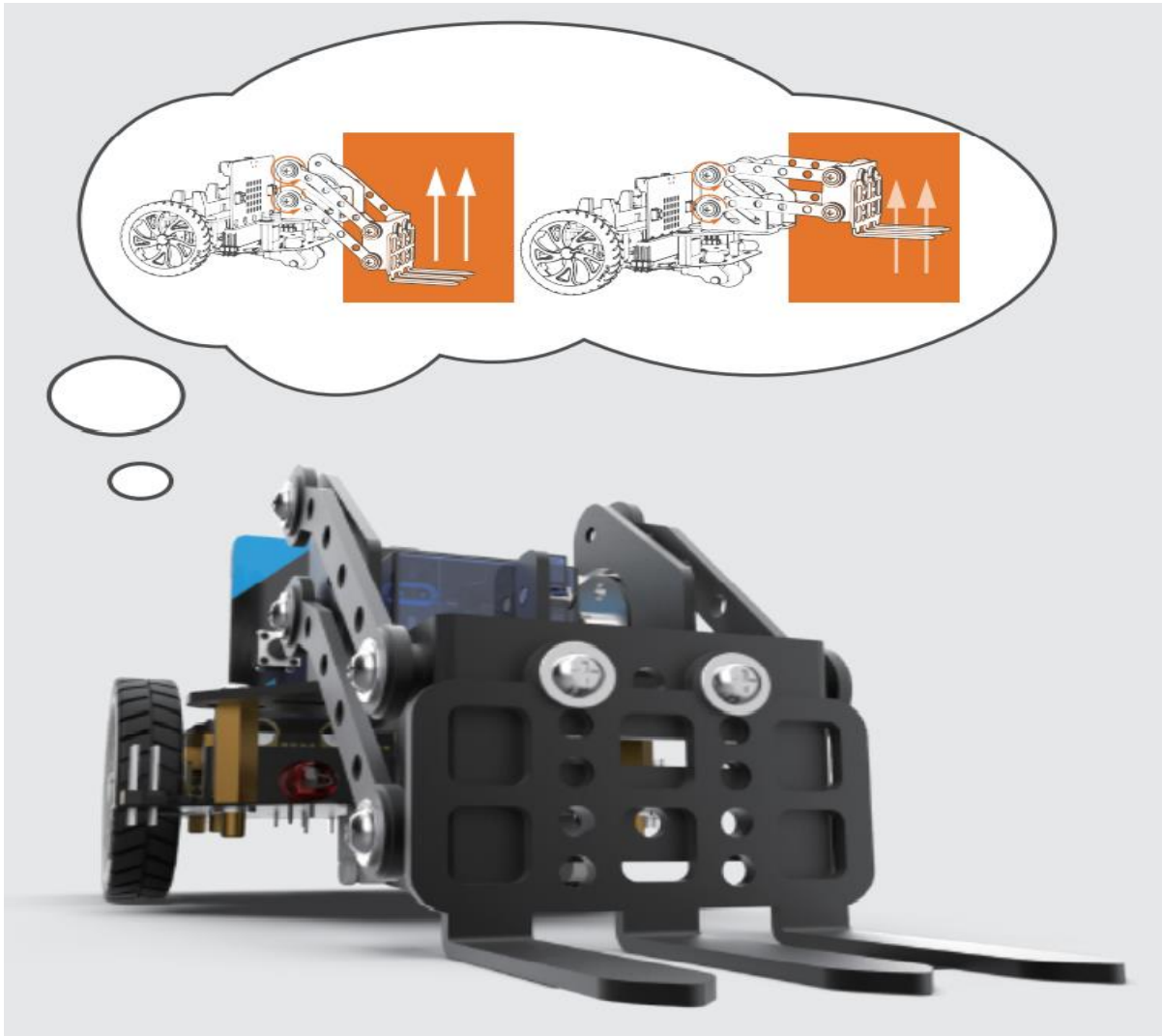


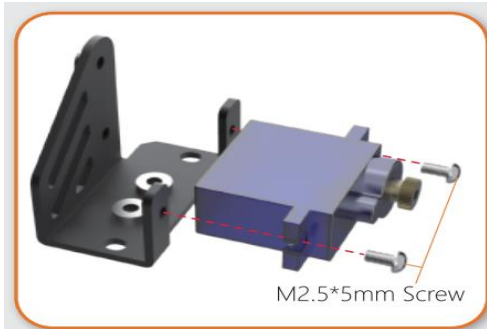
# Bluguard Maqueen Mechanic - Forklift



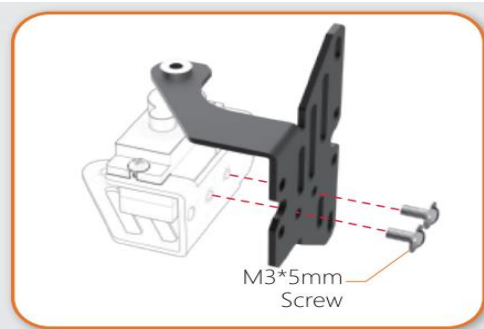
**Suggest Age: 9 +**

**Adult supervision is recommended for children under 9 years old.**

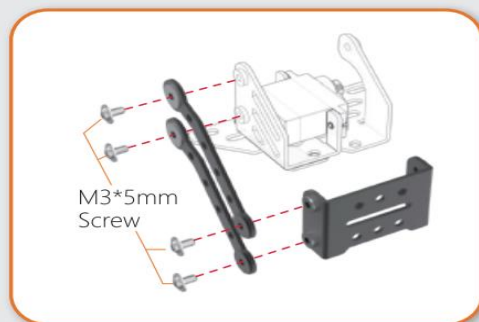
# Installation Diagram



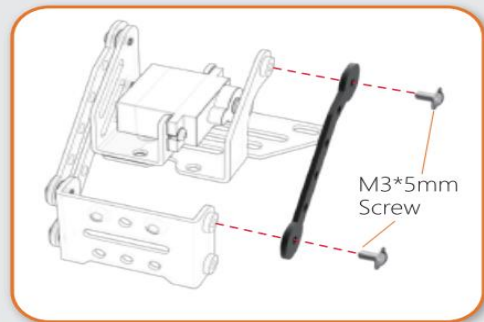
● Step1



● Step2



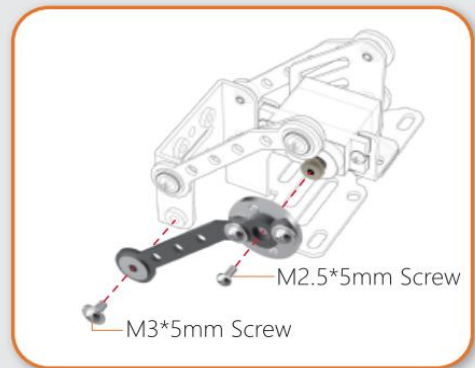
● Step3



● Step4



● Step5



● Step6



● Step7

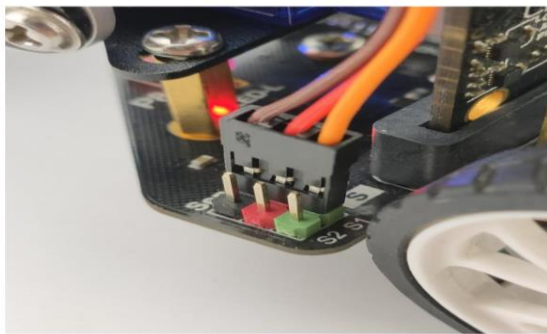


● Step8

# Method to Control

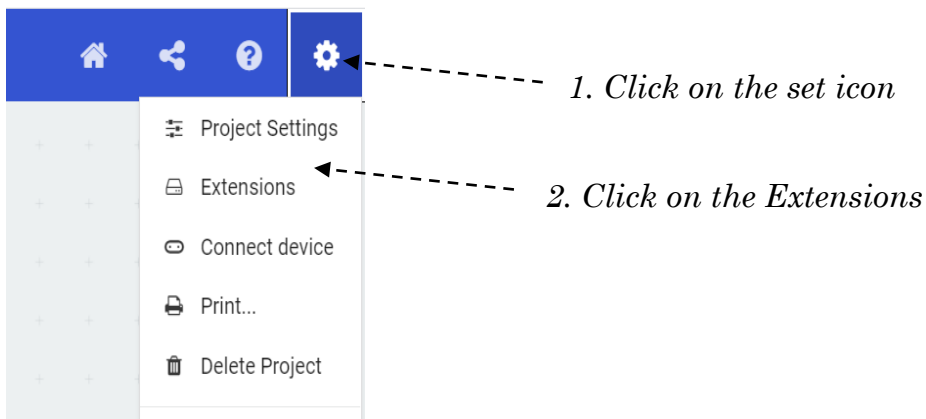
## 1. Wiring

- I. Plug the 3 pins servo wire into port S1 or S2 of Maqueen, shown as below :
  - Brown wire to Black pin
  - Red wire to Red pin
  - Orange wire to Green pin

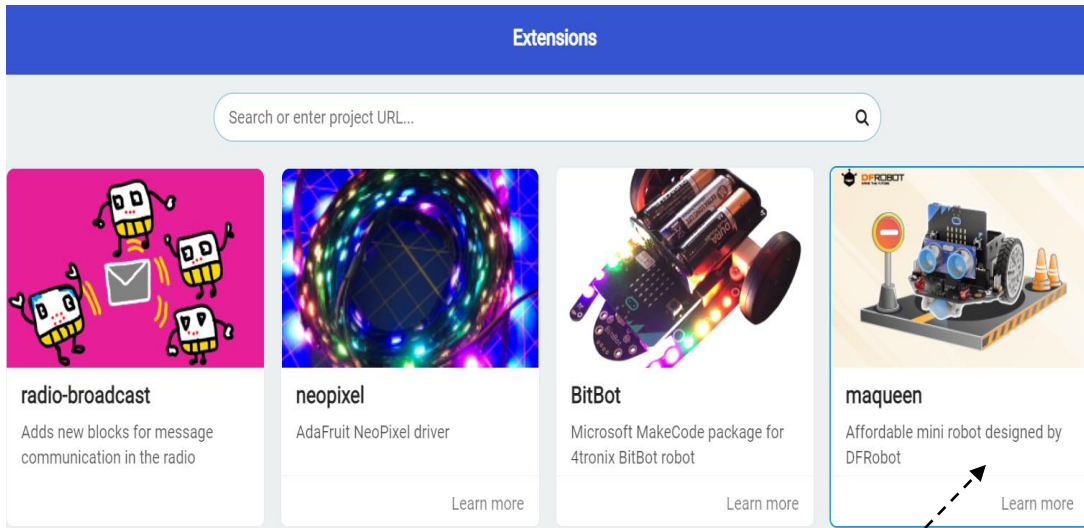


## 2. Makecode Tutorial

- I. Click the link <https://makecode.microbit.org>, enter the makecode graphical online programming platform and create **New Project**. (Note: Loading will be slow in the first time, please wait patiently)
- II. Import the extensions.

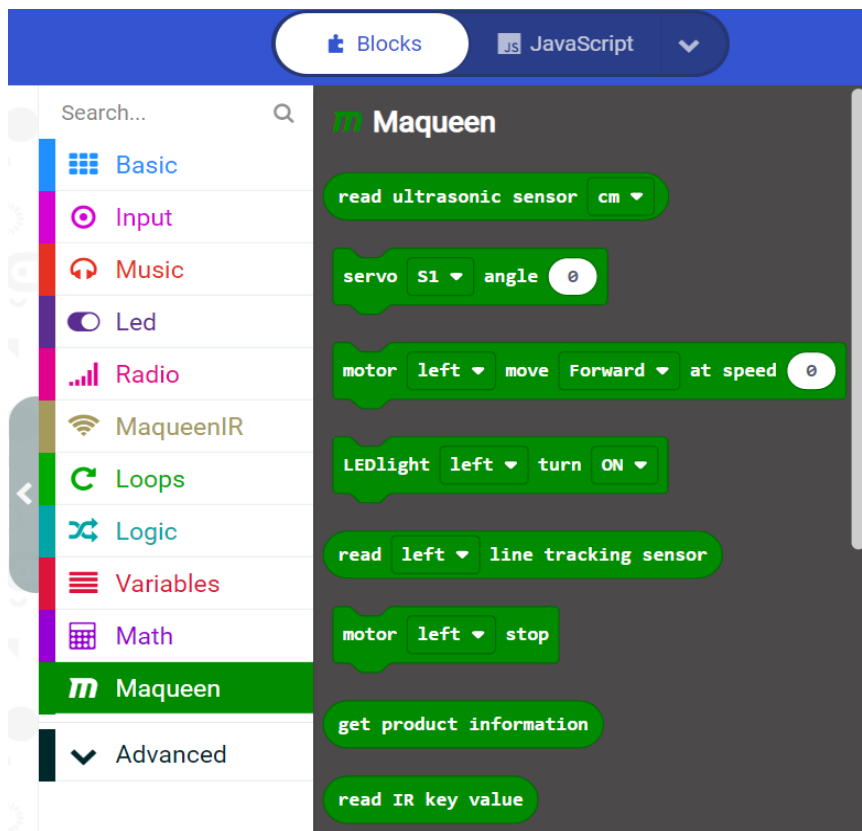


- III. Click on the Maqueen's library.



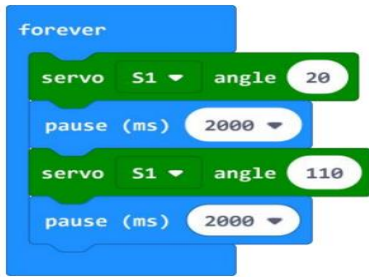
*Just click on it.*

#### IV. Import completed.

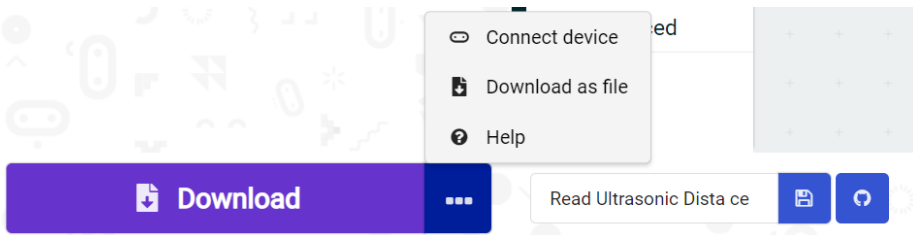


### 3. Examples

- I. The example will use a servo to make the forklift's fork move up and down. The code is as follows:



- II. Go to 'connect device' after connect micro:bit with cable. Just follow instruction and this step just one time setup. Click 'Download' button to download code to micro:bit.



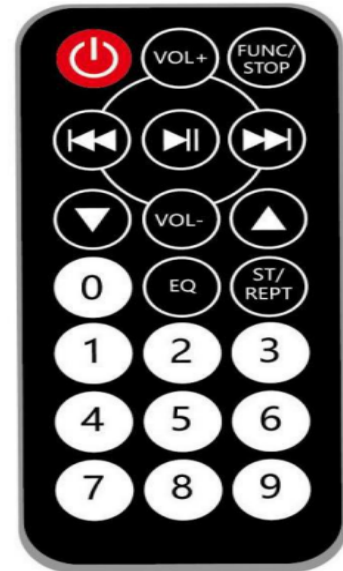
- III. Turn Maqueen on when the example code is downloaded, then the forklift's fork will go up and down constantly. There are two ways to adjust the starting and ending angles of rotation:

- Adjust the angle value in the code.
- Loosen the two screws on the servo and adjust the servo by hand, then tighten the screws.

#### 4. IR Remote Control of Forklift

- I. This example uses the infrared remote control to make the forklift's fork move up and down. Each button of the infrared remote control is corresponding to one key value.

Key	Key Value (Decimal)
Red Key	0
VOL+	1
FUNC/STOP	2
Rwd	4
Pause/Play	5
Fwd	6
Down Triangle	8
VOL-	9
Up Triangle	10
0	12
EQ	13
ST/REPT	14
1	16
2	17
3	18
4	20
5	21
6	22
7	24
8	25
9	26



Key value table of infrared remote control.

- II. Now, let's program an example to control movement of the forklift's fork by the infrared remote control. The code is shown in the figure:

```

on start
  set S to 90
  servo S1 angle S

on IR received message
  if message = 8 then
    set S to S + 3
    servo S1 angle S
  +
  if message = 10 then
    set S to S - 3
    servo S1 angle S
  +
  
```

- III. After the code is downloaded to micro: bit, pointing the infrared remote control to the infrared receiver of Maqueen, holding the Up Triangle and the Down Triangle respectively, and the forklift's fork will move up and down continuously.

### 5. IR Remote control of the Maqueen Mechanic - Forklift

- I. In the two programs above, we have controlled the movement of the fork separately. The example below is a comprehensive program. It uses the infrared remote control to enable the Maqueen move forward and backward and the fork move up and down.

The code is shown as below :

```
on IR received message
  if message = 17 then
    motor all move Forward at speed 150
  if message = 25 then
    motor all move Backward at speed 150
  if message = 20 then
    motor left move Forward at speed 0
    motor right move Forward at speed 150
  if message = 22 then
    motor left move Forward at speed 150
    motor right move Forward at speed 0
  if message = 21 then
    motor all stop
  if message = 8 then
    set S to S + 3
    servo S1 angle S
  if message = 10 then
    set S to S - 3
    servo S1 angle S

on start
  set S to 120
  servo S1 angle S
```

- II. In this example, Keys 2, 8, 4, 6, 5 are used to control Maqueen to move forward, move backward, turn left, turn right and stop; The Up and Down Triangles are used to make the forklift's fork move up and down respectively.

Program Link :

[https://makecode.microbit.org/\\_hdfUUH5y9Pbd](https://makecode.microbit.org/_hdfUUH5y9Pbd)