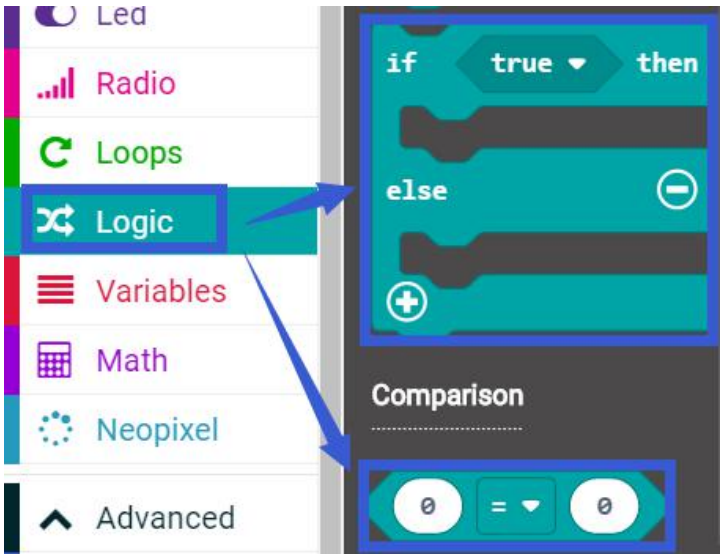

Basic
Input
Music
Led
Radio
Loops
Logic
Variables
show number 0
show leds

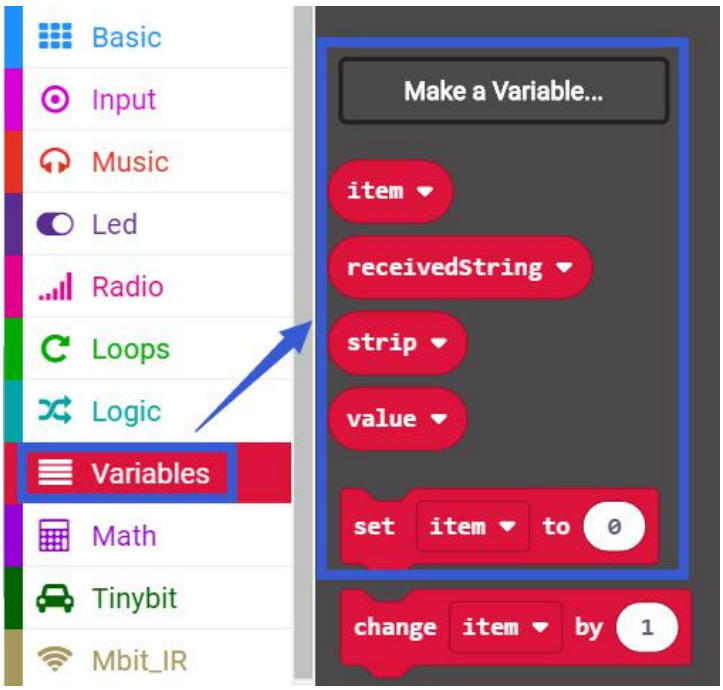

Basic
Input
Music
Led
Radio
Loops
Logic
Variables
Math
Neopixel
Advanced
Functions
Arrays
Text
Game
show icon
show string "Hello!"
clear screen
forever
on start
pause (ms) 100
show arrow North

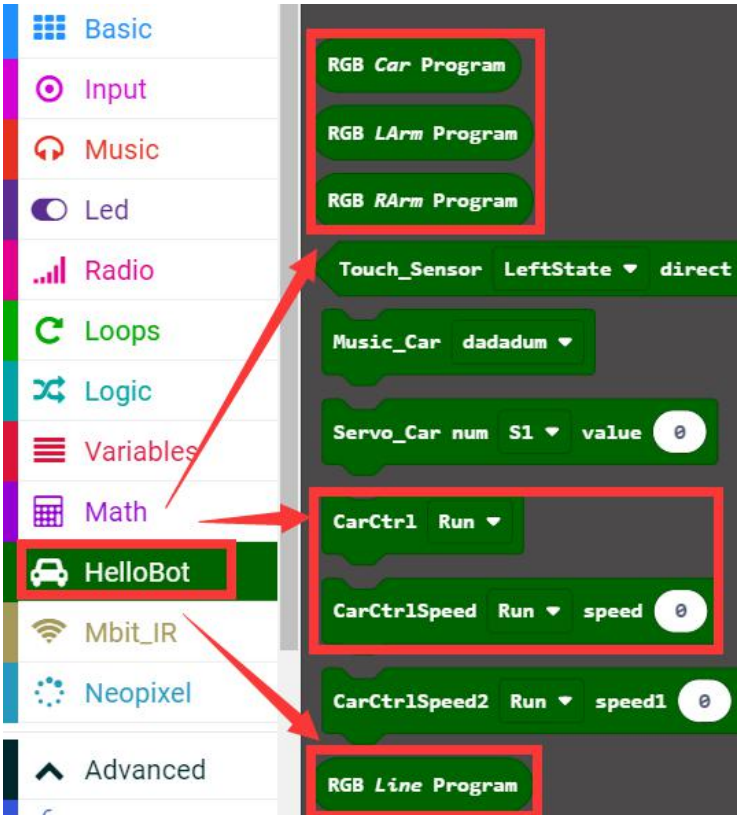

Input
Music
Led
Radio
more
radio set group 1
radio send number 0
radio send value "name" = 0

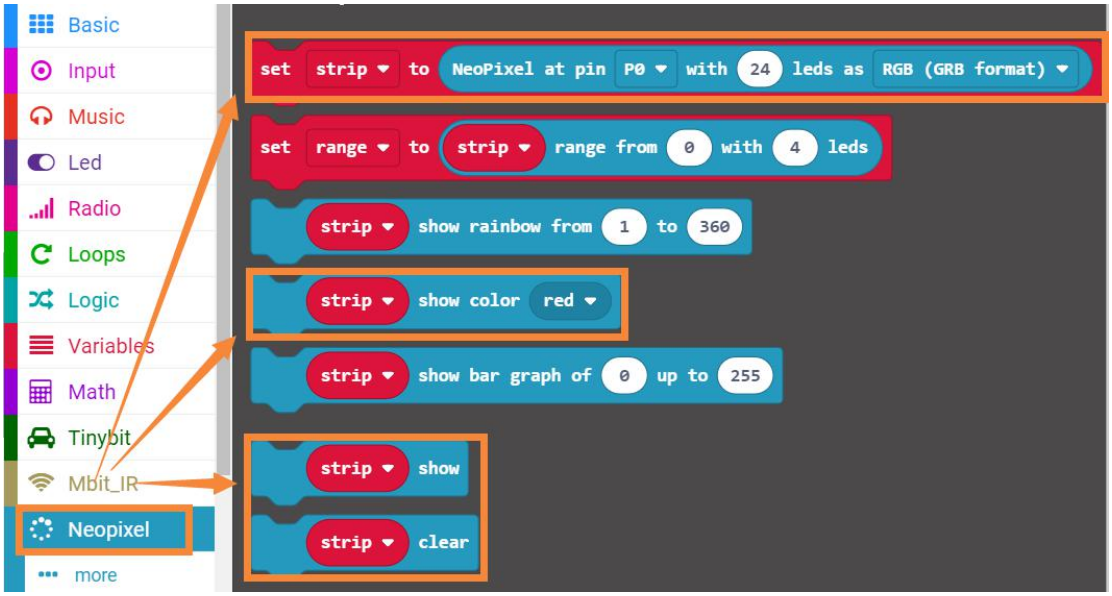

Input
Music
Led
Radio
more
radio set transmit power 7
radio set transmit serial number
radio set frequency band 0


Input
Music
Led
Radio
more
radio set transmit power 7
radio set transmit serial number
radio set frequency band 0


Led
Radio
Loops
Logic
Variables
Math
Neopixel
Advanced
if true then
else
Comparison
0 = 0

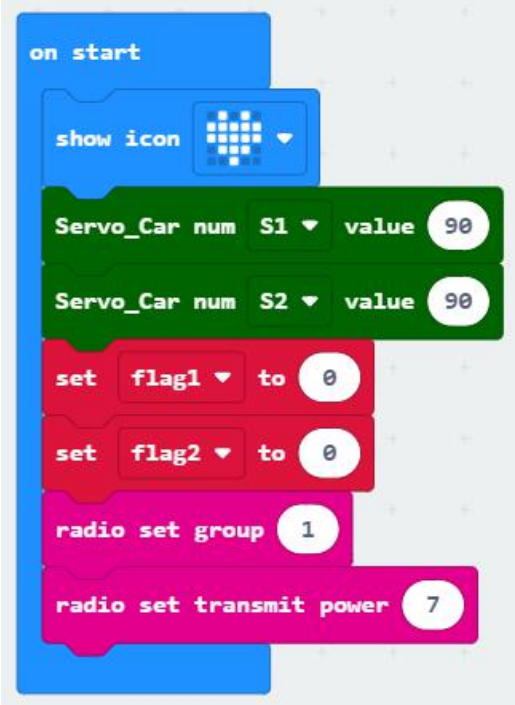

Basic
Input
Music
Led
Radio
Loops
Logic
Variables
Math
Tinybit
Mbit_IR
Make a Variable...
item
receivedString
strip
value
set item to 0
change item by 1


Basic
Input
Music
Led
Radio
Loops
Logic
Variables
Math
HelloBot
Mbit_IR
Neopixel
Advanced
RGB Car Program
RGB LArm Program
RGB RArm Program
Touch_Sensor LeftState direct
Music_Car dadadum
Servo_Car num S1 value 0
CarCtrl Run
CarCtrlSpeed Run speed 0
CarCtrlSpeed2 Run speed1 0
RGB Line Program

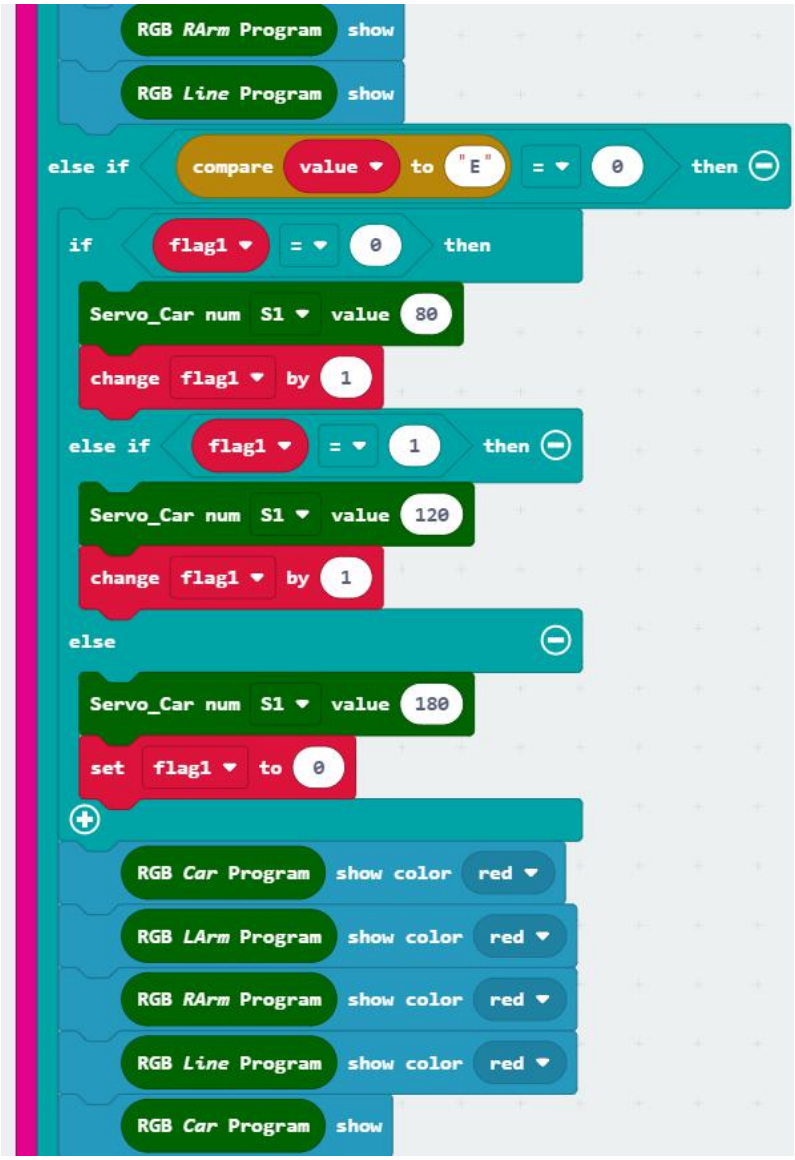


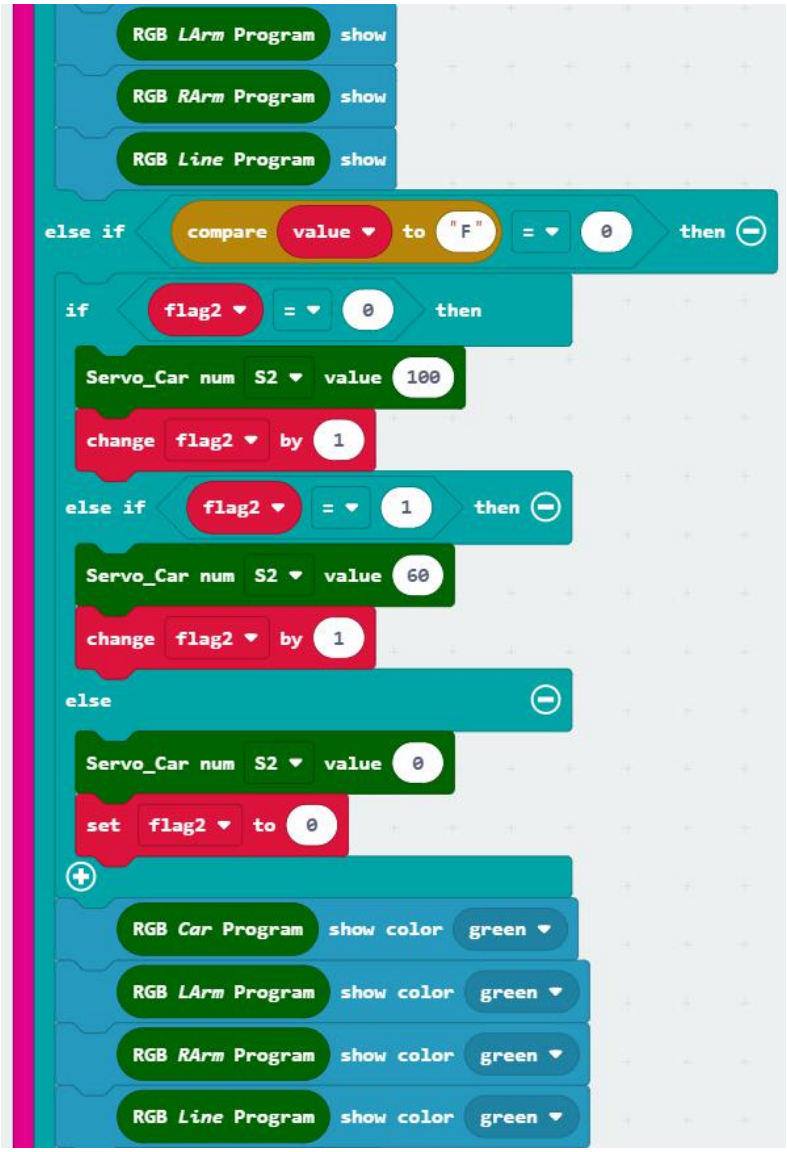
5. Combine block

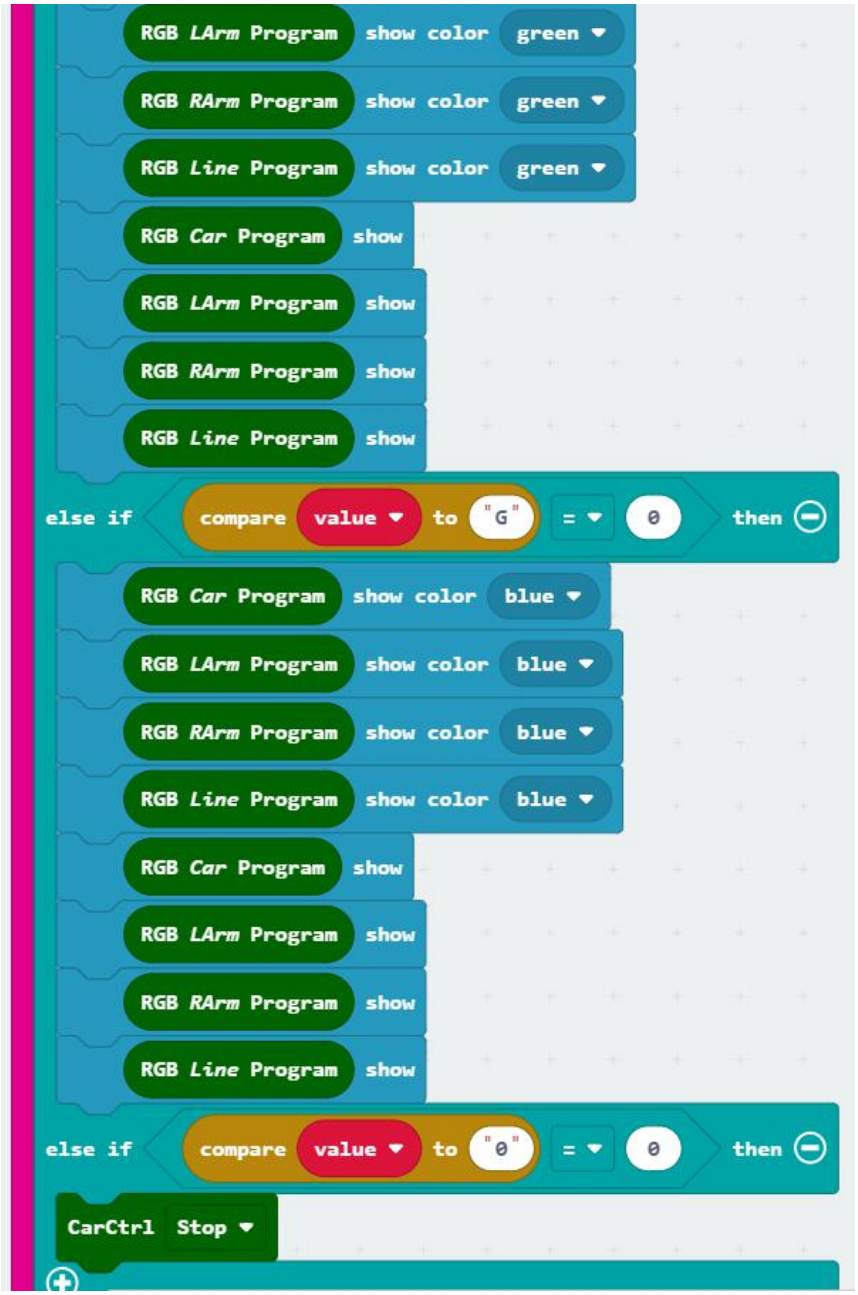
Basic Hellobot car code as shown below.



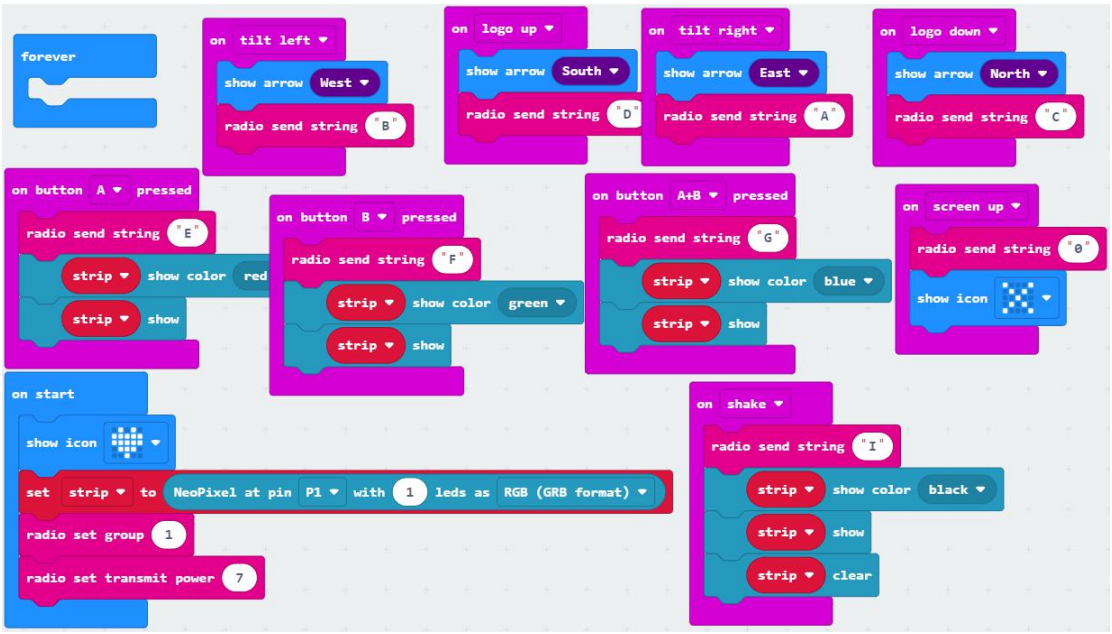

on radio received receivedString
set value to receivedString
if compare value to "A" = 0 then
CarCtrlSpeed Run speed 150
else if compare value to "B" = 0 then
CarCtrlSpeed Back speed 150
else if compare value to "C" = 0 then
CarCtrlSpeed SpinLeft speed 100
else if compare value to "D" = 0 then
CarCtrlSpeed SpinRight speed 100
else if compare value to "I" = 0 then
RGB Car Program show color black
RGB LArm Program show color black
RGB RArm Program show color black
RGB Line Program show color black
RGB Car Program show
RGB LArm Program show


RGB RArm Program show
RGB Line Program show
else if compare value to "E" = 0 then
if flag1 = 0 then
Servo_Car num S1 value 80
change flag1 by 1
else if flag1 = 1 then
Servo_Car num S1 value 120
change flag1 by 1
else
Servo_Car num S1 value 180
set flag1 to 0
RGB Car Program show color red
RGB LArm Program show color red
RGB RArm Program show color red
RGB Line Program show color red
RGB Car Program show


RGB LArm Program show
RGB RArm Program show
RGB Line Program show
else if compare value to "F" = 0 then
if flag2 = 0 then
Servo_Car num S2 value 100
change flag2 by 1
else if flag2 = 1 then
Servo_Car num S2 value 60
change flag2 by 1
else
Servo_Car num S2 value 0
set flag2 to 0
RGB Car Program show color green
RGB LArm Program show color green
RGB RArm Program show color green
RGB Line Program show color green



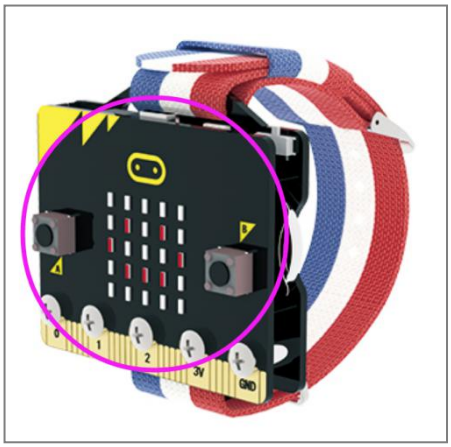
Wrist:bit code code as shown below.



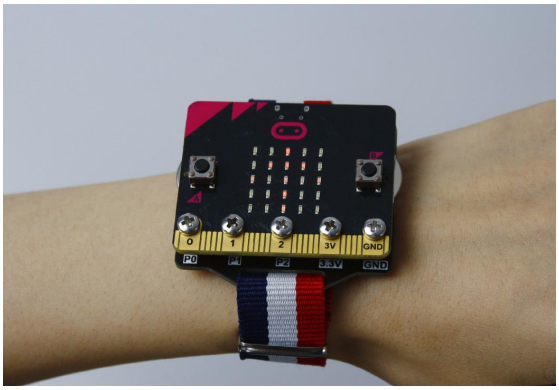
6. Experimental phenomena

We need to download microbit-Basic-Hellobot-code.hex file into micro:bit board of Hellobot car.

We need to download microbit-Wristbit-code.hex file into micro:bit board of Wristbit.



After the program is successfully downloaded. Take wrist:bit on your left wrist as shown below.



Basic Hellobot car dot matrix of will display a heart and two servo will rotate to 90°. Wrist:bit dot matrix will display a heart pattern.

if the wrist:bit is facing upward, car will stop;
if the micro:bit tilt left, the micro:bit dot matrix display arrow points to west, car will back;
if the micro:bit tilt right, the micro:bit dot matrix display arrow points to the east, car will advance;
If the micro:bit logo up, micro:bit dot matrix display points to the south, car will spin left;
if the micro:bit logo down, micro:bit dot matrix display points to the north, car will spin right;
if we press the button A, the RGB lights of the Wrist:bit and the car will become red. When we press button B, the RGB lights of the Wrist:bit and the car will become green.
if we press the A and B buttons at the same time, the RGB lights of the Wrist:bit and the car will become blue.
if we shaking the Wrist:bit, the RGB lights of Wrist:bit and the car will off.