# Patrol module status print

The tutorial demonstrates how to use Micro:bit to read the level of the four-way tracking module.

```
It is recommended that users purchase the Micro:bit expansion board. The
interface led out by the expansion board is convenient for connecting with the
four-way tracking module:
The experiment demonstrates the use of the four-way tracking module with the
Super:bit 2.0 expansion board.
```

Four-way tracking module
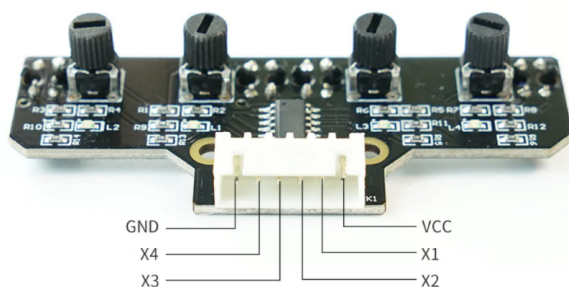
Hardware wiring

The four-way line patrol module and the Super:bit 2.0 expansion board can be connected using Dupont wires. Just follow the table to connect!

```
The Super:bit 2.0 expansion board does not have a fixed position and dedicated
interface for the four-way tracking module, so you need to fix and connect it
yourself
```

Four-way line patrol module interface	Four-way line patrol module corresponding indicator light	Four-way line patrol module corresponding knob	micro:bit
VCC			5V
X1	L1	SW1	P0
X2	L2	SW2	P1

Four-way line patrol module interface	Four-way line patrol module corresponding indicator light	Four-way line patrol module corresponding knob	micro:bit
X3	L3	SW3	P2
X4	L4	SW4	P5
GND			GND

Working principle

Detection status analysis: By reading the high and low levels of X1, X2, X3, and X4, it is determined whether the four-way line patrol module sensor detects a black line.

- Four-way tracking module

Black line detected:

Light on Four-way line tracking module corresponding interface outputs low level
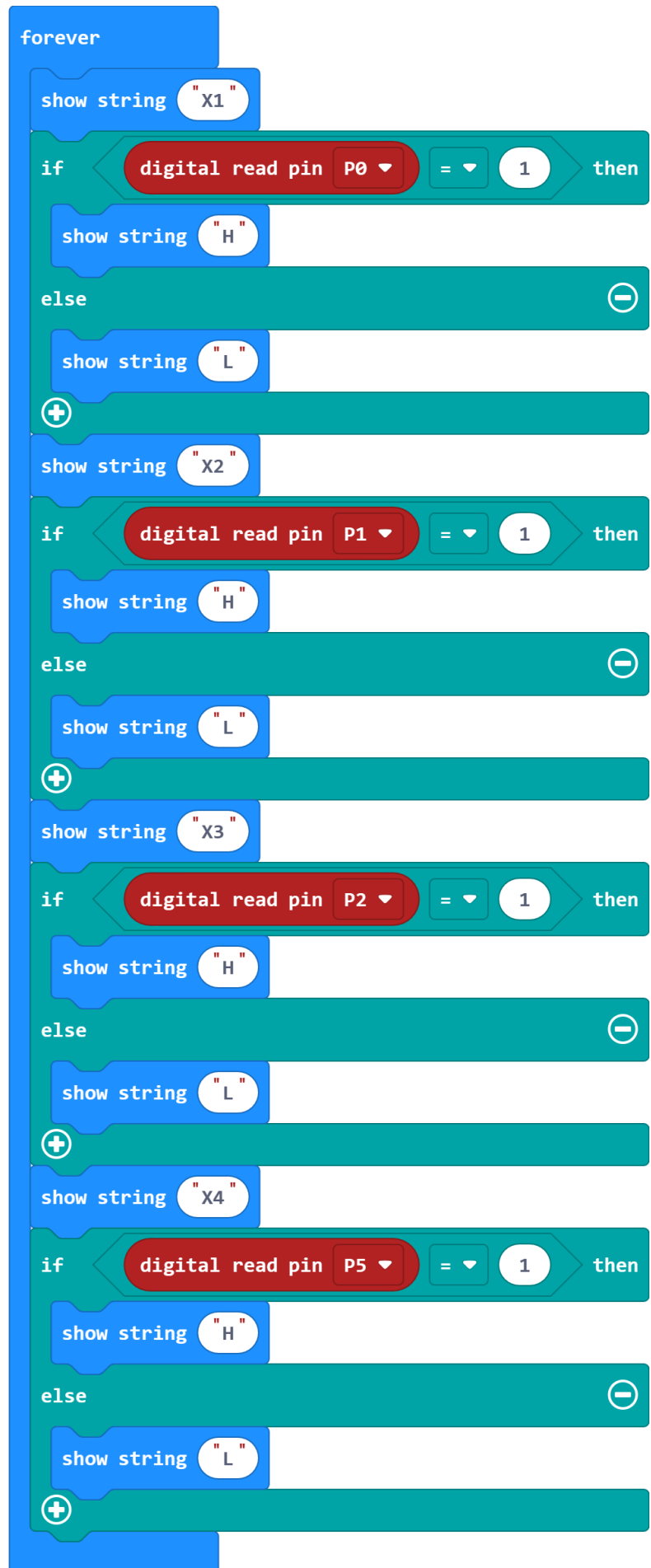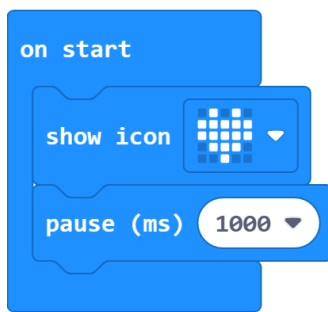
White line detected:

Light off Four-way line tracking module corresponding interface outputs high level

Main code

The idea of controlling the car can be directly understood and analyzed from the car code!

```
on start
    show icon [heart icon]
    pause (ms) 1000

forever
    show string "X1"
    if digital read pin P0 = 1 then
        show string "H"
    else
        show string "L"
    show string "X2"
    if digital read pin P1 = 1 then
        show string "H"
    else
        show string "L"
    show string "X3"
    if digital read pin P2 = 1 then
        show string "H"
    else
        show string "L"
    show string "X4"
    if digital read pin P5 = 1 then
        show string "H"
    else
        show string "L"
```

Experimental phenomenon

After downloading the program, turn on the external power supply of the expansion board, place the four-way tracking module on a black and white background, and the LED matrix of Micro:bit will print the levels read by the X1, X2, X3, and X4 interfaces!

Example:

The X1 interface detects a black line, the corresponding indicator light L1 of the tracking module is on, and the output is low level for the Micro:bit development board to read. The information behind the LED matrix X1 of the Micro:bit displays L;

The X1 interface detects a white line, the corresponding indicator light L1 of the tracking module is off, and the output is high level for the Micro:bit development board to read. The information behind the LED matrix X1 of the Micro:bit displays H;

The same applies to other interfaces.

Notes

- Adjustment of the four-way tracking module

For the case where the four-way tracking module is not sensitive or cannot be recognized, you can only connect VCC and GND, and place the four-way tracking module on a black and white background to adjust the knob.

Final effect: The indicator light of the four-way tracking module is on when it is 1.5cm away from the black background, and the indicator light is off when it is 1.5cm away from the white background (referred to as black on and white off).

- Code development issues

Since some pins of Micro:bit are multiplexing functions by default instead of GPIO functions, we need to turn off the default multiplexing function of the pins before we can use the GPIO (general input and output) function.

```
If users use their own or other manufacturers' products, they need to consider
this issue when developing and debugging, whether there are pin occupancy or
multiplexing issues!
```