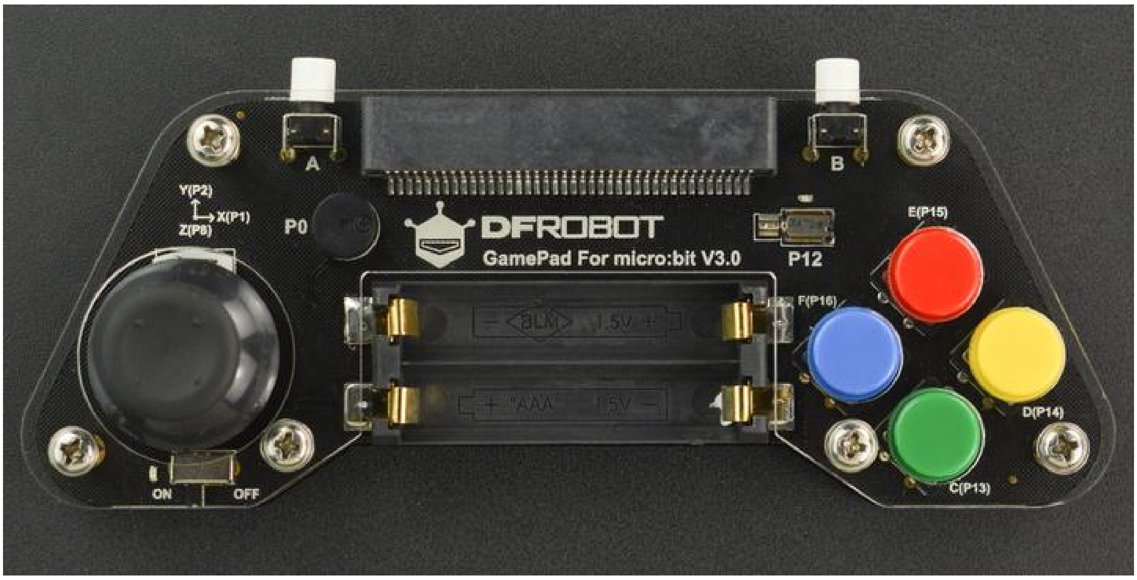
GamePad for micro:bit V3.0

- Based on MakeCode

(SKU: DFR0536)



www.DFRobot.com

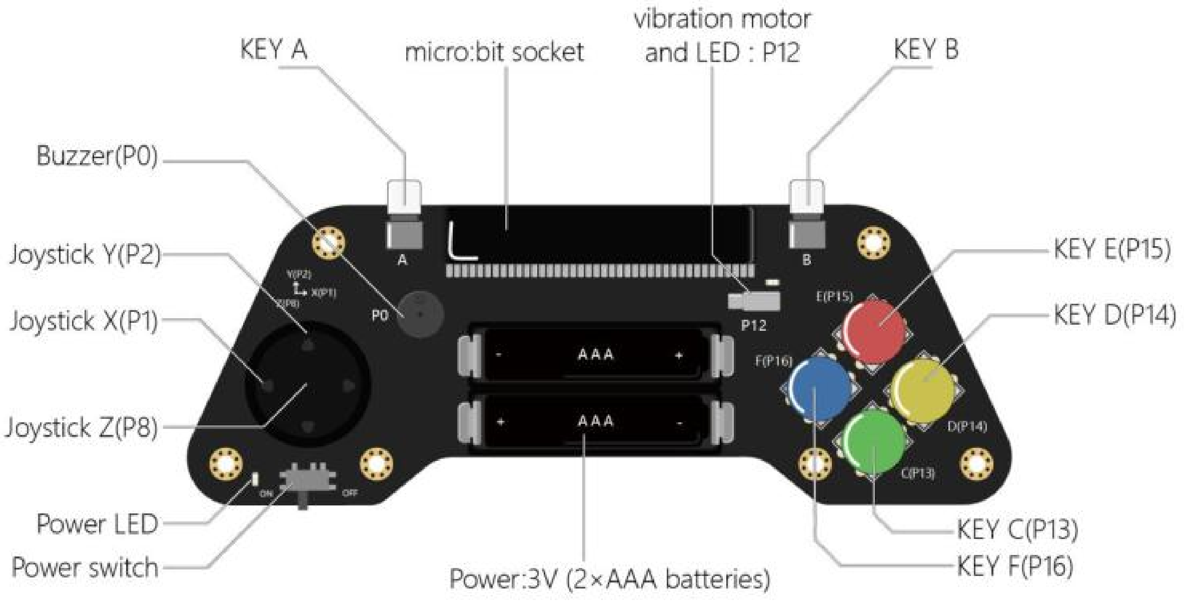
Chapter 1 Introduction to GamePad V3.0

Introduction

GamePad for micro:bit V3.0 is a micro: bit gamepad with a joystick. It adopts a high-precision three-axis analog amount joystick. The combination of joystick and gamepad allows you to control Maqueen's direction and speed at the same time. Moreover, there are 7 programmable buttons, which means you can explore more interesting functions and more flexible controls.

In the latest V3.0 product, we have put the external battery box to onboard PCB, which is more convenient to use.

Overview



Specifications

* Power: 3V DC (2 x AAA batteries)

* Joystick: 2 axis analog (X: P1 Y: P2) 1 axis digital (Z: P8)

* Onboard LED and vibration motor: P12

* Onboard buzzer: P0

* Keys: A(A), B(B), C(P13), D(P14), E(P15), F(P16), Z(P8)

* Dimension: 5.83x2.24inch / 148 × 57 mm

Shipping List

[DFR0536]GamePad for microbit x1

Chapter 2 Programming GamePad on MakeCode

The basic usage of MakeCode will be omitted here. This chapter will mainly introduce the function of product and how to program it on MakeCode.

MakeCode address and program library

MakeCode programming platform address: https://makecode.microbit.org

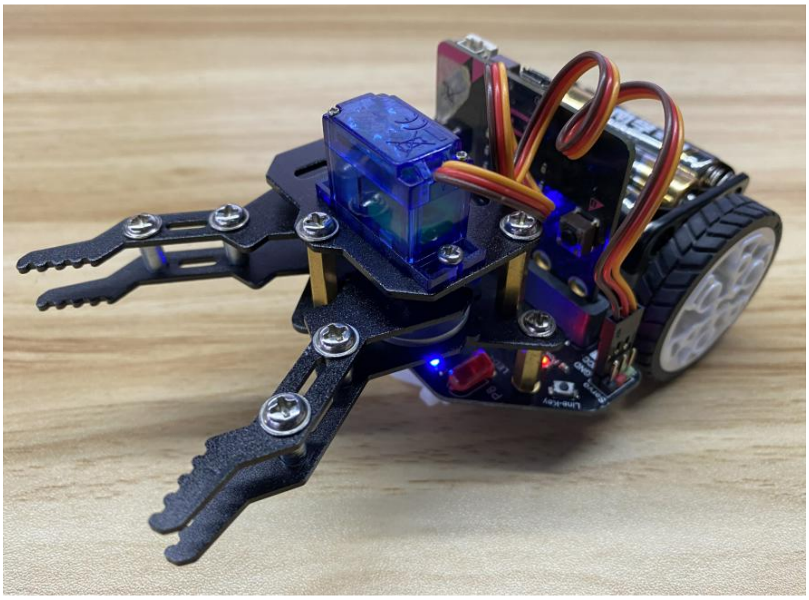
GamePad library: you can directly program this product on MakeCode without any third-party libraries.

Project 1 - Control Maqueen Lite via Switch Quantity

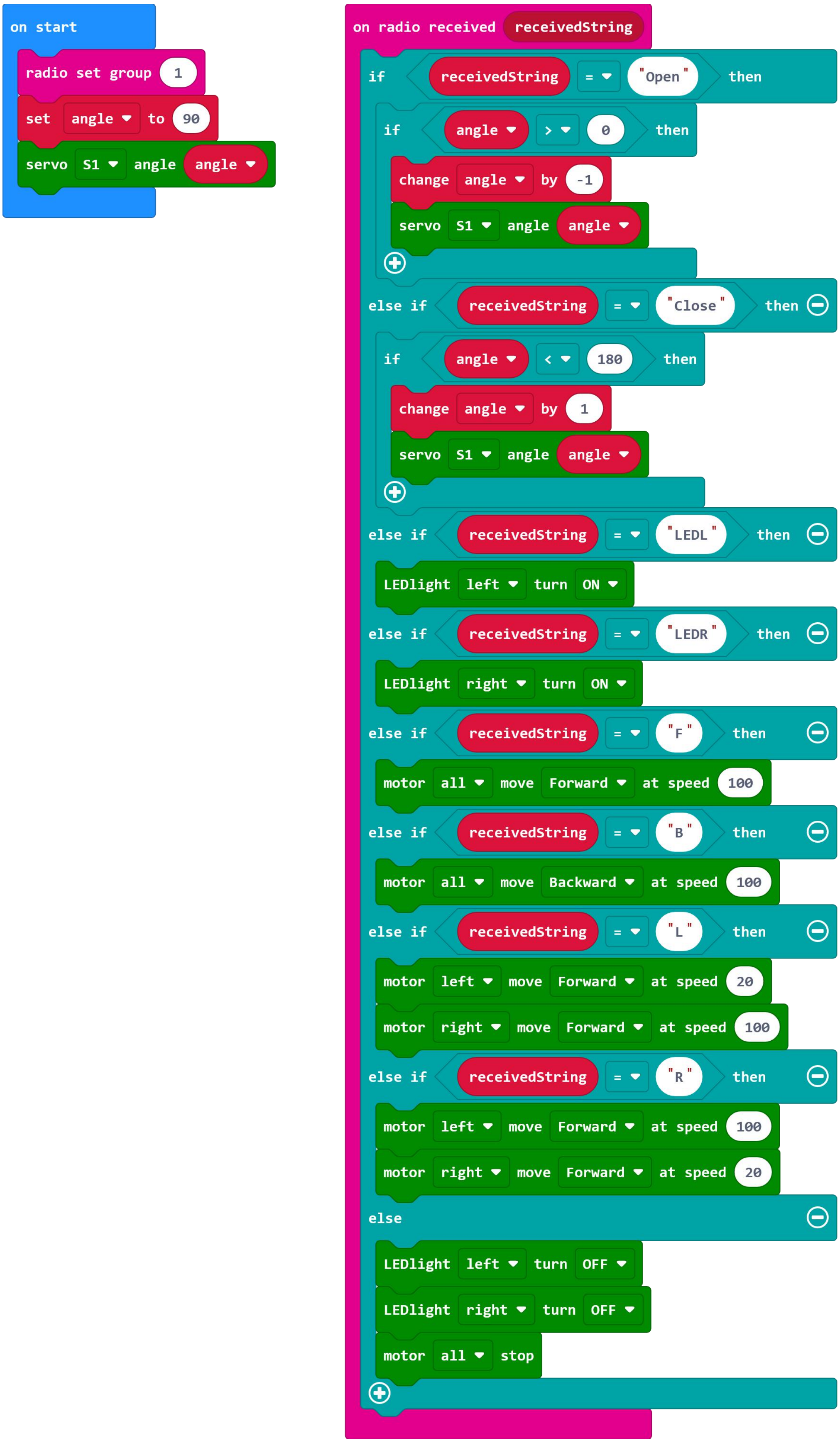
Introduction

Use the Gamepad’ s joystick to operate Maqueen to move forward and backward, turn left and right. Press the up and down buttons to control the movement of the gripper, the left and right buttons to turn the robot car’ s LEDs on/off.

Install the gripper on Maqueen Lite and connect it to port S1.



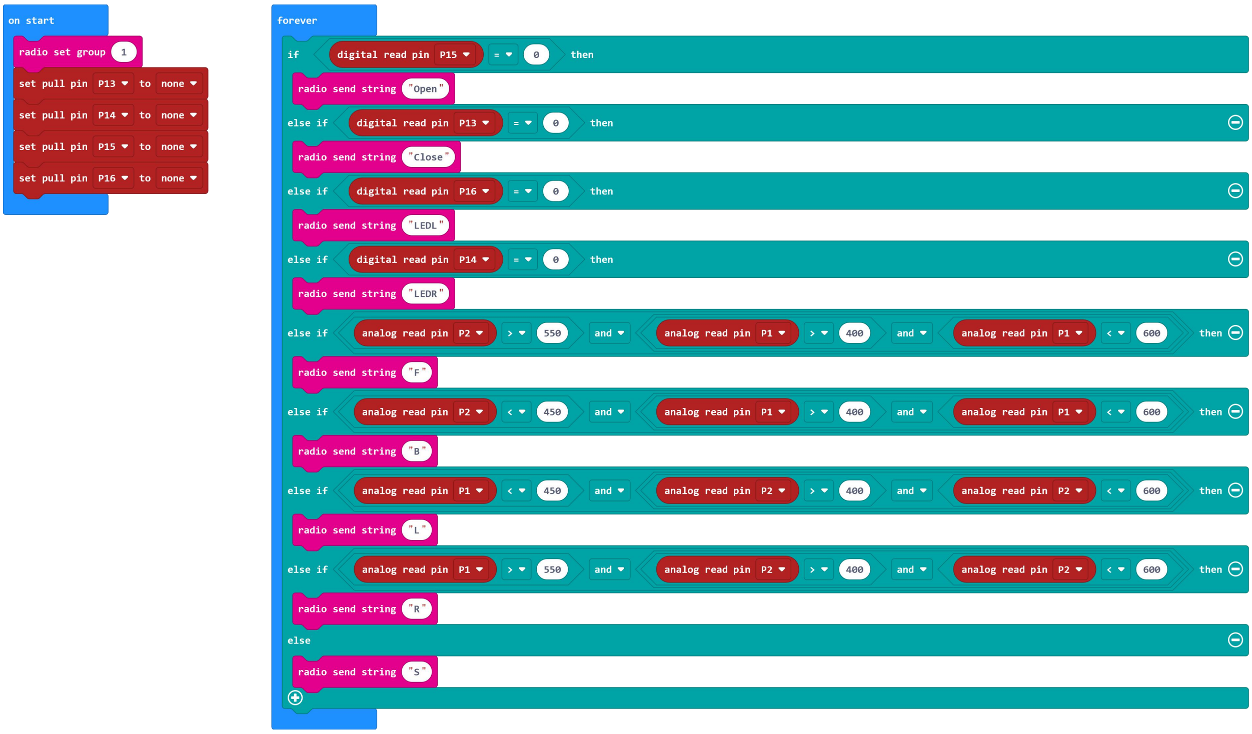
Program for Maqueen Lite: https://makecode.microbit.org/_Vot7AfUW7g6D



```
on start
    radio set group 1
    set angle to 90
    servo S1 angle angle
```

```
on radio received receivedString
    if receivedString = "Open" then
        if angle > 0 then
            change angle by -1
            servo S1 angle angle
    else if receivedString = "Close" then
        if angle < 180 then
            change angle by 1
            servo S1 angle angle
    else if receivedString = "LEDL" then
        LEDlight left turn ON
    else if receivedString = "LEDR" then
        LEDlight right turn ON
    else if receivedString = "F" then
        motor all move Forward at speed 100
    else if receivedString = "B" then
        motor all move Backward at speed 100
    else if receivedString = "L" then
        motor left move Forward at speed 20
        motor right move Forward at speed 100
    else if receivedString = "R" then
        motor left move Forward at speed 100
        motor right move Forward at speed 20
    else
        LEDlight left turn OFF
        LEDlight right turn OFF
        motor all stop
```

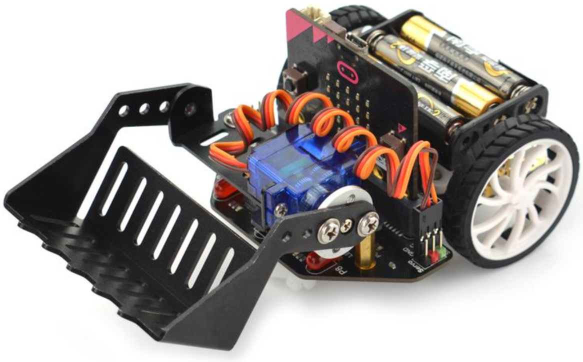
Program for GamePad: https://makecode.microbit.org/_PtgDRughPidF



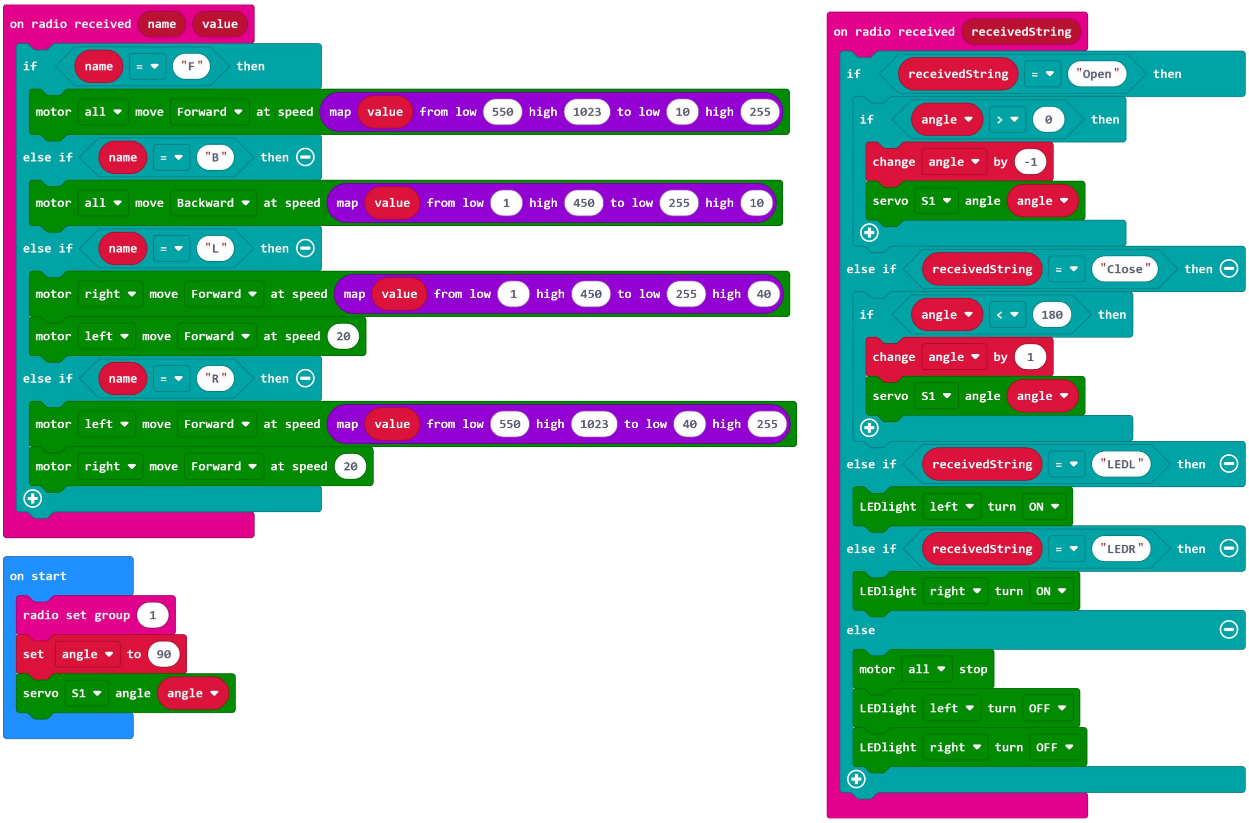
```
on start
    radio set group 1
    set pull pin P13 to none
    set pull pin P14 to none
    set pull pin P15 to none
    set pull pin P16 to none

forever
    if digital read pin P15 = 0 then
        radio send string "Open"
    else if digital read pin P13 = 0 then
        radio send string "Close"
    else if digital read pin P16 = 0 then
        radio send string "LEDL"
    else if digital read pin P14 = 0 then
        radio send string "LEDR"
    else if analog read pin P2 > 550 and analog read pin P1 > 400 and analog read pin P1 < 600 then
        radio send string "F"
    else if analog read pin P2 < 450 and analog read pin P1 > 400 and analog read pin P1 < 600 then
        radio send string "B"
    else if analog read pin P1 < 450 and analog read pin P2 > 400 and analog read pin P2 < 600 then
        radio send string "L"
    else if analog read pin P1 > 550 and analog read pin P2 > 400 and analog read pin P2 < 600 then
        radio send string "R"
    else
        radio send string "S"
```

Project 2 - Control Maqueen Lite via Analog Quantity

We have learned how to control the direction of the robot car in the last example. Now we will use analog quantity of the joystick to control the direction and speed of the robot simultaneously. Press the up an down buttons to control the movement of the loader, the left and right buttons to turn the robot car’ s LEDs on/off.

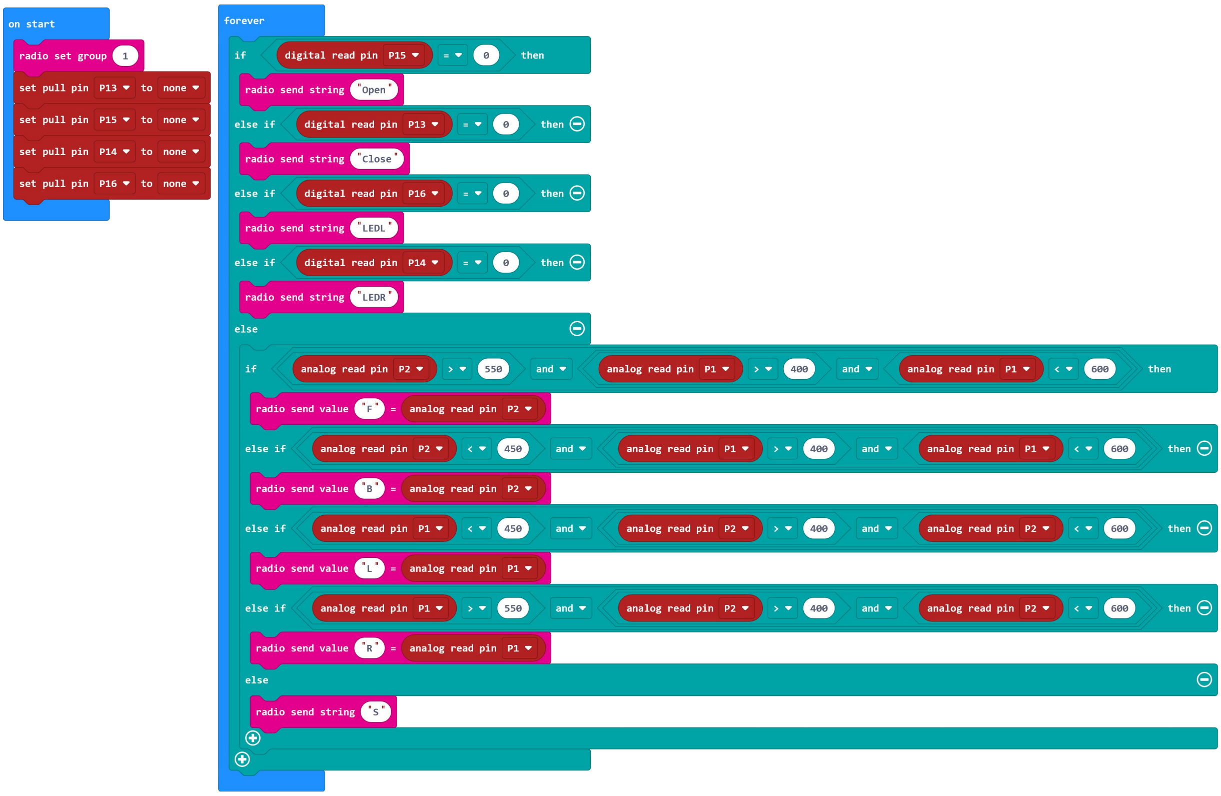


Program for Maqueen : https://makecode.microbit.org/_3WRLraYKPM2y



```
on radio received name value
    if name = "F" then
        motor all move Forward at speed map value from low 550 high 1023 to low 10 high 255
    else if name = "B" then
        motor all move Backward at speed map value from low 1 high 450 to low 255 high 10
    else if name = "L" then
        motor right move Forward at speed map value from low 1 high 450 to low 255 high 40
        motor left move Forward at speed 20
    else if name = "R" then
        motor left move Forward at speed map value from low 550 high 1023 to low 40 high 255
        motor right move Forward at speed 20

on start
    radio set group 1
    set angle to 90
    servo S1 angle angle

on radio received receivedString
    if receivedString = "Open" then
        if angle > 0 then
            change angle by -1
            servo S1 angle angle
    else if receivedString = "Close" then
        if angle < 180 then
            change angle by 1
            servo S1 angle angle
    else if receivedString = "LEDL" then
        LEDlight left turn ON
    else if receivedString = "LEDR" then
        LEDlight right turn ON
    else
        motor all stop
        LEDlight left turn OFF
        LEDlight right turn OFF
```

Program for GamePad : https://makecode.microbit.org/_1WYL7aKctdav



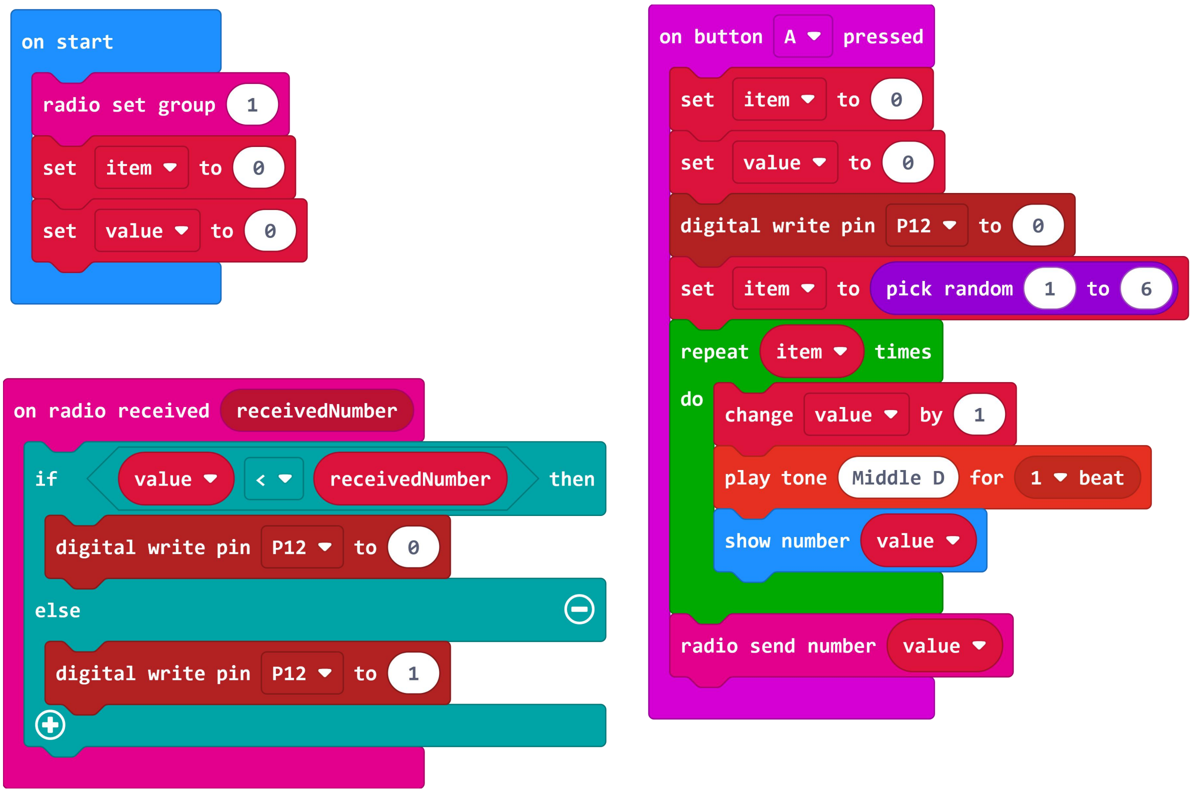
```
on start
    radio set group 1
    set pull pin P13 to none
    set pull pin P15 to none
    set pull pin P14 to none
    set pull pin P16 to none

forever
    if digital read pin P15 = 0 then
        radio send string "Open"
    else if digital read pin P13 = 0 then
        radio send string "Close"
    else if digital read pin P16 = 0 then
        radio send string "LEDL"
    else if digital read pin P14 = 0 then
        radio send string "LEDR"
    else
        if analog read pin P2 > 550 and analog read pin P1 > 400 and analog read pin P1 < 600 then
            radio send value "F" = analog read pin P2
        else if analog read pin P2 < 450 and analog read pin P1 > 400 and analog read pin P1 < 600 then
            radio send value "B" = analog read pin P2
        else if analog read pin P1 < 450 and analog read pin P2 > 400 and analog read pin P2 < 600 then
            radio send value "L" = analog read pin P1
        else if analog read pin P1 > 550 and analog read pin P2 > 400 and analog read pin P2 < 600 then
            radio send value "R" = analog read pin P1
        else
            radio send string "S"
```

Project 3 - Dice Rolling Game

Introduction

The “Dice Rolling Game” adopts the wireless communication of two micro:bit boards to simulate the dice to generate a random number within 1~6, and then compare the two numbers, the one who gets the larger number wins. The vibrator motor will vibrate to celebrate it. Download codes into two micro:bit boards and plug them into two GamePads when running this example.

Program Link: https://makecode.microbit.org/_YdWVgV7j7LhA



```
on start
    radio set group 1
    set item ▾ to 0
    set value ▾ to 0

on radio received receivedNumber
    if value ▾ < ▾ receivedNumber then
        digital write pin P12 ▾ to 0
    else
        digital write pin P12 ▾ to 1

on button A ▾ pressed
    set item ▾ to 0
    set value ▾ to 0
    digital write pin P12 ▾ to 0
    set item ▾ to pick random 1 to 6
    repeat item ▾ times
    do
        change value ▾ by 1
        play tone Middle D for 1 ▾ beat
        show number value ▾
    radio send number value ▾
```