

3.1 Color response

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1. Learning objectives

In this course. The K210 vision module performs color recognition. When any one of the colors red, yellow, blue and green is recognized, the car searchlight will light up with the corresponding color.

2. Preparation for class

1. Remove the TF card from the k210 vision module and insert it into the card reader.



2. Plug the card reader into the computer, and wait for the computer to recognize the USB disk.



3. Then, enter the TF card. You will see following content.

K210	2023/6/28/周三 9:36
KPU	2023/4/13/周四 16:30
main.py	2060/1/1/周四 0:00

4. Go to the k210 folder, find the **3.1_color_rgb.py** file from the folder and copy it to the root directory.

2.1_color_recognition.py	6/7/2023 12:23 PM
2.2_3.2_find_barcodes.py	6/15/2023 5:40 PM
2.3_3.3_find_qrcodes.py	6/26/2023 9:16 AM
2.4_find_apriltags.py	6/2/2023 10:15 AM
2.5_3.4_object_detect.py	6/26/2023 2:14 PM
2.6_3.5_self_learning.py	6/28/2023 10:00 AM
2.7_3.6_face_mask_detect.py	6/28/2023 9:20 AM
2.8_face_recog.py	6/28/2023 9:21 AM
2.9 3.8 mnist.py	6/15/2023 4:42 PM
3.1_color_rgb.py	6/28/2023 4:50 PM
3.7_face_detect.py	6/15/2023 11:23 AM
3.9_color_follow_line.py	7/14/2023 5:06 PM
3.10_follow_apriltag.py	7/13/2023 10:58 AM
3.11_follow_color.py	7/13/2023 12:11 PM
3.12_Autopilot.py	7/25/2023 9:29 AM
K210	8/24/2023 3:36 PM
KPU	8/24/2023 3:36 PM
3.1_color_rgb.py	7/25/2023 9:29 AM
main.py	8/24/2023 5:22 PM

5. Delete the original **main.py** file.

Then, re-name the **3.1_color_rgb.py** file as the **main.py** file.

K210	8/24/2023 3:36 PM
KPU	8/24/2023 3:36 PM
3.1_color_rgb.py	7/25/2023 9:29 AM

6. After re-name, pull out the card reader, remove the TF card and insert it back into the k210 vision module.

3. Programming Methods

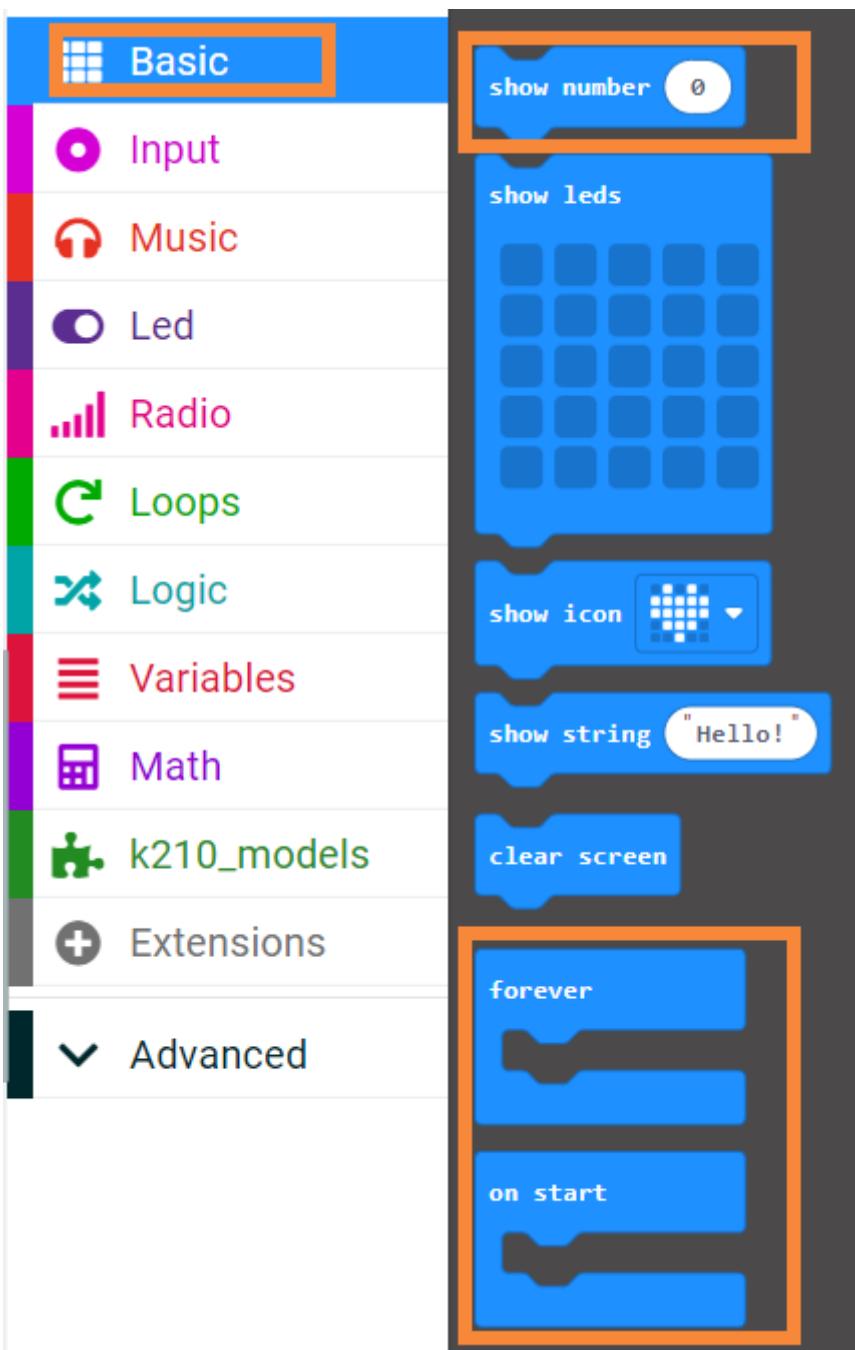
Online programming: first copy this URL <https://makecode.microbit>, and enter the online programming interface.

Click Extension, copy the package URL: <https://github.com/YahboomTechnology/K210-Module.git> to the input field, click Confirm to add package,

Click Extension again, copy the package URL: <https://github.com/YahboomTechnology/Tiny-bitLib> to the input field, click Confirm to add the package.

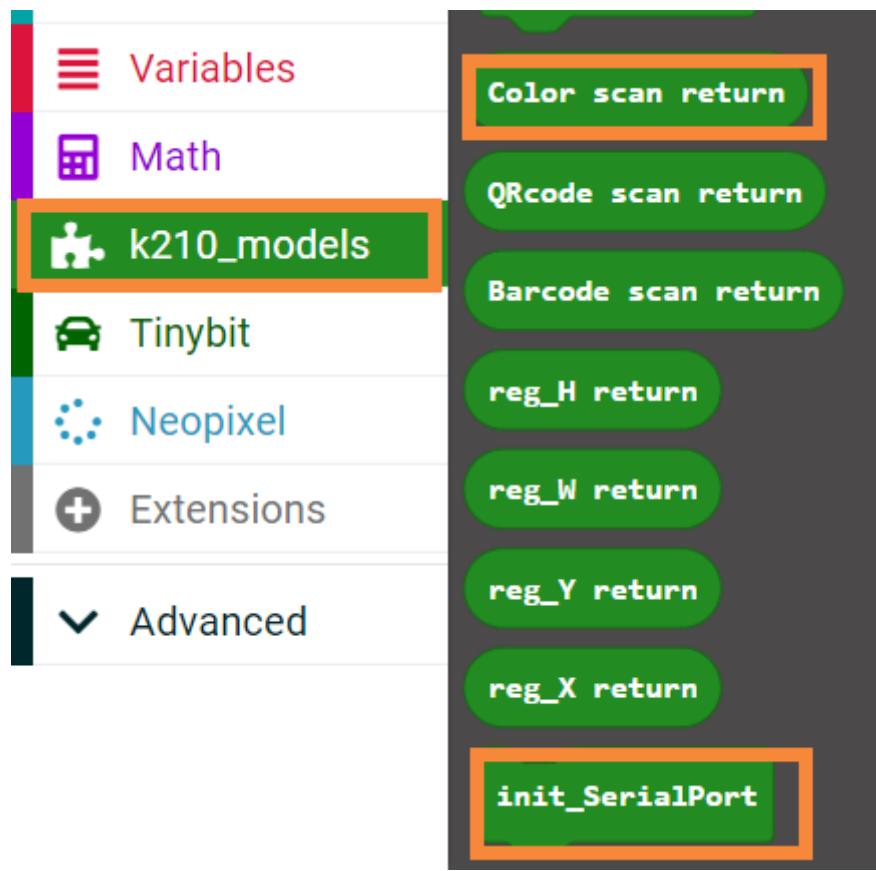
Finally you can use the K210 Vision Module package and Tinybit's building blocks.

4. Blocks

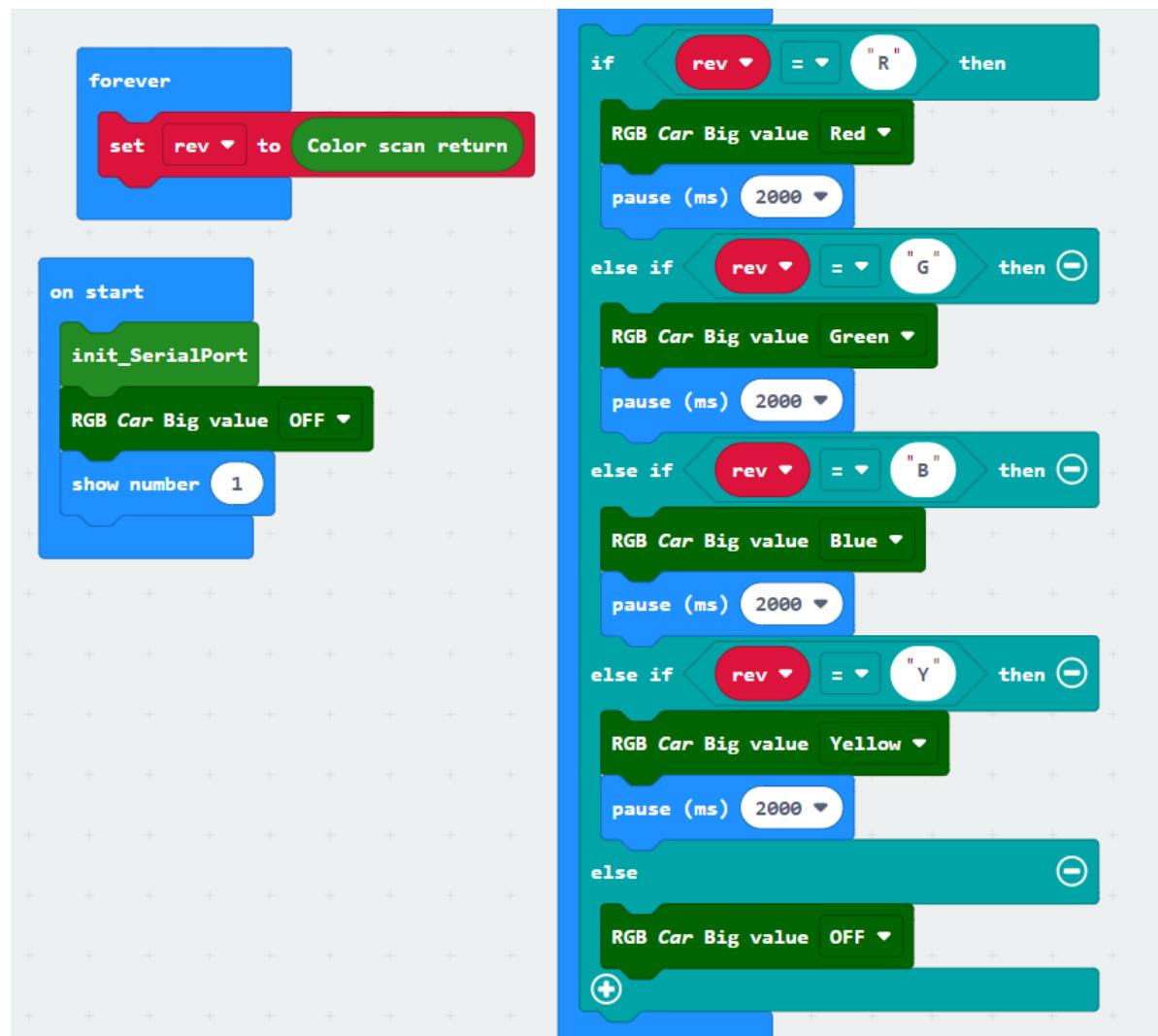


The image shows a Scratch workspace with three scripts displayed on the stage:

- Variables Script:** A grey script containing:
 - A yellow "Make a Variable..." button.
 - A yellow "set num to 0" block.
 - A red "change num by 1" block.
- Tinybit Script:** A green script containing:
 - A pink "RGB Car Big value OFF" block.
 - A green "RGB Car Big2 value1 0 value2" block.
 - A green "Music_Car dadadum" block.
 - A green "CarCtrl Run" block.
 - A green "CarCtrlSpeed Run speed 0" block.
 - A green "CarCtrlSpeed2 Run speed1 0" block.
 - A green "Line_Sensor direct LeftState" block.
- Logic Script:** An orange script containing:
 - An orange "if true then" block.
 - An orange "else" block.
 - An orange "end" block.



5. Code



6. Download code

Connect the Micro:bit board to the computer via microusb cable, the computer will pop up a USB stick.

Then, select the **k210_color.hex** code and right click to send it to the Micro:bit U disk.

Wait until sending is complete and unplug the Micro:bit usb cable. Plug the Micro:bit board into the car.

7. Experimental phenomena

After starting the car, wait for the screen to display the camera image.

After displaying the screen, point the camera at the color to be identified, and when any one of the red, yellow, blue and green colors is identified, the trolley searchlight will light up with the corresponding color.

