Chapter 14

Speed Recorder

The car speed recorder can accurately record the driving state, such as, direction turning, speed increasing and reducing, and so on. The collected data can be displayed in real-time for the driver to master the vehicle condition. How can we visually see the speed information of Maqueen Plus? An OLED display helps here. Maqueen Plus has 3 IIC ports for connecting Gravity modules with IIC communication. Let's start to make a speed recorder for Maqueen Plus.

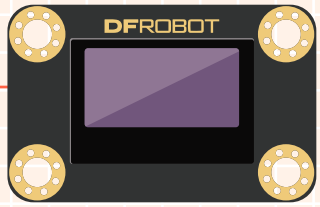
Goal

Learn how to use OLED display

Electronic Component

OLED

OLED-2864 Display

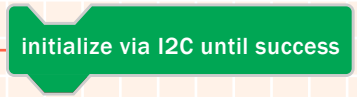


OLED-2864 display module can work without backlight, support IIC communication, high transmission rate and 60Hz refresh frequency.

Command Learning

Block Brief

I2C Initiate



Initiate IIC to detect if the communication between micro:bit and Maqueen Plus is successfully built.

Read motor speed

Read the current speed of the motor

Initiate OLED

Initiate OLED display module

OLED display number

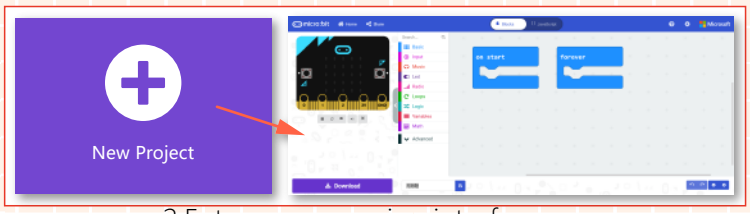
Display number at the n line of OLED screen

Hands-on Practice

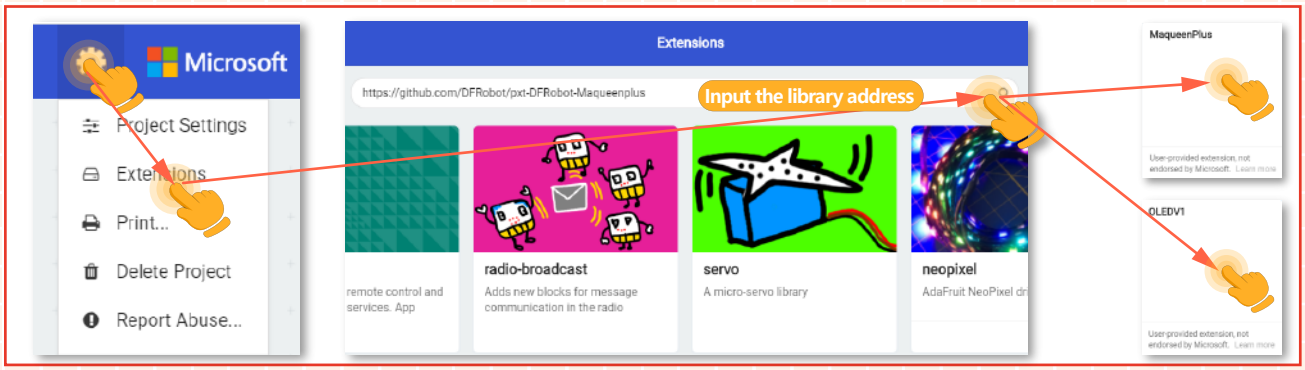
Step 1 Create a New Project

1.Input https://makecode.microbit.org/ into your browser to enter MakeCode editor.
2.Click "new project" to enter MakeCode programming interface.
3.Add the Maqueen Plus library:https://github.com/DFRobot/pxt-DFRobot-Maqueenplus
4.Click "setting"->"Extension", input the following address into the search bar, and select "OLEDV1".
https://github.com/DFRobot/pxt-OLEDV1
5.OLEDV1-related blocks will appear at the command block section when the OLED library is added successfully.

1.Enter MakeCode editor

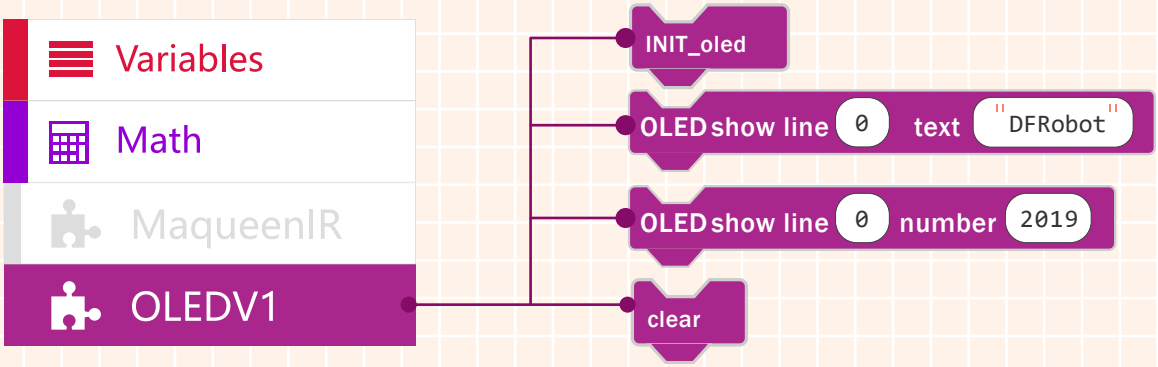


2.Enter programming interface



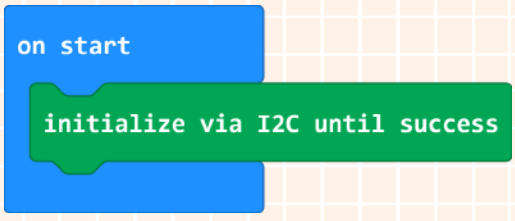
3.Add the extension library

OLED program module

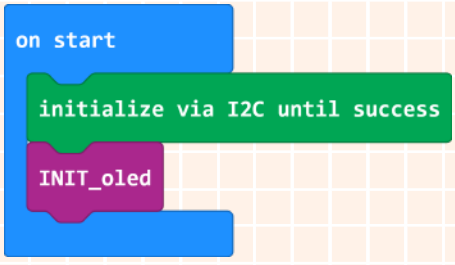


Step 2 Programming

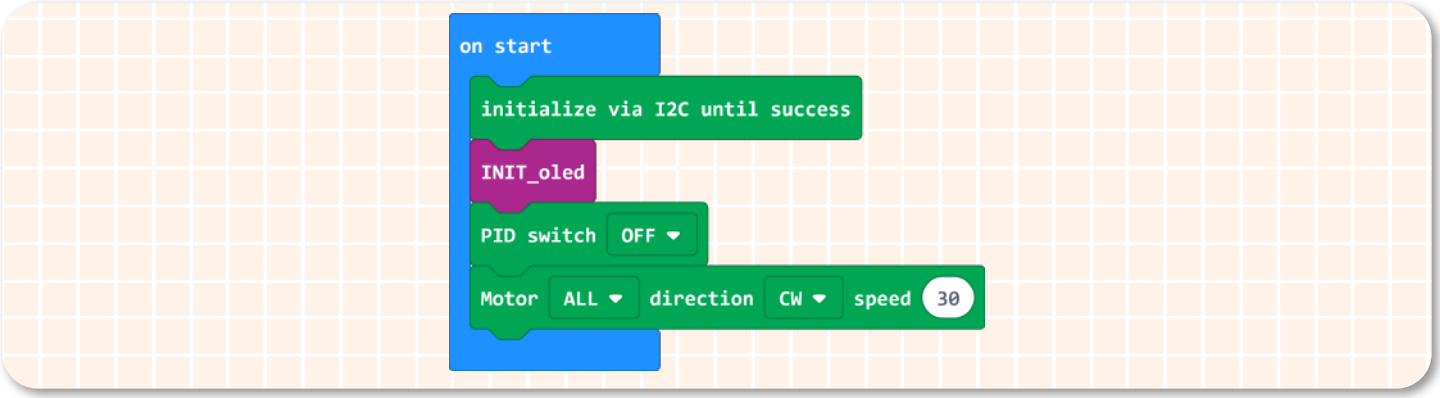
1.Initiate the IIC address when the program starts.



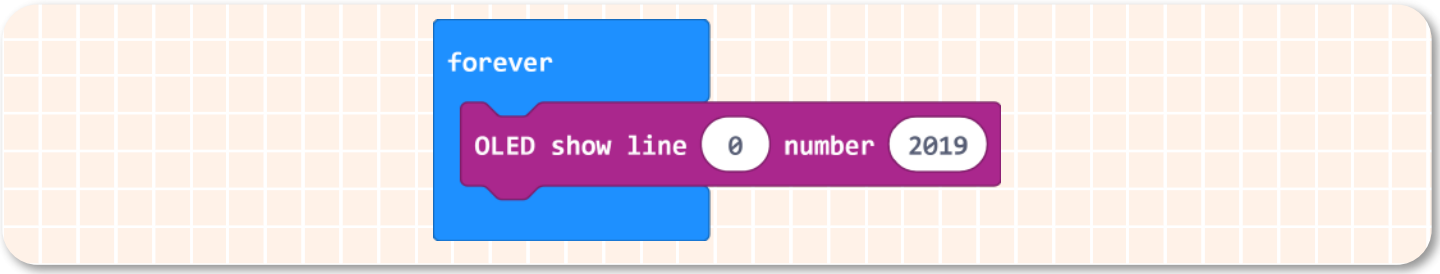
1.Initiate the IIC address when the program starts.



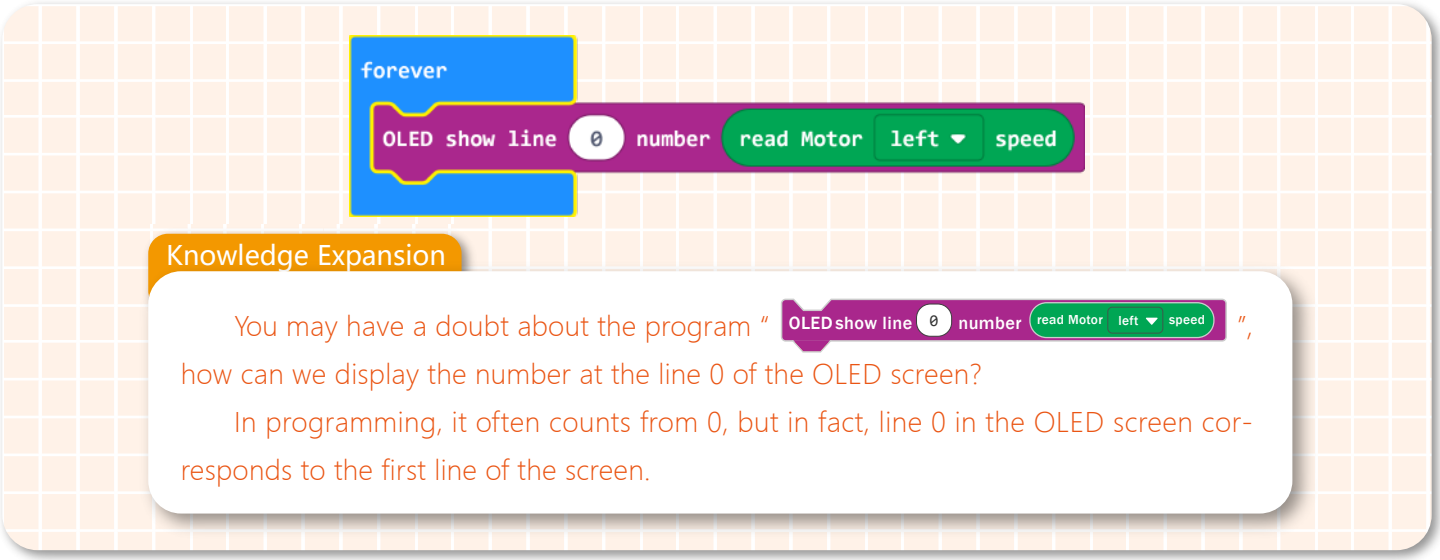
3.Disable PID, and let the Maqueen Plus car move forward at the speed of 30.



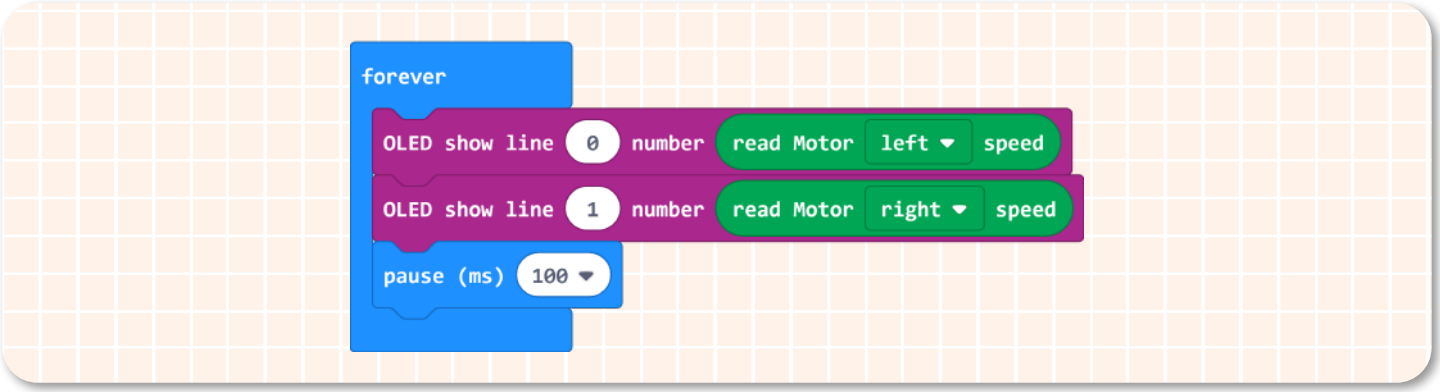
4.Place the OLED number display block inside the "forever" block for showing data in real-time.



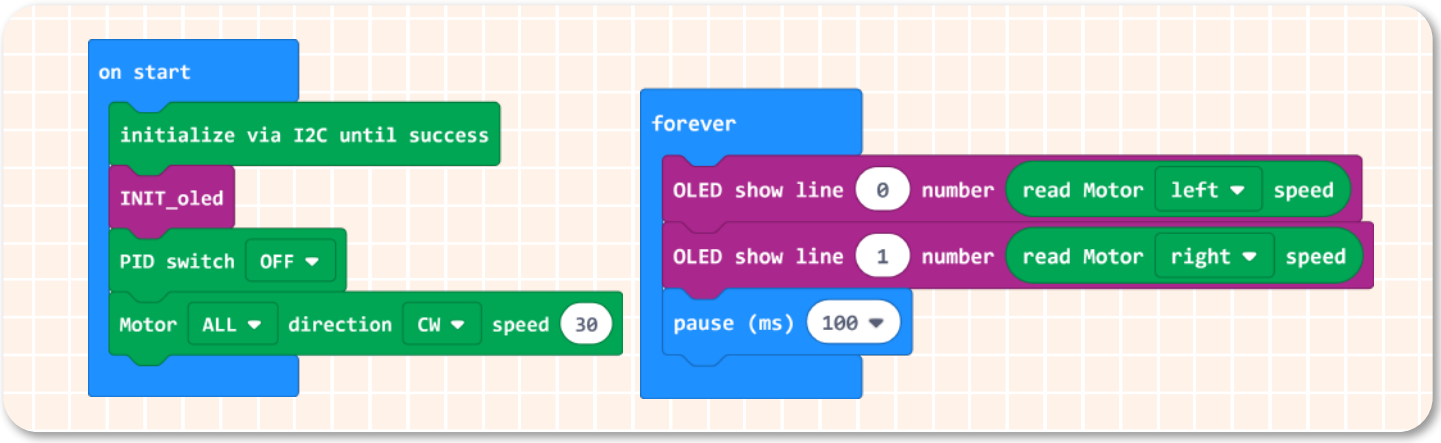
5.Drag the "read motor speed" block into the "OLED display number" block to display the left motor speed on the OLED display.



6.Program to display the right motor speed at the second line of the OLED screen by the same way, and refresh the data every 0.1 second. The complete program is shown below:



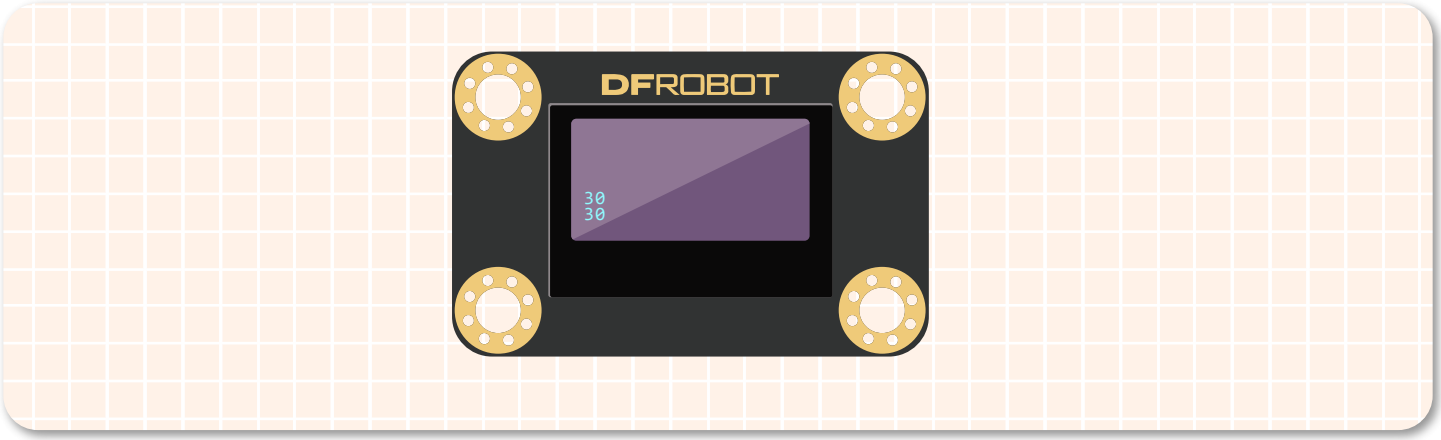
7.The complete program is shown below:



8.Name your project as "Speed Recorder" and save it.

Step 5 Effect Display

Turn on the power switch, then the left motor speed will be displayed at the first line of the screen, and the right motor speed will be shown at the second line of the screen. The data will be refreshed constantly.



Think & Explore

1.We may find that though we set the speed of both motors to 30, the data on the OLED still changes continuously. Why is that? How can we make the speed data less changeable?

Tips: turn on the PID switch to maintain the speed balance of the motors.

2.There are several projects involving LED matrix in the previous chapters, like light sensing robot, little ranging expert, etc. Now replace the LED display with OLED screen.