microbit_ K210 color recognition

1.K210 and microbit communication

1.1 Experimental premises

This tutorial uses microbit V2.0, and K210 requires running the program in * * K210-AI (microbit) * * to start the experiment
Microbit * 1
Eyu clip * 3
Several DuPont Lines
K210 perspective module * 1 (requires SD card (with AI model inside) and camera)
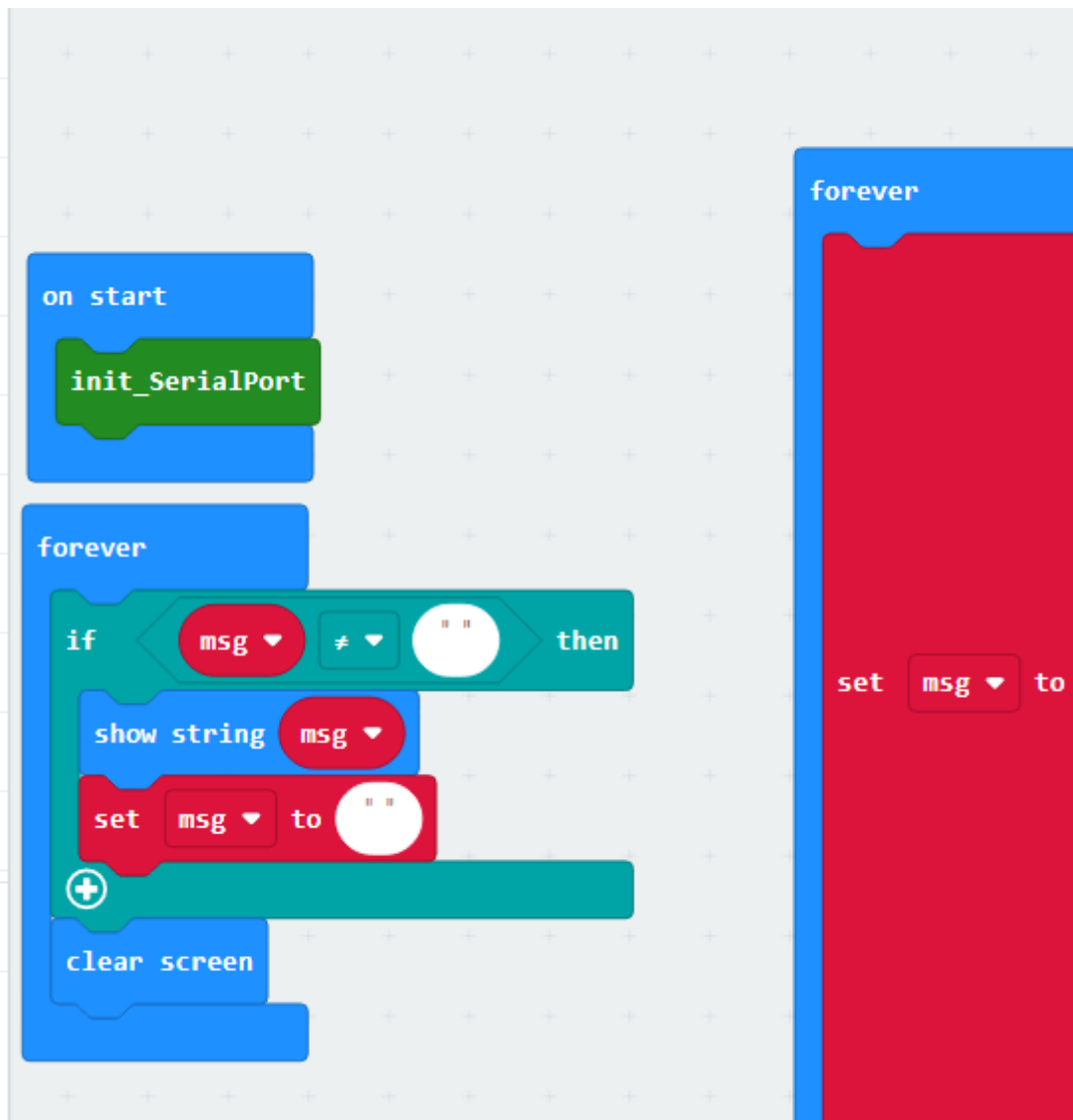USB to TTL module * 1
Import k210AI library： https://github.com/YahboomTechnology/K210-Module

1.2 Experimental wiring

microbit	USB to TTL module
P1	RXD
GND	GND

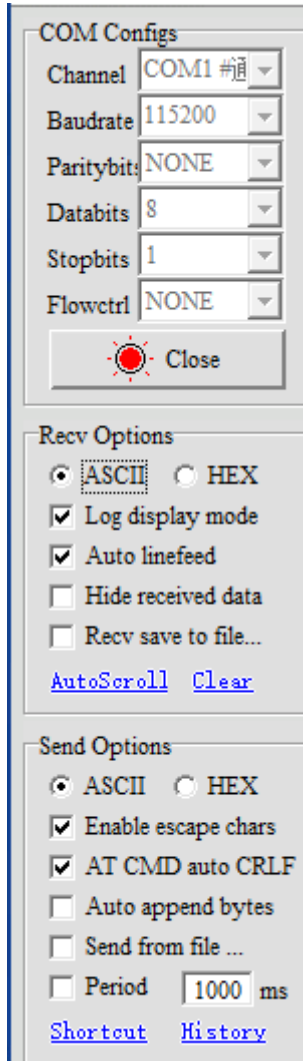| microbit	k210
P2	TXD
GND	GND
Wiring as shown in the diagram：	

1.3 Main code analysis

From the code, simply configure the serial port and call the relevant serial port and K210 building blocks for data acquisition

- X: The abscissa of the identification box
- Y: The vertical coordinate of the identification box
- W: The width of the identification box
- H: The height of the identification box
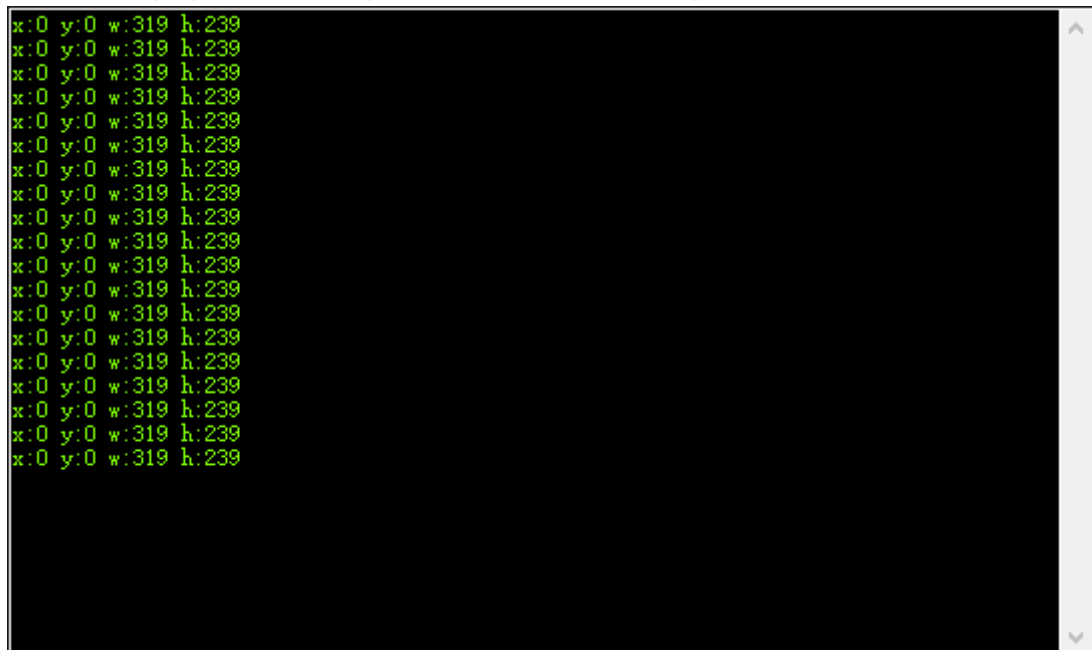
1.4 experimental phenomena

1. After connecting the cable, the K210 perspective module runs offline. Please check 【6.2 K210 as coprocessor】 -- 【ReadMe】

2. Set the serial port assistant to the interface shown in the figure

COM Configs

Channel	COM1 #通 ▼
Baudrate	115200 ▼
Paritybits	NONE ▼
Databits	8 ▼
Stopbits	1 ▼
Flowctrl	NONE ▼

● Close

Recv Options

⊙ ASCII ○ HEX
☑ Log display mode
☑ Auto linefeed
☐ Hide received data
☐ Recv save to file...

AutoScroll Clear

Send Options

⊙ ASCII ○ HEX
☑ Enable escape chars
☑ AT CMD auto CRLF
☐ Auto append bytes
☐ Send from file ...
☐ Period 1000 ms

Shortcut History

3. Download the hex program of this tutorial into microbit
4. After starting recognition, you can see that the serial assistant prints something and the microbit screen also scrolls to display the received information. The experimental results in the following figure show the phenomenon of color recognition

```
x:0 y:0 w:319 h:239
x:0 y:0 w:319 h:239
x:0 y:0 w:319 h:239
x:0 y:0 w:319 h:239
x:0 y:0 w:319 h:239
x:0 y:0 w:319 h:239
x:0 y:0 w:319 h:239
x:0 y:0 w:319 h:239
x:0 y:0 w:319 h:239
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x:0 y:0 w:319 h:239
x:0 y:0 w:319 h:239
x:0 y:0 w:319 h:239
x:0 y:0 w:319 h:239
x:0 y:0 w:319 h:239
x:0 y:0 w:319 h:239
x:0 y:0 w:319 h:239
```

This experiment displays the four values of x, y, w, and h in the color recognition box

1.5 Microbit calls the building blocks to parse the results of K210, and the role of each block

Website of K210 library： https://github.com/YahboomTechnology/K210-Module

k210_models

- face_detect Scan return
- Apriltag_id return
- handwriting_number return
- self_learning Scan return
- object_detct Scan return
- face_reg Scan return
- face_mask Scan return
- Apriltag Scan return
- Color scan return
- QRcode scan return
- Barcode scan return
- reg_H return
- reg_W return
- reg_Y return
- reg_X return
- init_SerialPort