

Appendix 1. Maqueen Plus Block Description And Basic Tutorial



Technically, Maqueen Plus is a device and block is the tool to operate it, just like a TV set and remote controller. So we have to use the following blocks to make our Maqueen Plus "come alive". Let's get to know how these blocks work.

initialize via I2C until success

Initialize I2C to detect if the communication between micro:bit and Maqueen Plus is successfully established.
This block only needs to run once at the start of main program.
Init setting is essential when using I2C communication.
I2C Address: 0x10

PID switch OFF ▼

PID algorithm is able to maintain the speed balance of motor.
Enable PID when using motor.
Two state: off/on.

Motor left ▼ direction CW ▼ speed 0

Set the direction and speed for "left/right/all" motor.
Direction: forward, backward
Speed: 0~255

Motor left ▼ stop

Stop the "left/right/all" motor.

Motor Compensation left ▼ speed 0

When there is a speed difference between the two motors, set speed compensation for "left/right" motor to adjust speed difference.
Adjustable range: 0~10

read Motor left ▼ speed

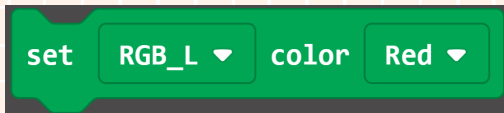
Read the current speed of "left/right" motor.

read Motor left ▼ direction(stop:0,forward:1,back:2)

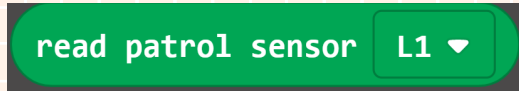
Read the direction of "left/right" motor.
0: stop;
1: rotate forward;
2: rotate backward.

servo S1 ▼ angle 0

Set the angle of servo "S1-S3".
Range: 0°~ 180°



Set the display color of "left/right/all"RGB LED. Seven colors to choose from.
Turn off the RGB LED.



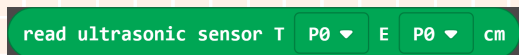
Read the value returned by line-tracking sensor "L1, L2, L3, R1, R2, R3".
Return value 1: detected black line.
Return value 0: no black line detected.



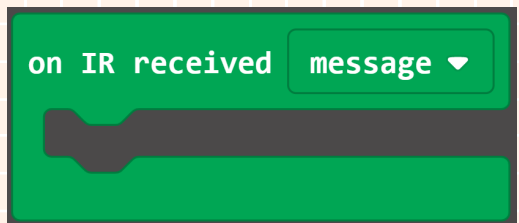
Read the grayscale value detected by line-tracking sensor "L1, L2, L3, R1, R2, R3".



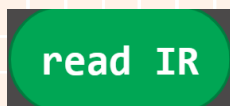
Get the current version of Maqueen Plus.



Detect the distance between the ultrasonic sensor and the obstacle ahead. T: transmitting end; E: receiving end.
Set T and E to the corresponding GPIO ports according to hardware connection.



The codes inside this block will run when IR receiver module received an external IR signal.



Read the received IR signal.
Display the code value in decimal.

Program link for Maqueen Plus Basic Tutorial

Chapter 2-Let's move, Maqueen!: https://makecode.microbit.org/_Y4aajgg5Ac9F

Chapter 3-Walking Emoji: https://makecode.microbit.org/_UxCMVr3ttMm2

Chapter 4- City Defender-A Police Car: https://makecode.microbit.org/_D7UKTPVDiCrF

Chapter 5-Light Sensing Robot: https://makecode.microbit.org/_hq1HTt56dez0

Chapter 6-Moth Robot: https://makecode.microbit.org/_Ho4f769stFa6

Chapter 7-Little Ranging Expert: https://makecode.microbit.org/_hHpCq1AKcgwF

Chapter 8-Car Reversing Helper: https://makecode.microbit.org/_HDt2v5dz3XTi

Chapter 9-Line-tracking Robot: https://makecode.microbit.org/_4tx3s0K90W6m

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Chapter 10-Tour of Crossroad: https://makecode.microbit.org/_0MThCUM8rXFT

Chapter 11-IR-controlled Robot: https://makecode.microbit.org/_LEwhMxMEYYF0

Chapter 12- Motion Sensing Robot---Transmitting End: https://makecode.microbit.org/_FhT3wChe89v7

Chapter 12- Motion Sensing Robot--- Receiving End: https://makecode.microbit.org/_XaF3XHXpWWCJ

Chapter 13-Crazy Racing -PID Enabled: https://makecode.microbit.org/_0YjYi7VprYEr

Chapter 13-Crazy Racing -PID Disabled: https://makecode.microbit.org/_TtCYvoKhMKL5

Chapter 14-Speed Recorder: https://makecode.microbit.org/_2Am8KajhFERs

Chapter 15-Firefighting Robot: https://makecode.microbit.org/_H7V7Uk2gR1tv