



Programación, Computación y Robótica

Dept. de Informática 2025-26

Safety instructions

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Wonder Building Kit is an electronic product and we need to pay attention to the following issues in daily use, please read carefully and know the relevant precautions.

1. Do not use the Wukong expansion board while it is being charged. Using the Wukong expansion board while charging will not only shorten the life of the Wukong expansion board, but may also cause damage to the product.
2. Do not use detergent or water to clean the Wonder Building Kit. We recommend that you use a cotton cloth moistened with alcohol to scrub, or a hair dryer if you still need to clean the joints.
3. Do not disassemble or alter in any way the structure of the Wukong expansion board and other electronic devices by yourself.
4. Do not place the Wukong expansion board and other electronic components near or in fire as this may cause damage to the product or cause a fire.
5. When not using the Wonder Building Kit for an extended period of time, place it in a clean box and wrap it in a bag to prevent dust from falling into the interface and interfering with your use. Store the wrapped Wonder Building Kit in a clean, dry environment.

When 360° Servo is used for the first time, the angle should be adjusted first, and then the structure should be built to avoid blocking of the servo due to the space structure, which will lead to damage of the product. The reference commissioning procedure is as follows:



| Niveles de complejidad del montaje | |
|---|---------------------|
| < 20 tipos de piezas | |
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| Niveles de complejidad del montaje | |
|---|---------------------|
| >=20 y < 30 tipos de piezas | |
| Medio | Nº de piezas |
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Wonder Building Kit(EF08239)

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Safety instructions

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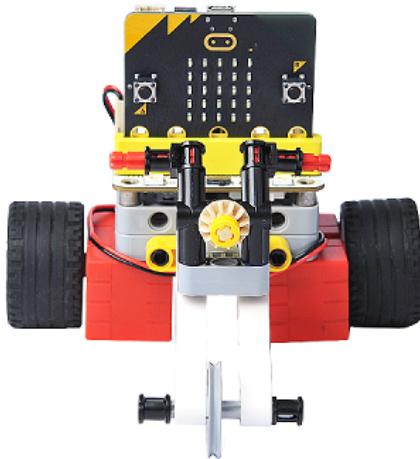
Case 01: The Motorcycle

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3.1. Purpose

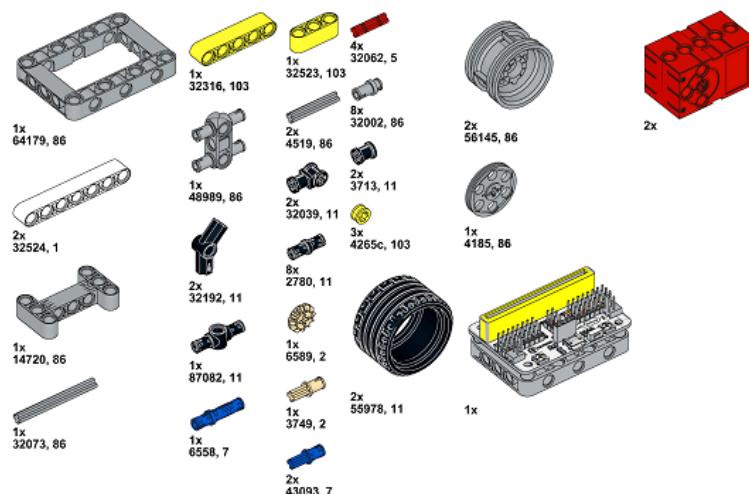
To make a motorcycle with the Wonder Building kit.



3.2. Link

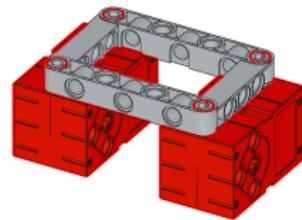
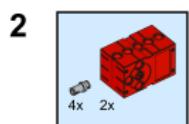
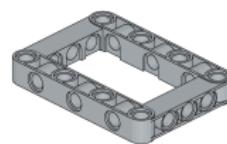
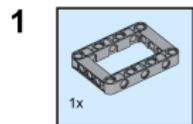
[micro:bit Wonder Building Kit](#)

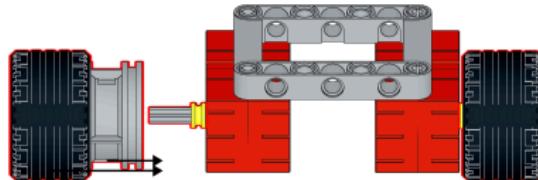
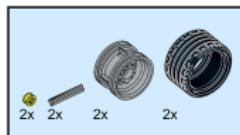
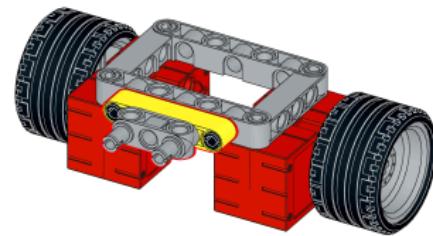
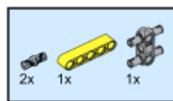
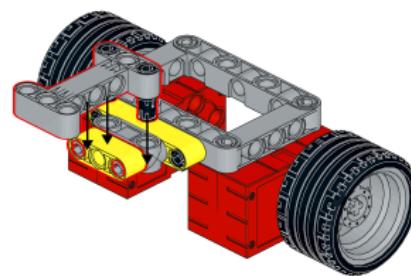
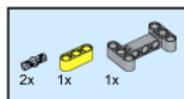
3.3. Materials Required

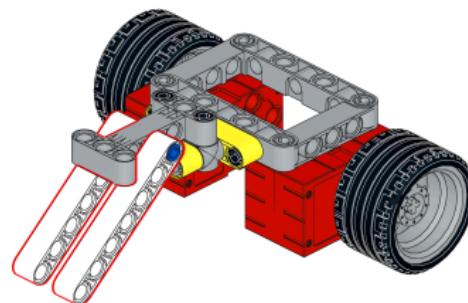
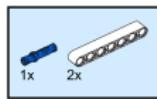
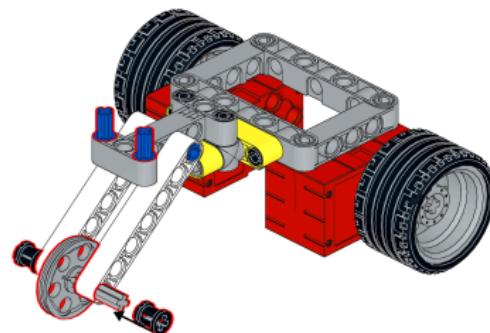
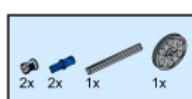
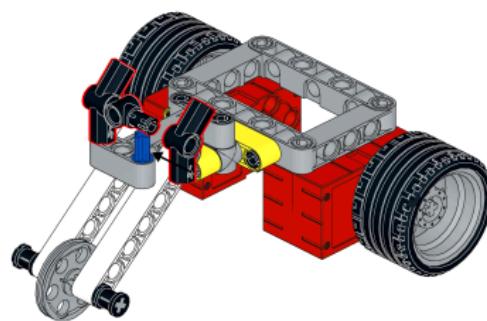


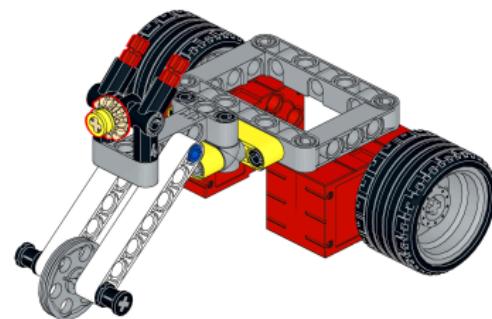
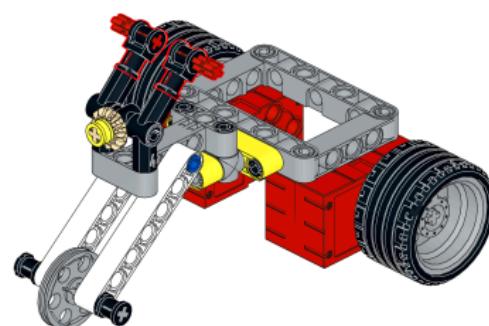
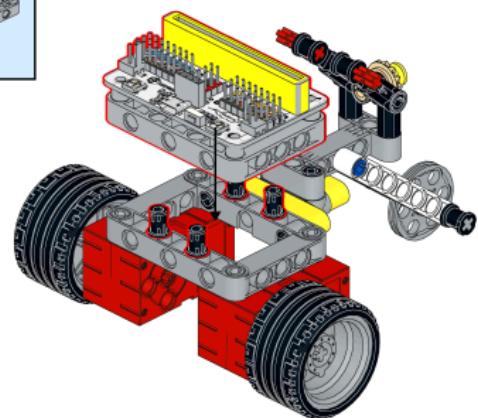
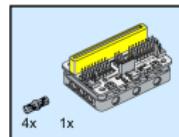
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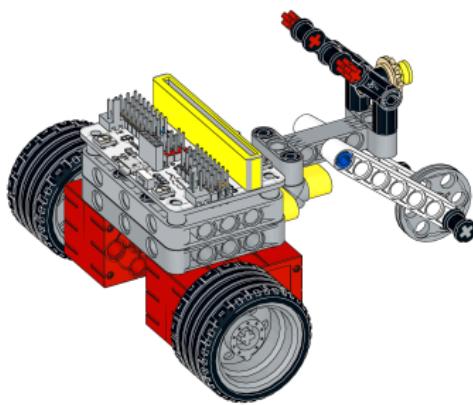
3.4. Bricks build-up



3**4****5**

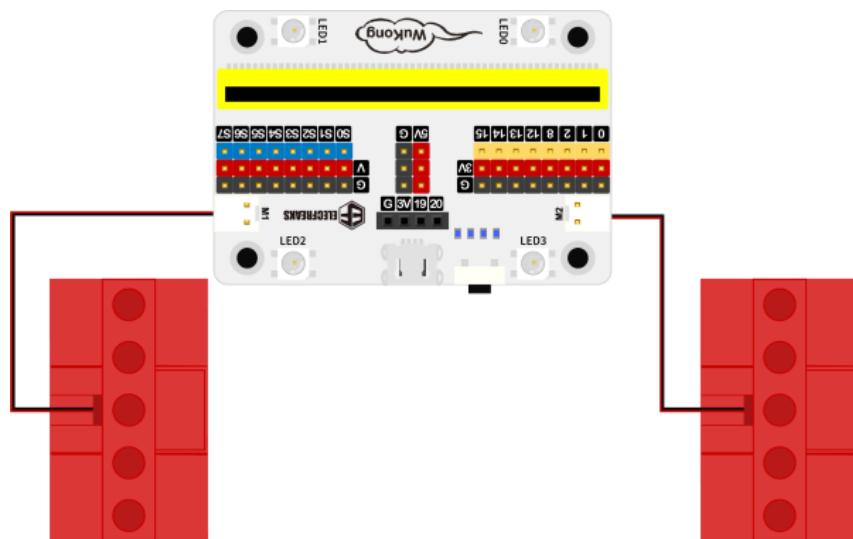
6**7****8**

9**10****11**

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3.5. Hardware Connection

Connect two [motors](#) to M1 and M2 ports on [Wukong breakout board](#).



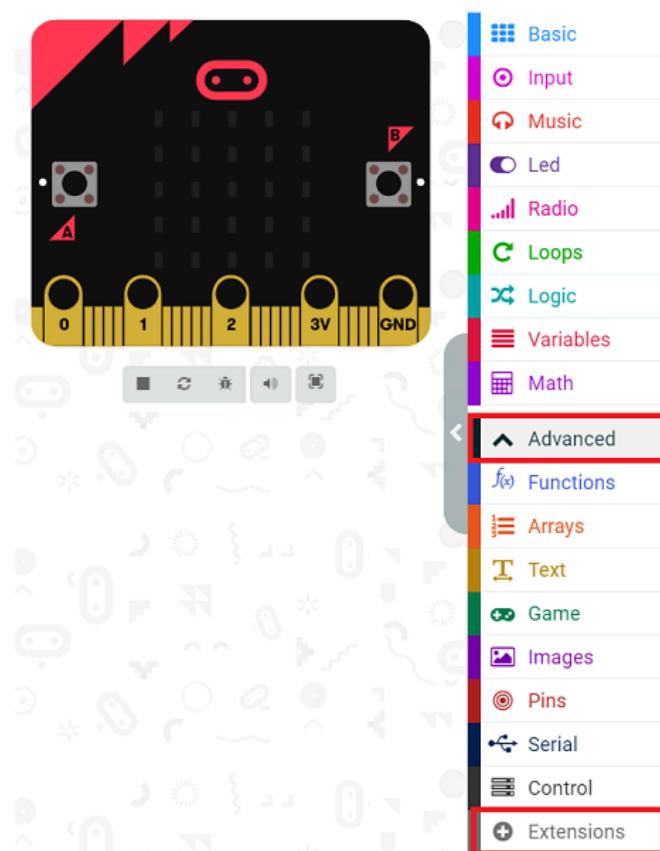
3.6. Software Platform

[MakeCode](#)

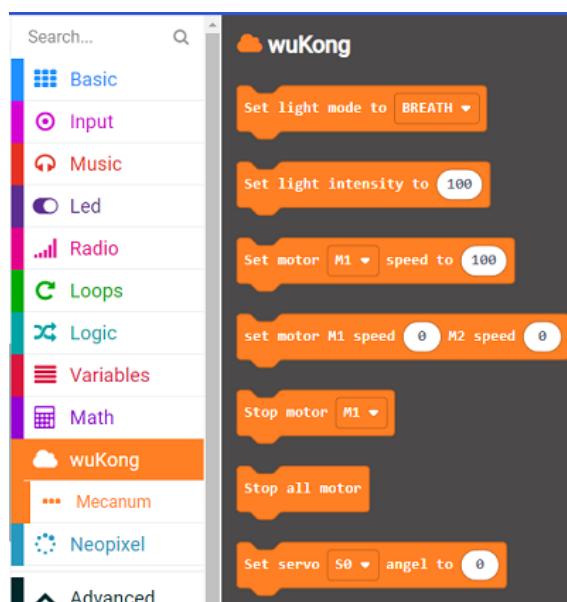
3.7. Coding

Add extensions

Click "Advanced" in the MakeCode to see more choices.



Search with Wukong in the dialogue box to download it.



Program

```

on button A ▾ pressed
  set motor M1 speed -100 M2 speed -100
end

on button B ▾ pressed
  set motor M1 speed 100 M2 speed 100
end

on button A+B ▾ pressed
  Stop all motor
end

```

Link:https://makecode.microbit.org/_K6mFyJ16ofCj

Result

While button A being pressed, the motorcycle moves forward and it reverses if button B is pressed, while pressing button A+B, it stops driving.

By ELECFREAKS Team

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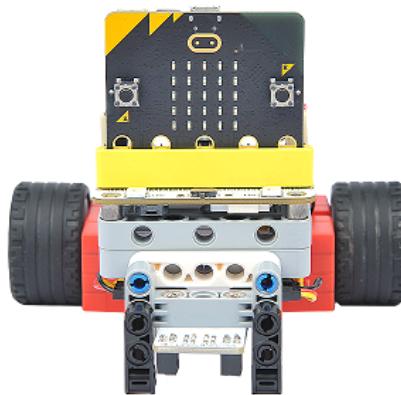
Case 02: Line-following Cars

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4.1. Purpose

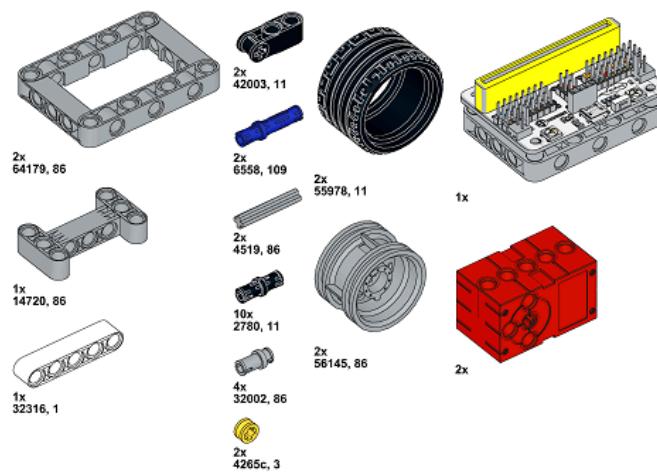
To make a line following car.



4.2. Link

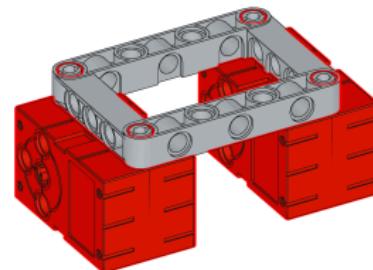
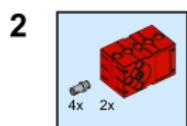
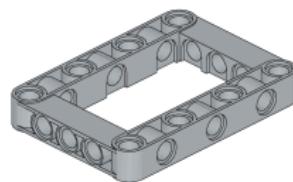
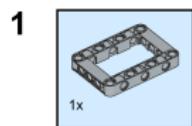
[micro:bit Wonder Building Kit](#)

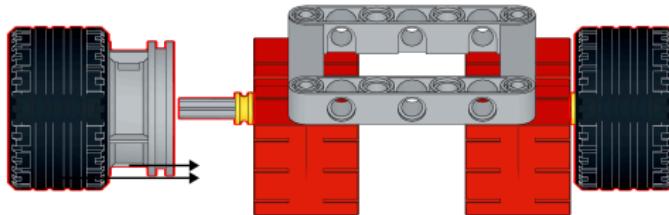
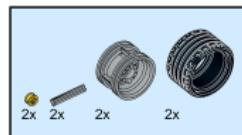
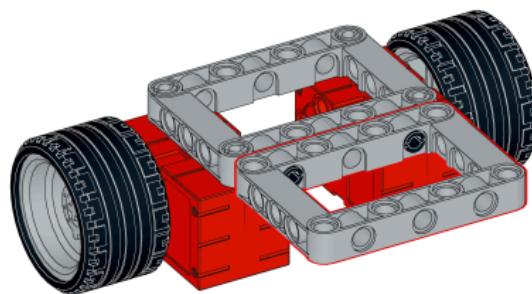
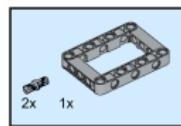
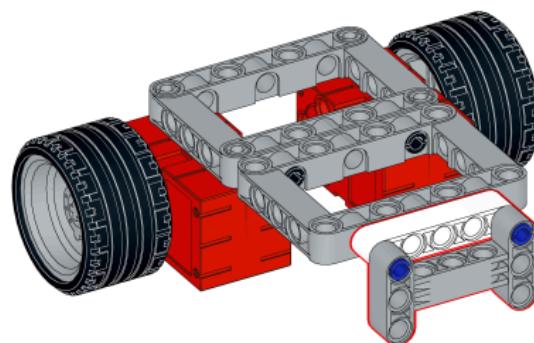
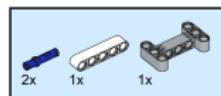
4.3. Materials Required

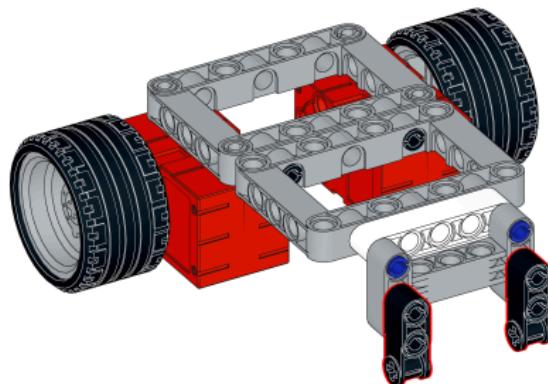
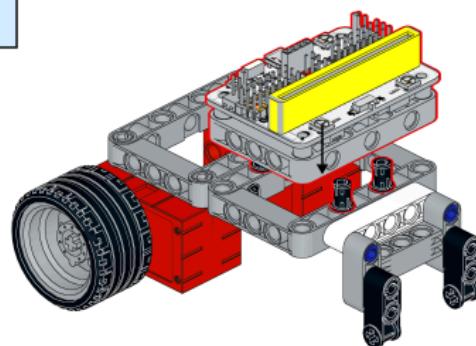
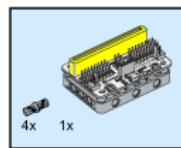
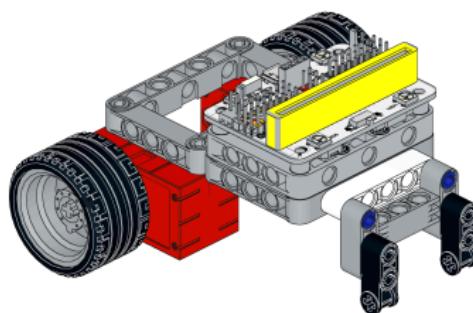


Video link: <https://youtu.be/J2QKDKnTklw>

4.4. Bricks build-up



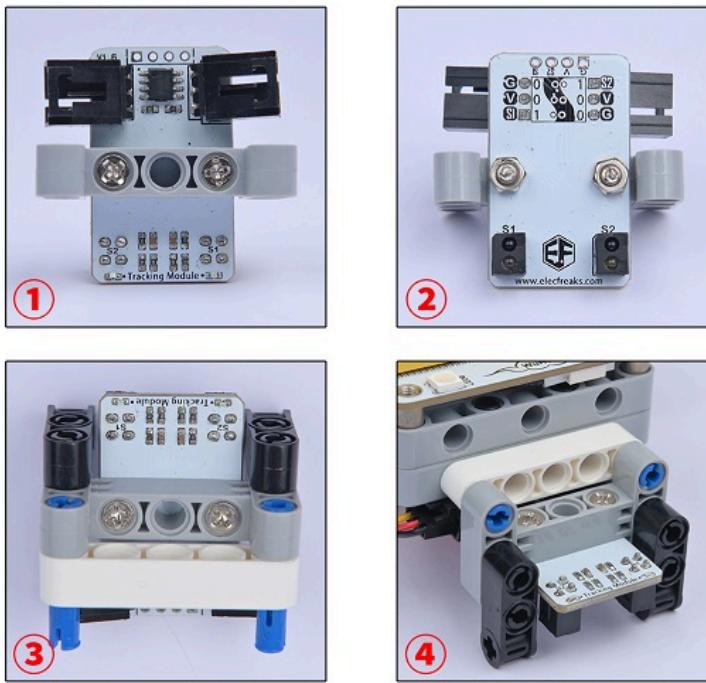
3**4****5**

6**7****8**

4.5. Installation Methods of Hardwares

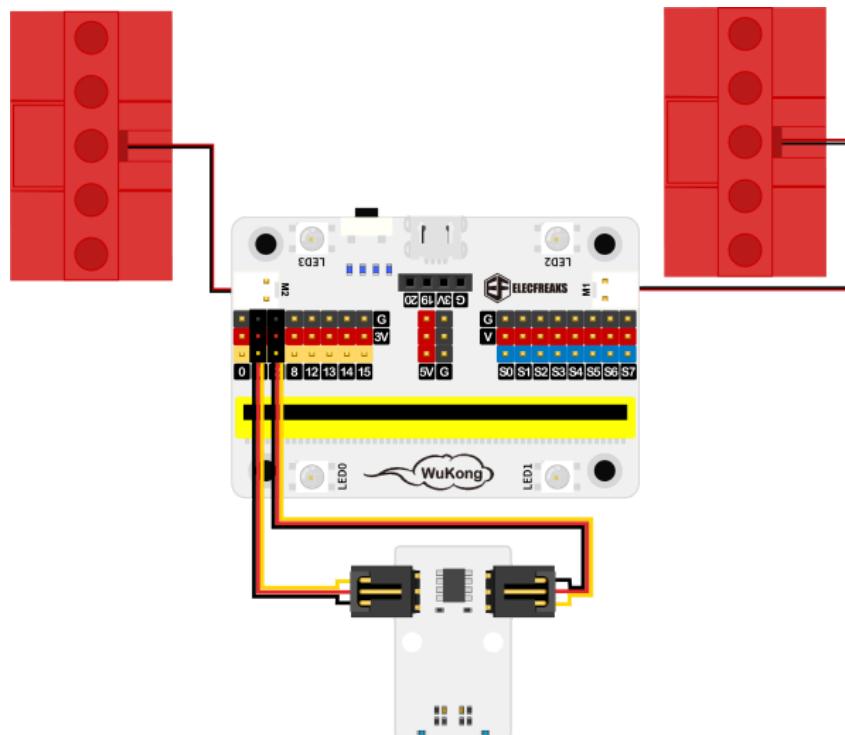
Install the dual-line tracking sensor with the bricks.

Sensor Connection Diagram



4.6. Hardware Connection

Connect two [motors](#) to M1 and M2, the [dual line-following](#) sensor to P1 and P2 ports on [Wukong breakout board](#).



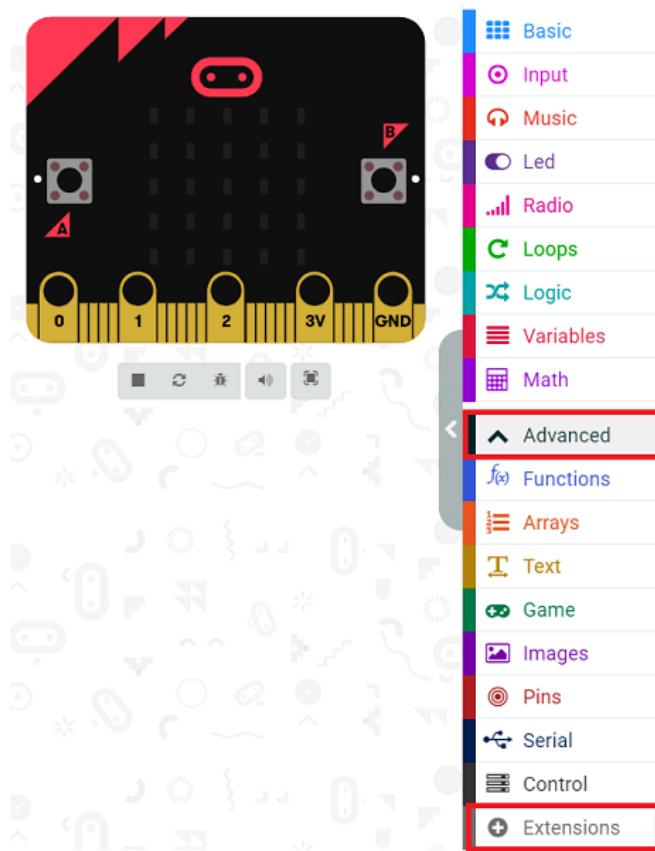
4.7. Software Platform

[MakeCode](#)

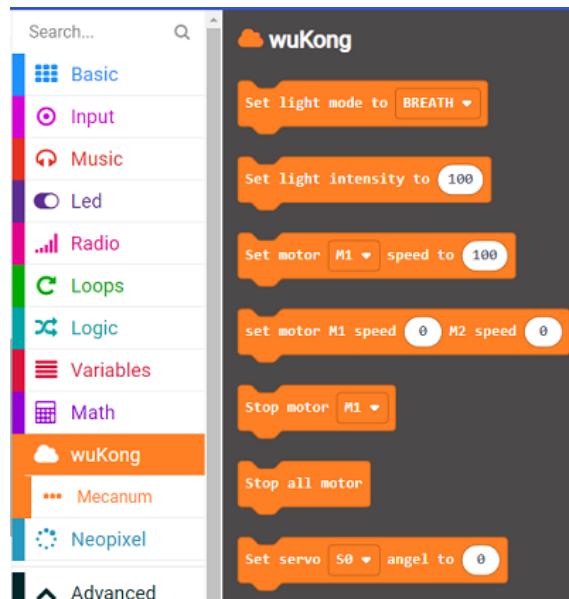
4.8. Coding

Add extensions

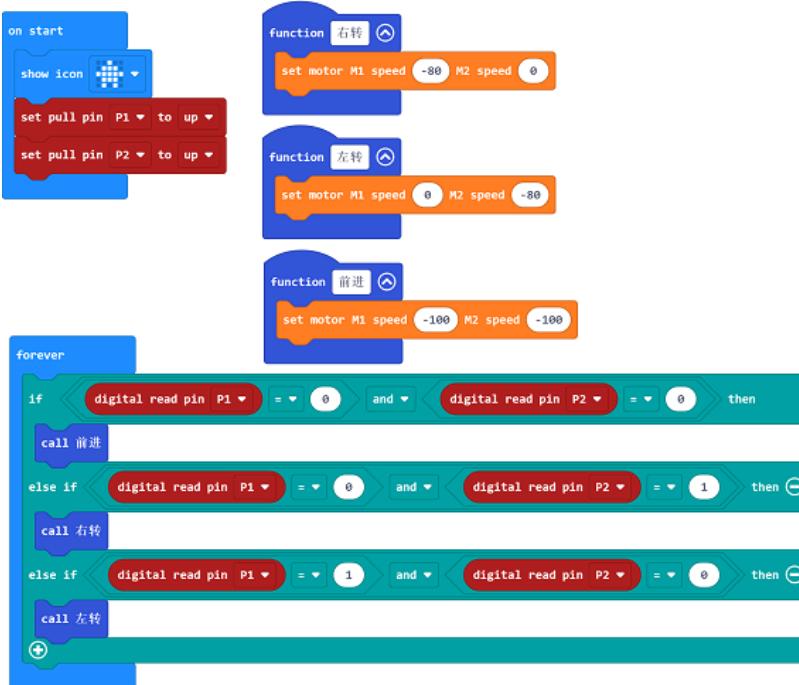
Click "Advanced" in the MakeCode to see more choices.



Search with Wukong in the dialogue box to download it.



Program



Link:https://makecode.microbit.org/_azffEJVztHiW

Result

The car moves along with the maps at a uniform speed, it will keep its speed and directions if it deviates from the black line until it goes back.

By ELECFREAKS Team

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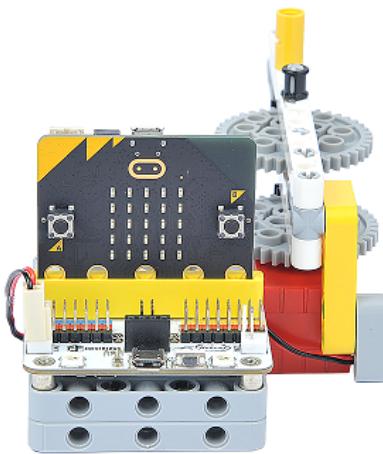
Case 03: The Gyroscope Base

Contents

- [5.1. Purpose](#)
- [5.2. Link](#)
- [5.3. Materials Required](#)
- [5.4. Bricks build-up](#)
- [5.5. Hardware Connection](#)
- [5.6. Software Platform](#)
- [5.7. Coding](#)

5.1. Purpose

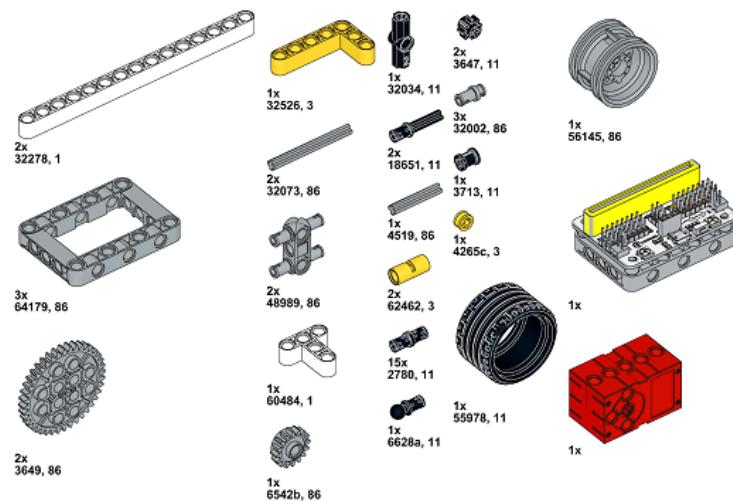
To make a gyroscope baseboard.



5.2. Link

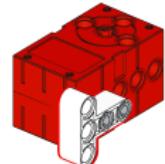
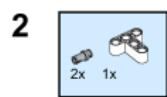
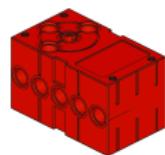
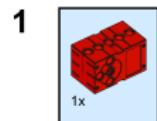
[micro:bit Wonder Building Kit](#)

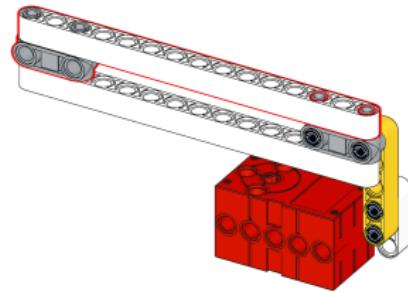
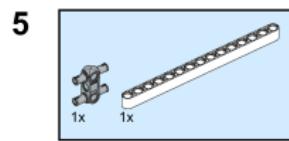
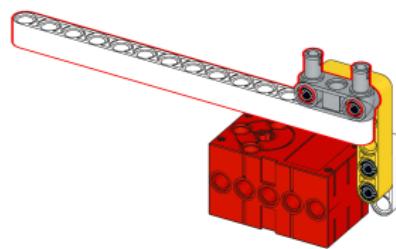
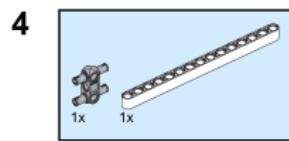
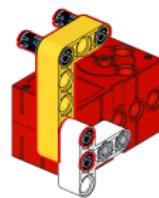
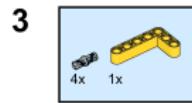
5.3. Materials Required

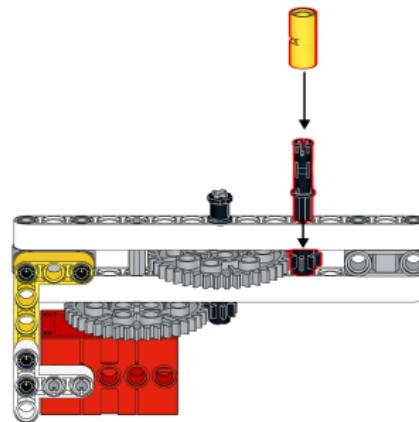
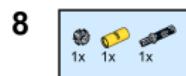
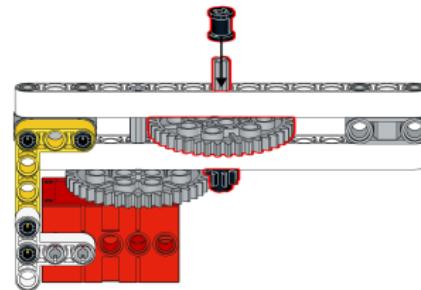
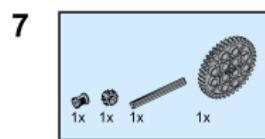
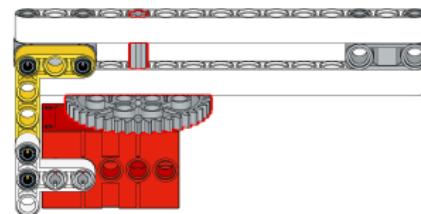
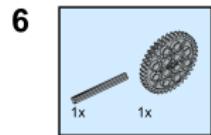


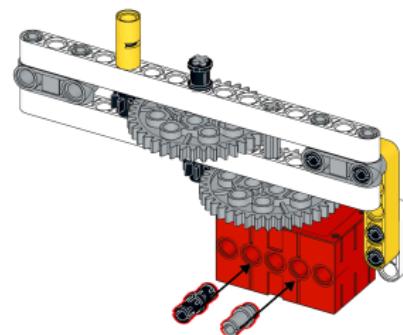
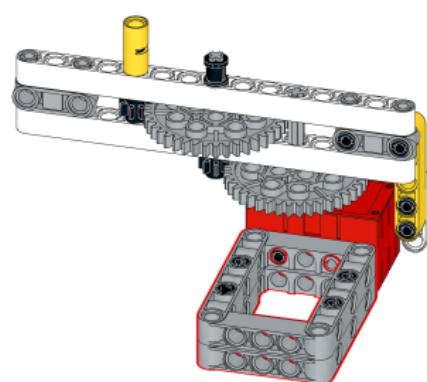
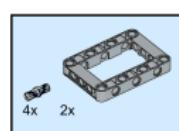
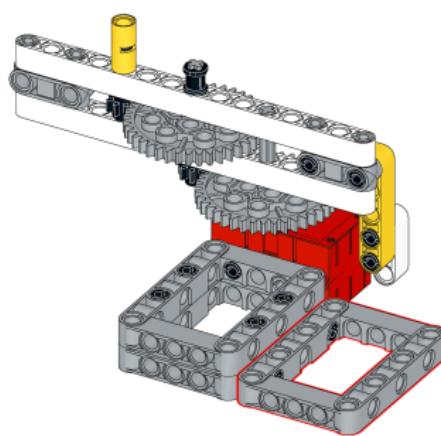
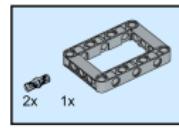
Video link: https://youtu.be/XC_tynRRxR0

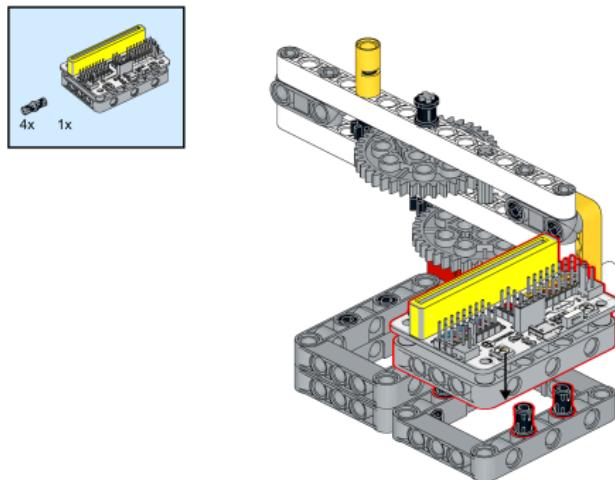
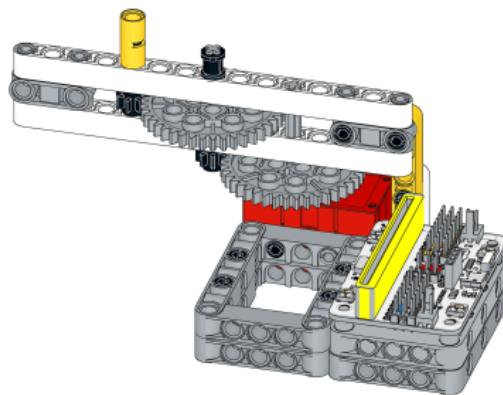
5.4. Bricks build-up





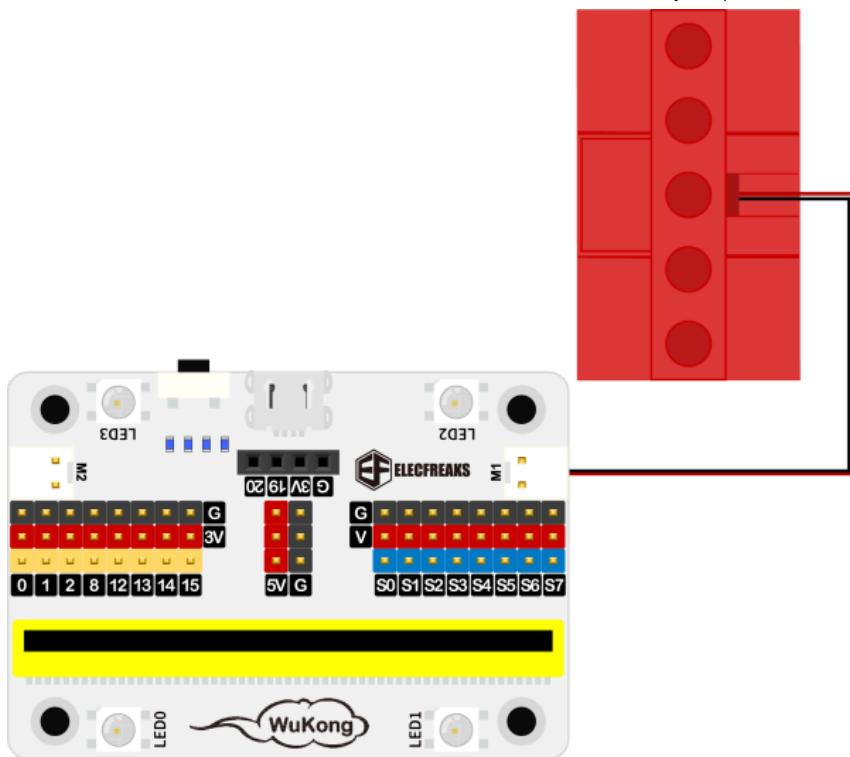


9**10****11**

12**13**

5.5. Hardware Connection

Connect a [motor](#) to M1 port on [Wukong breakout board](#).



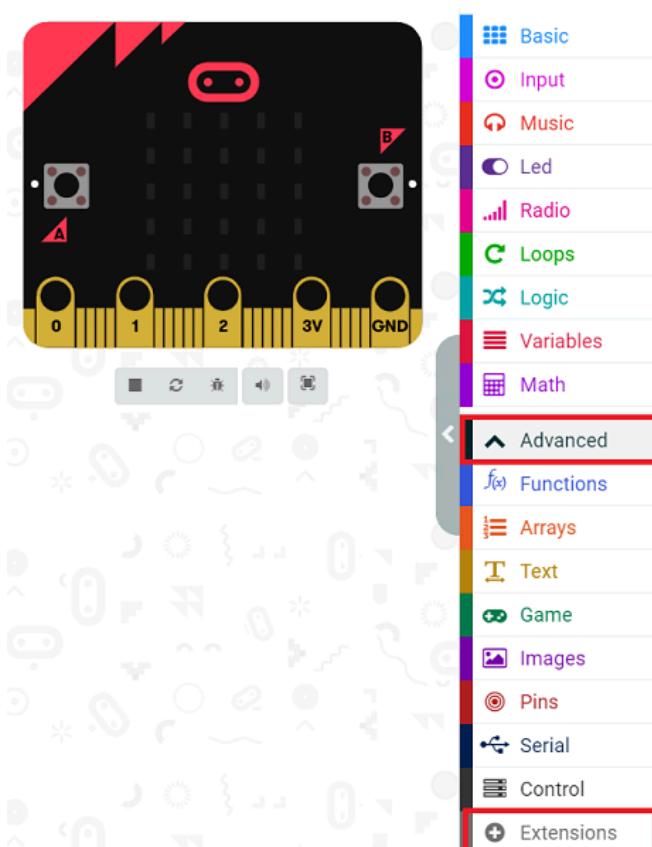
5.6. Software Platform

[MakeCode](#)

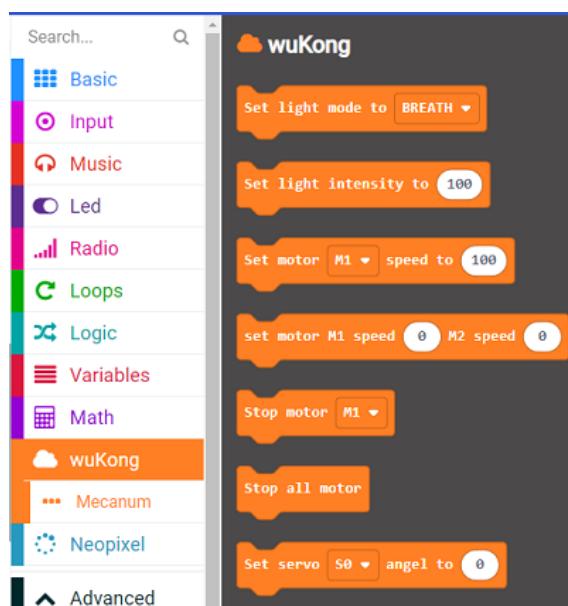
5.7. Coding

Add extensions

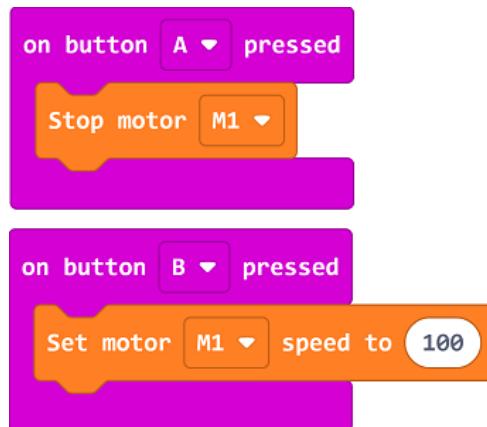
Click "Advanced" in the MakeCode to see more choices.



Search with Wukong in the dialogue box to download it.



Program



Link:https://makecode.microbit.org/_FFibega47Hwy

Result

Press the button B and the motor connecting to M1 starts driving, put the gyroscope base on the swirling yellow connectors, when the accelerate speed meets the standard, release your hands and it will not fall off; press button A to stop driving the motor.

By ELECFREAKS Team

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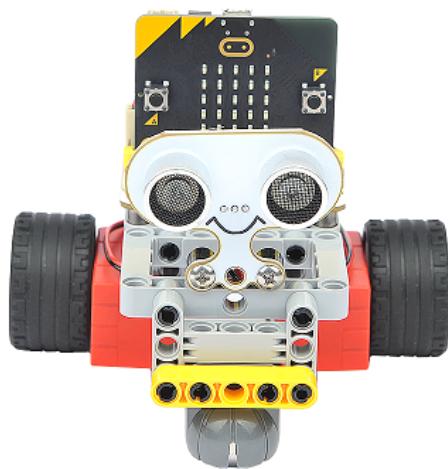
Case 04: Obstacles-avoidance Cars

Contents

- [6.1. Purpose](#)
- [6.2. Link](#)
- [6.3. Materials Required](#)
- [6.4. Bricks build-up](#)
- [6.5. Installation Methods of Hardwares](#)
- [6.6. Hardware Connection](#)
- [6.7. Software Platform](#)
- [6.8. Coding](#)
- [6.9. Result](#)

6.1. Purpose

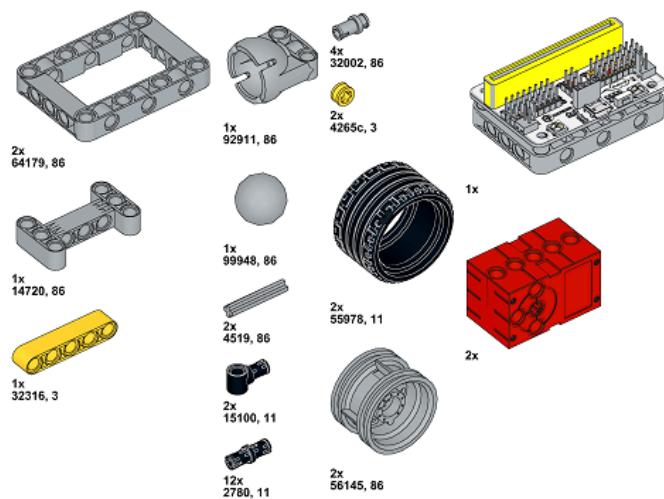
To make an obstacle-avoidance car.



6.2. Link

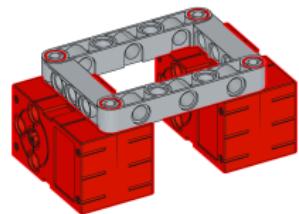
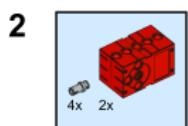
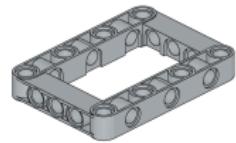
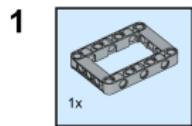
[micro:bit Wonder Building Kit](#)

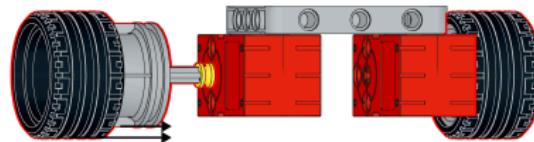
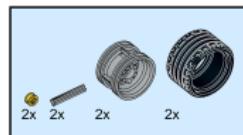
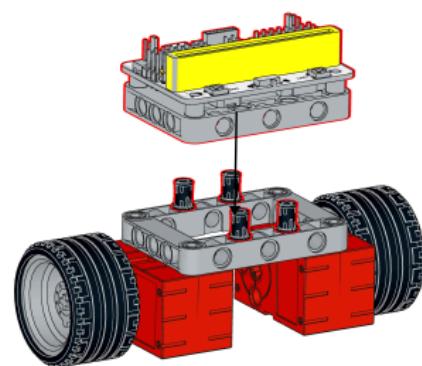
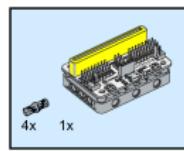
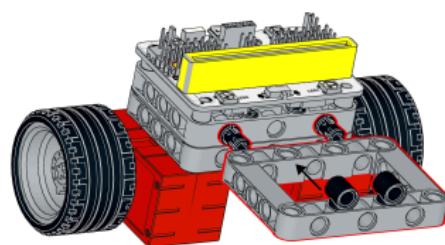
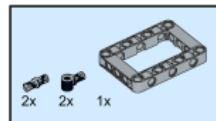
6.3. Materials Required

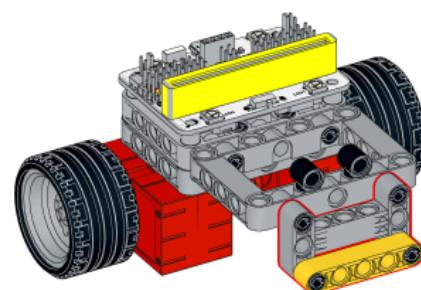
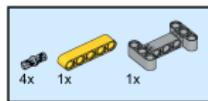
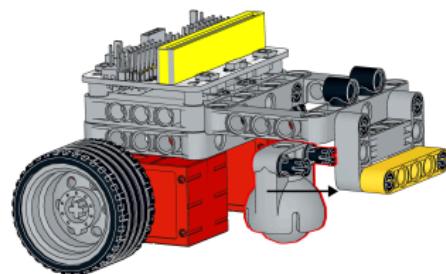
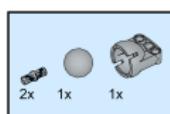
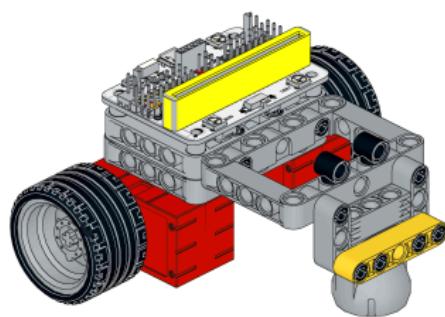


Video link: <https://youtu.be/jYkSCfRpj1Y>

6.4. Bricks build-up



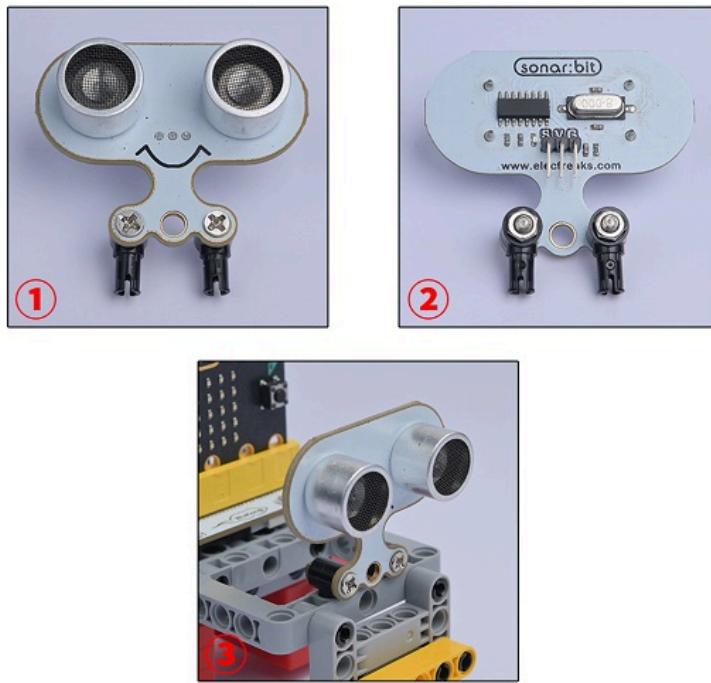
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6**7****8**

6.5. Installation Methods of Hardwares

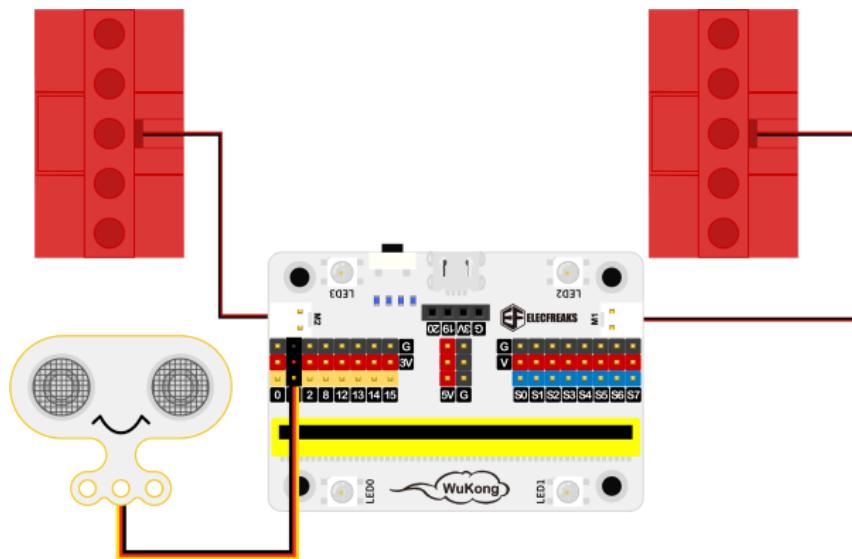
Install the sonar:bit with the bricks.

Sensor Connection Diagram



6.6. Hardware Connection

Connect two [motors](#) to M1, M2, and the [sonar:bit](#) to P1 port on [Wukong breakout board](#).



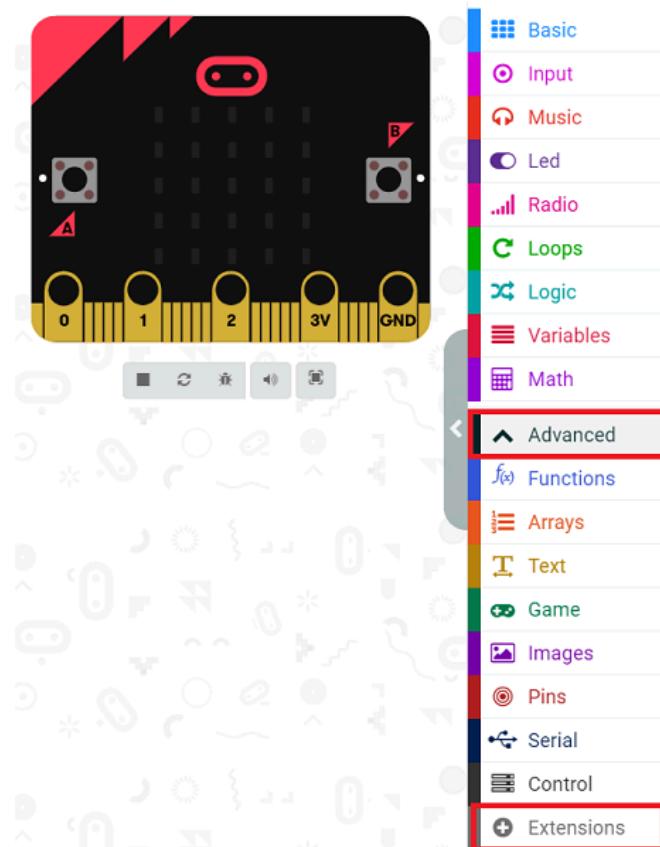
6.7. Software Platform

[MakeCode](#)

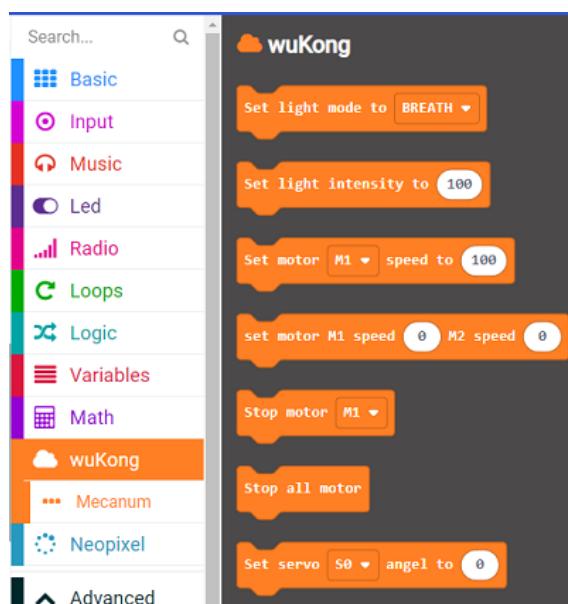
6.8. Coding

Add extensions

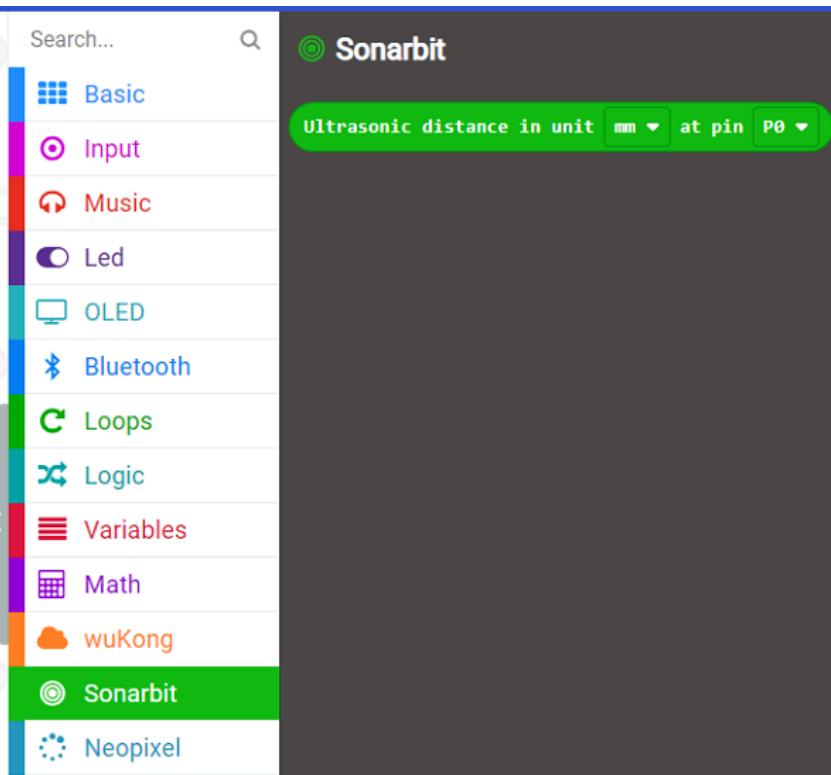
Click "Advanced" in the MakeCode to see more choices.



Search with Wukong in the dialogue box to download it.



Search with <https://github.com/elecbreaks/pxt-sonarbit> in the dialogue box to add the sonar:bit extension.



Program

```

on start
  set motor M1 speed -100 M2 speed -100

forever
  set sonor to Ultrasonic distance in unit cm at pin P1
  if sonor < 20 and sonor > 1 then
    set motor M1 speed -50 M2 speed 100
    pause (ms) pick random 0 to 10
  else
    set motor M1 speed -100 M2 speed -100
  end

```

The Scratch script consists of two main sections: "on start" and "forever". The "on start" section initializes both motors to full speed in reverse. The "forever" loop repeatedly measures the ultrasonic distance from pin P1. If the distance is less than 20cm and greater than 1cm, the motors are set to move at 50% speed in opposite directions (M1: -50, M2: 100) and a random pause between 0 and 10ms is applied. Otherwise, the motors are set to full speed in reverse.

Link:https://makecode.microbit.org/_7K4bgpCKv2WJ

6.9. Result

While on start, the car moves forward at the full speed and it turns right if it detects any obstacles within the scope of 20cm, and then it keeps moving forward.

Case 05: Rotary Chairs

Contents

- [7.1. Purpose](#)
- [7.2. Link](#)
- [7.3. Materials Required](#)
- [7.4. Bricks build-up](#)
- [7.5. Hardware Connection](#)
- [7.6. Software Platform](#)
- [7.7. Coding](#)

7.1. Purpose

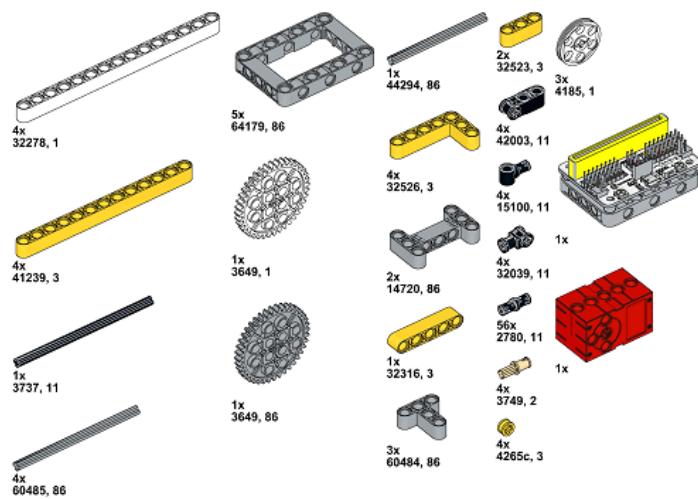
To make a rotary chair project.



7.2. Link

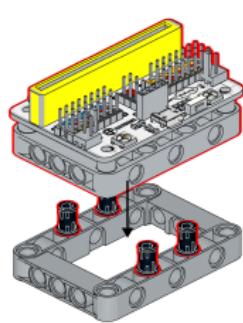
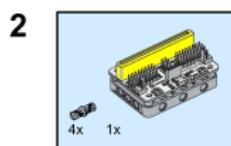
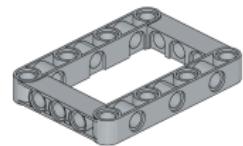
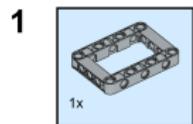
[micro:bit Wonder Building Kit](#)

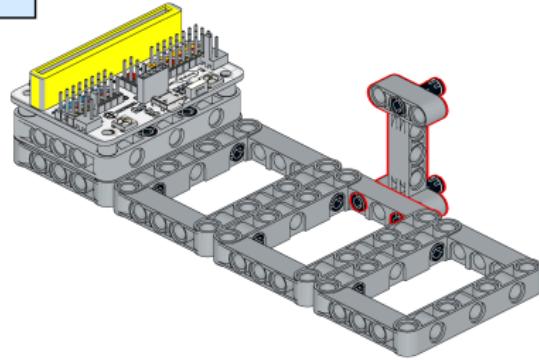
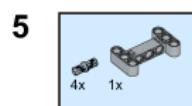
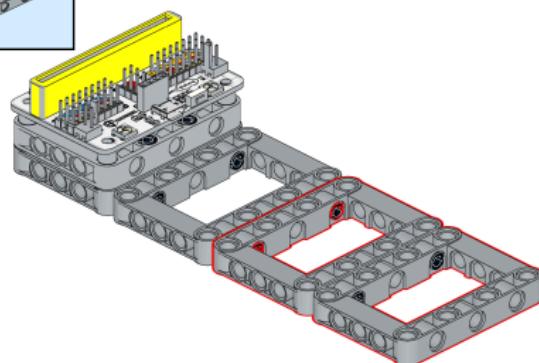
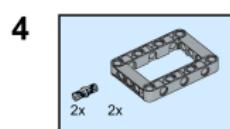
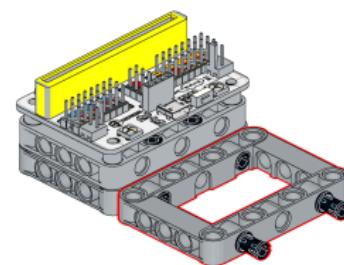
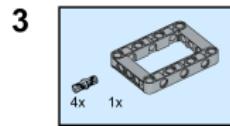
7.3. Materials Required

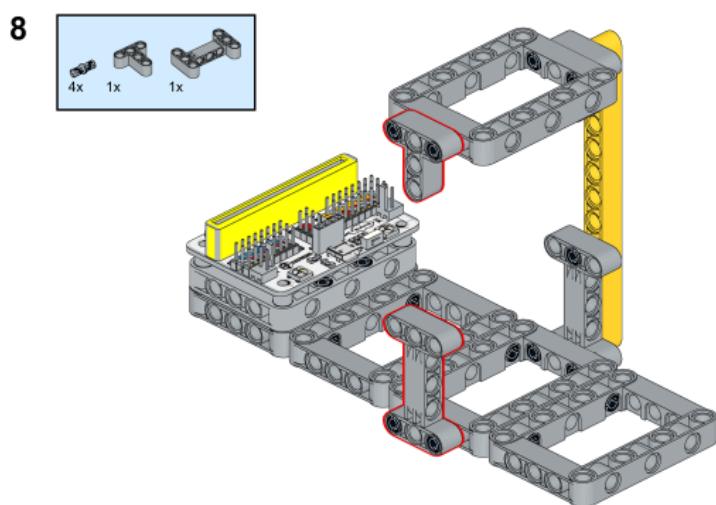
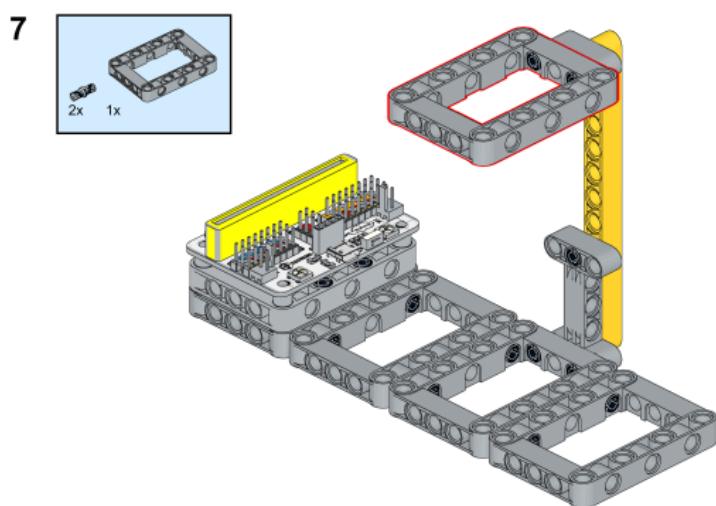
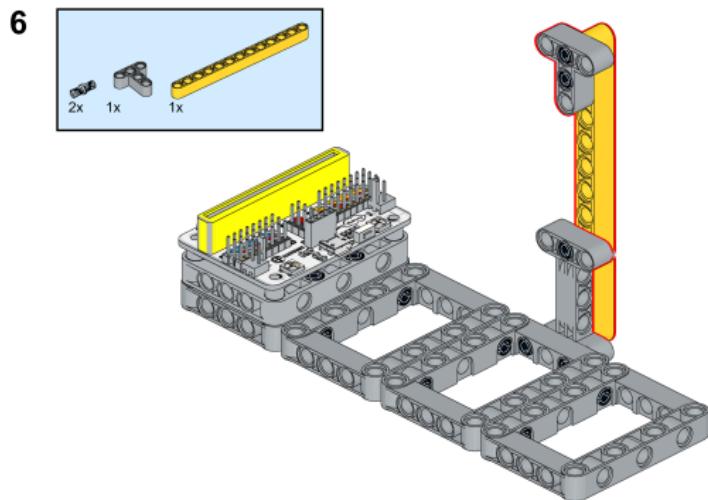


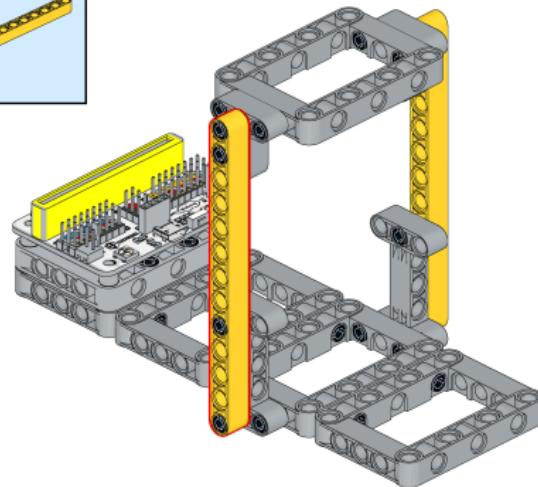
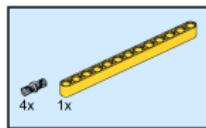
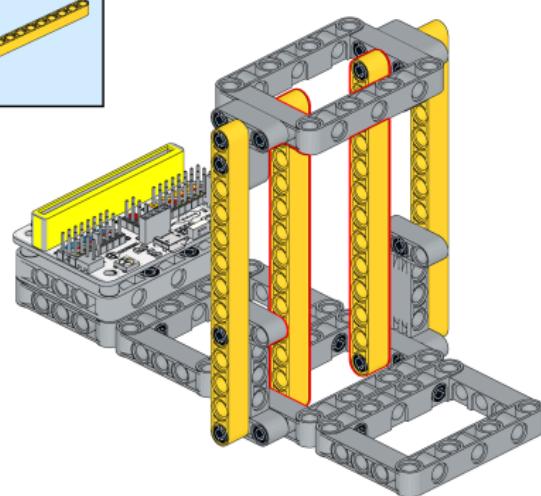
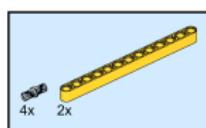
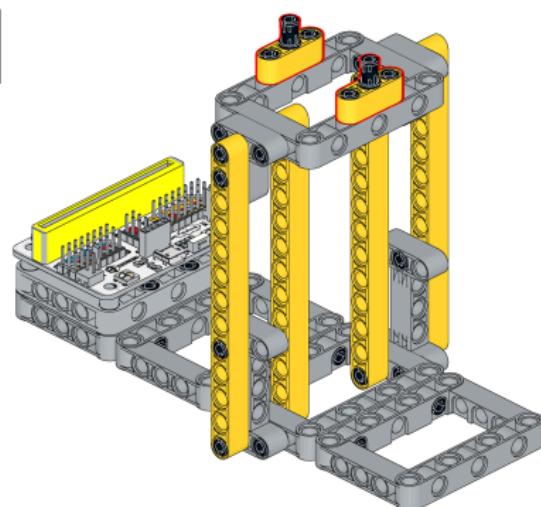
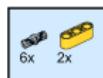
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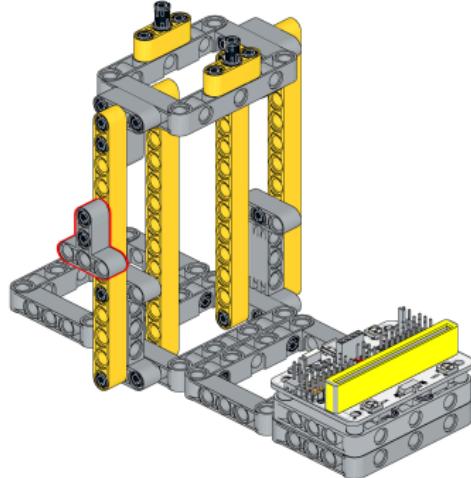
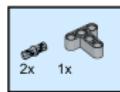
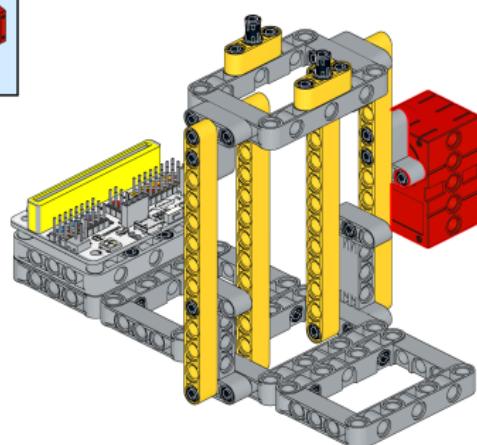
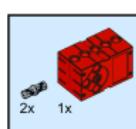
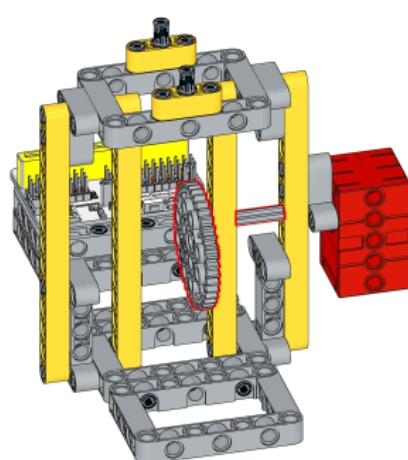
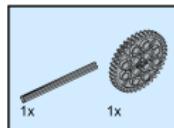
7.4. Bricks build-up

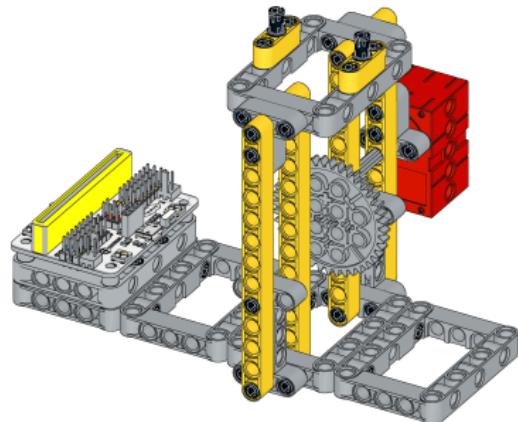
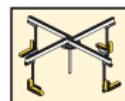
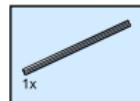


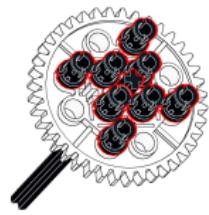
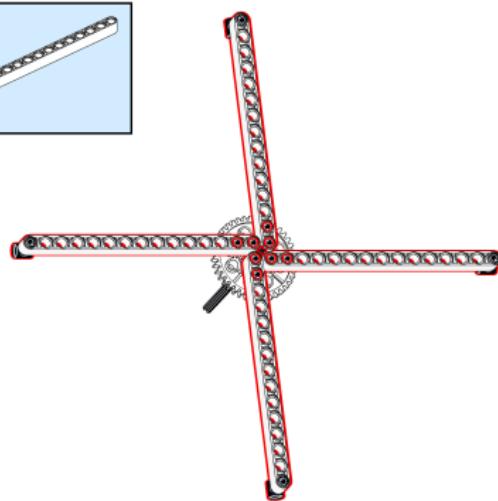
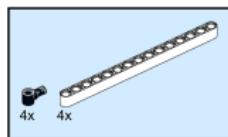


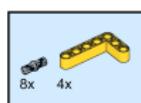
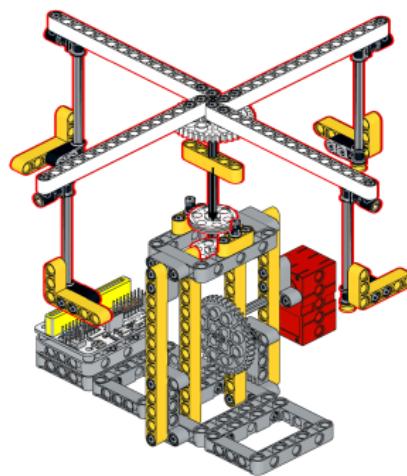
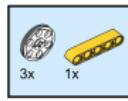


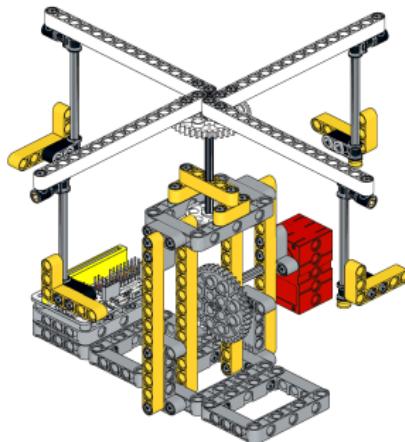
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15**16****17**

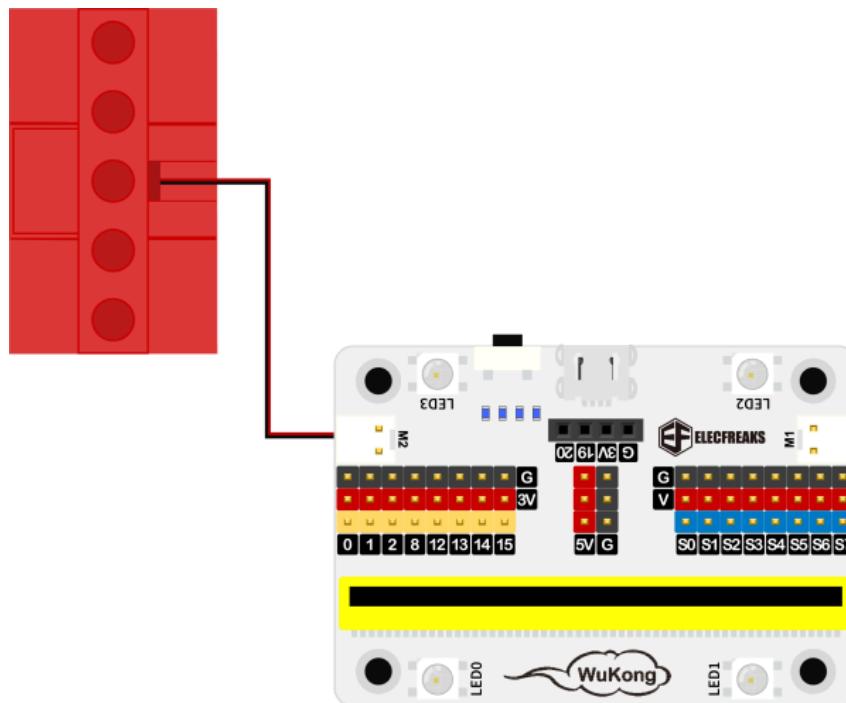
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21**22****23**

24

7.5. Hardware Connection

Connect a [motor](#) to M2 port on [Wukong breakout board](#).



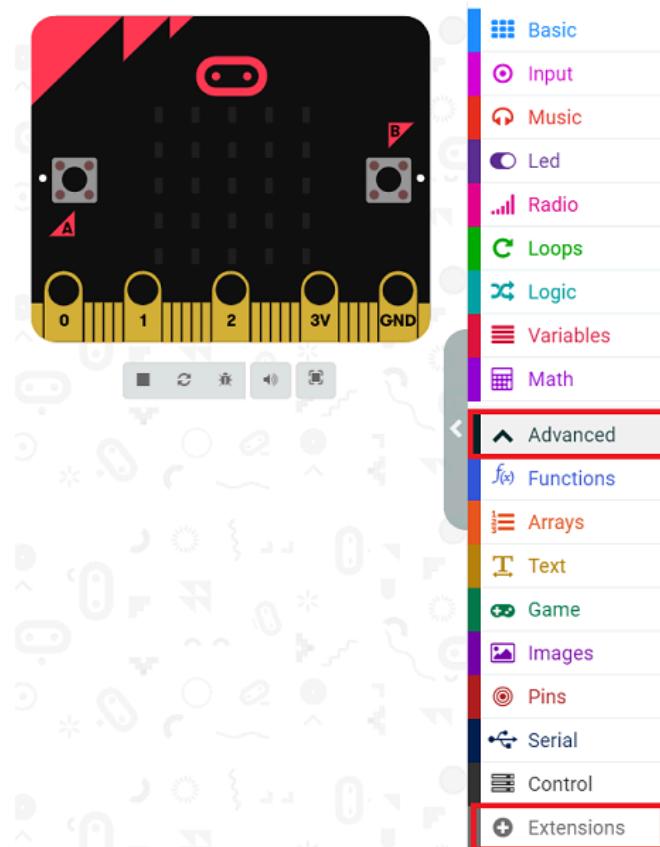
7.6. Software Platform

[MakeCode](#)

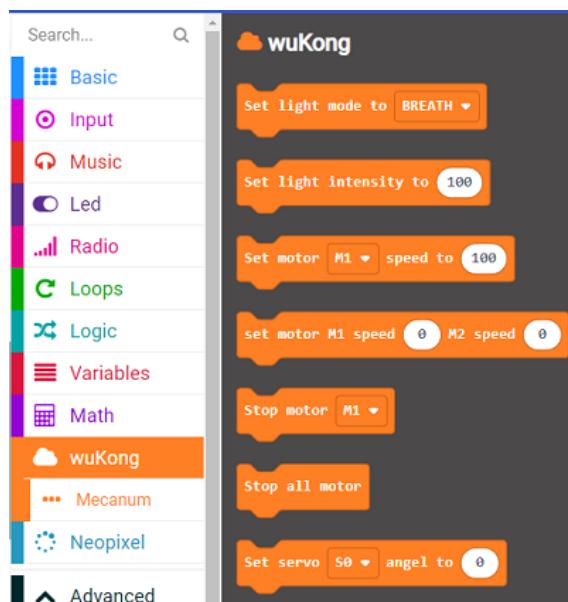
7.7. Coding

Add extensions

Click "Advanced" in the MakeCode to see more choices.



Search with Wukong in the dialogue box to download it.



Program

```

on button A ▾ pressed
  Set motor M2 ▾ speed to 100
on button B ▾ pressed
  Stop motor M2 ▾

```

Link:https://makecode.microbit.org/_cYPE670Rz5cc

Result

Press button A to start the rotary chairs and press button B to stop it.

By ELECFREAKS Team

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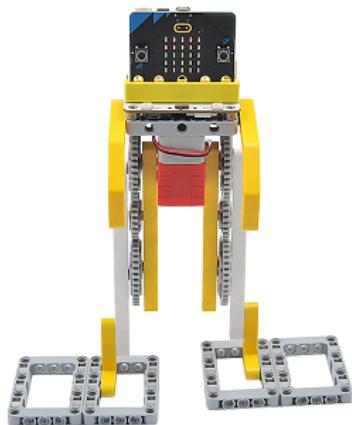
Case 06: The Bigfoot Monster

Contents

- [8.1. Purpose](#)
- [8.2. Link:](#)
- [8.3. Materials Required](#)
- [8.4. Bricks build-up](#)
- [8.5. Hardware Connection](#)
- [8.6. Software Platform](#)
- [8.7. Coding](#)

8.1. Purpose

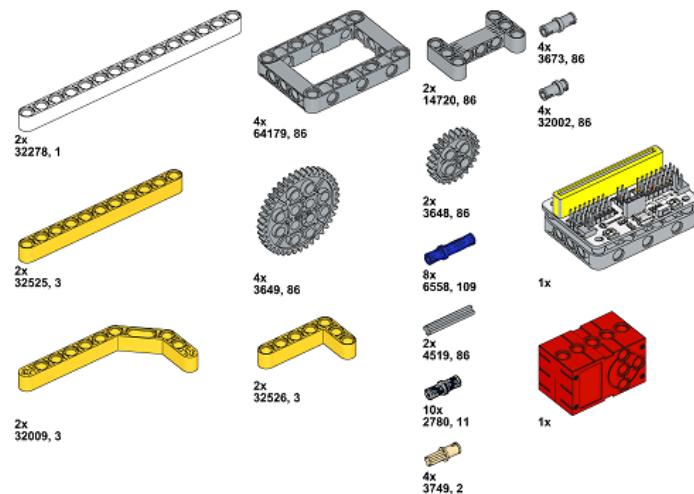
To make a bigfoot monster.



8.2. Link:

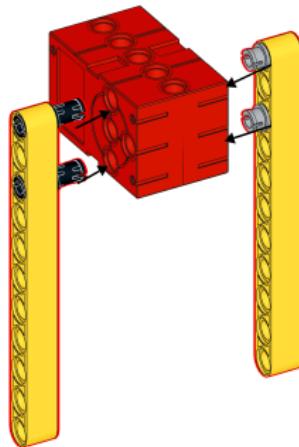
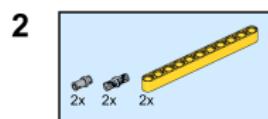
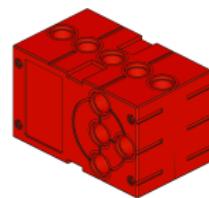
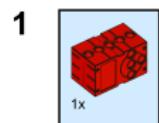
[micro:bit Wonder Building Kit](#)

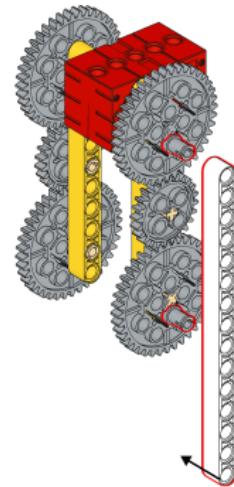
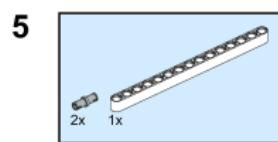
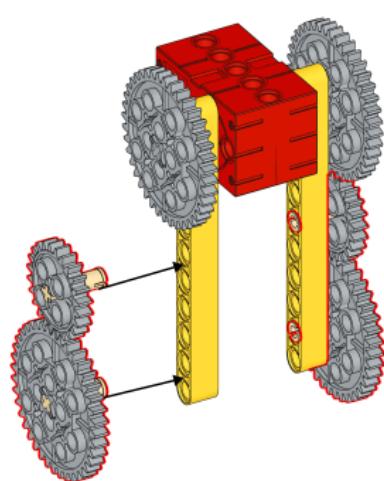
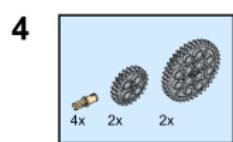
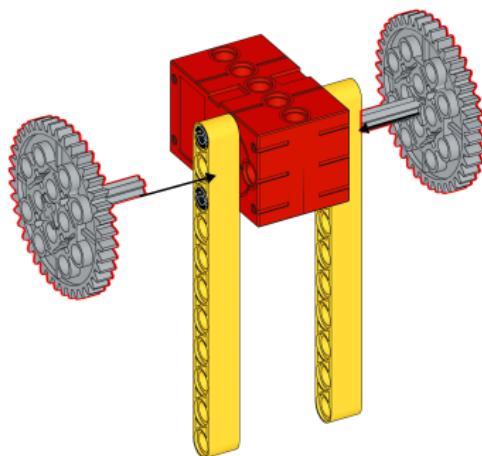
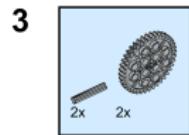
8.3. Materials Required

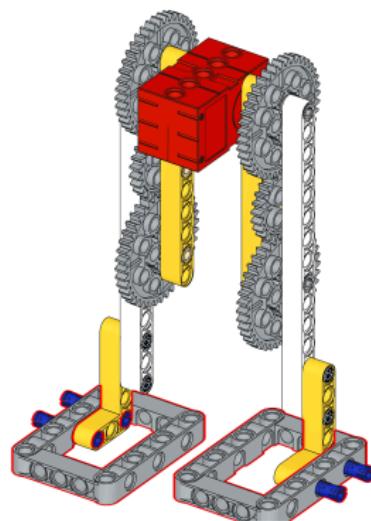
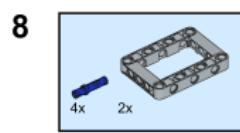
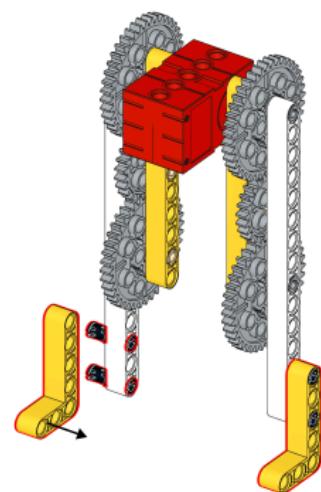
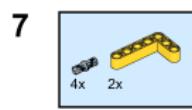
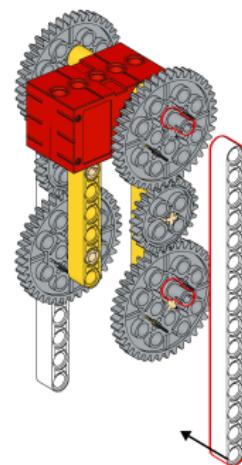
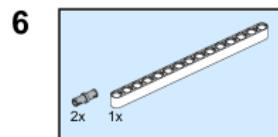


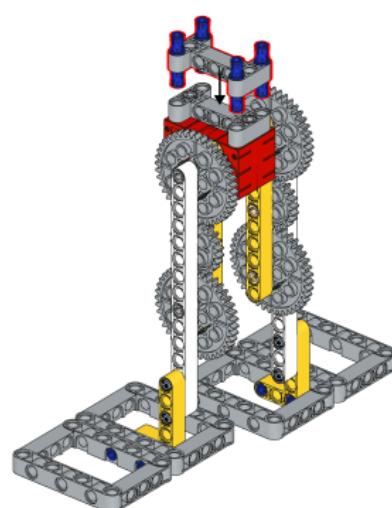
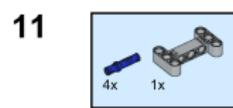
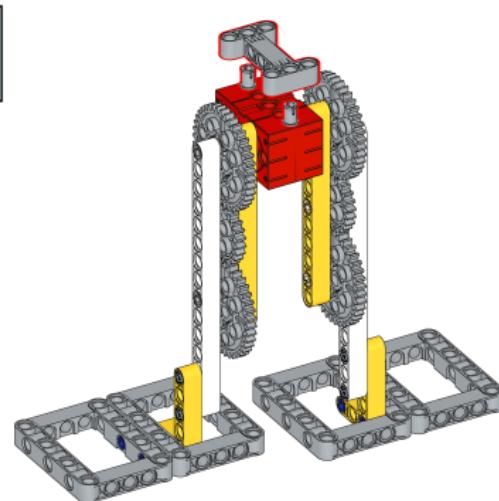
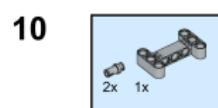
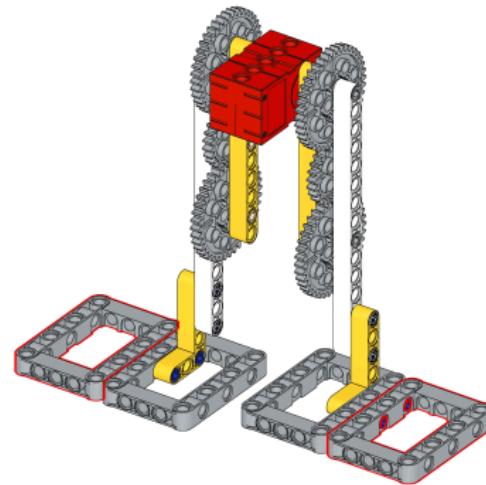
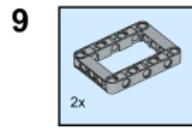
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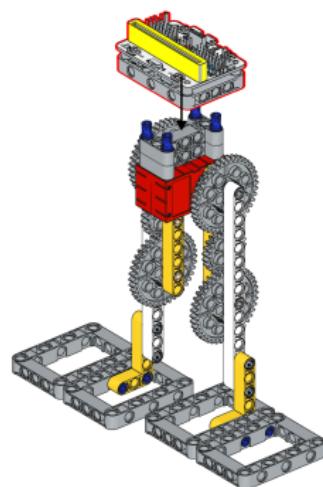
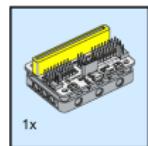
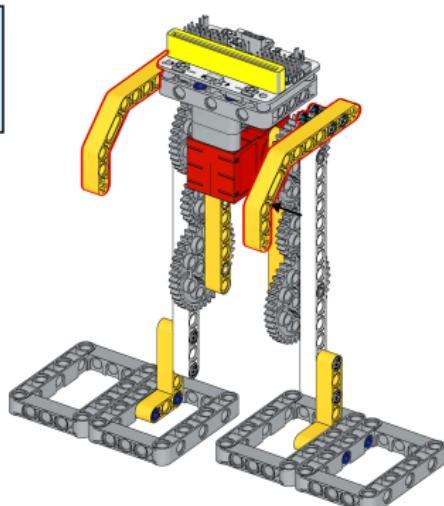
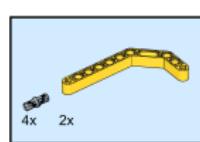
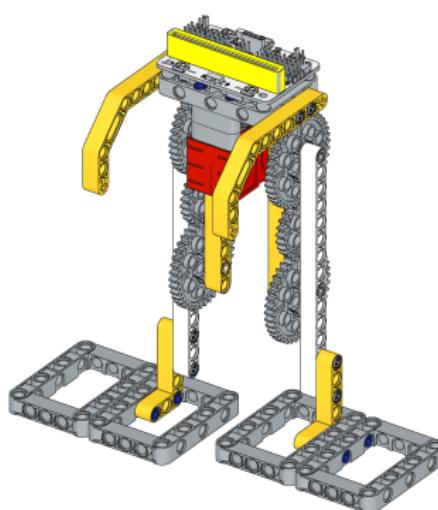
8.4. Bricks build-up





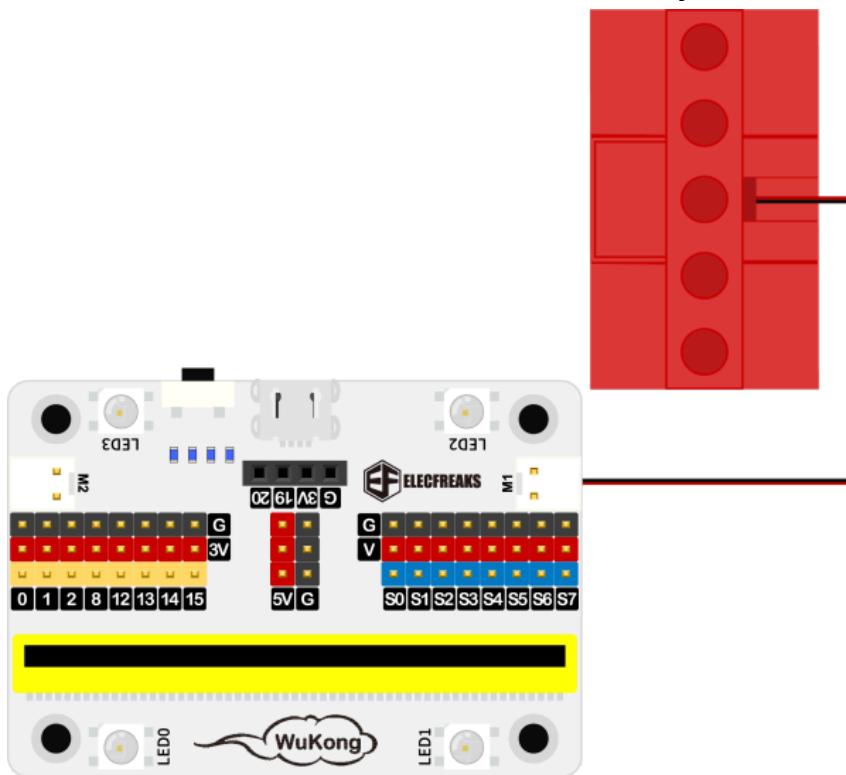




12**13****14**

8.5. Hardware Connection

Connect a [motor](#) to M1 port on [Wukong breakout board](#).



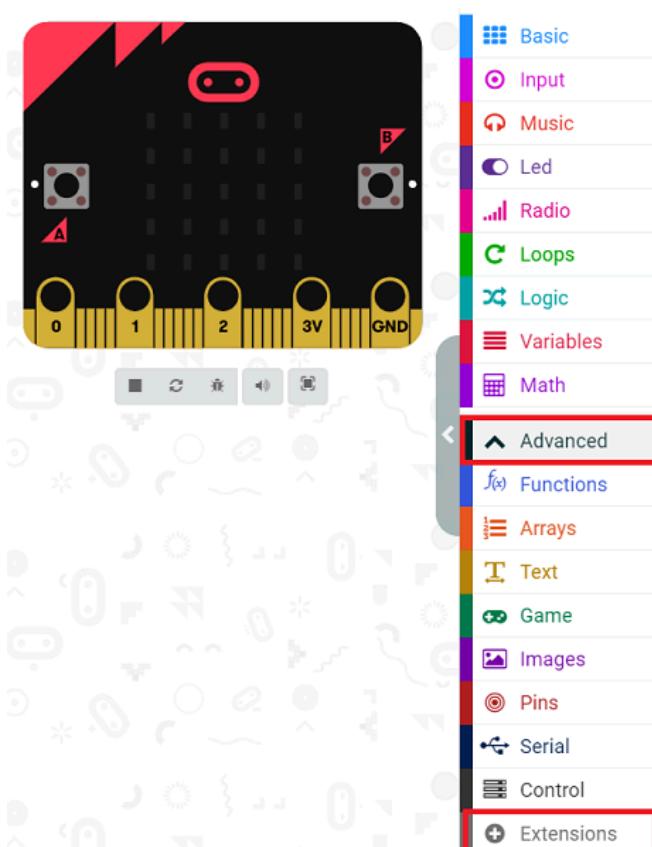
8.6. Software Platform

[MakeCode](#)

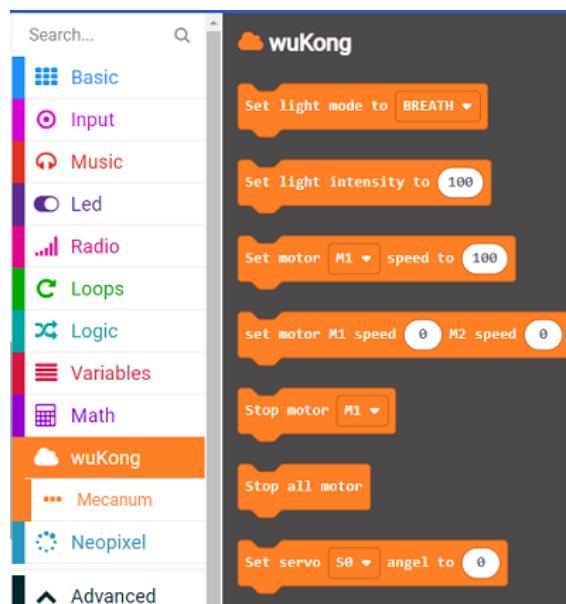
8.7. Coding

Add extensions

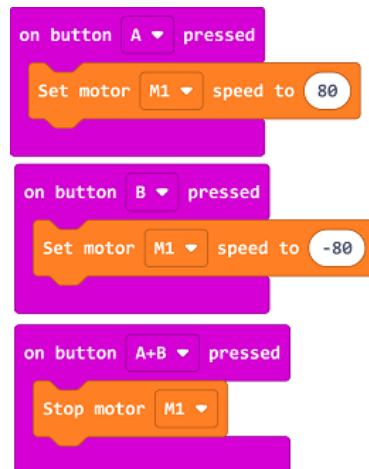
Click "Advanced" in the MakeCode to see more choices.



Search with Wukong in the dialogue box to download it.



Program



Link:https://makecode.microbit.org/_2gH040Us5LX7

Result

Press button A to move the bigfoot monster forward and press button A+B to stop it.

By ELECFREAKS Team

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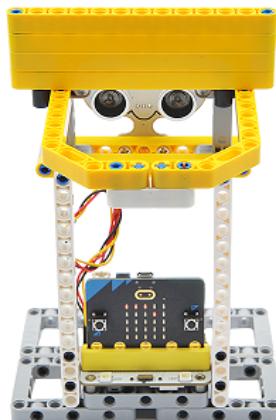
Case 07: The Basketball Counter

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- [9.1. Purpose](#)
- [9.2. Link:](#)
- [9.3. Materials Required](#)
- [9.4. Bricks build-up](#)
- [9.5. Installation Methods of Hardwares](#)
- [9.6. Hardware Connection](#)
- [9.7. Software Platform](#)
- [9.8. Coding](#)

9.1. Purpose

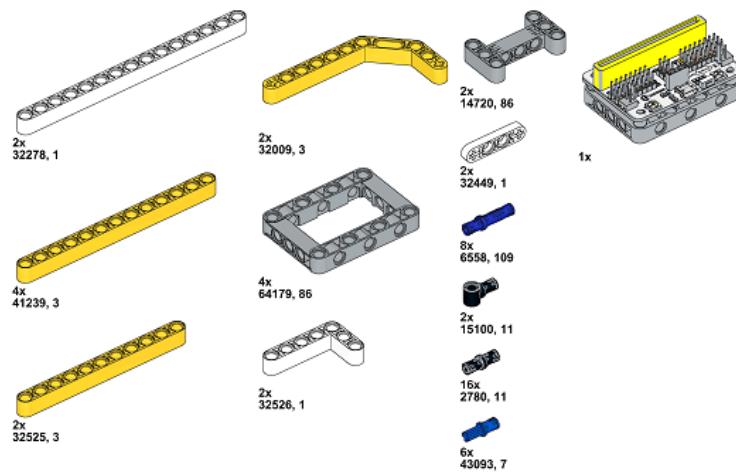
To make a basketball counter.



9.2. Link:

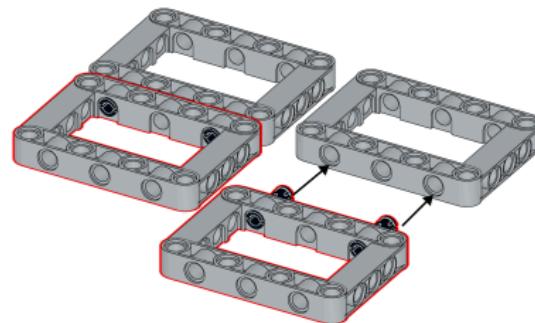
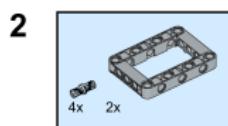
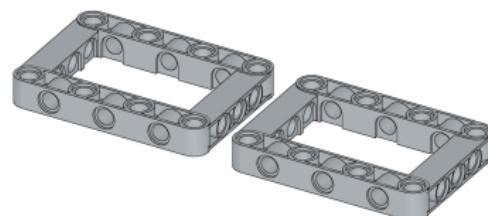
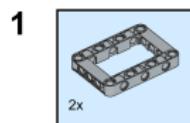
[micro:bit Wonder Building Kit](#)

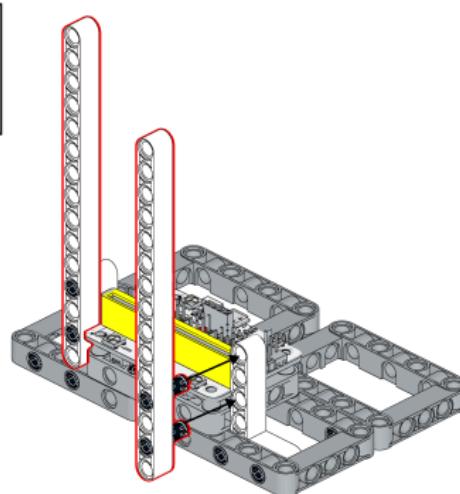
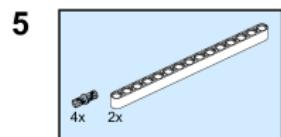
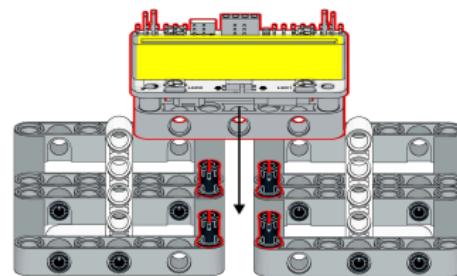
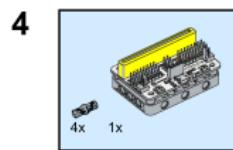
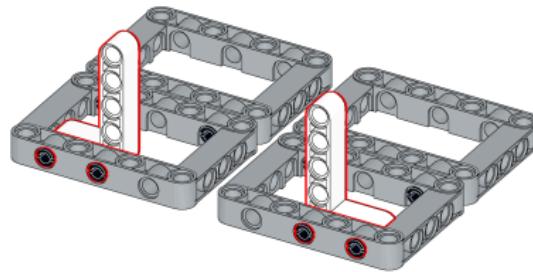
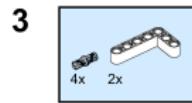
9.3. Materials Required

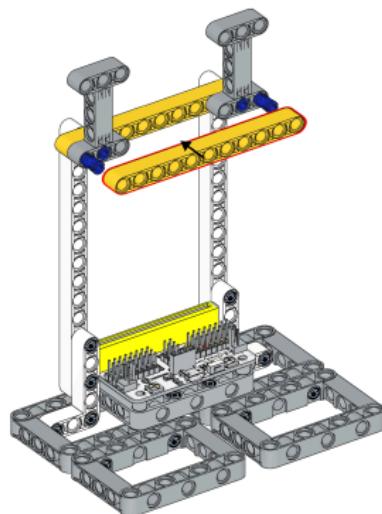
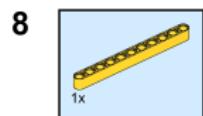
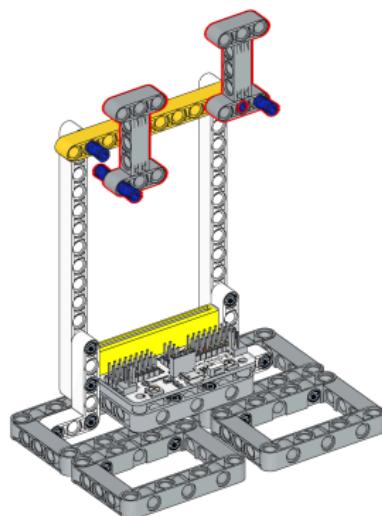
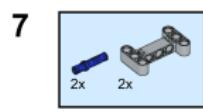
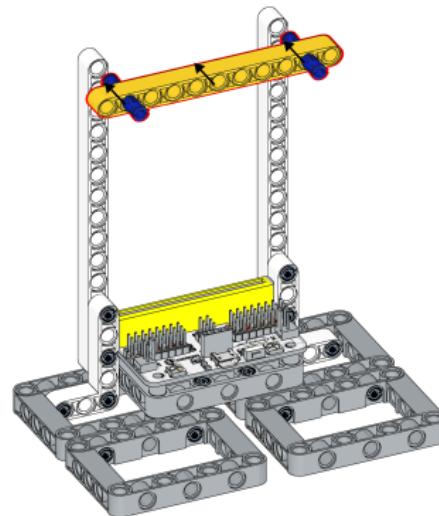
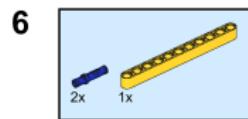


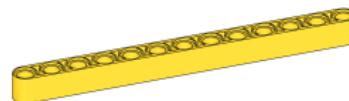
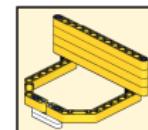
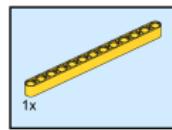
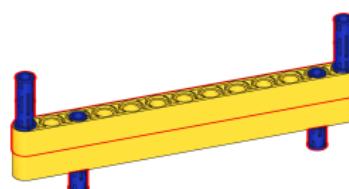
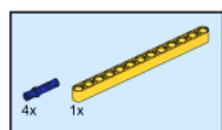
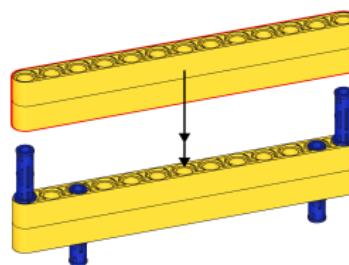
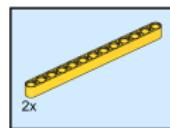
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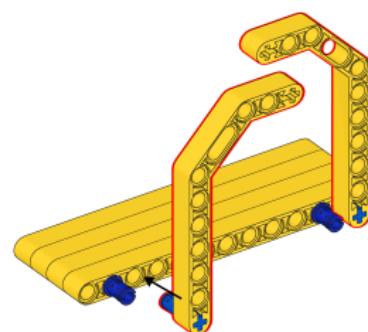
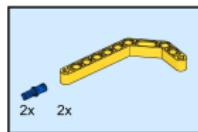
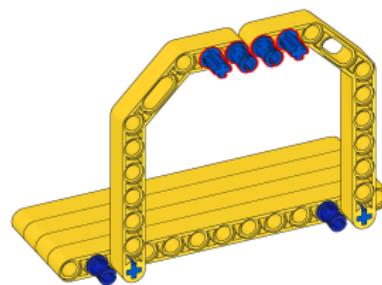
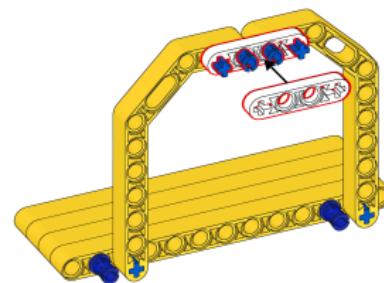
9.4. Bricks build-up

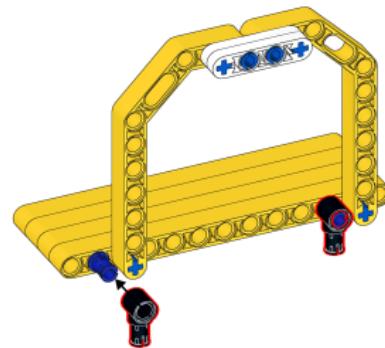
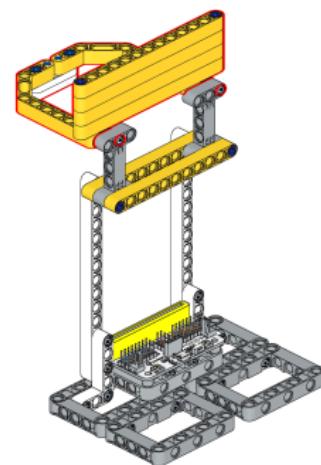
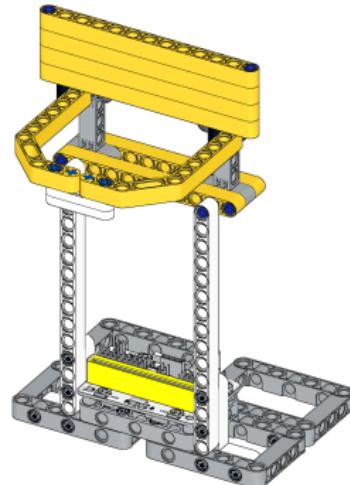






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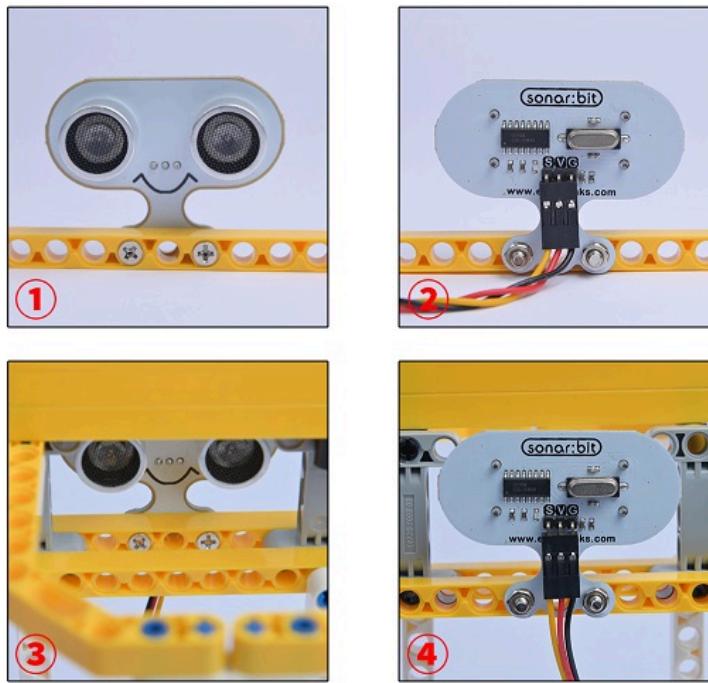
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15**16****17**

9.5. Installation Methods of Hardwares

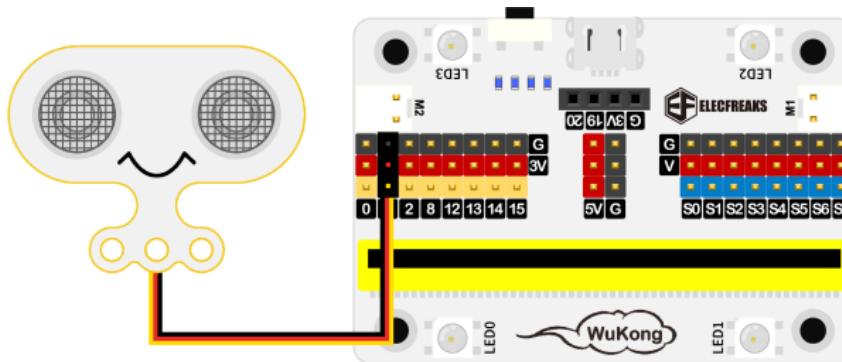
Install the sonar:bit with the bricks.

Sensor Connection Diagram



9.6. Hardware Connection

Connect a [sonar:bit](#) to P1 port on [Wukong breakout board](#).



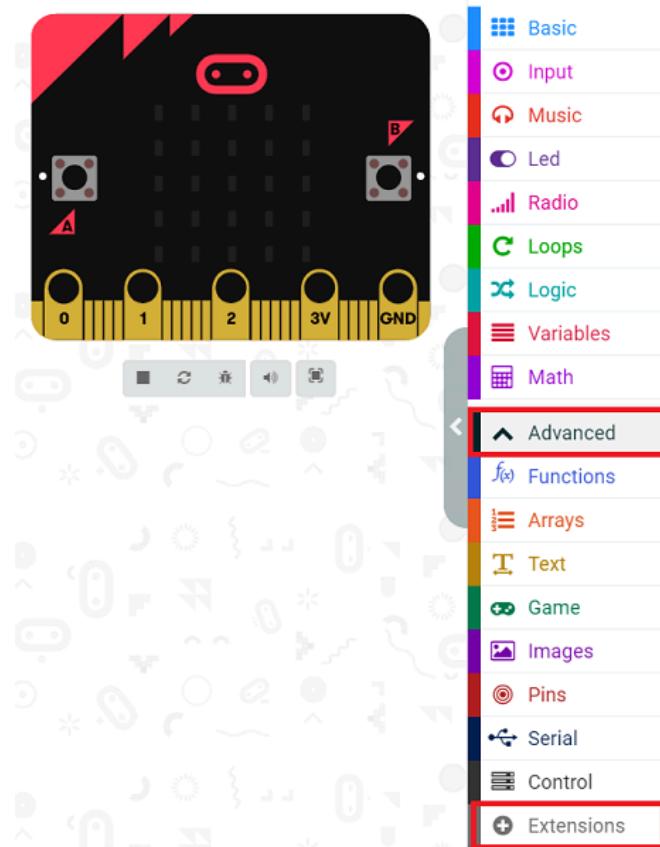
9.7. Software Platform

[MakeCode](#)

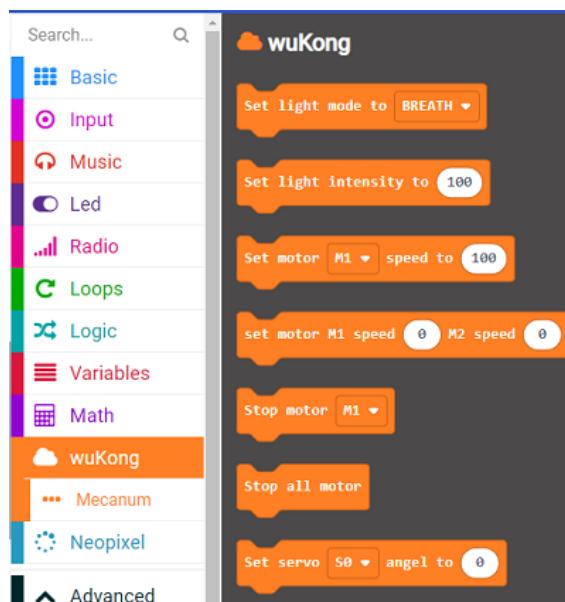
9.8. Coding

Add extensions

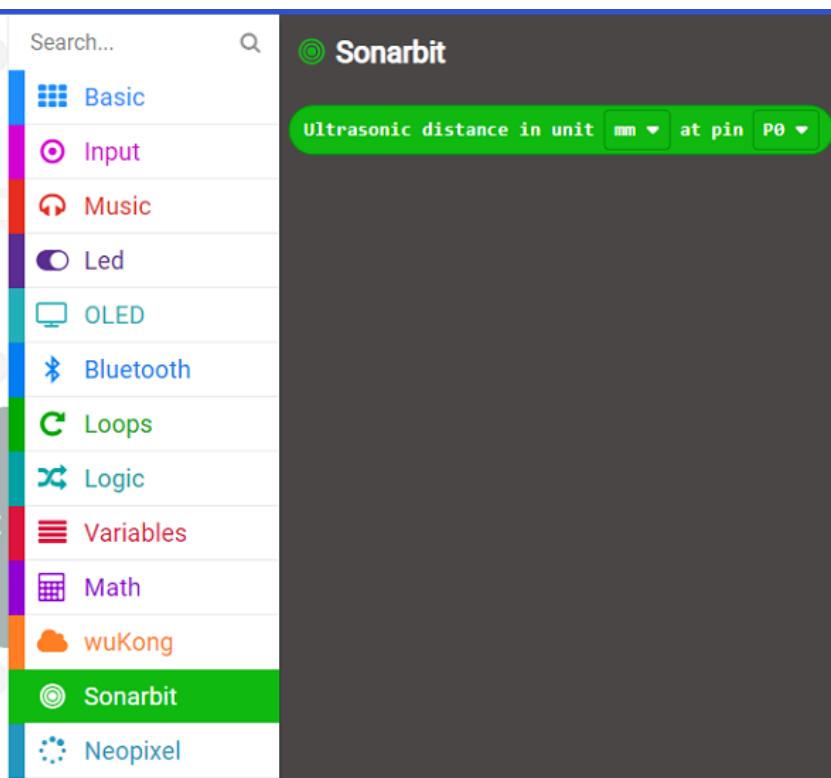
Click “Advanced” in the MakeCode to see more choices.



Search with Wukong in the dialogue box to download it.



Search with <https://github.com/elecbreaks/pxt-sonarbit> in the dialogue box to add the sonar:bit extension.



Program

```

on start
  show number i ▾

forever
  set p ▾ to Ultrasonic distance in unit cm ▾ at pin P1 ▾
  if p ▾ > ▾ 0 ▾ and p ▾ < ▾ 6 ▾ then
    change i ▾ by 1
    show number i ▾
    pause (ms) 200 ▾
  end

```

The code consists of two main sections: an 'on start' event and a 'forever' loop. The 'on start' event displays the variable 'i'. The 'forever' loop measures the ultrasonic distance at pin P1 and checks if it is greater than 0 and less than 6. If true, it increments 'i' by 1, displays 'i', and pauses for 200ms.

Link:https://makecode.microbit.org/_hueHXycJJgv1

Result

When the ultrasonic sensor detects the ball goes through the basket, it will be counted, and the value will be displayed on the micro:bit. (The principle of ultrasonic counting in this case requires to be tested according to the actual construction of the basket, it is the detection of ultrasonic sensors to the ball basket with the fixed distance value, and by judging this fixed distance value, the score plus one, so as to achieve the purpose of counting. (Ultrasonic sensor counting may have deviations, inaccurate, belonging to the normal situation of not detecting the small ball.

Case 08: The Robot Arm

Contents

- [10.1. Purpose](#)
- [10.2. Link](#)
- [10.3. Materials Required](#)
- [10.4. Bricks build-up](#)
- [10.5. Hardware Connection](#)
- [10.6. Software Platform](#)
- [10.7. Coding](#)

10.1. Purpose

To make a robot arm.

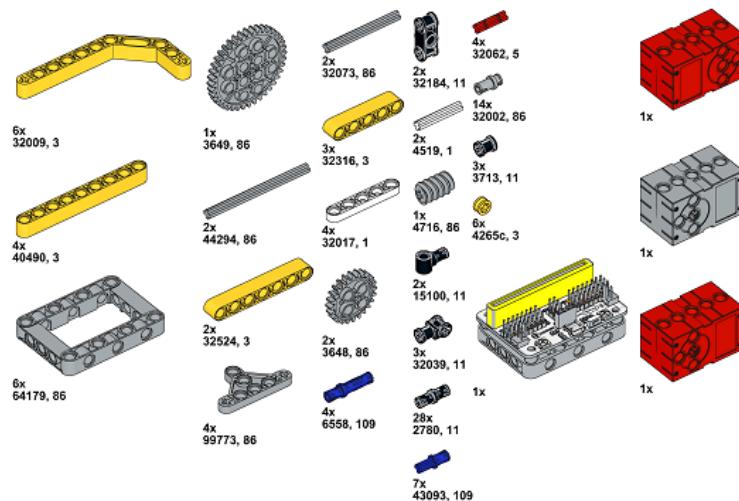


10.2. Link

[micro:bit Wonder Building Kit](#)

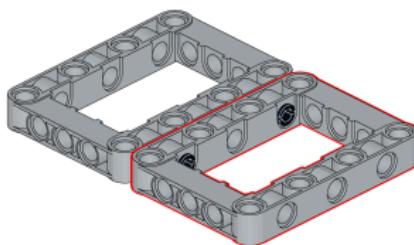
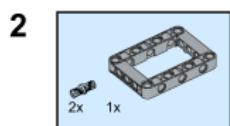
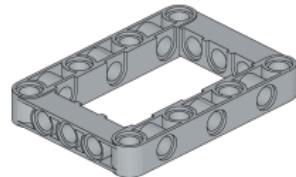
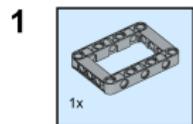
[Joystick bit](#)

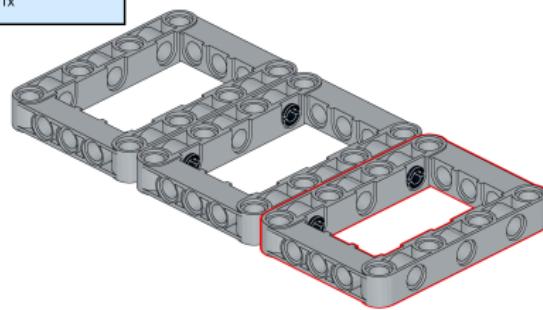
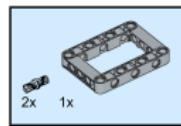
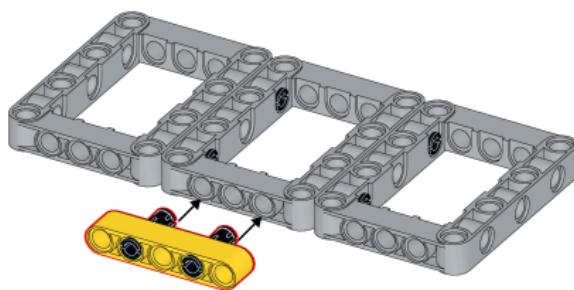
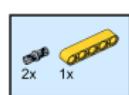
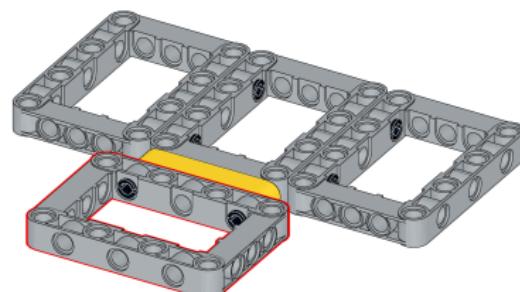
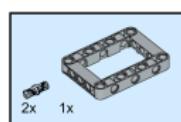
10.3. Materials Required

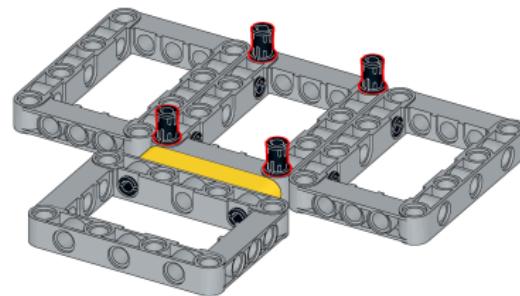
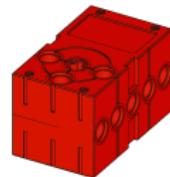
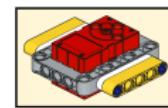
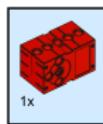
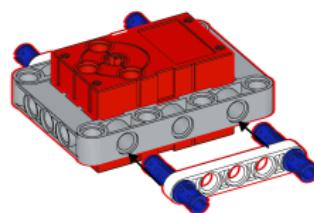
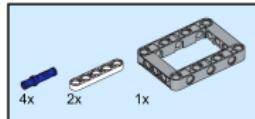


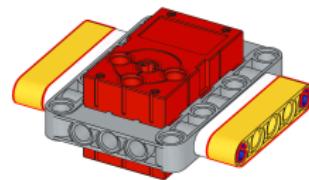
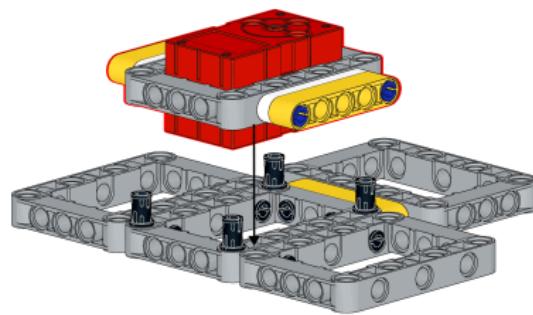
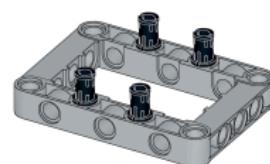
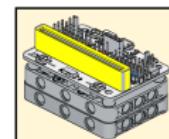
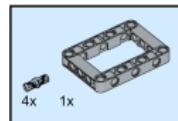
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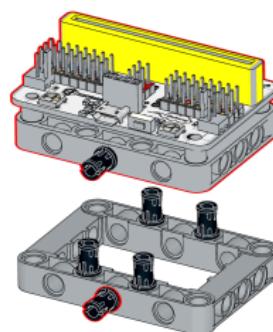
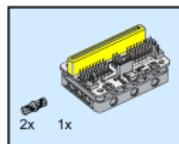
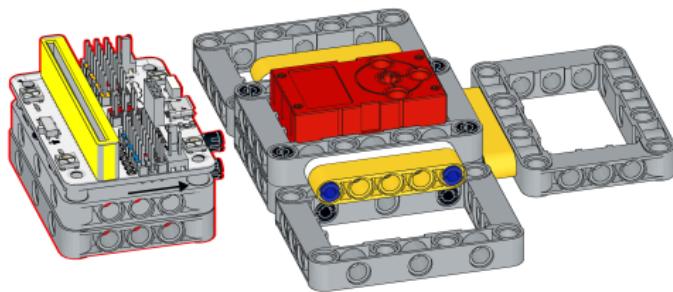
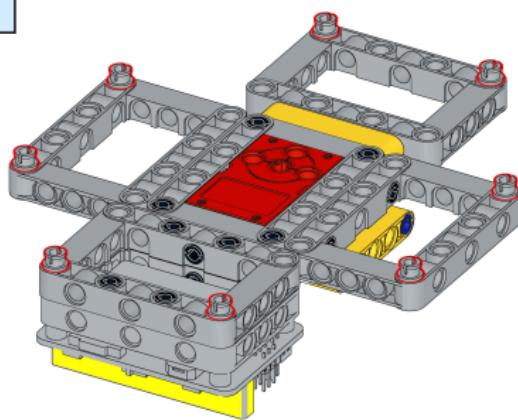
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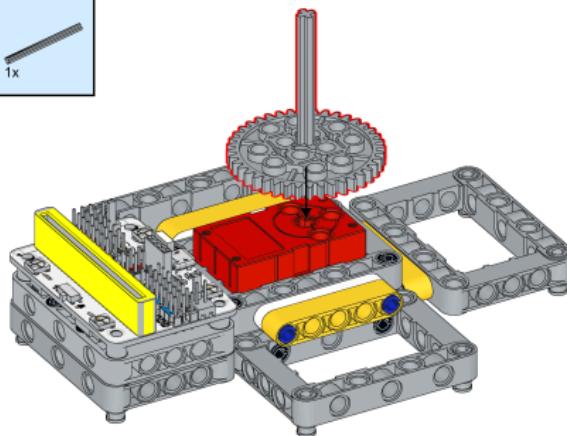
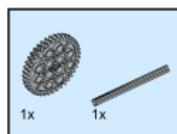
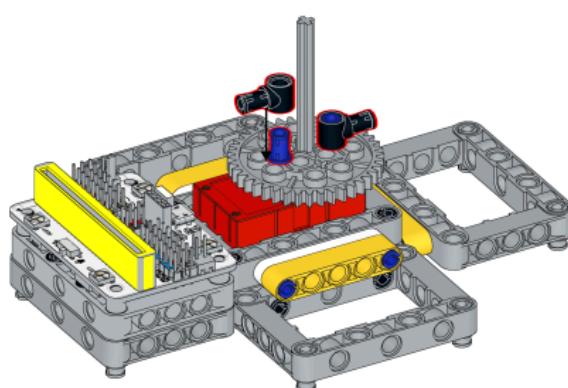
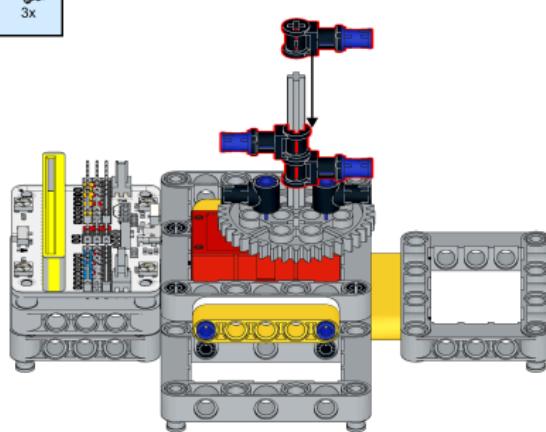


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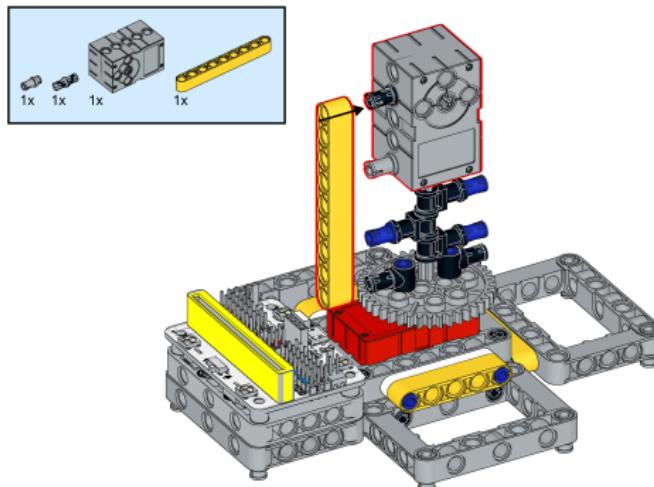
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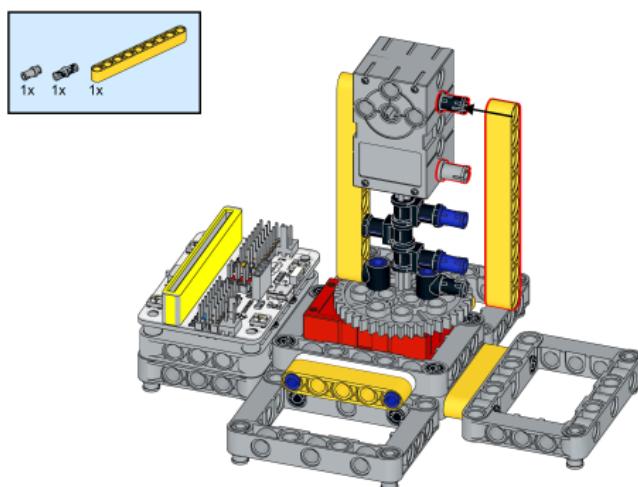
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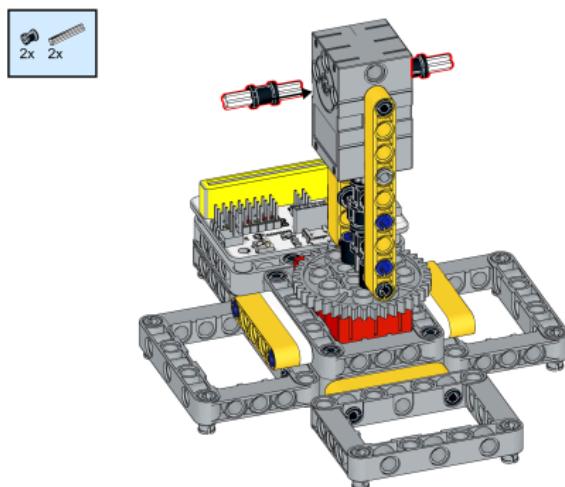
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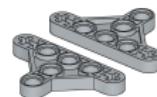
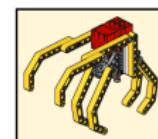
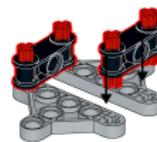
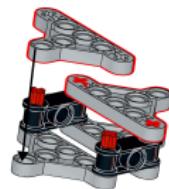


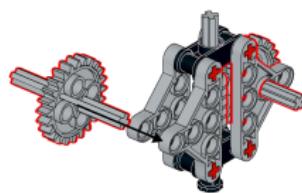
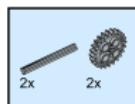
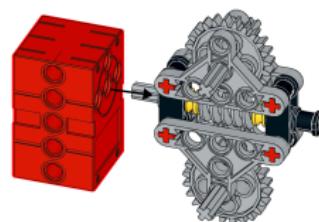
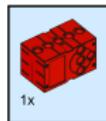
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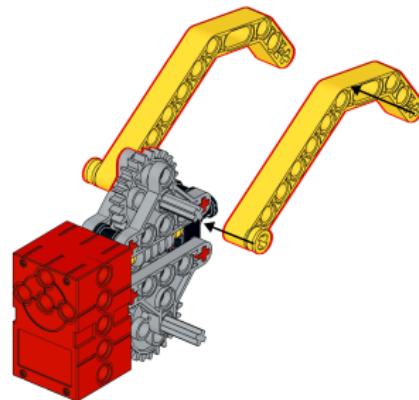
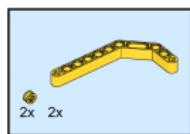
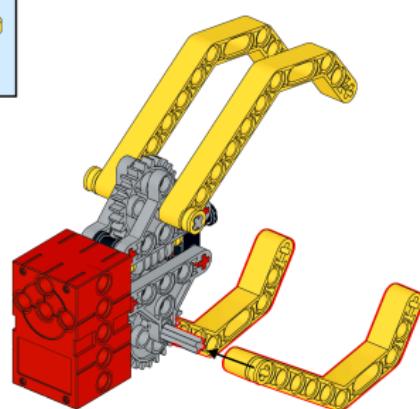
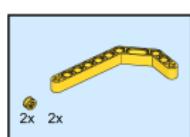
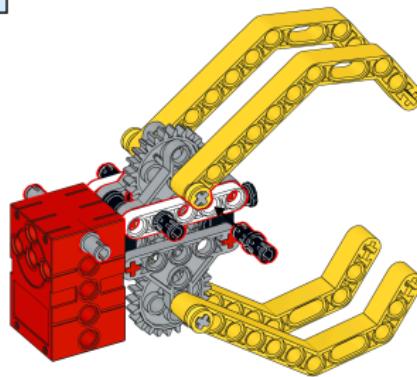
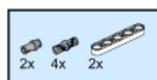


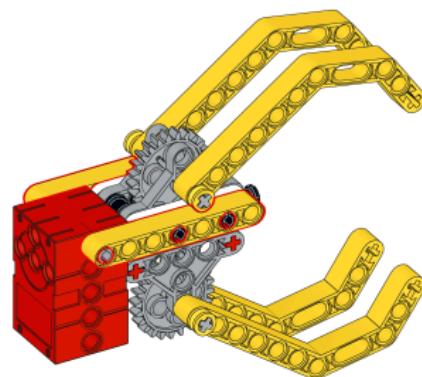
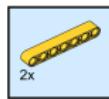
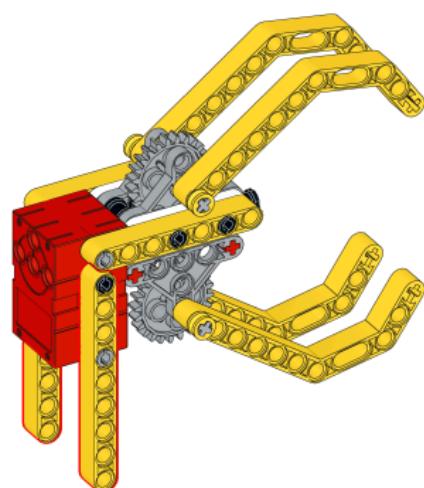
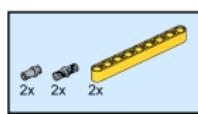
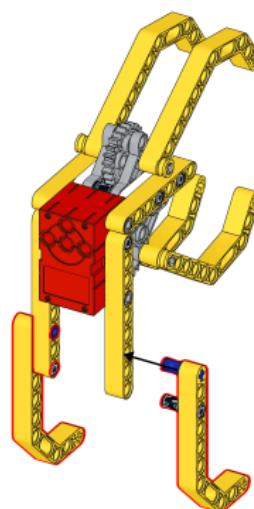
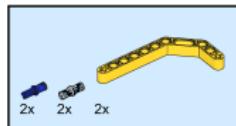
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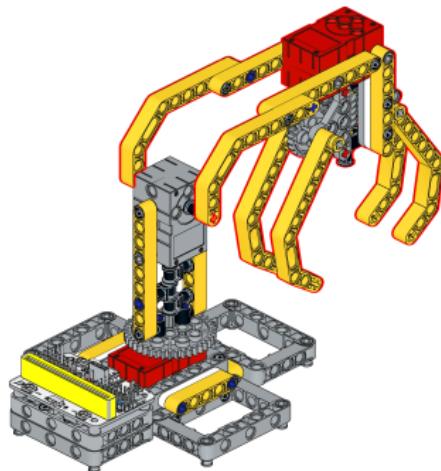
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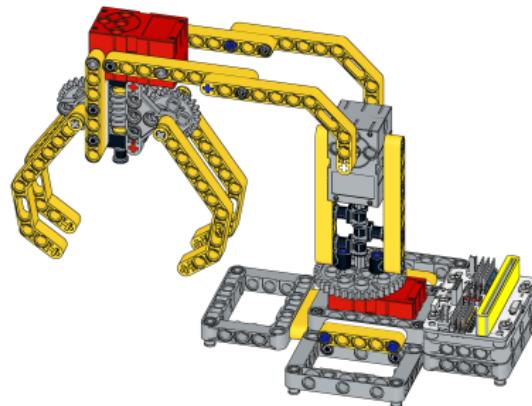
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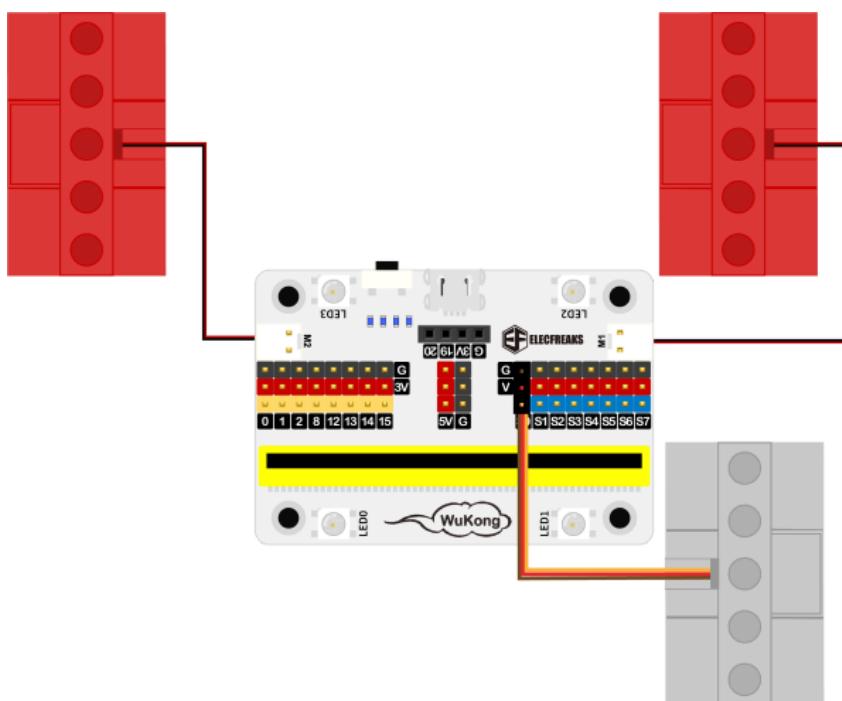


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10.5. Hardware Connection

Connect two [motors](#) to M1 and M2, the [servo](#) to S0 ports on [Wukong breakout board](#).



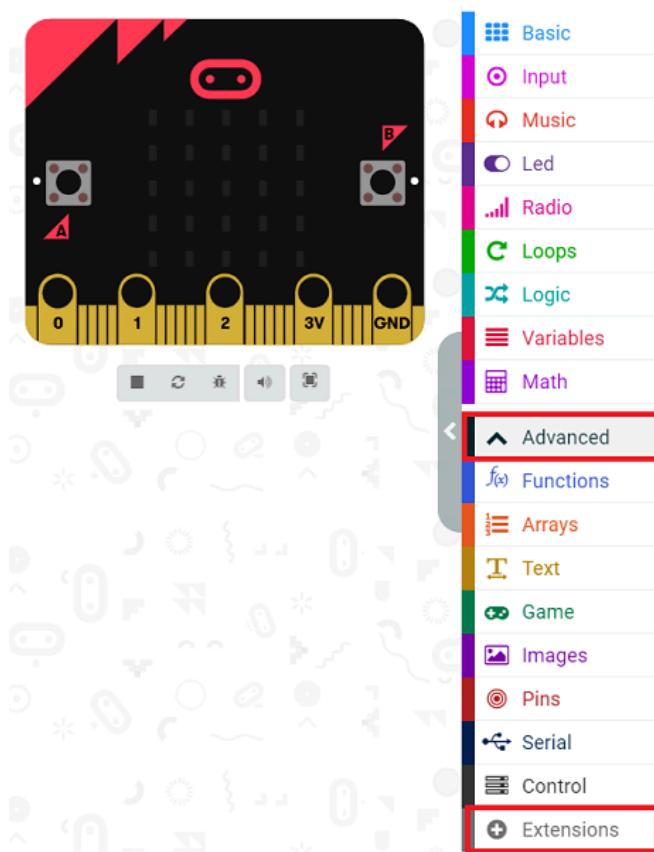
10.6. Software Platform

[MakeCode](#)

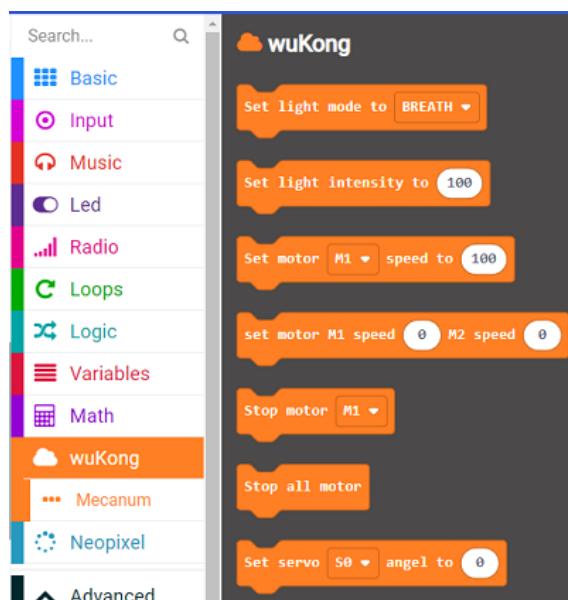
10.7. Coding

Add extensions

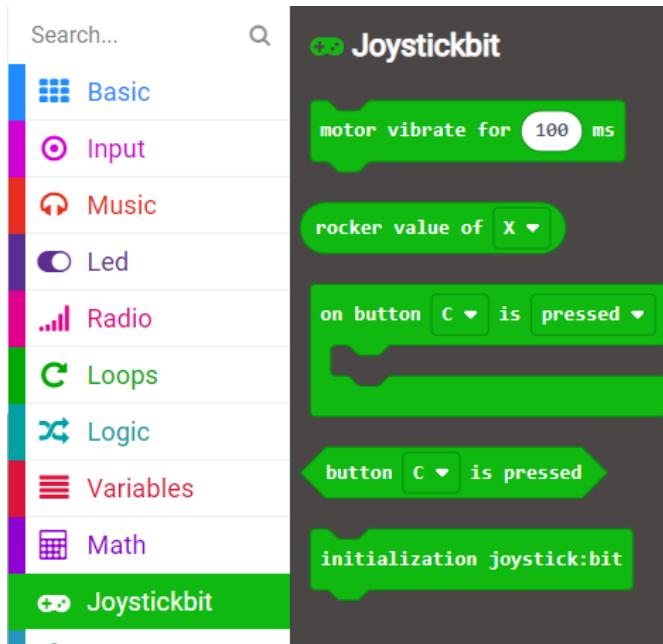
Click “Advanced” in the MakeCode to see more choices.



Search with Wukong in the dialogue box to download it.

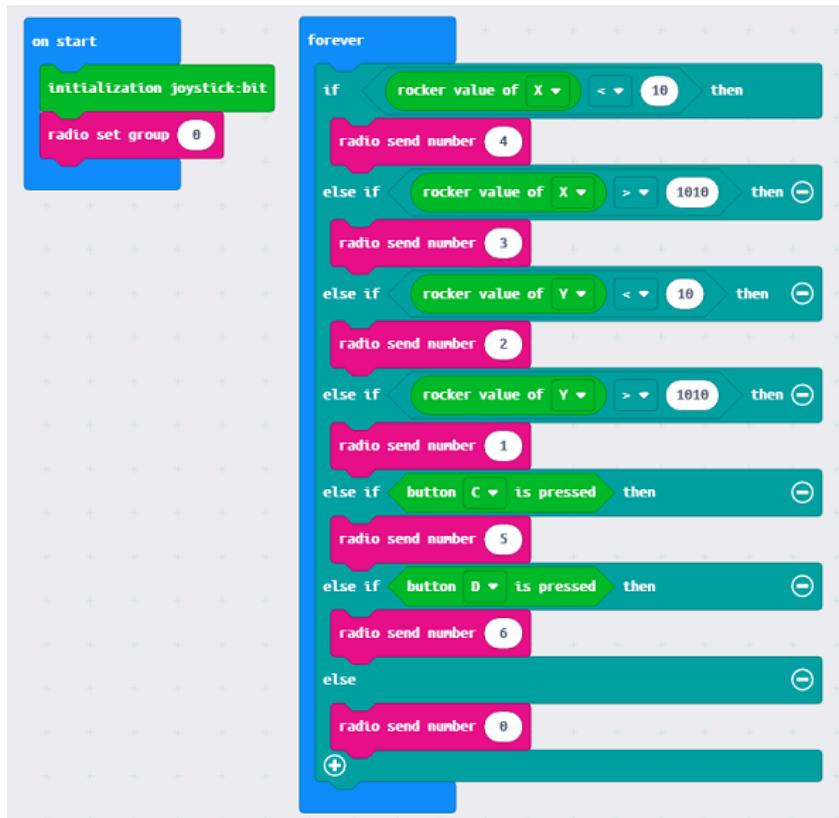


Search with joystickbit in the dialogue box to download it.



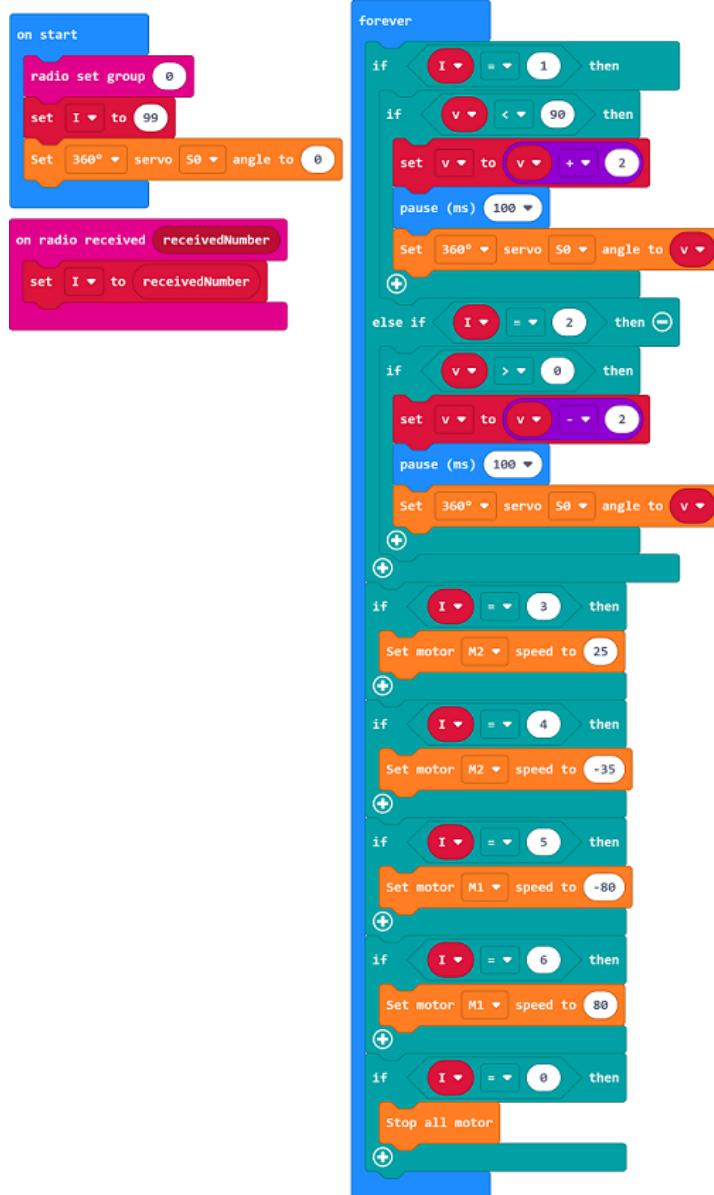
Program

For Joystick:bit:



Link:https://makecode.microbit.org/_3mK9cbULkLCy

For the robot arm:



Link:https://makecode.microbit.org/_92hgjPE9Kdec

Result

Control the robot arm with the Joystick:bit, the left and right direction of the handle rocker controls the rotation of the robot arm to the left and right, the up and down direction of the handle rocker controls the rise and fall of the robot arm, the C button controls the clamping of the robot arm, and the D button controls the release of the robot arm clamp.

By ELECFREAKS Team

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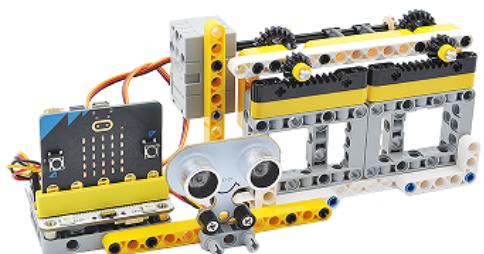
Case 09: Automatic Doors

Contents

- [11.1. Purpose](#)
- [11.2. Link:](#)
- [11.3. Materials Required](#)
- [11.4. Bricks build-up](#)
- [11.5. Installation Methods of Hardwares](#)
- [11.6. Hardware Connection](#)
- [11.7. Software Platform](#)
- [11.8. Coding](#)

11.1. Purpose

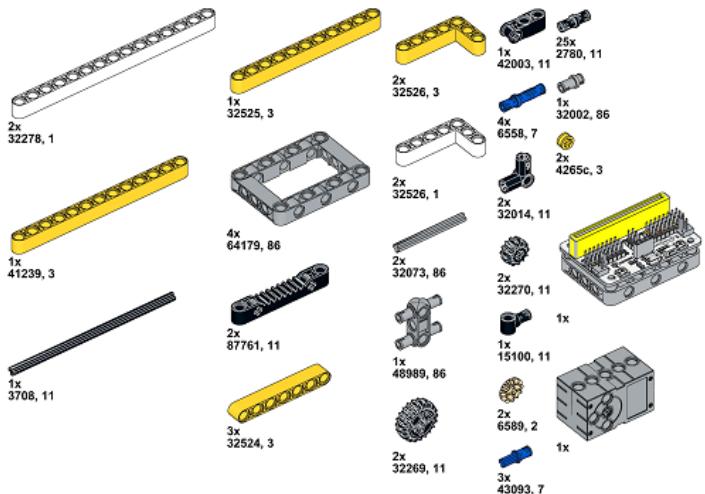
To make an automatic door.



11.2. Link:

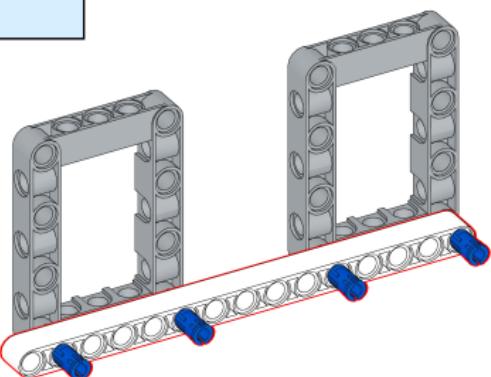
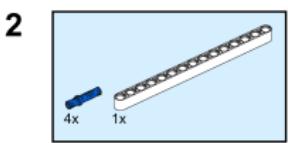
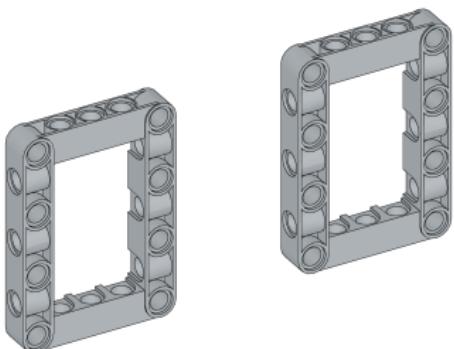
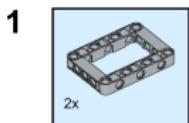
[micro:bit Wonder Building Kit](#)

11.3. Materials Required

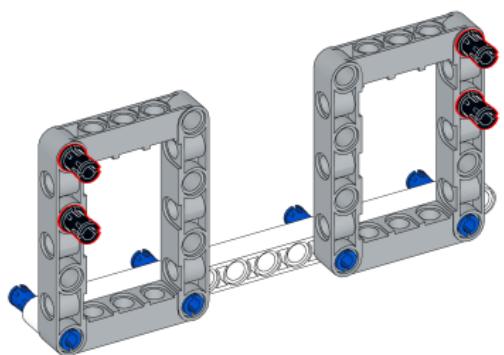


Video link: <https://youtu.be/JimDF7ArSjQ>.

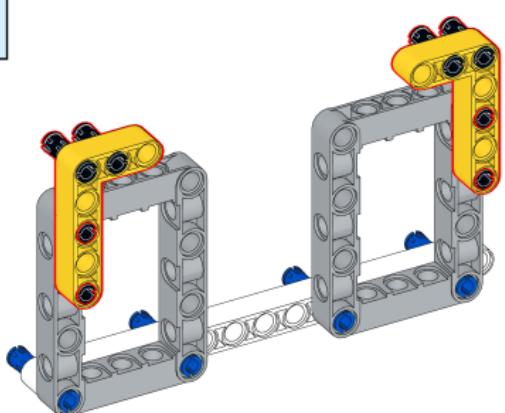
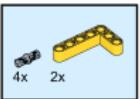
11.4. Bricks build-up



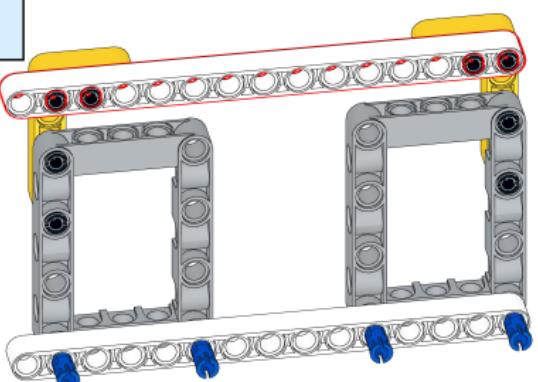
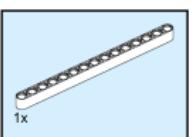
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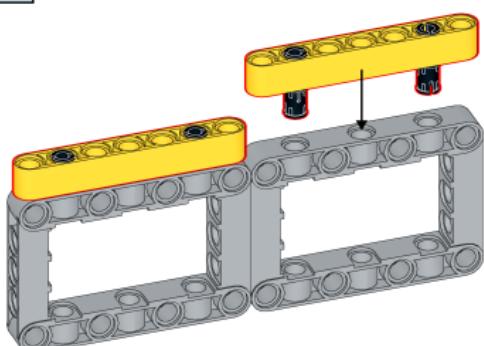
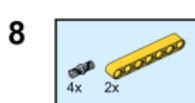
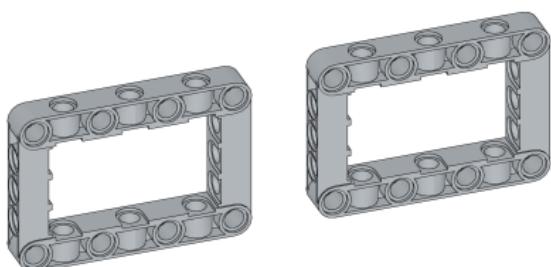
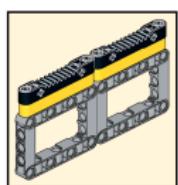
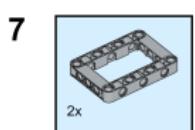
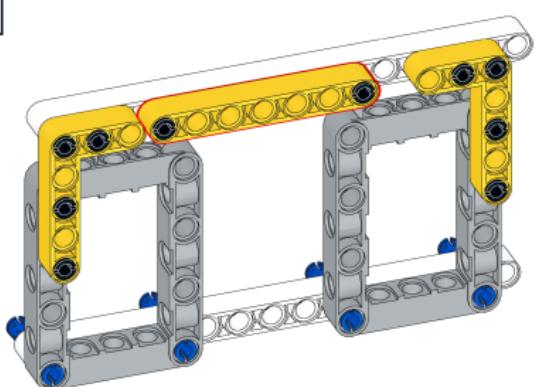
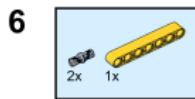


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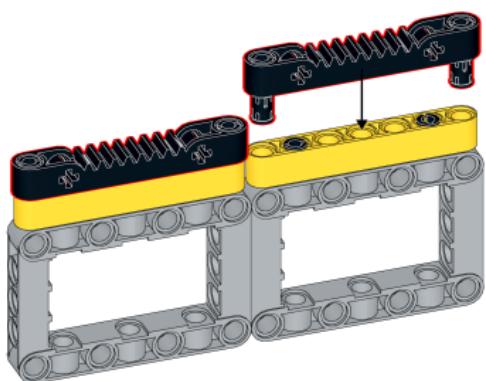


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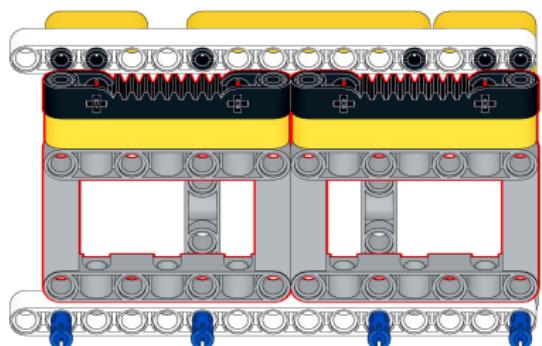




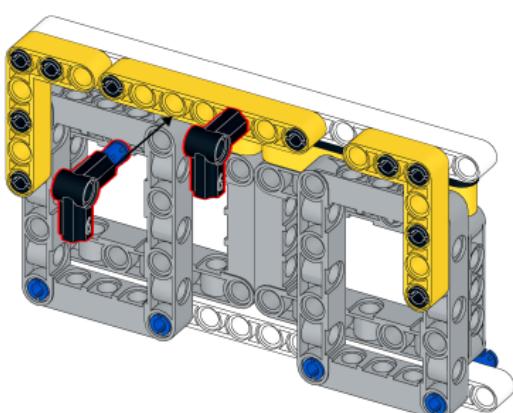
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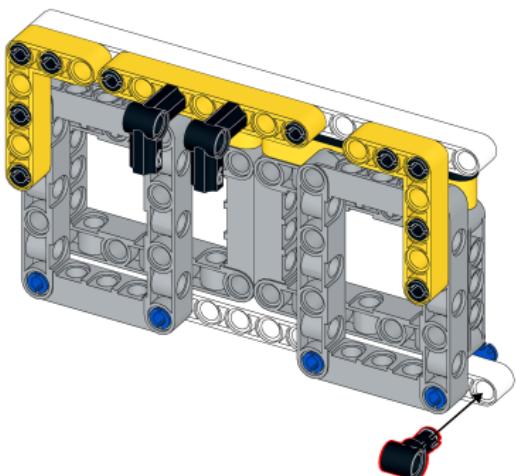
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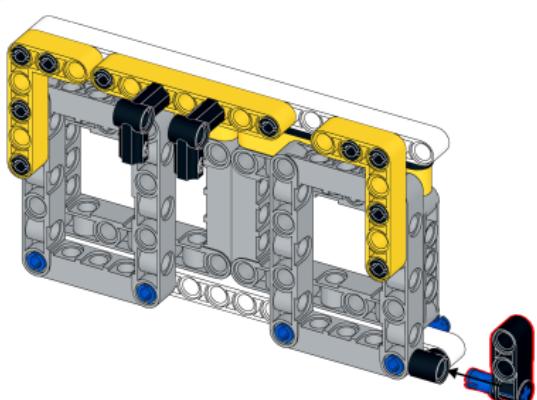
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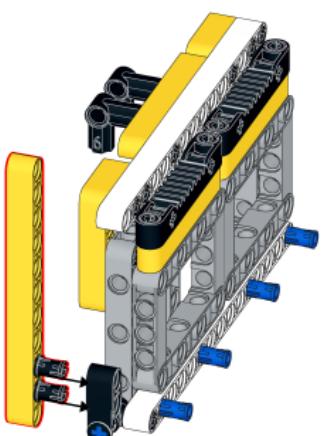
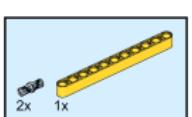
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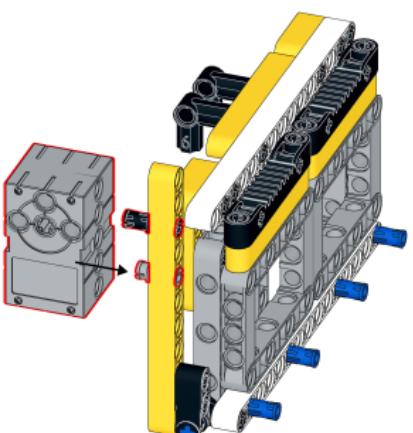
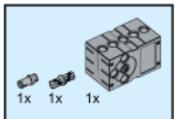
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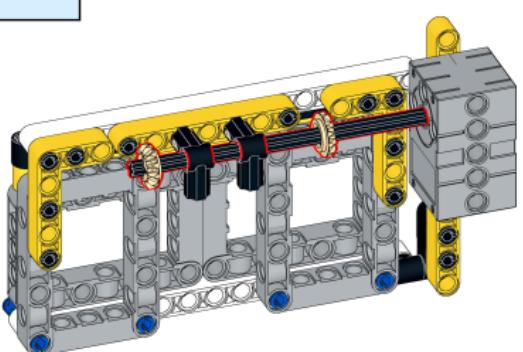
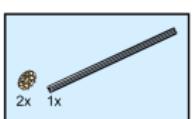
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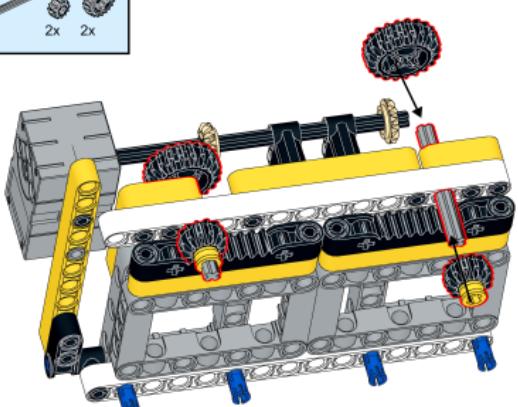
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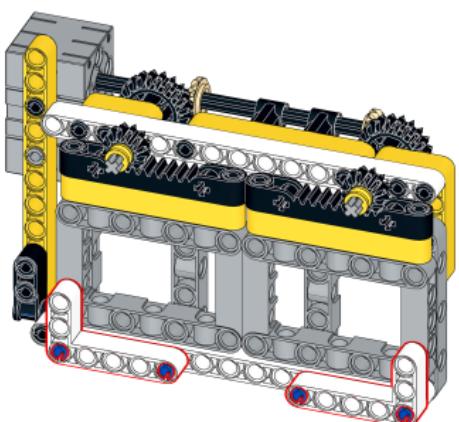
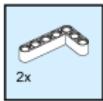
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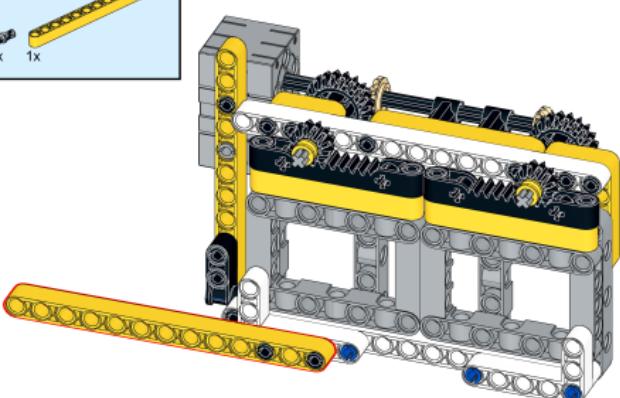
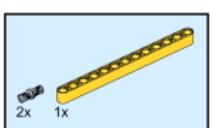
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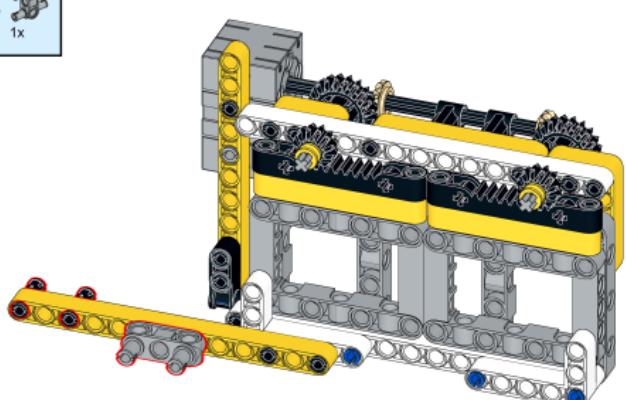
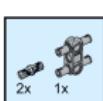
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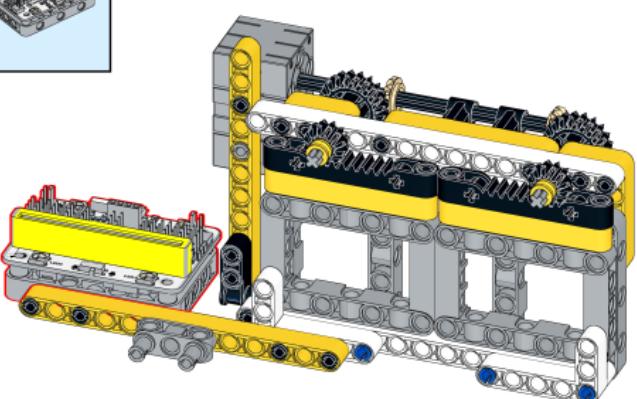
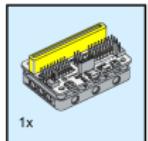
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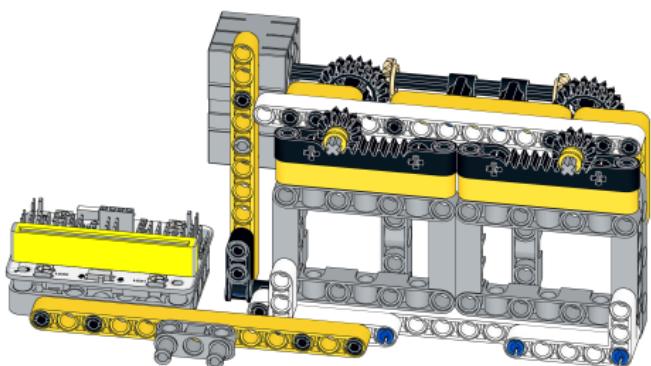
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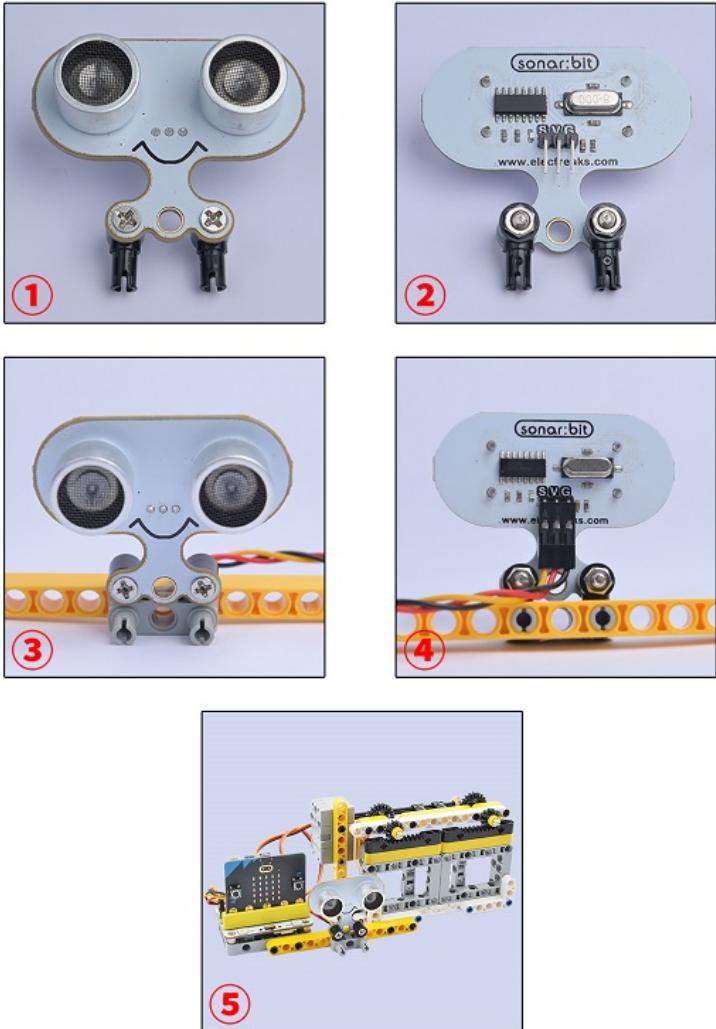
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11.5. Installation Methods of Hardwares

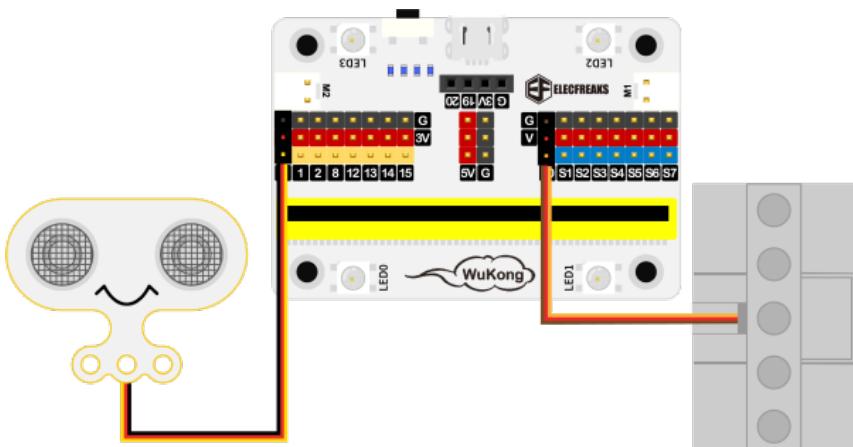
Install the sonar:bit with the bricks.

Sensor Connection Diagram



11.6. Hardware Connection

Connect a [sonar:bit](#) to P1 and the [servo](#) to S0 port on [Wukong breakout board](#).



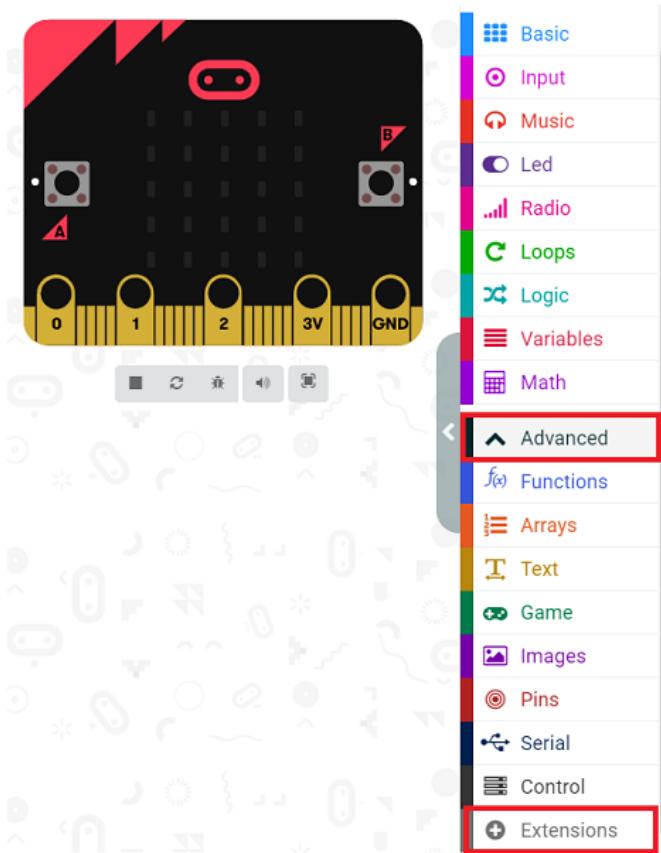
11.7. Software Platform

[MakeCode](#)

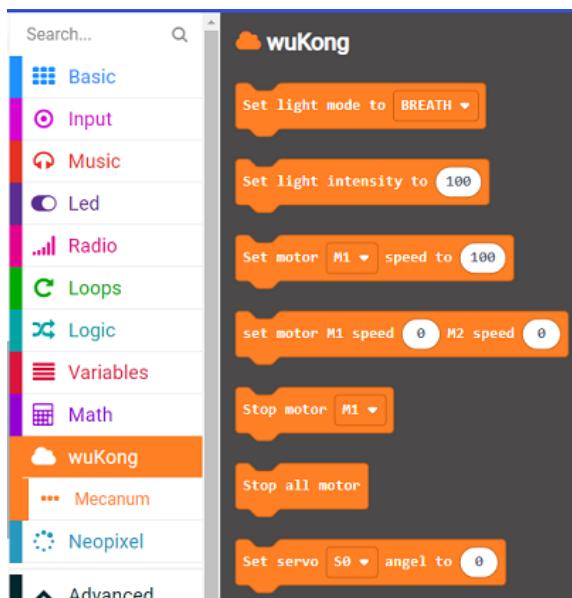
11.8. Coding

Add extensions

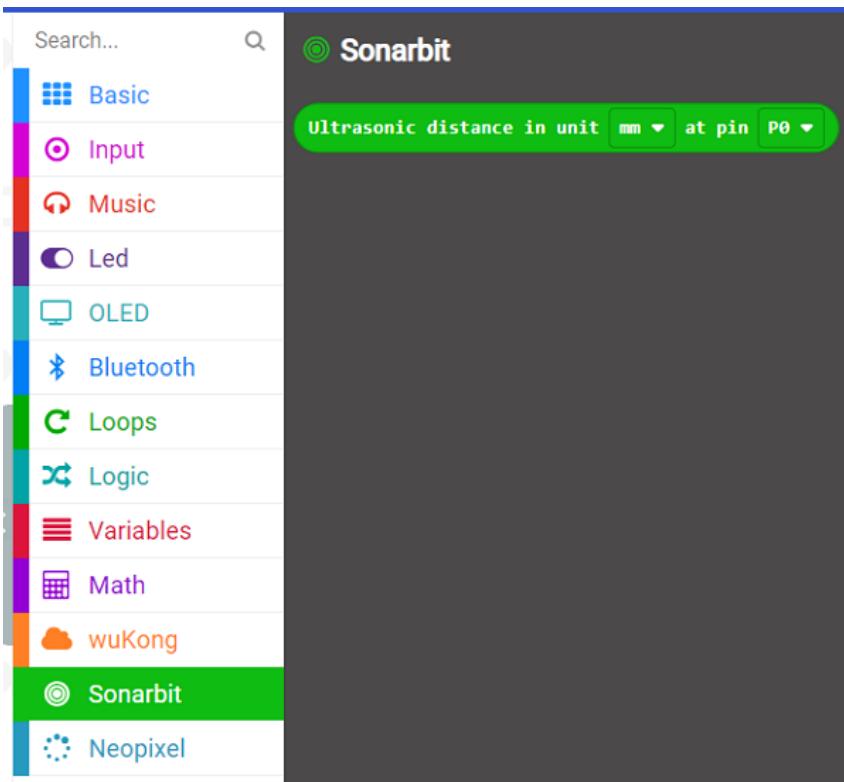
Click "Advanced" in the MakeCode to see more choices.



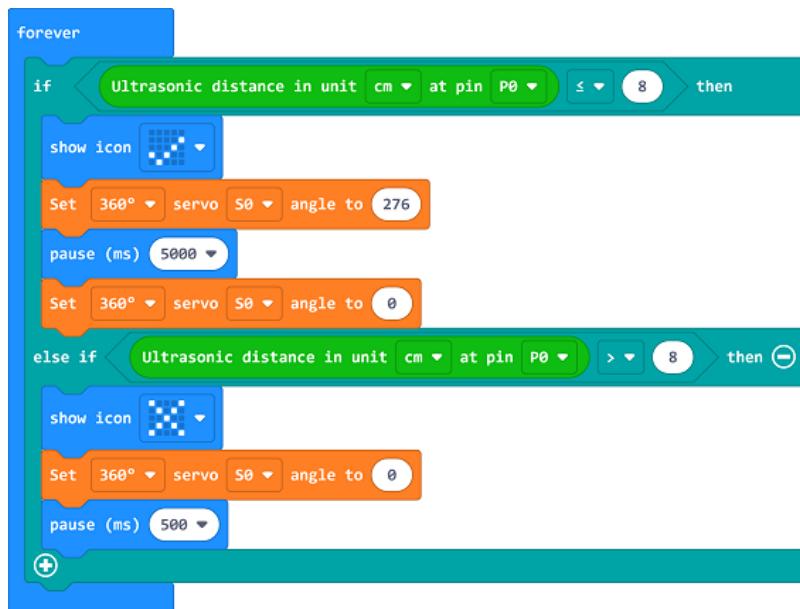
Search with Wukong in the dialogue box to download it.



Search with <https://github.com/elecfreaks/pxt-sonarbit> in the dialogue box to add the sonar:bit extension.



Program



Link:https://makecode.microbit.org/_eUPf4XEudVKY

Result

When the ultrasonic sensor detects someone passing by, it will display ✓ on the micro:bit and control the servo to open the door and close it automatically after 5 seconds, if the ultrasonic sensor does not detect anyone, it will keep displaying ✗ on the micro:bit and the door is closed.

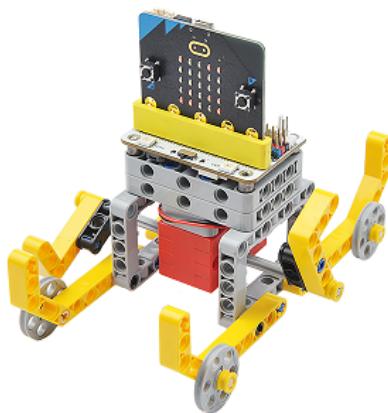
Case 10: Boating

Contents

- [12.1. Purpose](#)
- [12.2. Link](#)
- [12.3. Materials Required](#)
- [12.4. Bricks build-up](#)
- [12.5. Hardware Connection](#)
- [12.6. Software Platform](#)
- [12.7. Coding](#)

12.1. Purpose

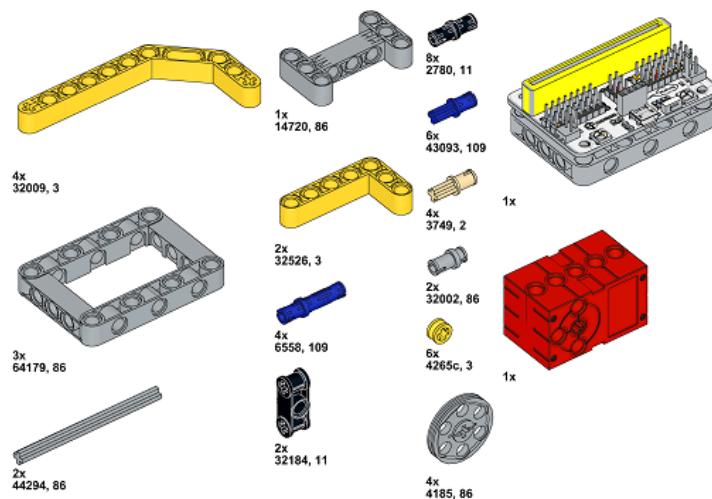
To make a boating car.



12.2. Link

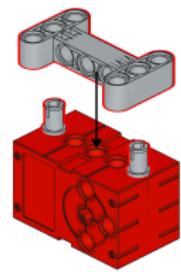
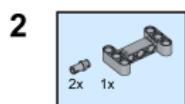
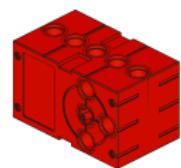
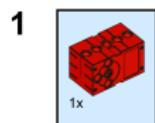
[micro:bit Wonder Building Kit](#)

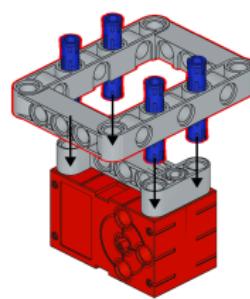
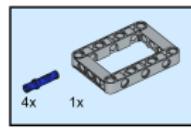
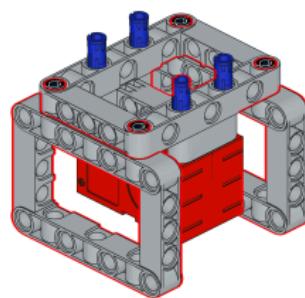
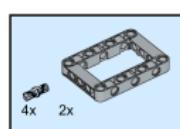
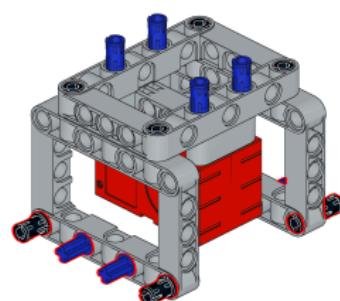
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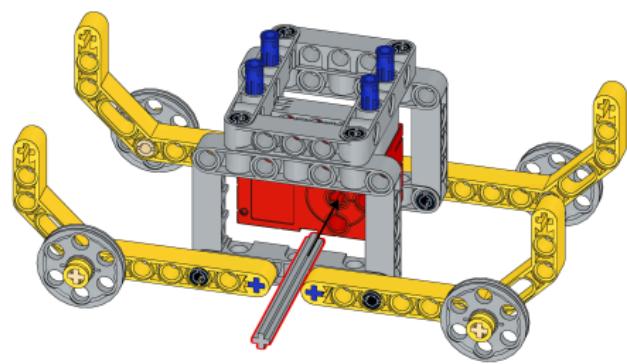
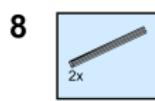
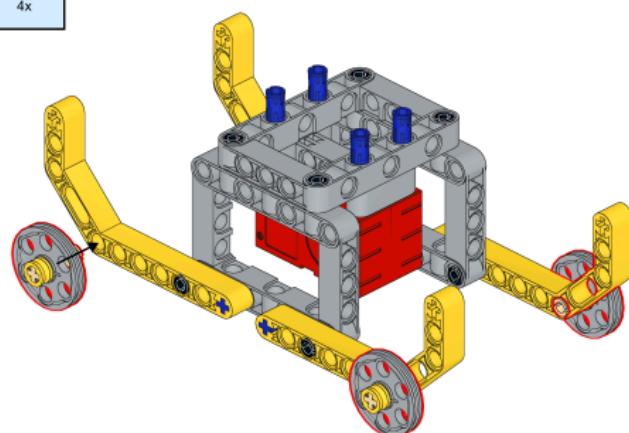
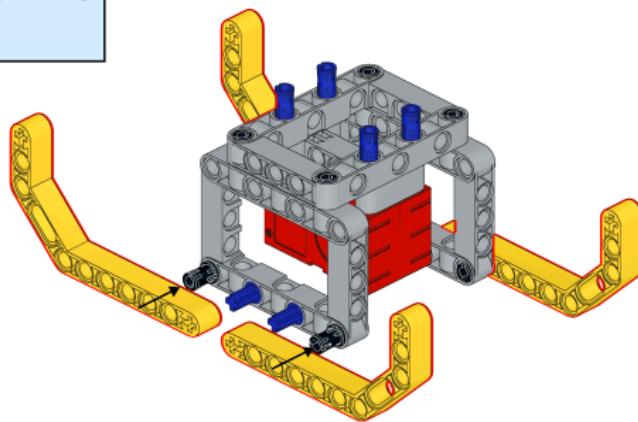
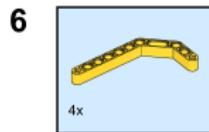


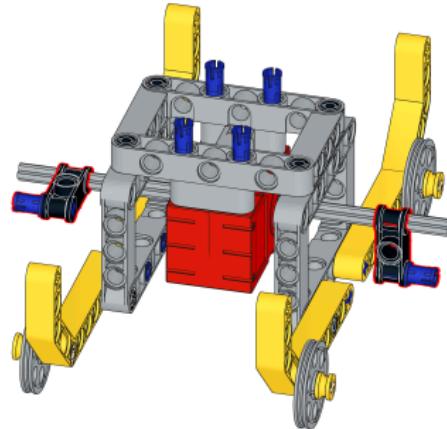
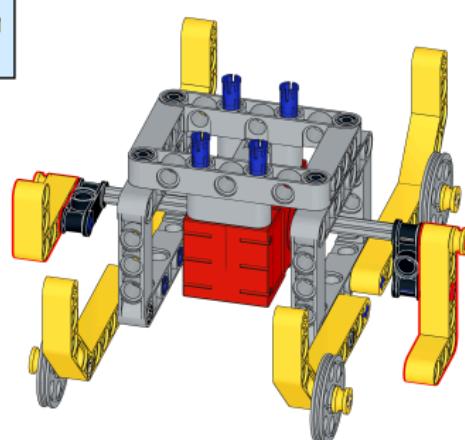
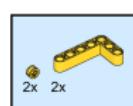
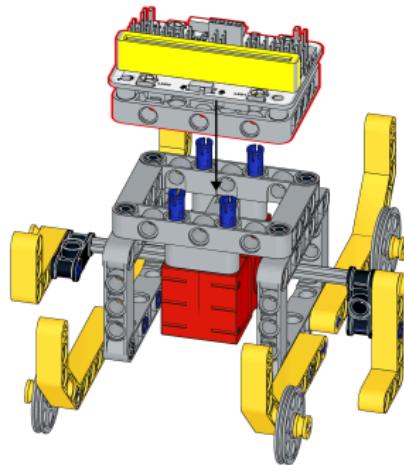
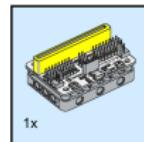
Video link: <https://youtu.be/mT2DdwNPeks>

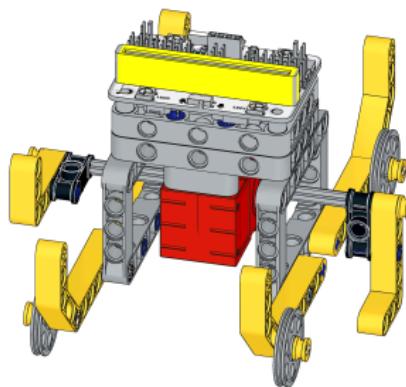
12.4. Bricks build-up



3**4****5**

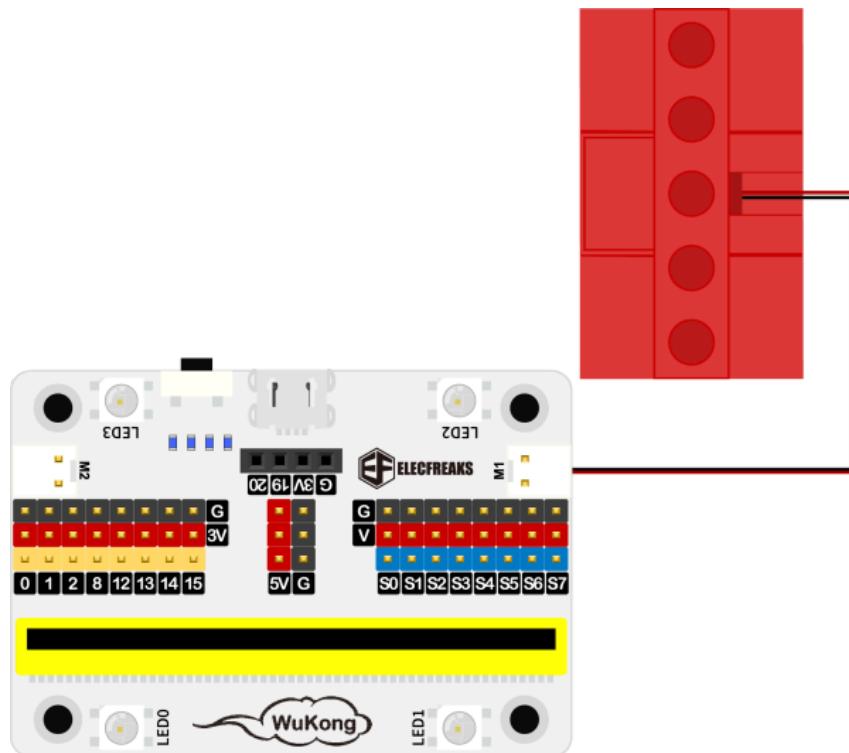


9**10****11**

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12.5. Hardware Connection

Connect a [motor](#) to M1 port on [Wukong breakout board](#).



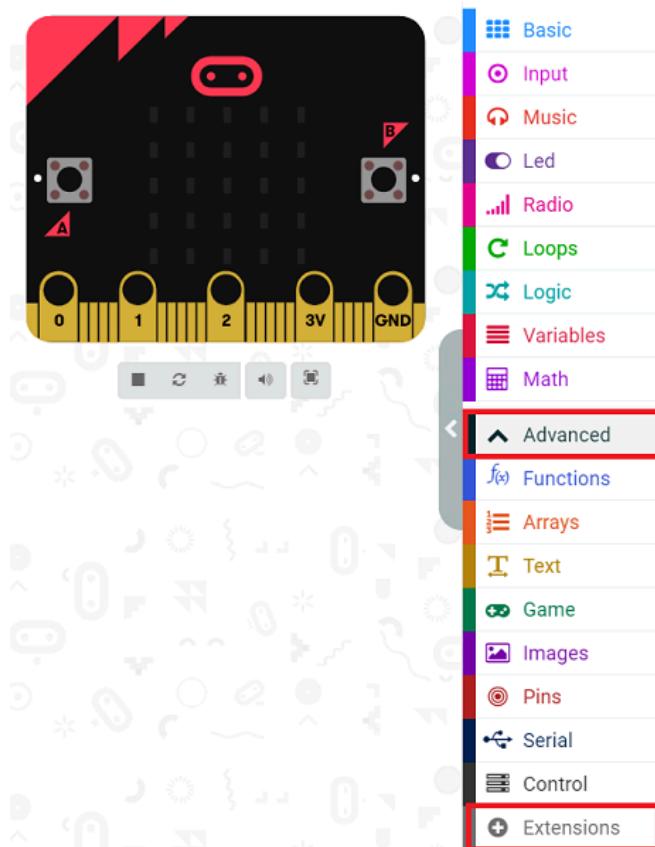
12.6. Software Platform

[MakeCode](#)

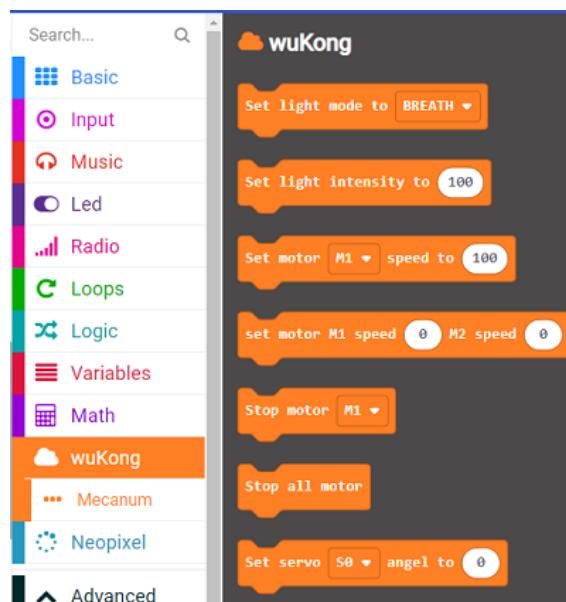
12.7. Coding

Add extensions

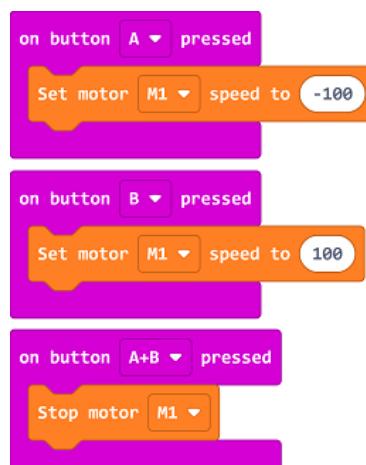
Click "Advanced" in the MakeCode to see more choices.



Search with Wukong in the dialogue box to download it.



Program



Link:https://makecode.microbit.org/_4wuFkYirTVqd

Result

When button A is pressed the rorer moves forward, when button B is pressed the rorer moves backward, when button A+B is pressed the rorer stops moving.

By ELECFREAKS Team

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Case 11: The Tiny Sky Wheel

Contents

- [13.1. Purpose](#)
- [13.2. Link:](#)
- [13.3. Materials Required](#)
- [13.4. Bricks build-up](#)
- [13.5. Hardware Connection](#)
- [13.6. Software Platform](#)
- [13.7. Coding](#)

13.1. Purpose

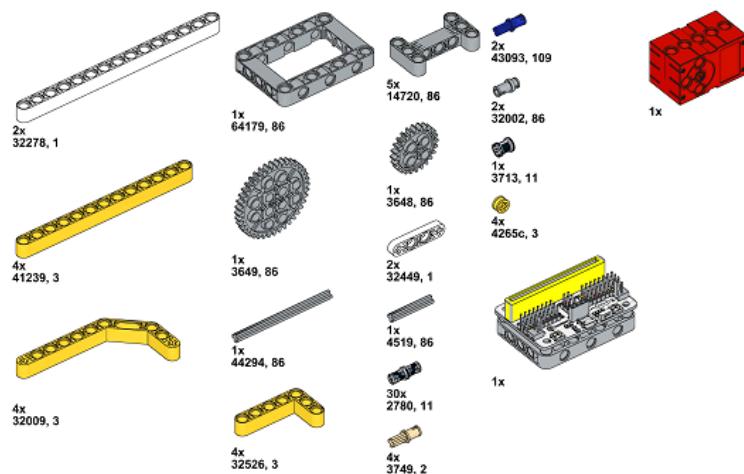
To make a tiny sky wheel.



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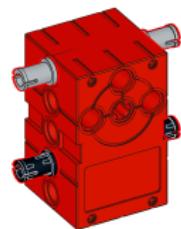
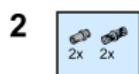
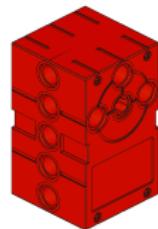
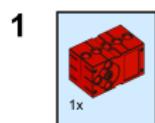
[micro:bit Wonder Building Kit](#)

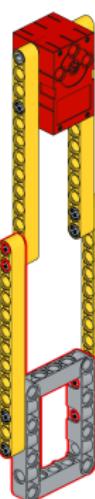
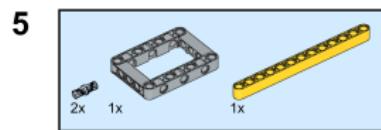
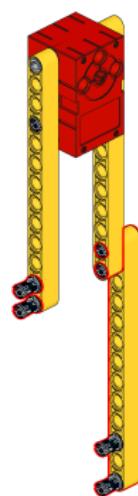
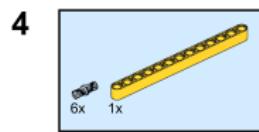
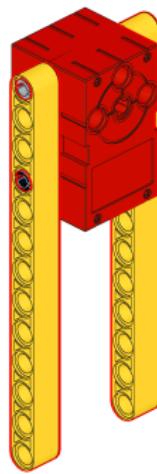
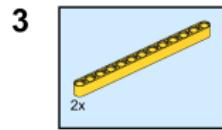
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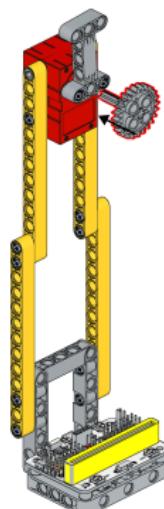
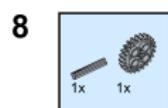
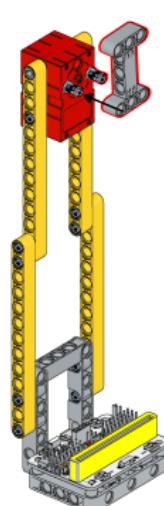
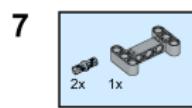
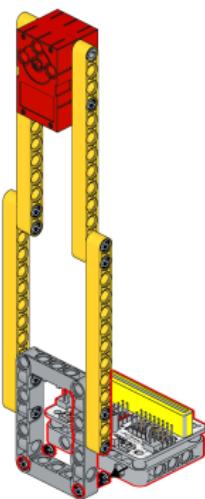
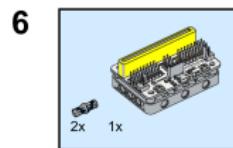


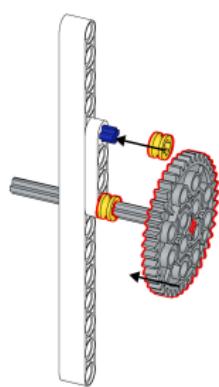
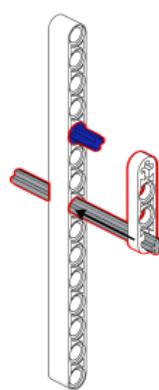
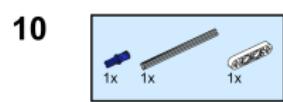
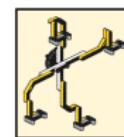
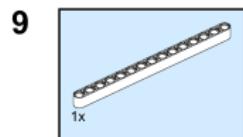
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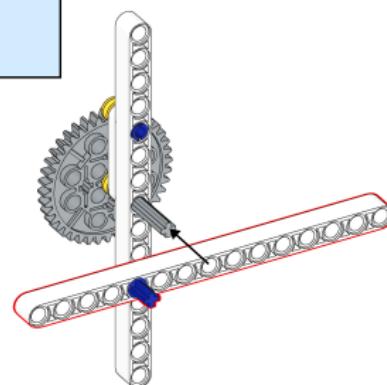
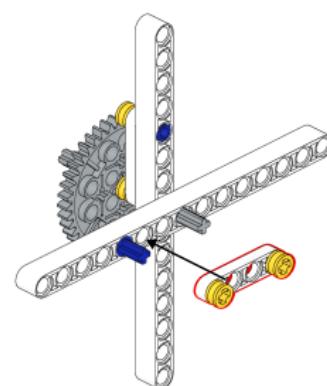
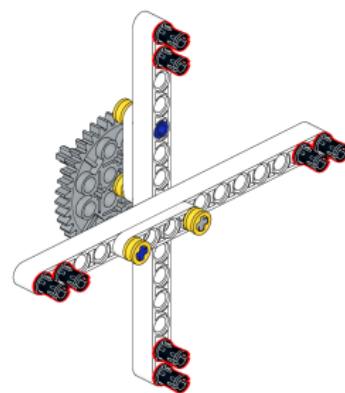
13.4. Bricks build-up

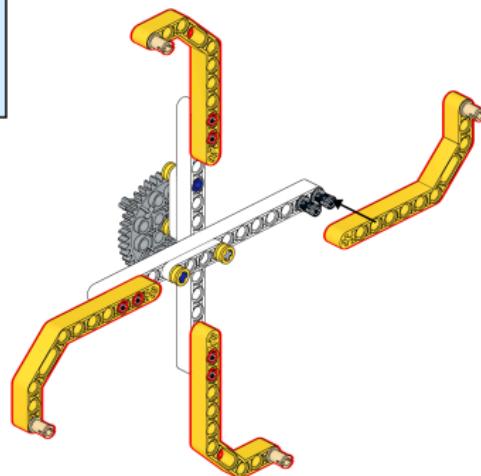
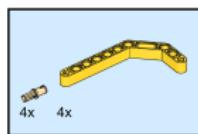
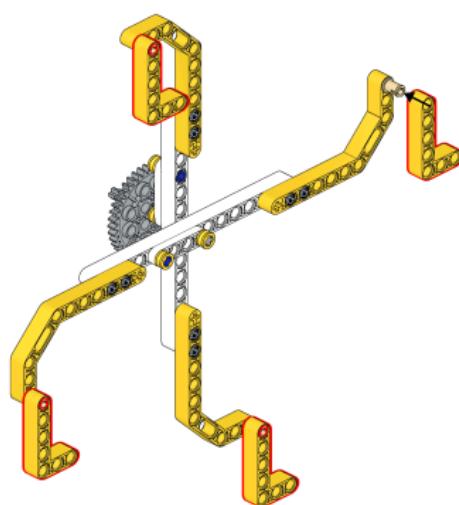
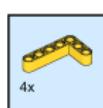
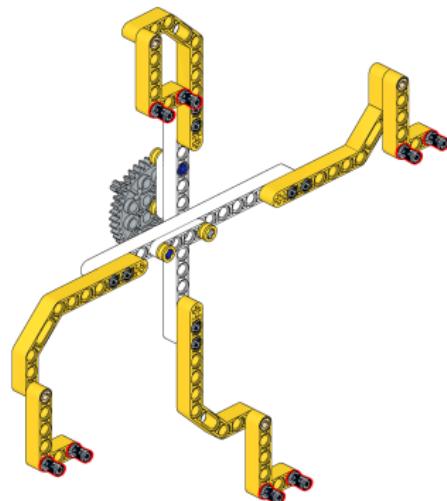


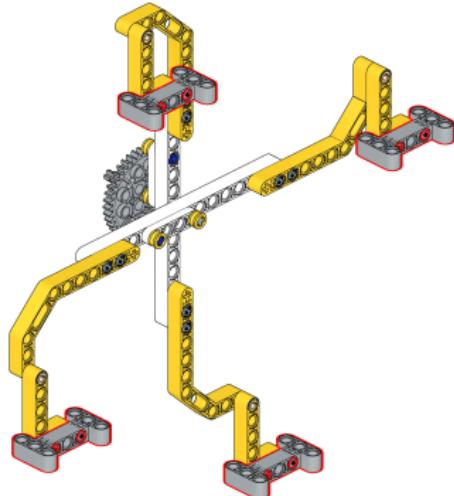
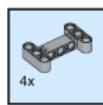
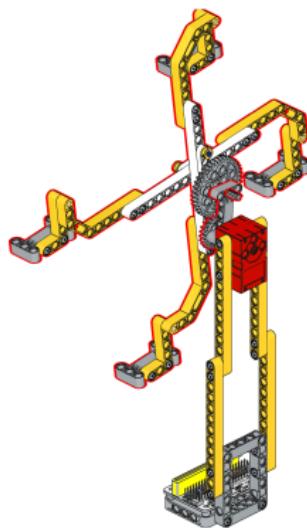
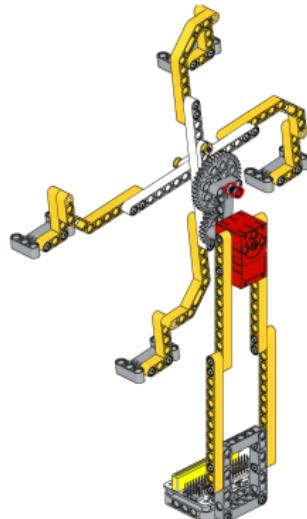






12**13****14**

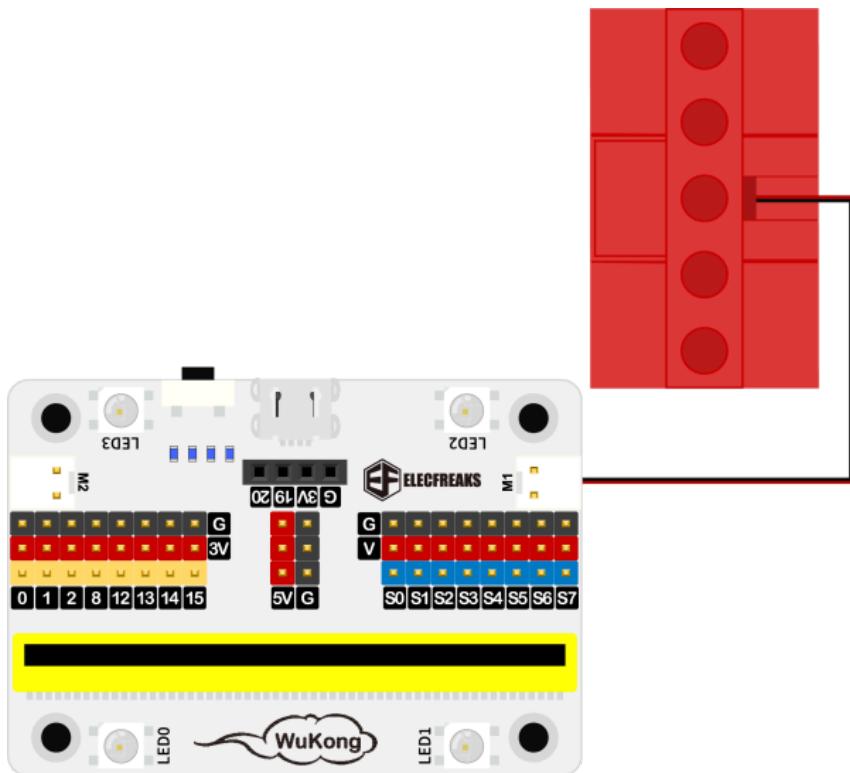
15**16****17**

18**19****20**

21

13.5. Hardware Connection

Connect a [motor](#) to M1 port on [Wukong breakout board](#).



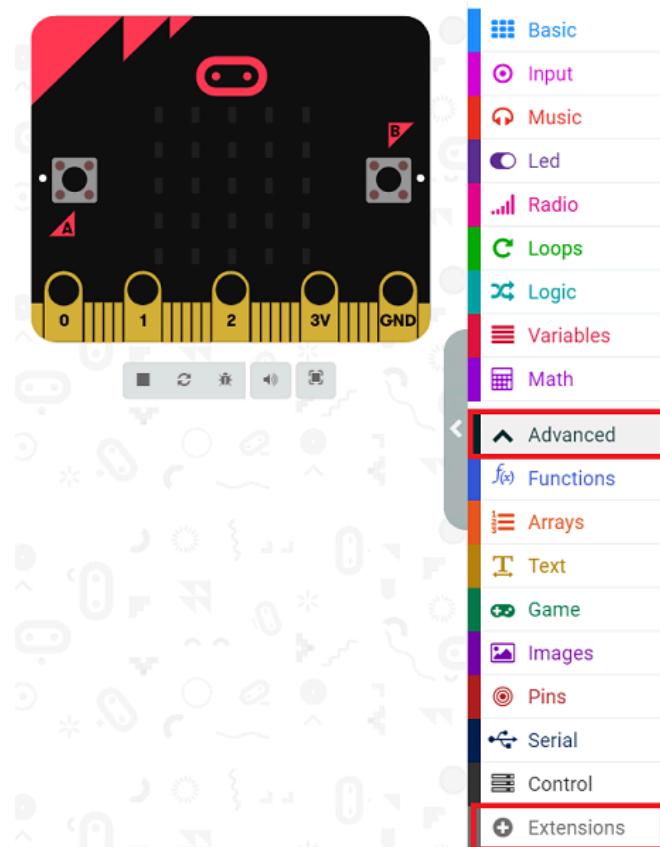
13.6. Software Platform

[MakeCode](#)

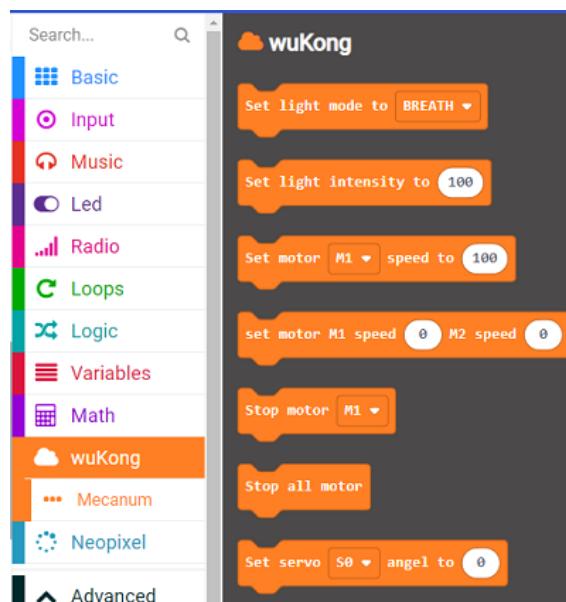
13.7. Coding

Add extensions

Click "Advanced" in the MakeCode to see more choices.



Search with Wukong in the dialogue box to download it.



Program

```

on button A pressed
  Set motor M1 speed to 100

on button B pressed
  Stop motor M1

```

Link: https://makecode.microbit.org/_VuRXgH1y30yp

Result

When button A is pressed the tiny sky wheel starts to rotate and when button B is pressed it stops rotating.

By ELECFREAKS Team

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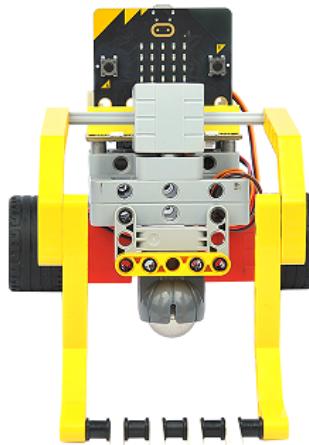
Case 12: The Forklift

Contents

- [14.1. Purpose](#)
- [14.2. Link](#)
- [14.3. Materials Required](#)
- [14.4. Bricks build-up](#)
- [14.5. Hardware Connection](#)
- [14.6. Software Platform](#)
- [14.7. Coding](#)

14.1. Purpose

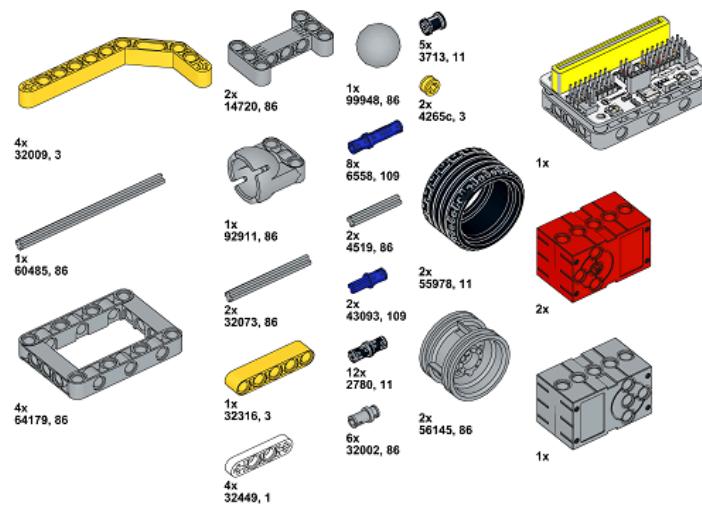
To make a forklift.



14.2. Link

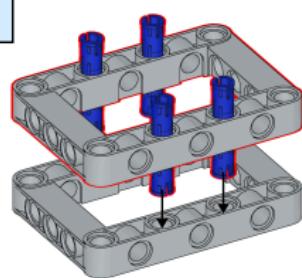
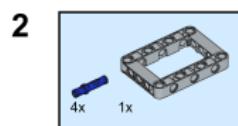
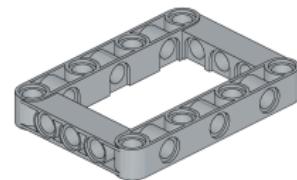
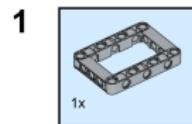
[micro:bit Wonder Building Kit Joystick bit](#)

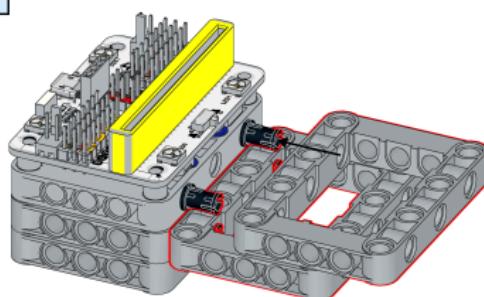
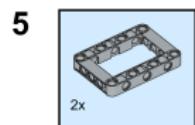
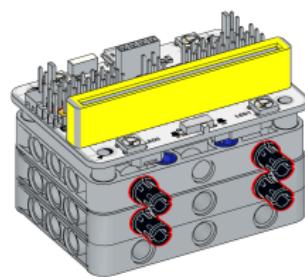
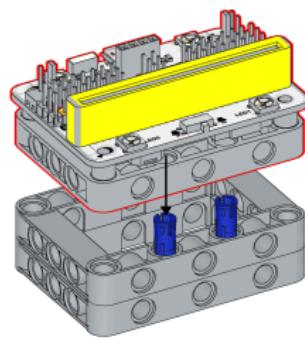
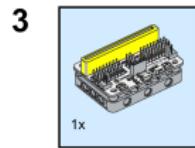
14.3. Materials Required



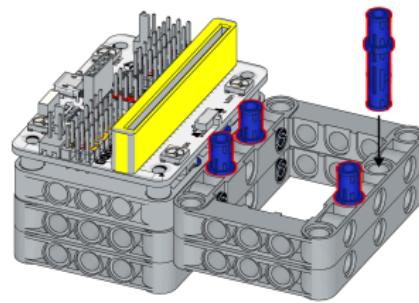
Video link: <https://youtu.be/PIhMVJYBMhM>

14.4. Bricks build-up

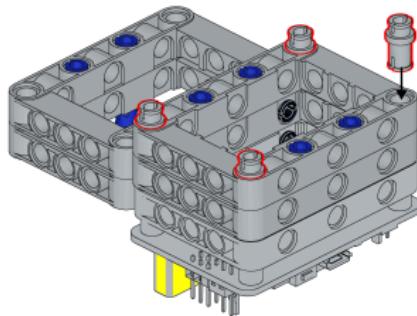


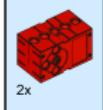


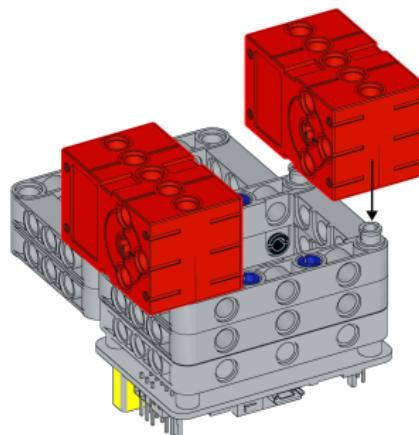
6 
4x

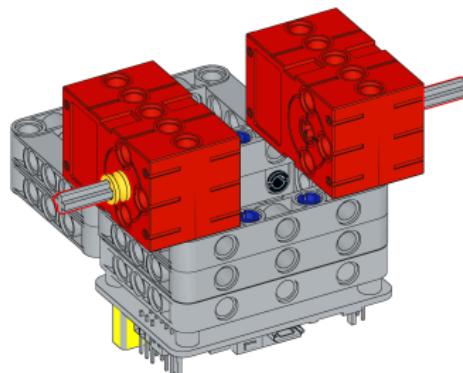
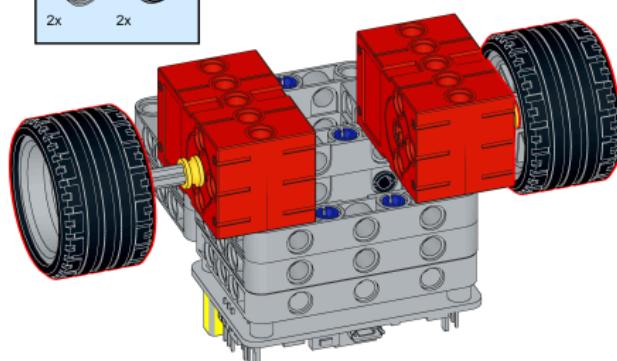
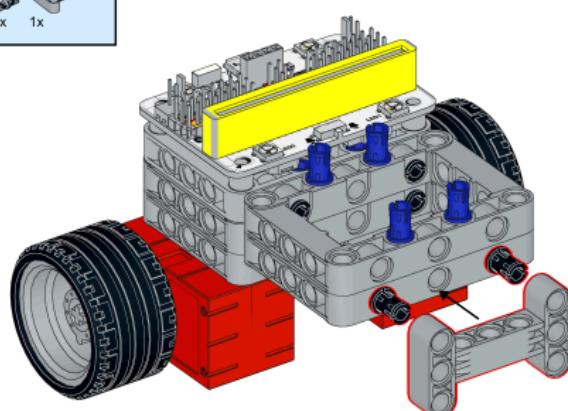
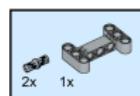


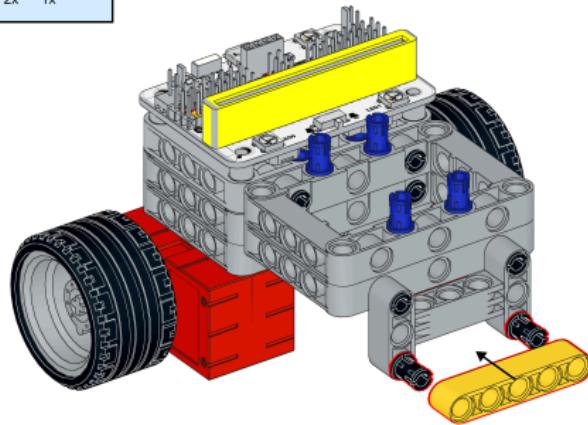
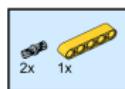
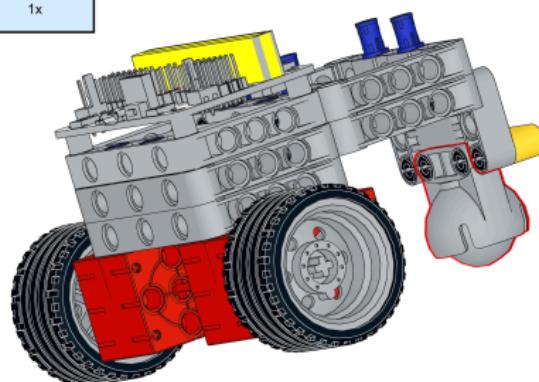
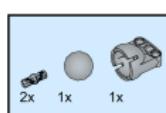
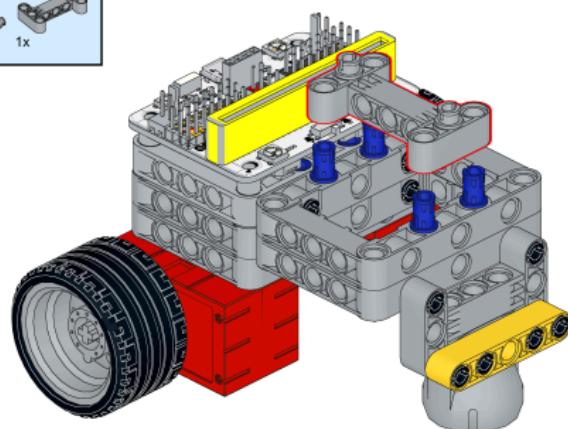
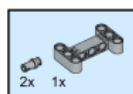
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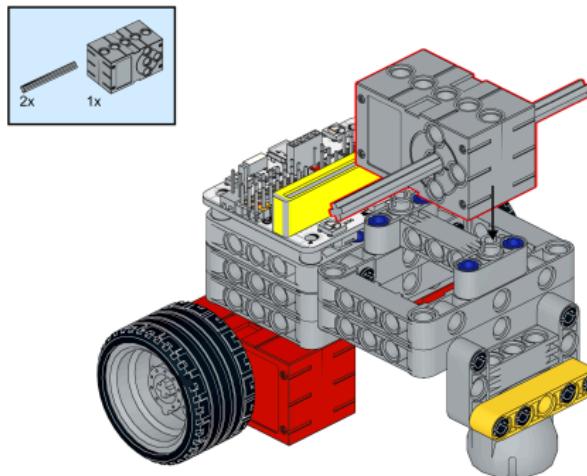
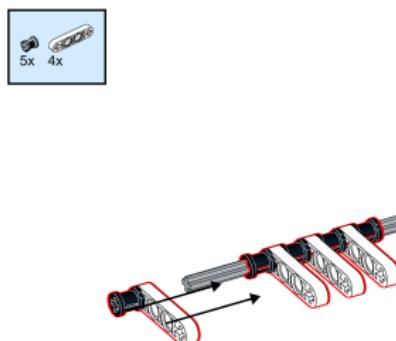


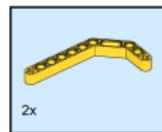
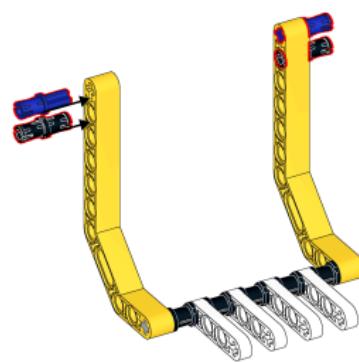
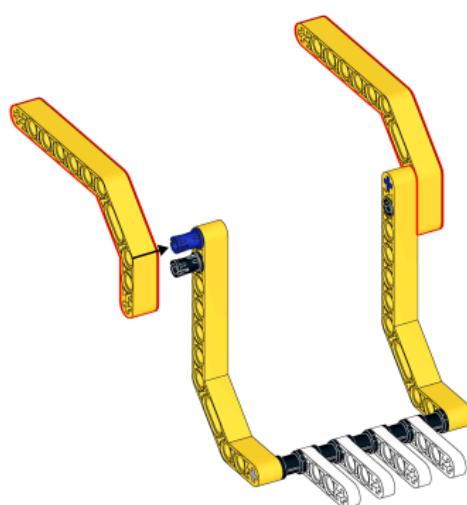
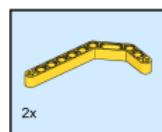
8 
2x



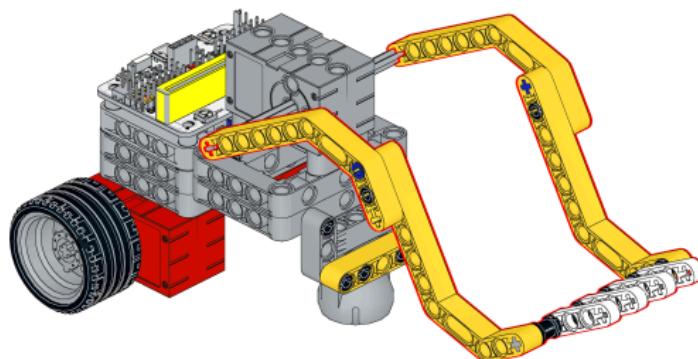
9**10****11**

12**13****14**

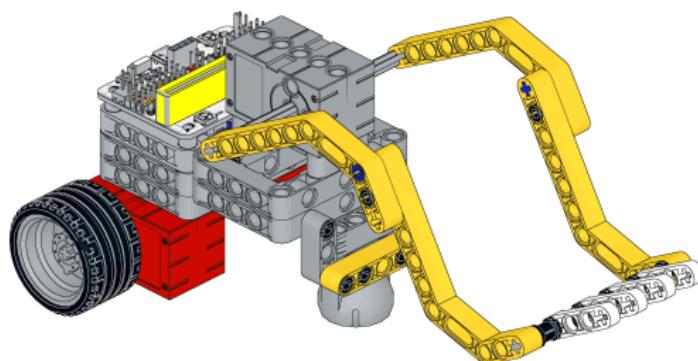
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18**19****20**

21

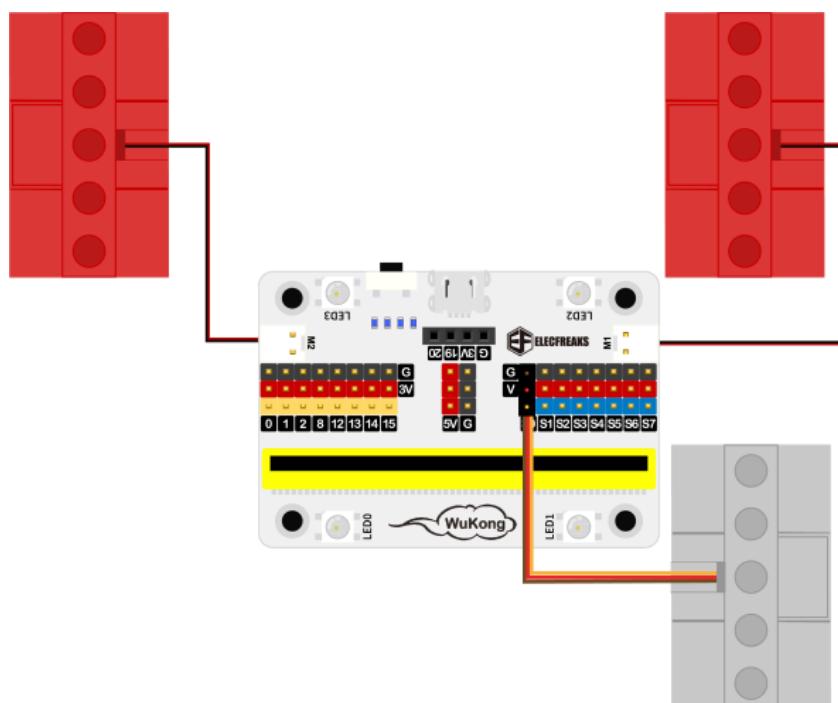


22



14.5. Hardware Connection

Connect two [motors](#) to M1 and M2, the [servo](#) to S0 ports on [Wukong breakout board](#).



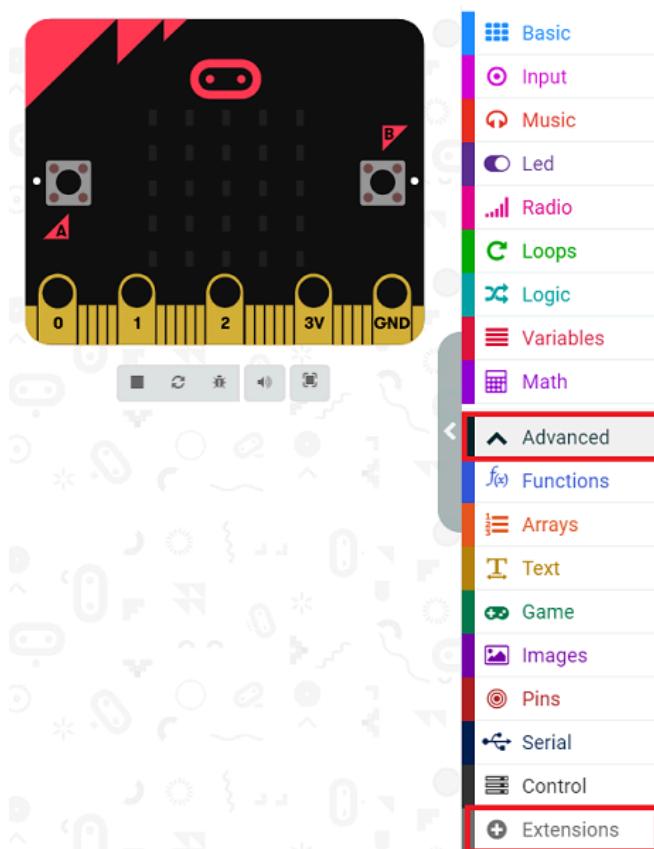
14.6. Software Platform

[MakeCode](#)

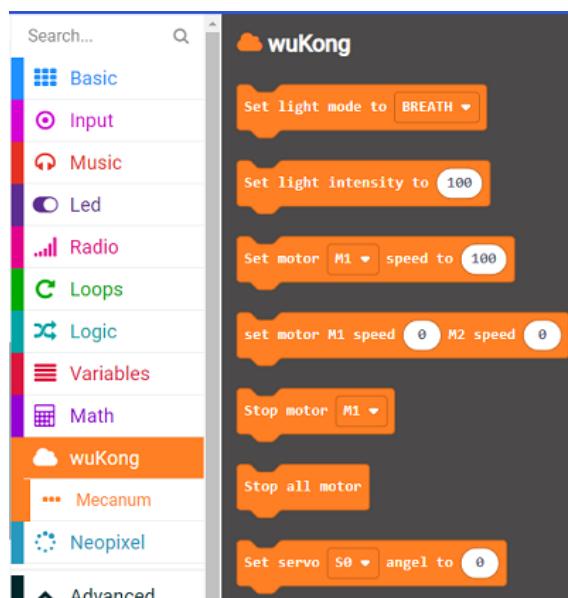
14.7. Coding

Add extensions

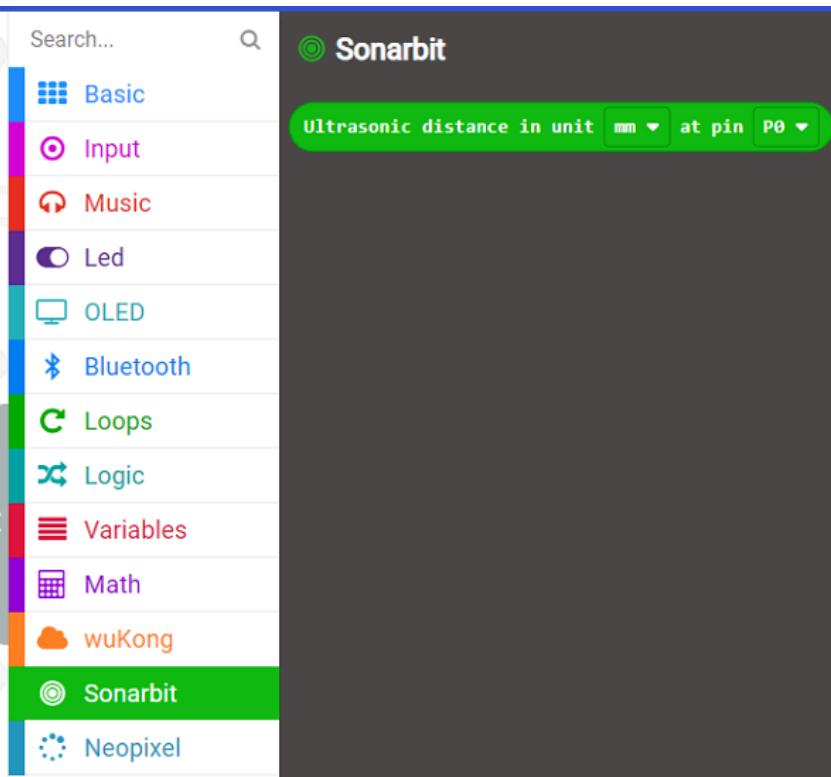
Click “Advanced” in the MakeCode to see more choices.



Search with Wukong in the dialogue box to download it.



Search with <https://github.com/elecfares/pxt-sonarbit> in the dialogue box to add the sonar:bit extension.



Program

For Joystick:bit:



The Scratch script starts with an **on start** event which runs the **initialization joystick:bit** and **radio set group 1** blocks. It then enters a **forever** loop. Inside the loop, it checks the X and Y rockers. If the X rocker is less than 200, it sends a radio message of 4. If the X rocker is greater than 800, it sends a radio message of 3. If the Y rocker is less than 200, it sends a radio message of 2. If the Y rocker is greater than 800, it sends a radio message of 1. It also checks for button presses: if button C is pressed, it sends a radio message of 5; if button D is pressed, it sends a radio message of 6. If button D is not pressed, it sends a radio message of 0. If button C is not pressed, it sends a radio message of 0. Finally, if none of the conditions are met, it sends a radio message of 0.

```
on start
  initialization joystick:bit
  radio set group 1
end

forever
  if <rockers value> < 200 then
    radio send number 4
  else if <rockers value> > 800 then
    radio send number 3
  else if <Y rocker value> < 200 then
    radio send number 2
  else if <Y rocker value> > 800 then
    radio send number 1
  else if [button C was pressed] then
    radio send number 5
  else if [button D was pressed] then
    radio send number 6
  else if [not button D was pressed] then
    radio send number 0
  else if [not button C was pressed] then
    radio send number 0
  else
    radio send number 0
end
```

Link:https://makecode.microbit.org/_f5DVqMKrtgYA For the forklift:

```

on start
  radio set group [1]
end

on radio received [receivedNumber]
  set [v v] to [receivedNumber]
end

forever
  if [v v] = [1] then
    set motor M1 speed [-100] M2 speed [-100]
  else if [v v] = [2] then
    set motor M1 speed [100] M2 speed [100]
  else if [v v] = [3] then
    set motor M1 speed [50] M2 speed [-50]
  else if [v v] = [4] then
    set motor M1 speed [-50] M2 speed [50]
  else if [v v] = [0] then
    Stop all motor
  else if [v v] = [5] then
    Set [360° v] servo [S0 v] angle to [0]
  else if [v v] = [6] then
    Set [360° v] servo [S0 v] angle to [60]
  end
end

```

Link:https://makecode.microbit.org/_UoAP69ArTfyI

Result

Use the handle to control the forklift, the up and down, left and right directions of the handle rocker are to control the forward and backward, the left and right movement of the forklift, D button to control the raisin of the forklift, C button to control the lowering of it.

By ELECFREAKS Team

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Case 13: The Seesaw

Contents

- [15.1. Purpose](#)
- [15.2. Link:](#)
- [15.3. Materials Required](#)
- [15.4. Bricks build-up](#)
- [15.5. Hardware Connection](#)
- [15.6. Software Platform](#)
- [15.7. Coding](#)

15.1. Purpose

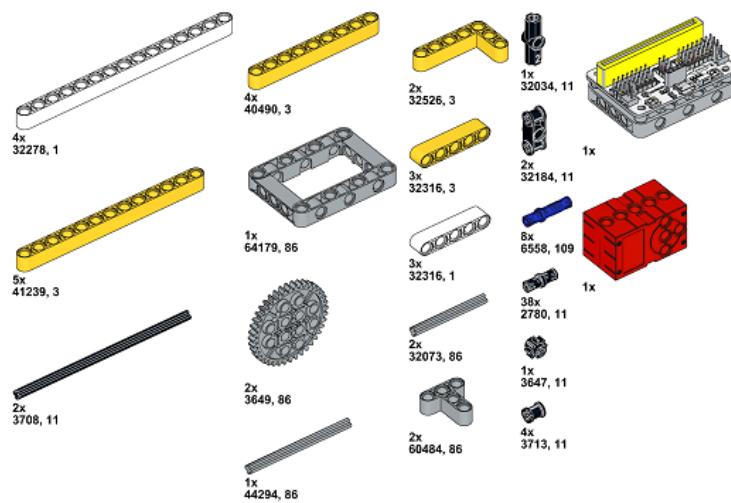
To make a seesaw.



15.2. Link:

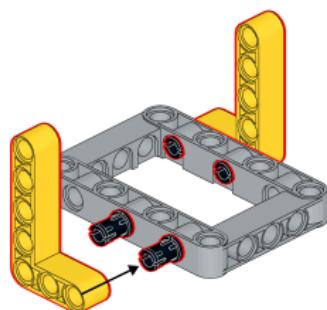
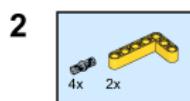
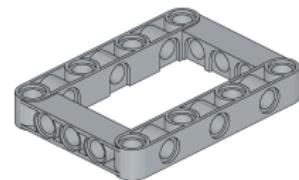
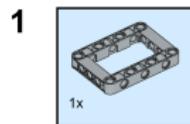
[micro:bit Wonder Building Kit](#)

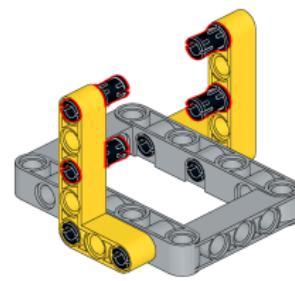
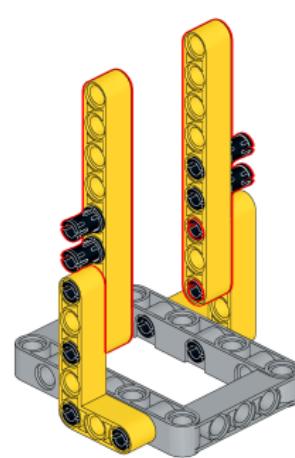
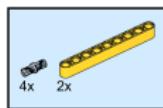
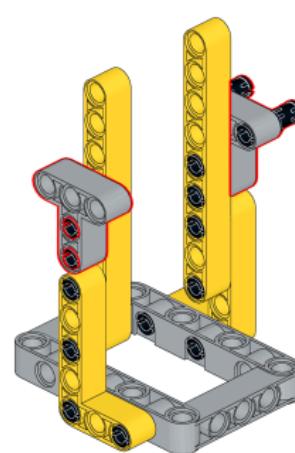
15.3. Materials Required

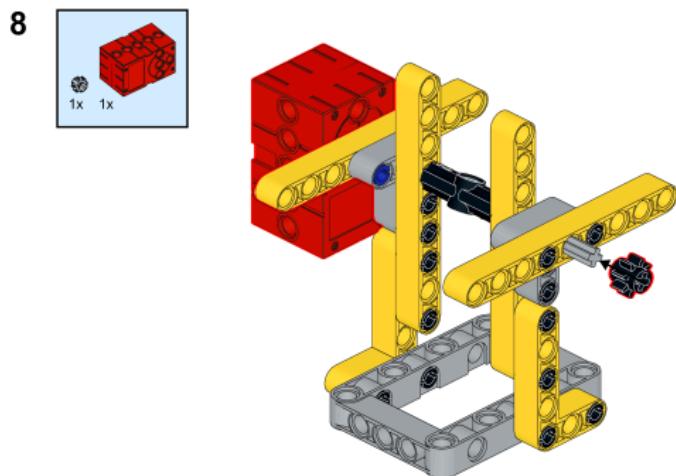
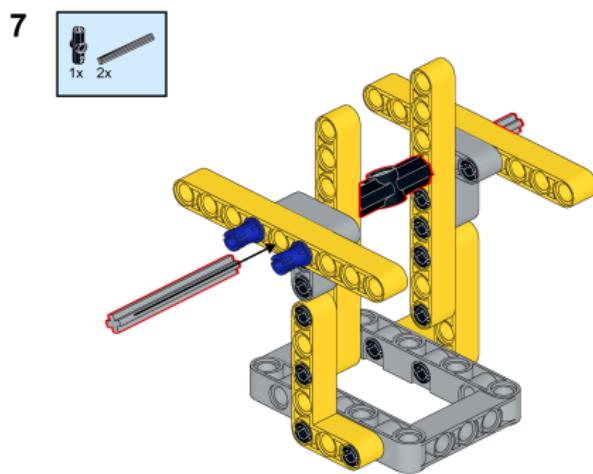
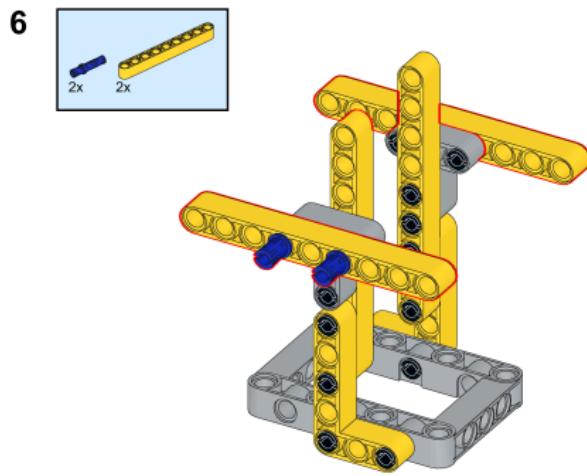


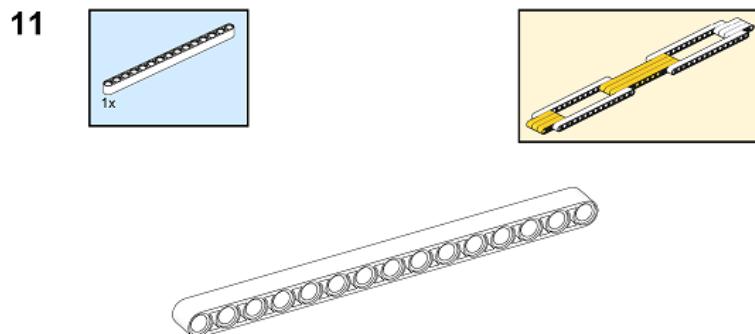
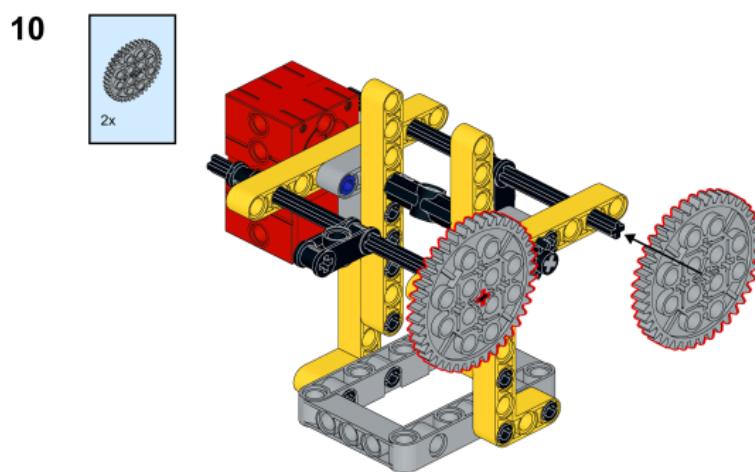
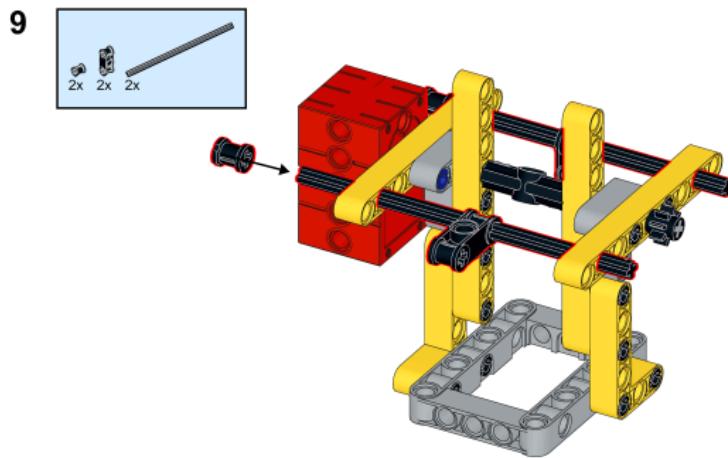
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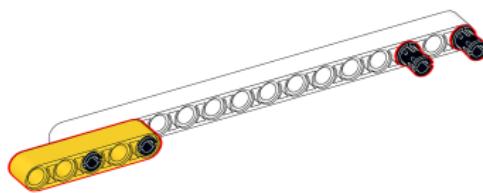
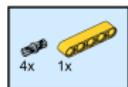
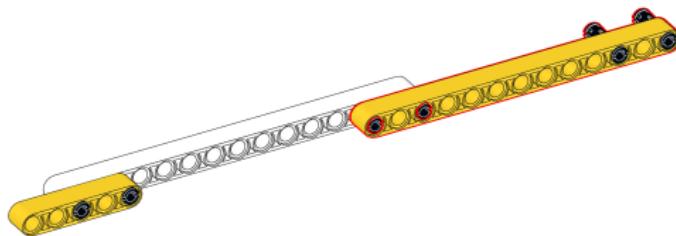
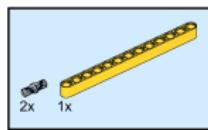
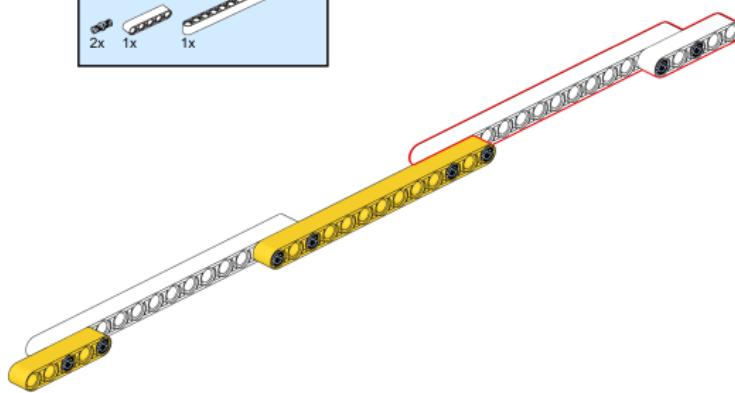
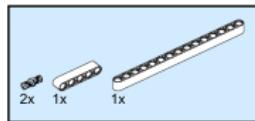
15.4. Bricks build-up

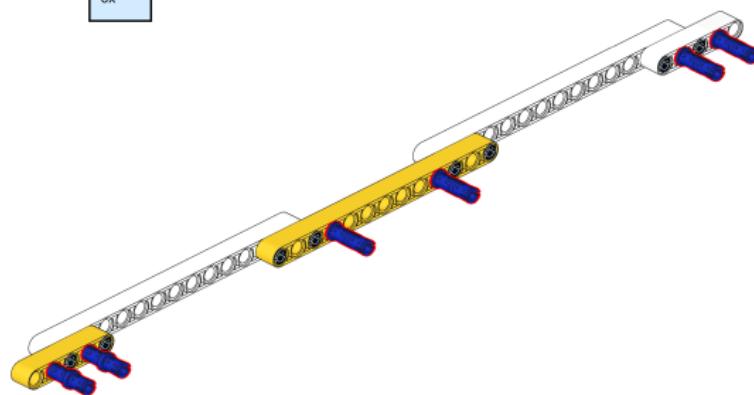
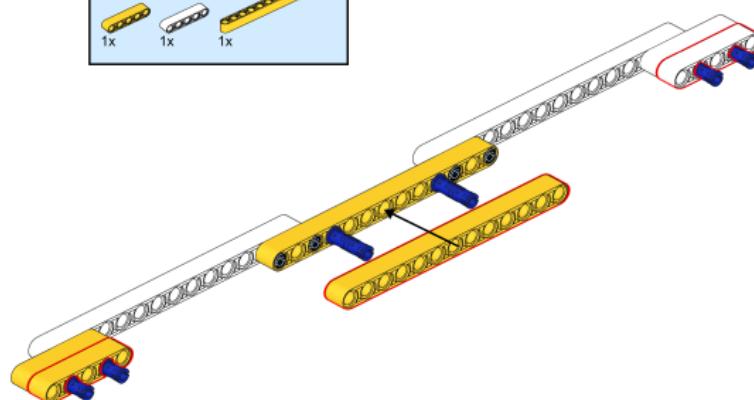
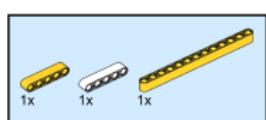
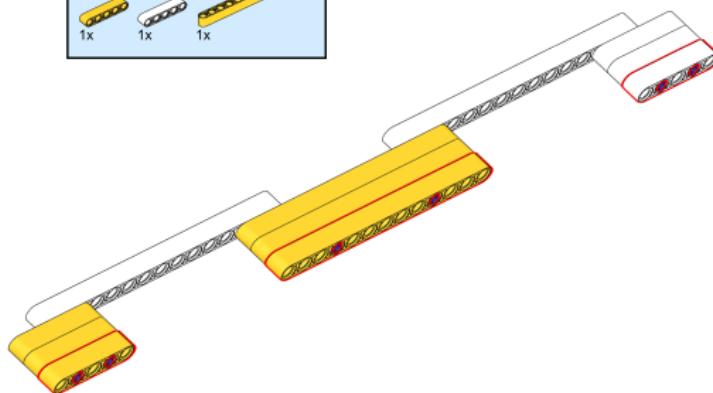
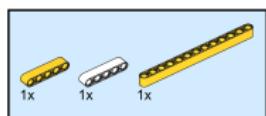


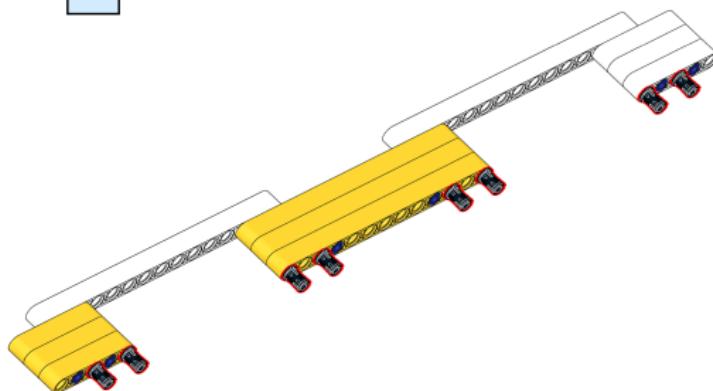
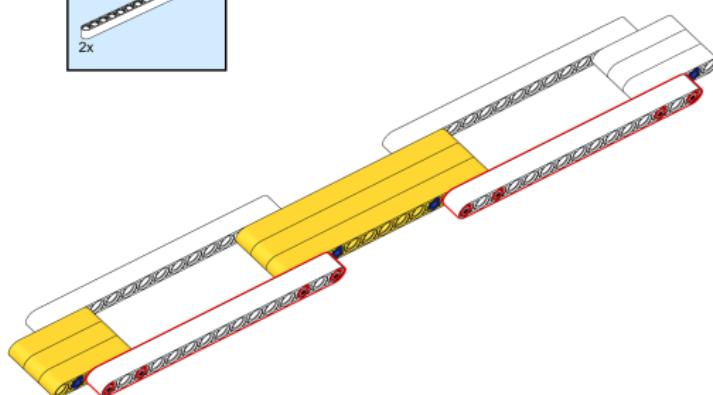
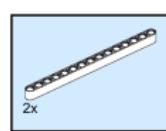
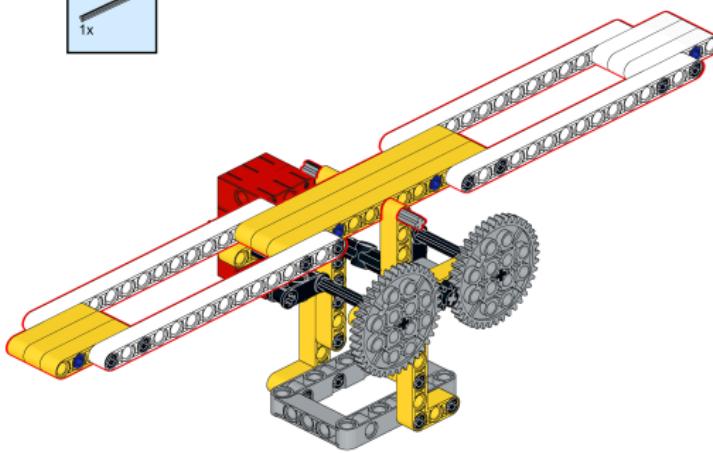
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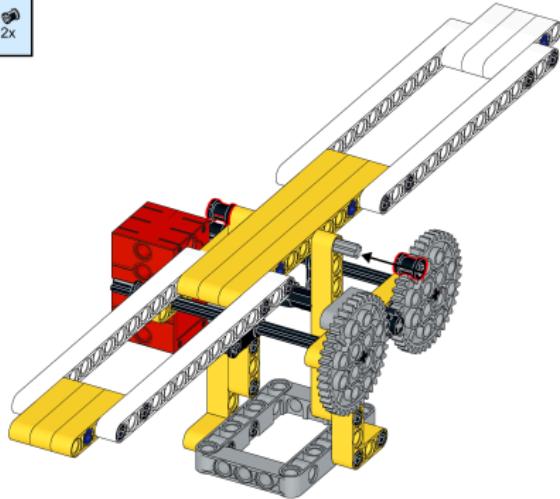
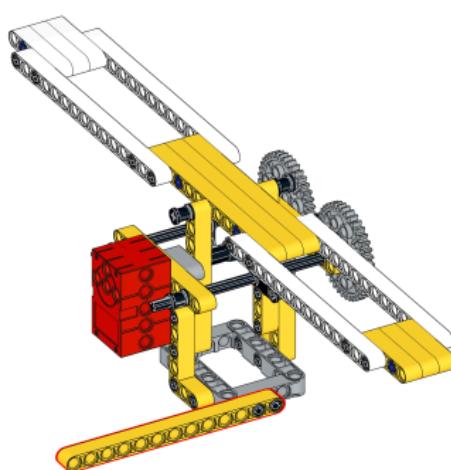
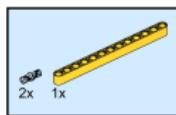
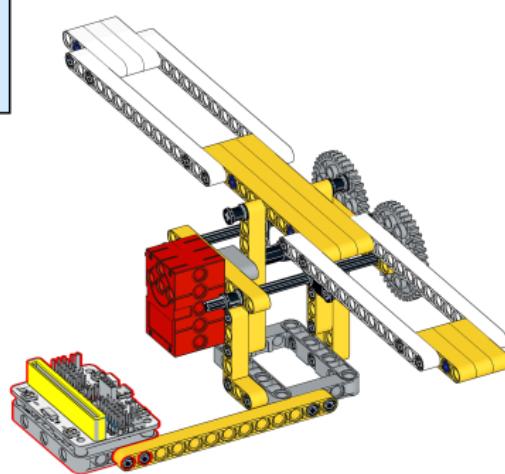
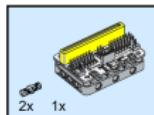


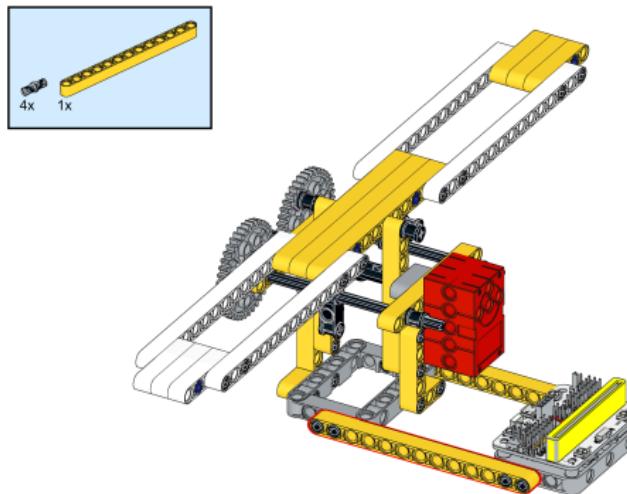
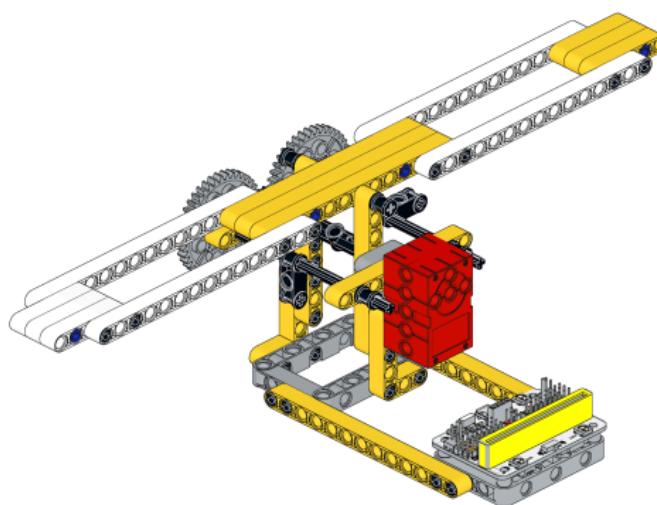


12**13****14**

15**16****17**

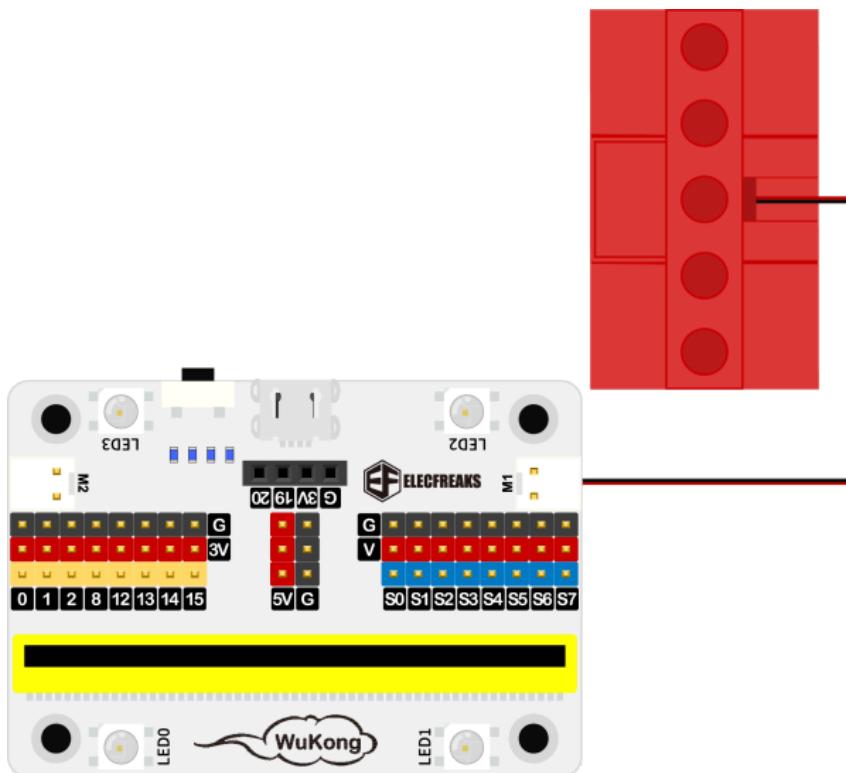
18**19****20**

21**22****23**

24**25**

15.5. Hardware Connection

Connect a [motor](#) to M1 port on [Wukong breakout board](#).



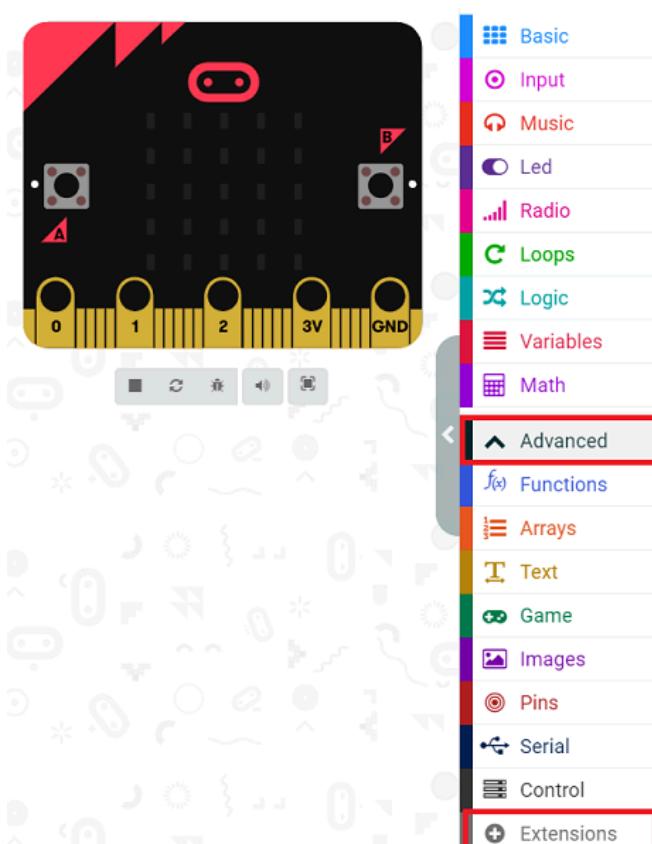
15.6. Software Platform

[MakeCode](#)

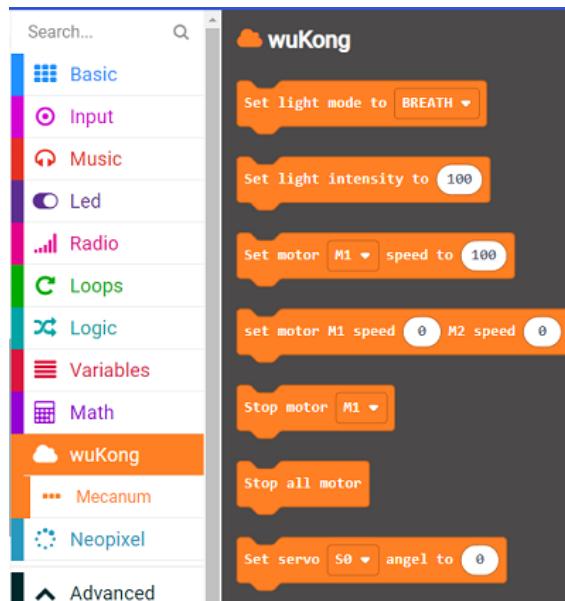
15.7. Coding

Add extensions

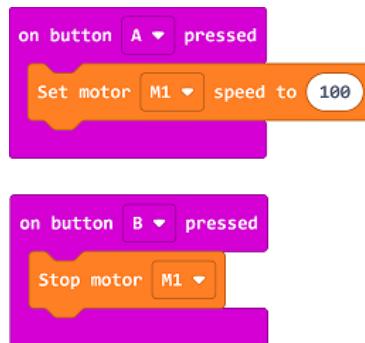
Click "Advanced" in the MakeCode to see more choices.



Search with Wukong in the dialogue box to download it.



Program



Link: https://makecode.microbit.org/_8WiCUT0zu6wv

Result

When button A is pressed, the seesaw operates automatically and when button B is pressed, the seesaw shuts down and stops operating.

By ELECFREAKS Team

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Case 14: The Reading Range Guitar

Contents

- [16.1. Purpose](#)
- [16.2. Link:](#)
- [16.3. Materials Required](#)
- [16.4. Bricks build-up](#)
- [16.5. Installation Methods of Hardwares](#)
- [16.6. Hardware Connection](#)
- [16.7. Software Platform](#)
- [16.8. Coding](#)

16.1. Purpose

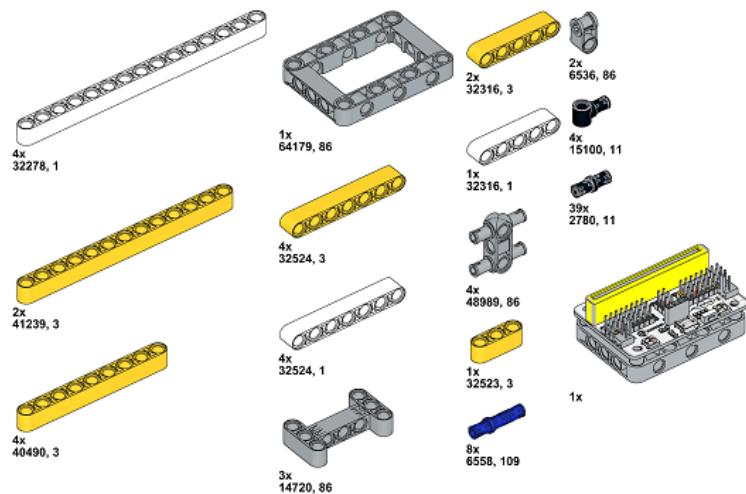
To make a guitar that is able to read ranges.



16.2. Link:

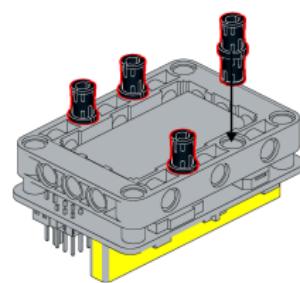
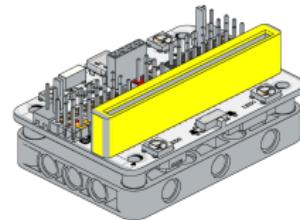
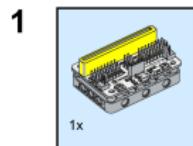
[micro:bit Wonder Building Kit](#)

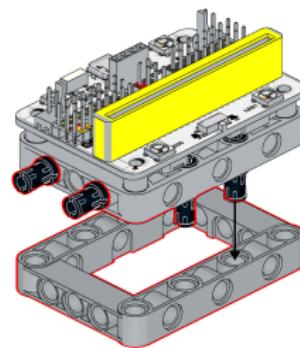
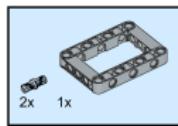
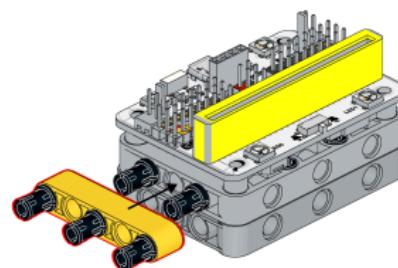
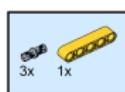
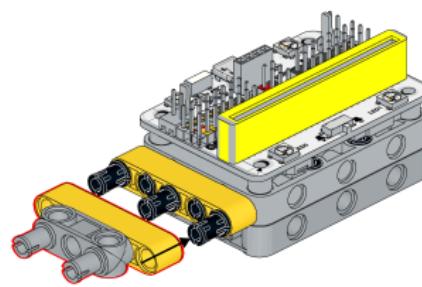
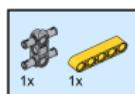
16.3. Materials Required

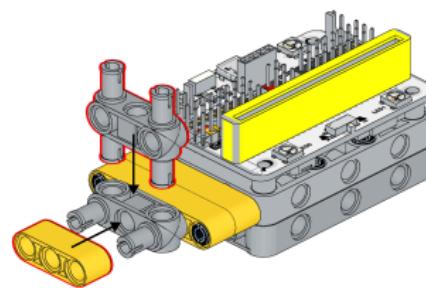
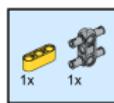
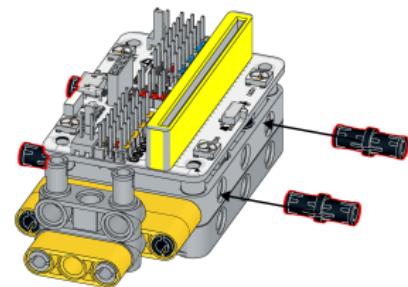
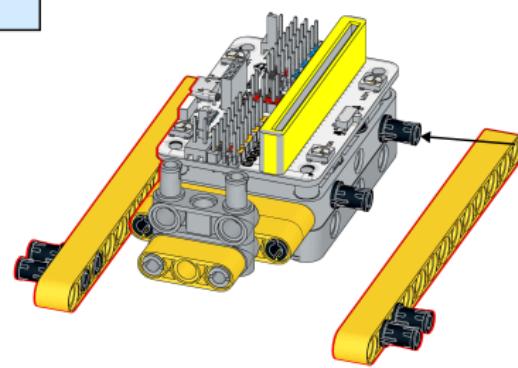
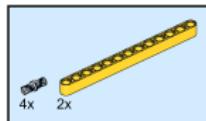


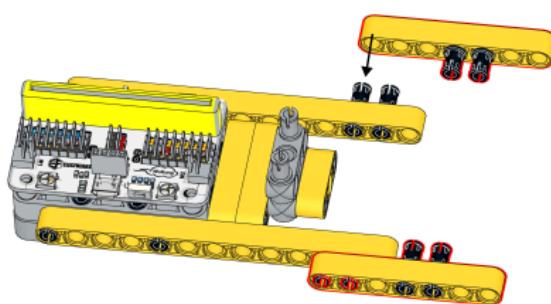
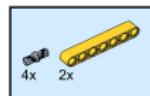
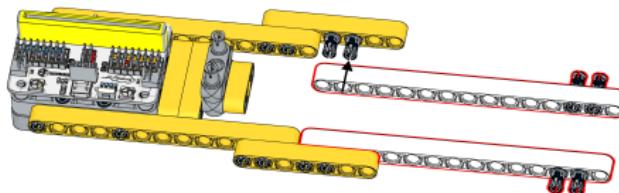
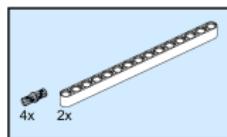
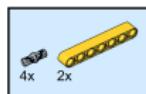
Video link: https://youtu.be/B_P8gOaA0Gc

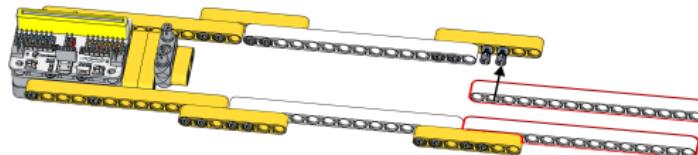
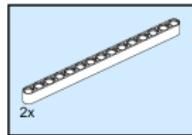
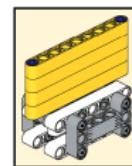
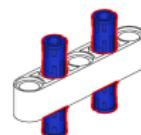
16.4. Bricks build-up

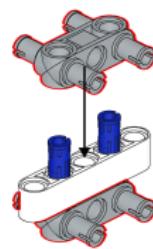
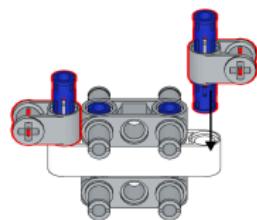
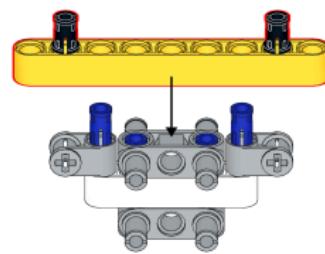
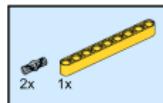


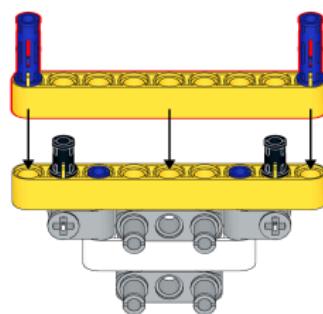
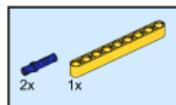
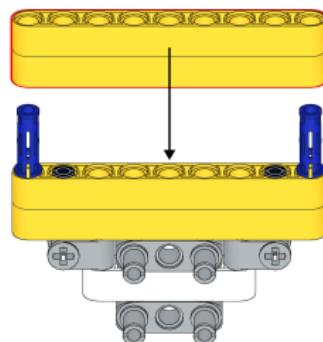
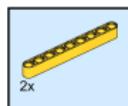
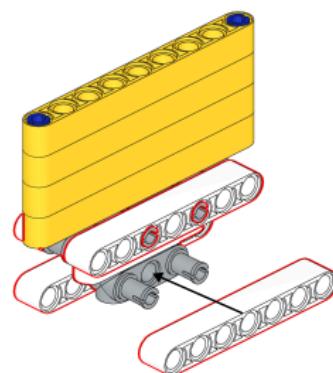
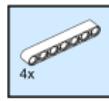
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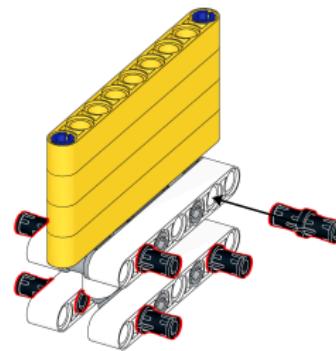
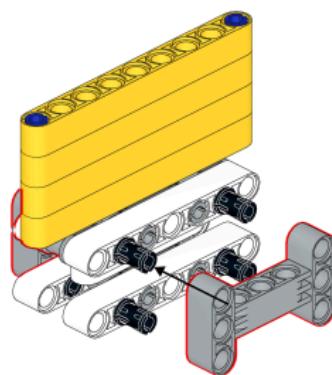
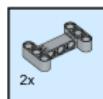
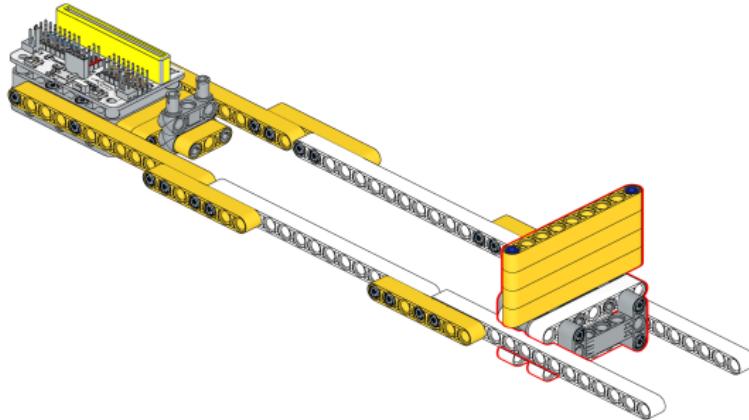
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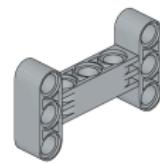
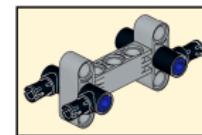
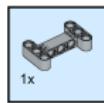
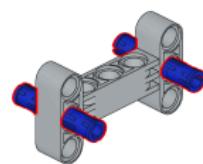
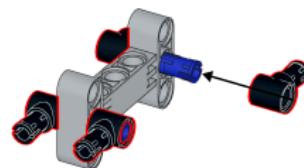
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12**13****14**

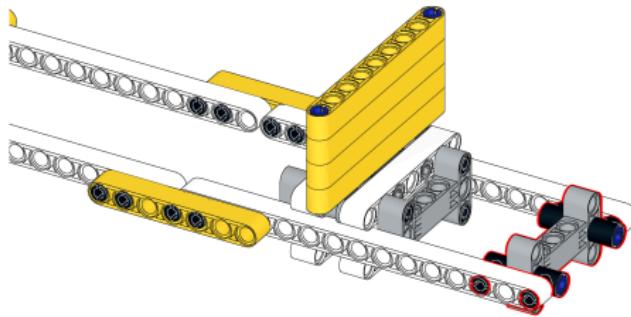
15**16****17**

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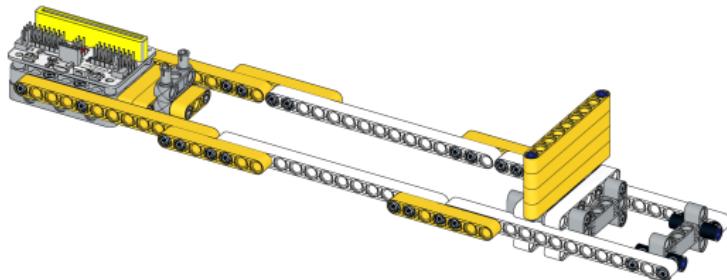
21**22****23**

24**25****26**

27



28



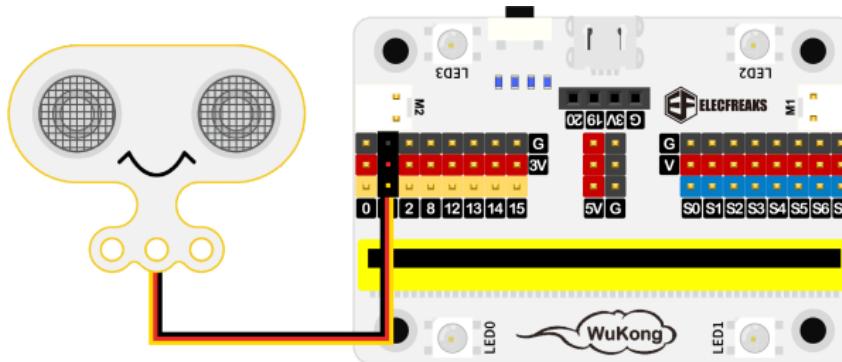
16.5. Installation Methods of Hardwares

Install the sonar:bit with the bricks.



16.6. Hardware Connection

Connect a [sonar:bit](#) to P1 port on [Wukong breakout board](#).



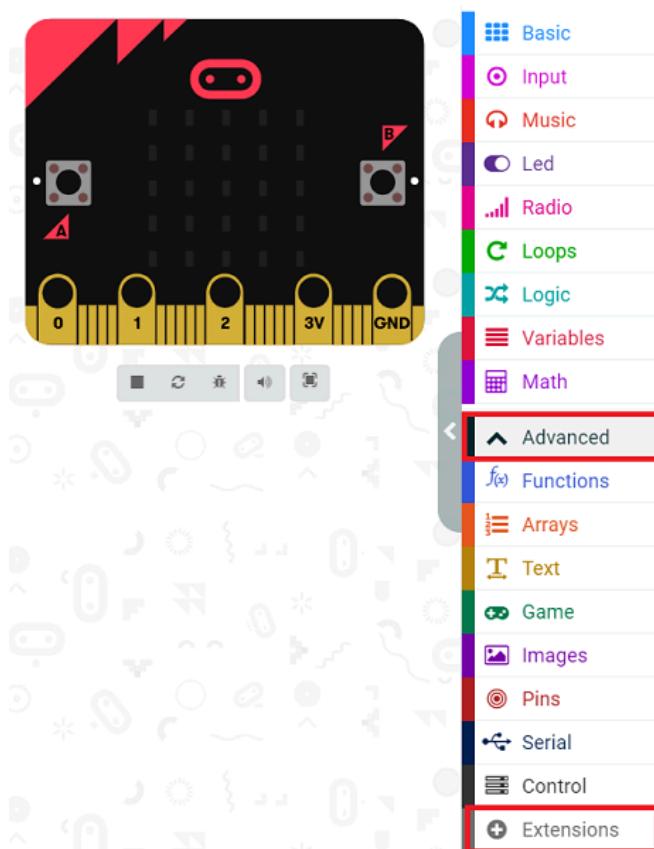
16.7. Software Platform

[MakeCode](#)

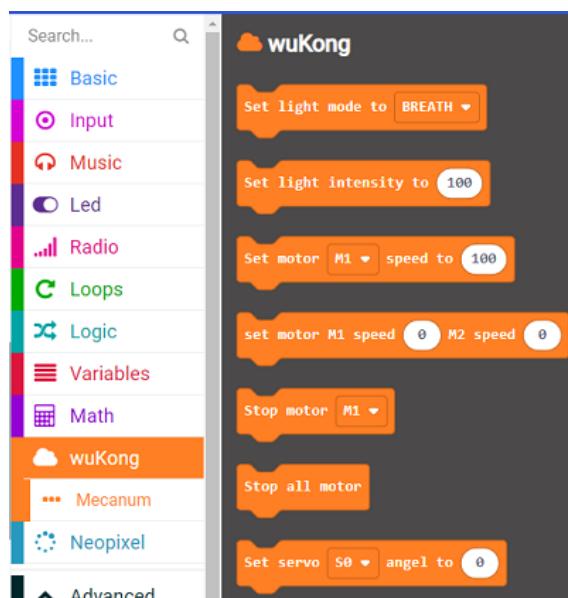
16.8. Coding

Add extensions

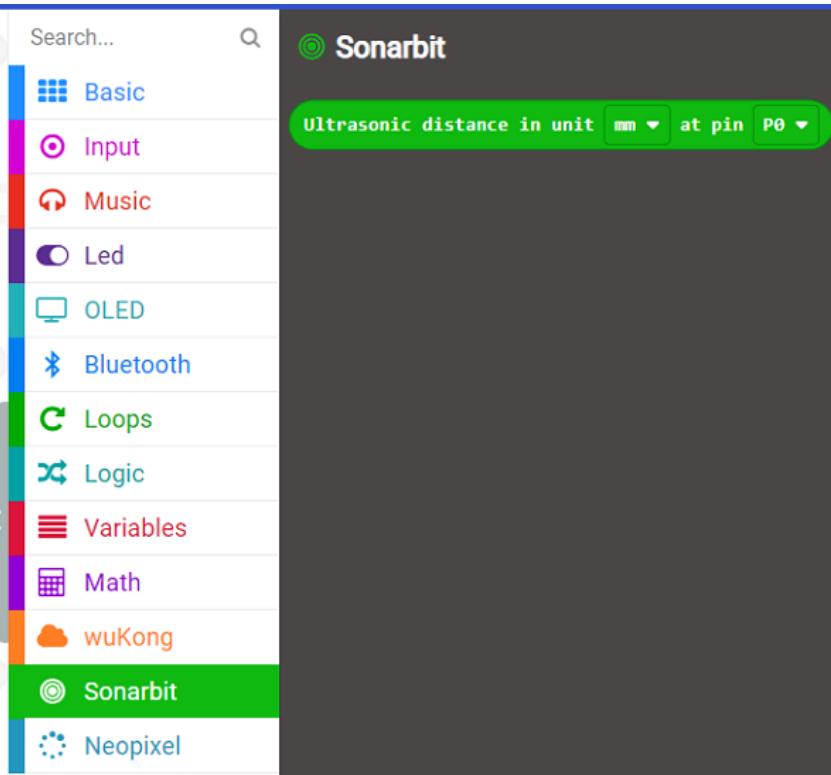
Click “Advanced” in the MakeCode to see more choices.



Search with Wukong in the dialogue box to download it.



Search with <https://github.com/elecbreaks/pxt-sonarbit> in the dialogue box to add the sonar:bit extension.



Program

```

on start
  set [x] to [0]
  show icon [grid icon]
  set [built-in speaker v] to [ON]

forever
  set [x] to [Ultrasonic distance in unit cm at pin P1]
  if [x ≥ 6 and x ≤ 8] then
    play tone [High C] for [1] beat
  else if [x > 8 and x ≤ 10] then
    play tone [High D] for [1] beat
  else if [x > 10 and x ≤ 12] then
    play tone [High E] for [1] beat
  else if [x > 12 and x ≤ 14] then
    play tone [High F] for [1] beat
  else if [x > 14 and x ≤ 16] then
    play tone [High G] for [1] beat
  else if [x > 16 and x ≤ 18] then
    play tone [High A] for [1] beat
  else if [x > 18 and x ≤ 20] then
    play tone [High B] for [1] beat
  end
end

```

Link:https://makecode.microbit.org/_1YvYtE8RM8oL

Result

By detecting the value of the distance between the ultrasonic sensor and the baffle only, the buzzer is controlled to emit different tones.

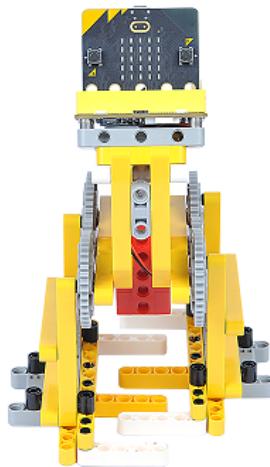
Case 15: The Walking Robot

Contents

- [17.1. Purpose](#)
- [17.2. Link:](#)
- [17.3. Materials Required](#)
- [17.4. Bricks build-up](#)
- [17.5. Hardware Connection](#)
- [17.6. Software Platform](#)
- [17.7. Coding](#)

17.1. Purpose

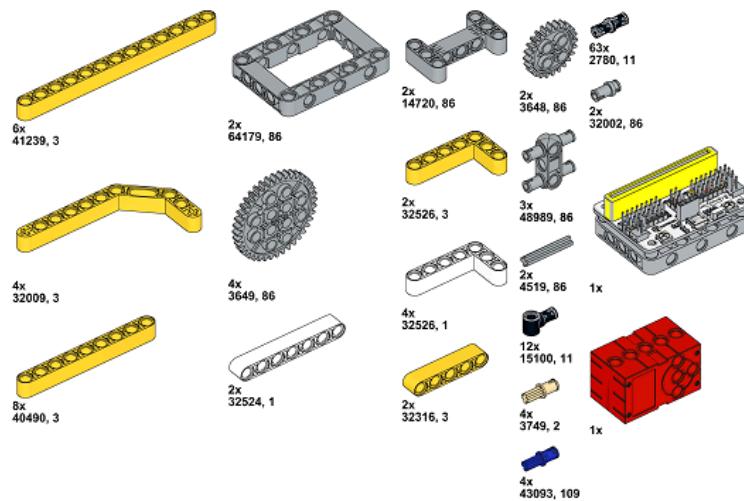
To make a walking robot.



17.2. Link:

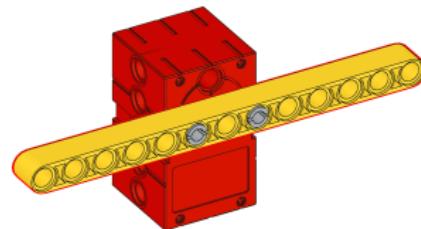
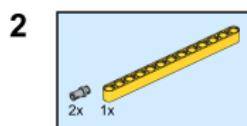
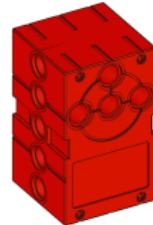
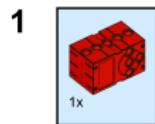
[micro:bit Wonder Building Kit](#)

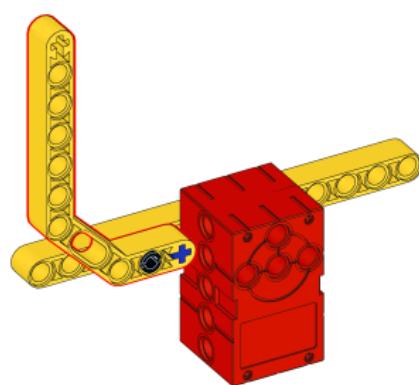
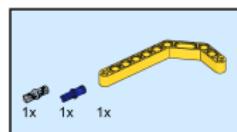
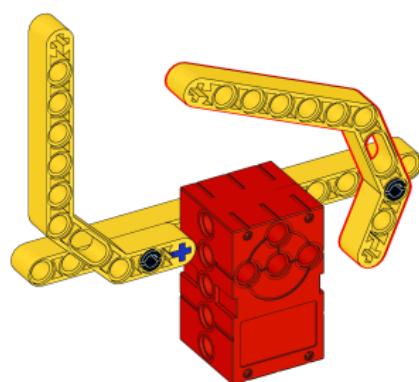
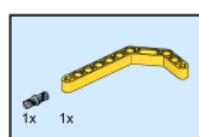
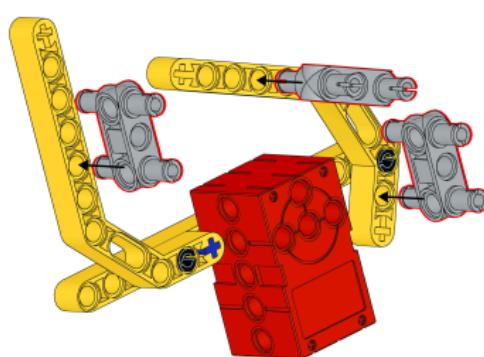
17.3. Materials Required

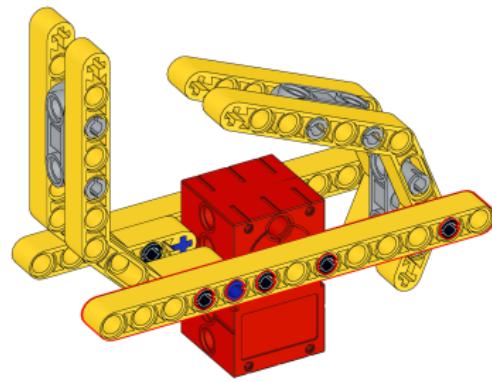
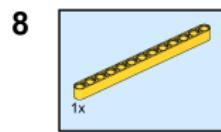
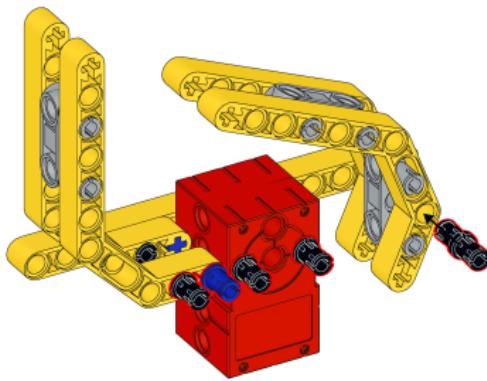
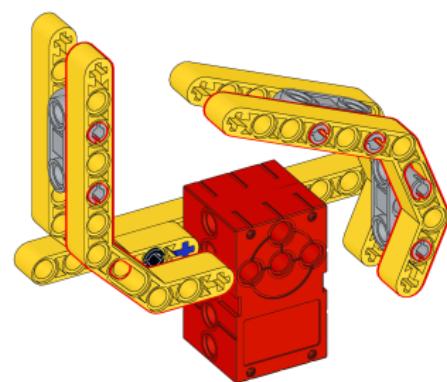
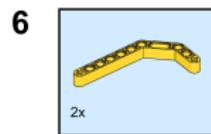


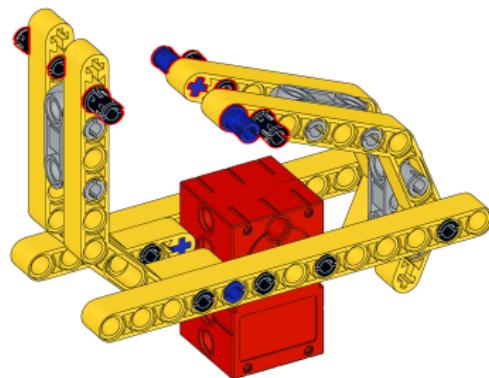
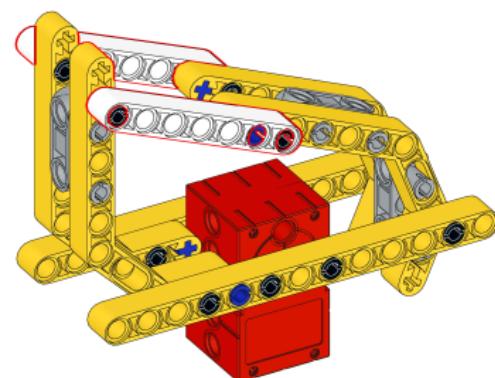
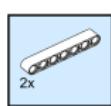
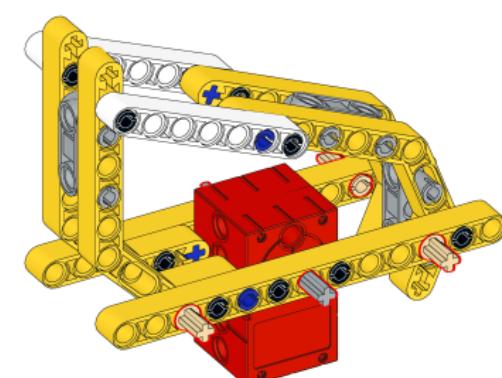
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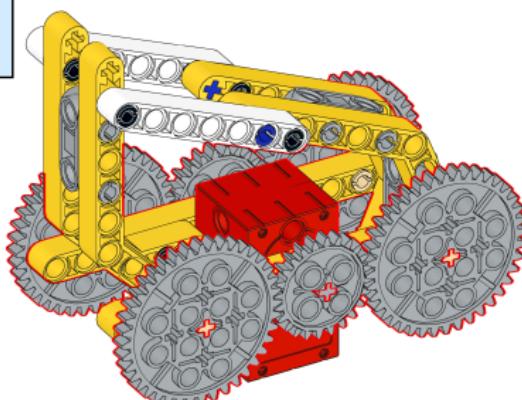
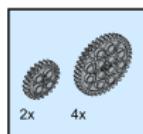
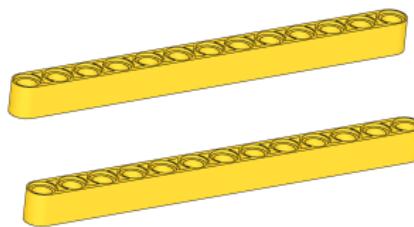
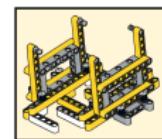
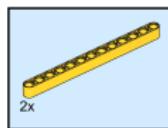
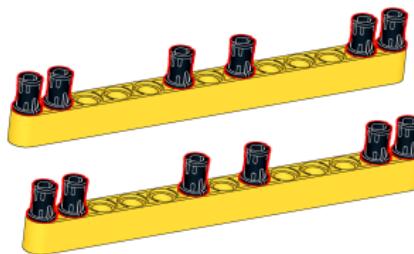
17.4. Bricks build-up

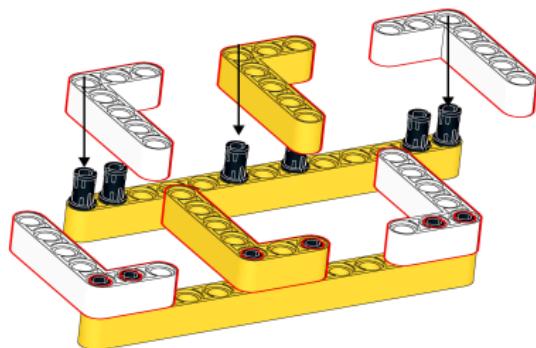
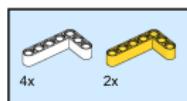
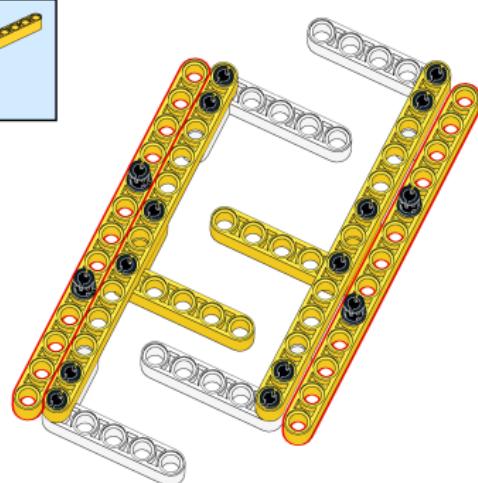
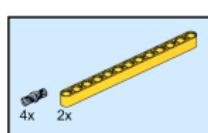
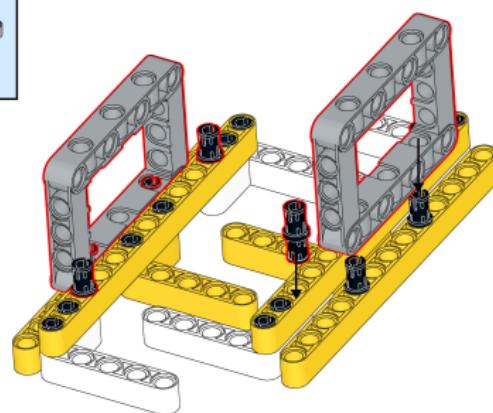
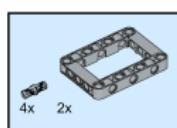


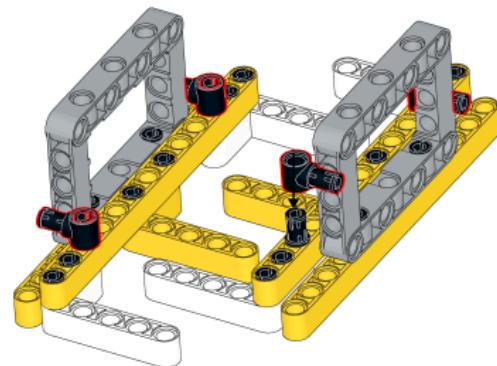
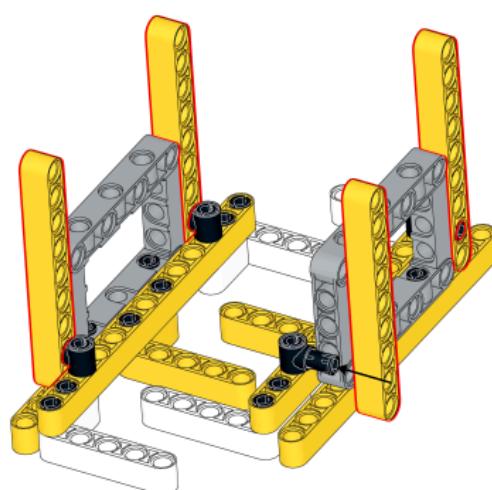
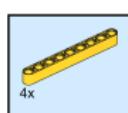
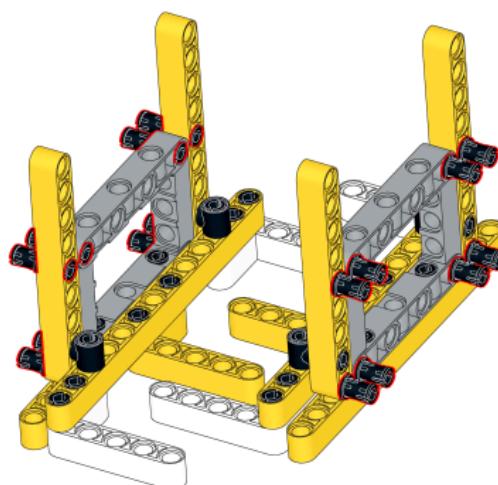
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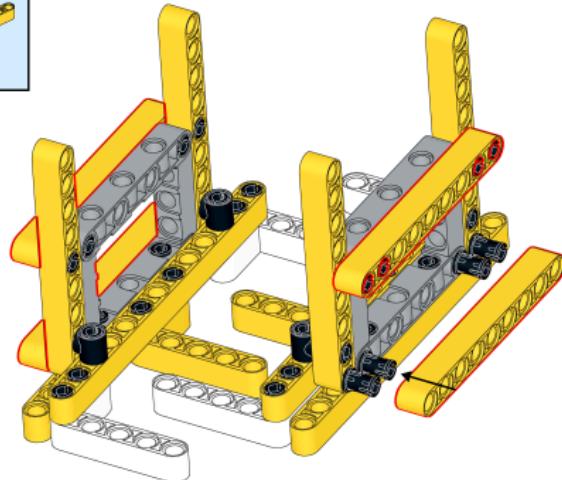
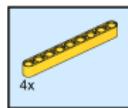
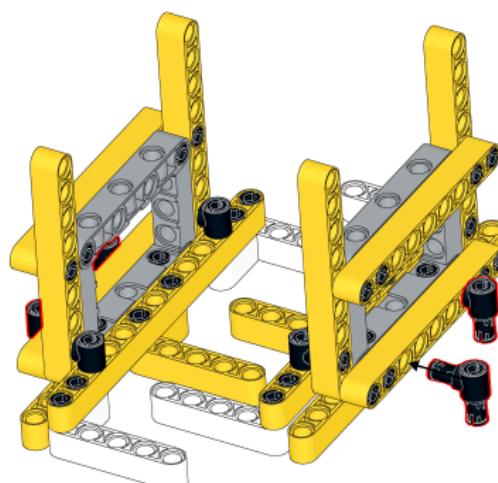
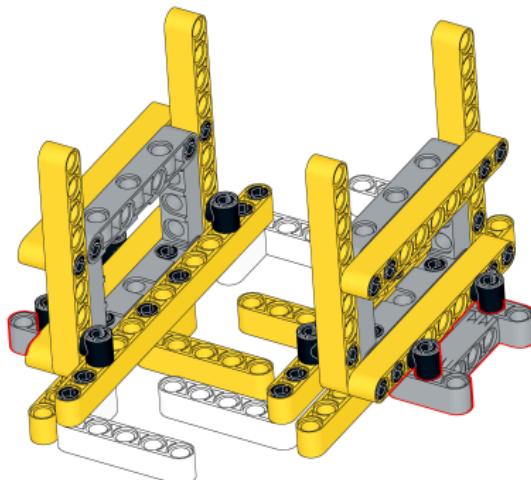
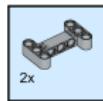


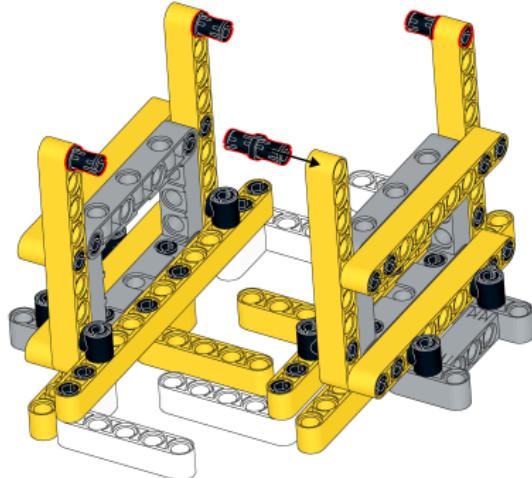
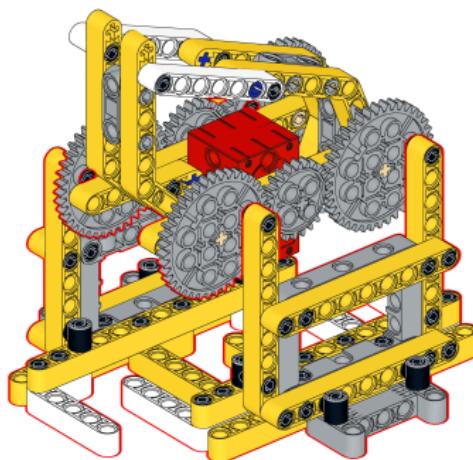
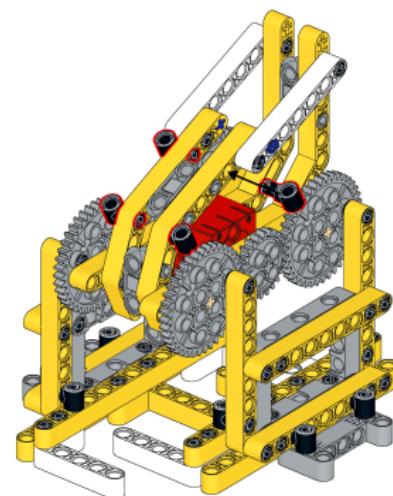
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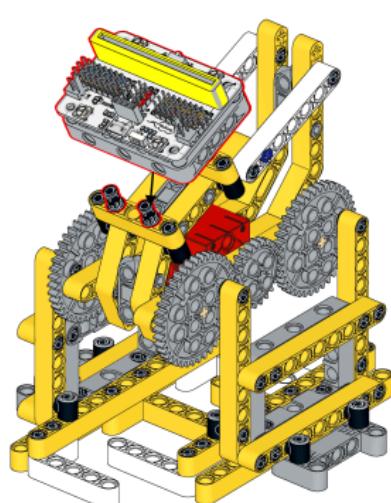
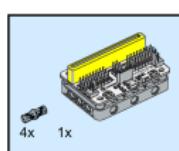
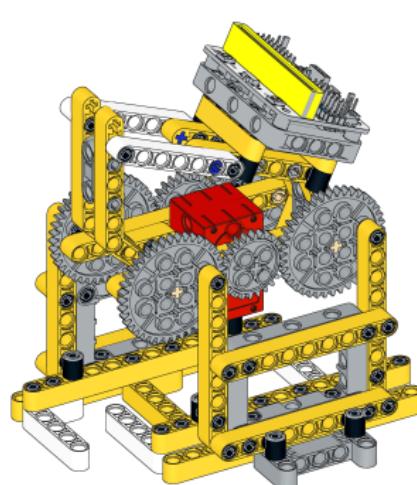
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15**16****17**

18**19****20**

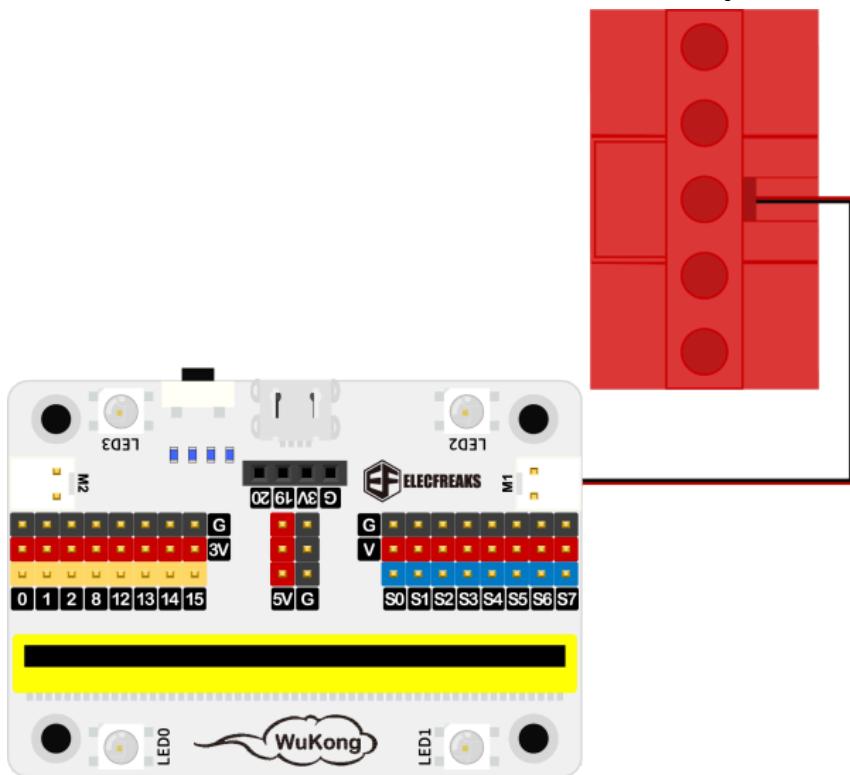
21**22****23**

24**25****26**

27**28****29**

17.5. Hardware Connection

Connect a [motor](#) to M1 port on [Wukong breakout board](#).



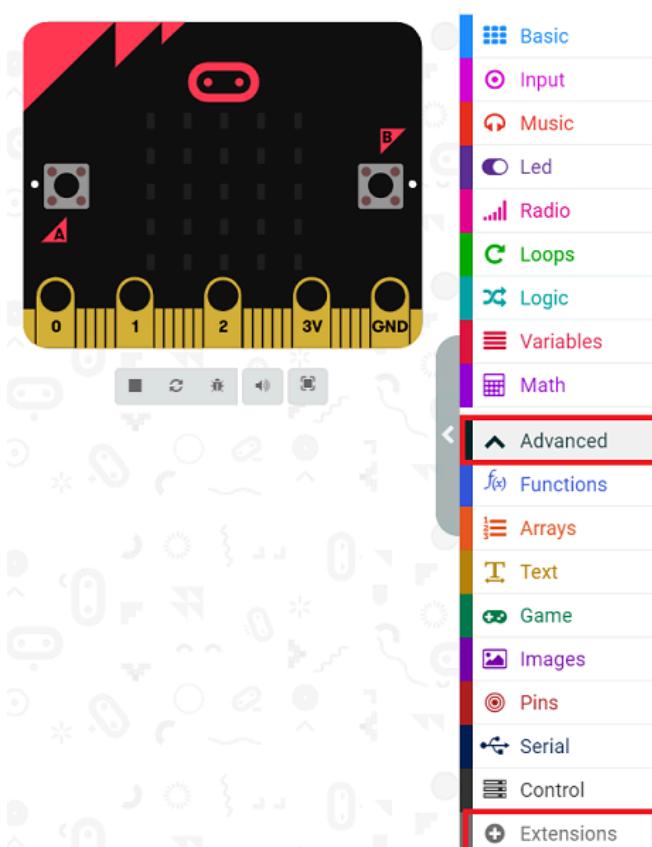
17.6. Software Platform

[MakeCode](#)

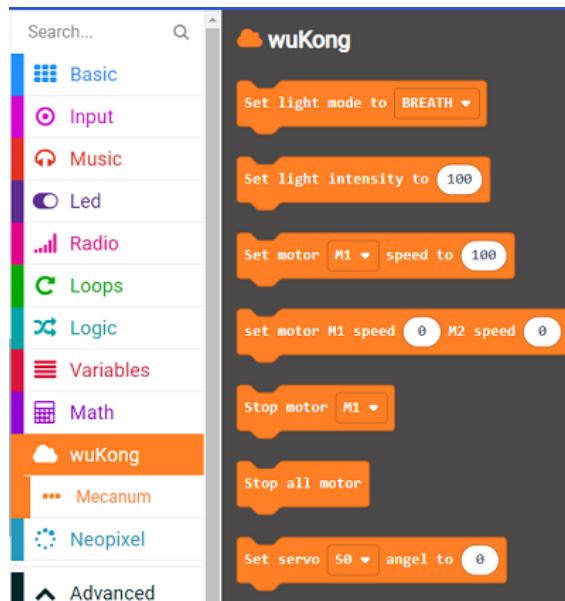
17.7. Coding

Add extensions

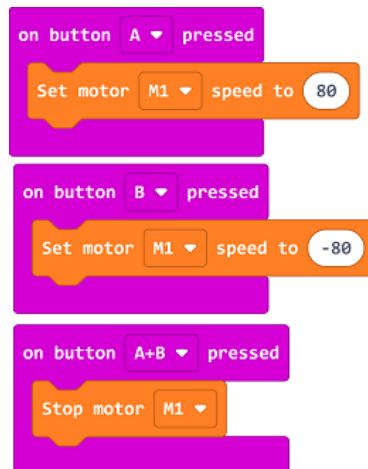
Click “Advanced” in the MakeCode to see more choices.



Search with Wukong in the dialogue box to download it.



Program



Link:https://makecode.microbit.org/_b5D9689YX8R3

Result

The robot moves forward when button A is pressed, it moves backward when button B is pressed, and it stops moving when button A+B is pressed.

By ELECFREAKS Team

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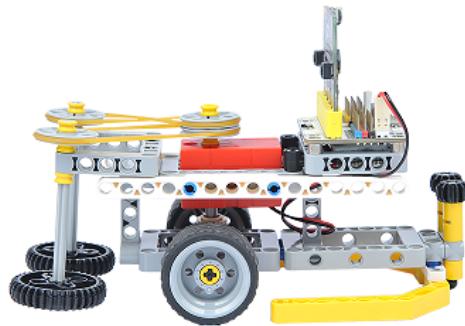
Case 16: The Road Sweeper

Contents

- [18.1. Purpose](#)
- [18.2. Link:](#)
- [18.3. Materials Required](#)
- [18.4. Bricks build-up](#)
- [18.5. Hardware Connection](#)
- [18.6. Software Platform](#)
- [18.7. Coding](#)

18.1. Purpose

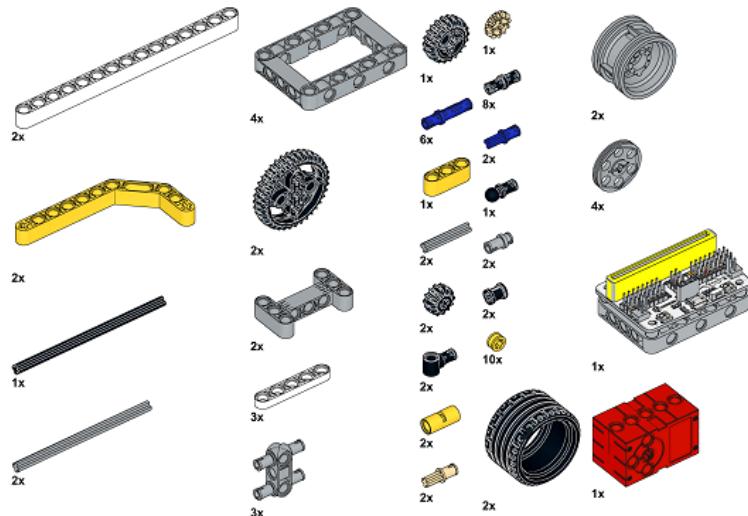
To make a road sweeper.



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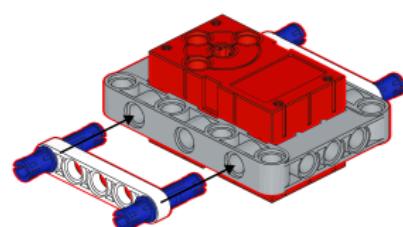
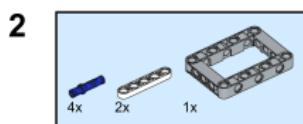
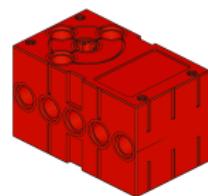
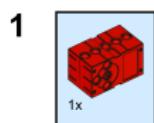
[micro:bit Wonder Building Kit](#)

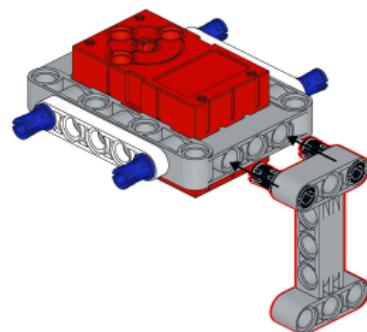
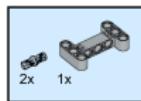
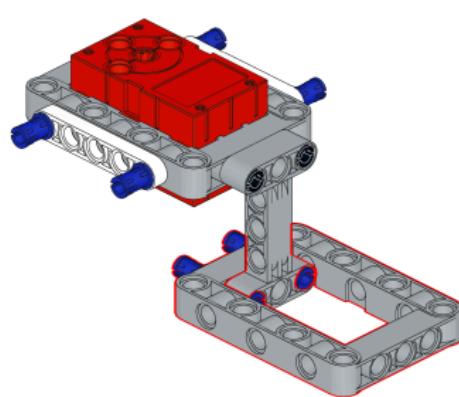
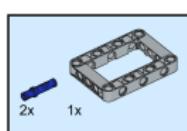
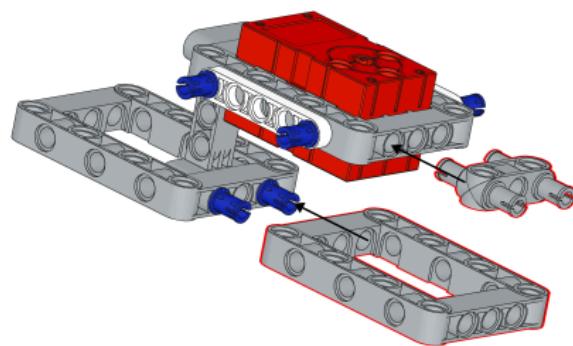
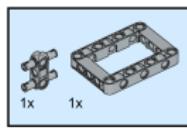
18.3. Materials Required

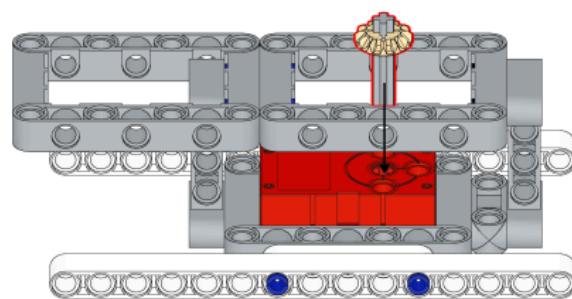
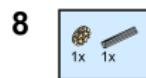
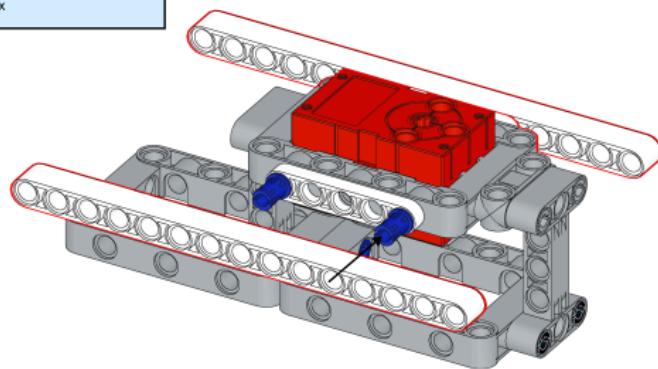
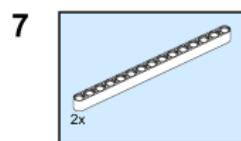
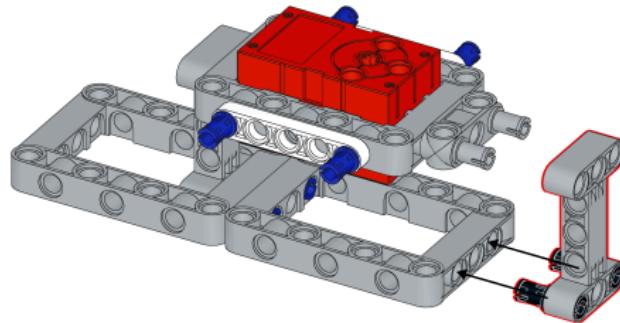
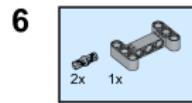


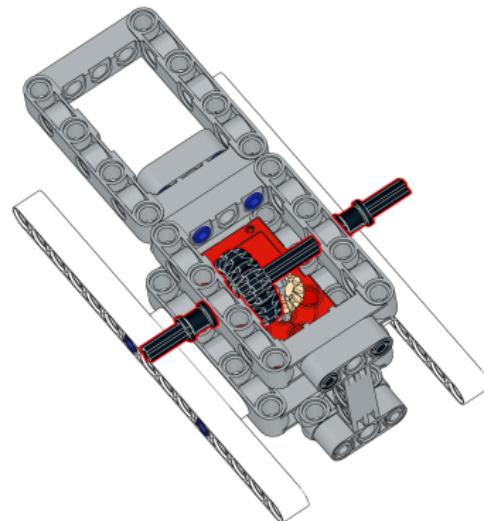
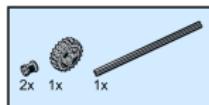
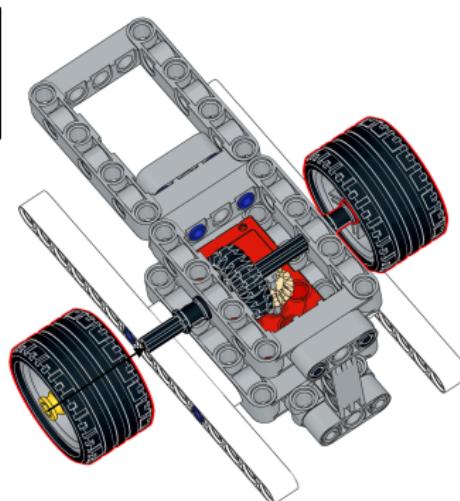
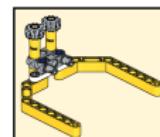
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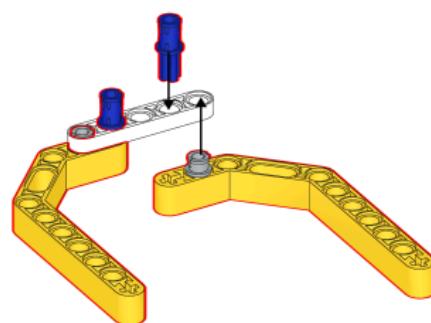
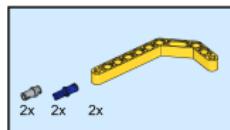
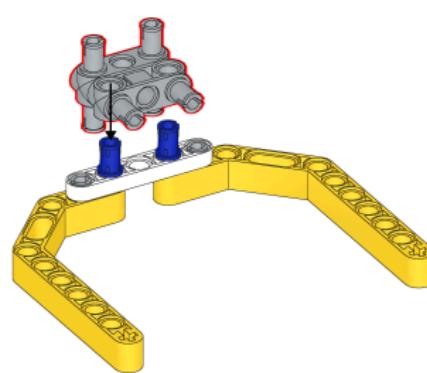
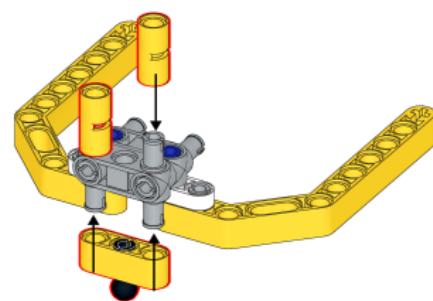
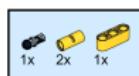
18.4. Bricks build-up

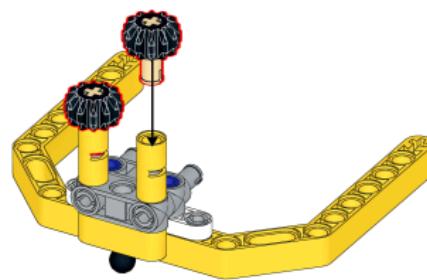
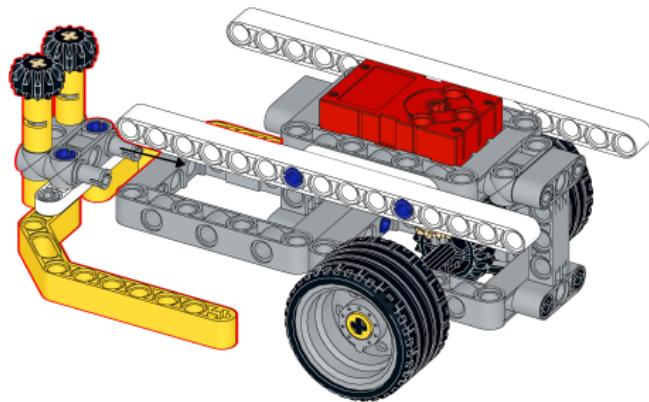
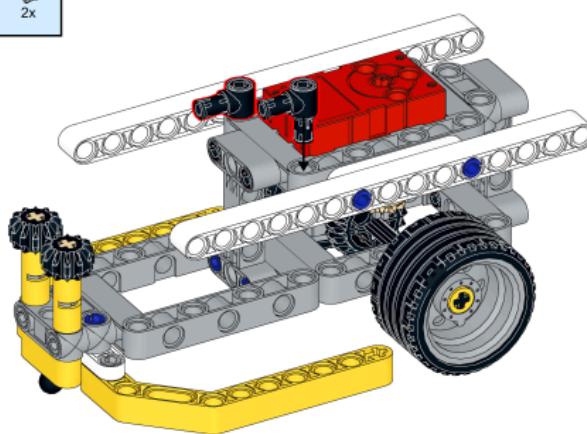


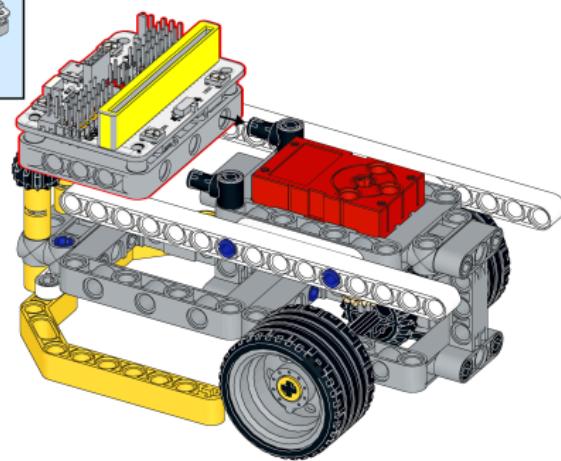
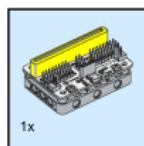
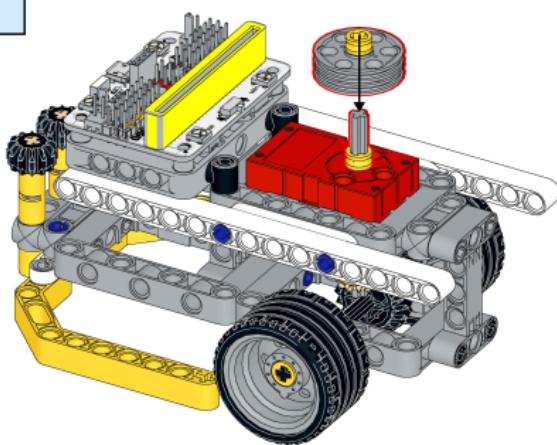
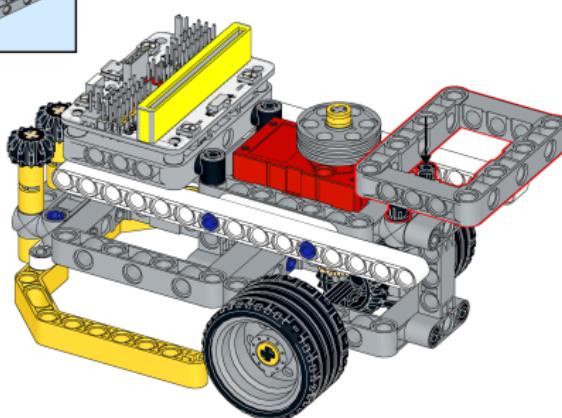
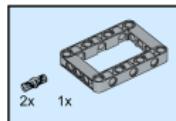
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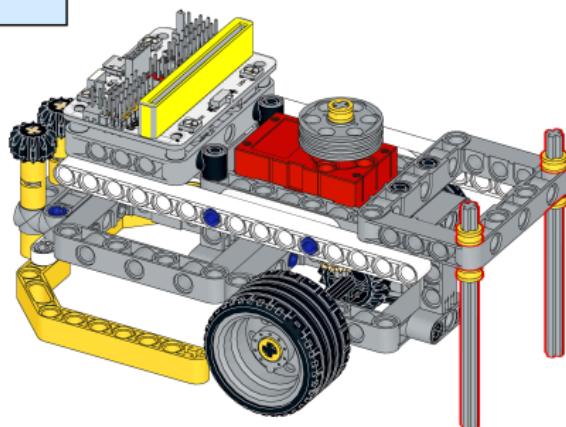
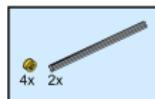
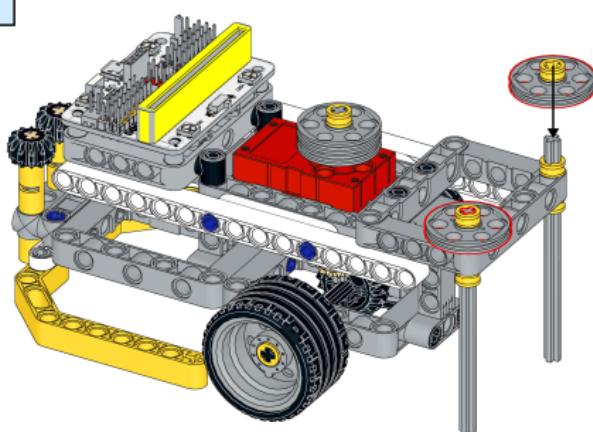
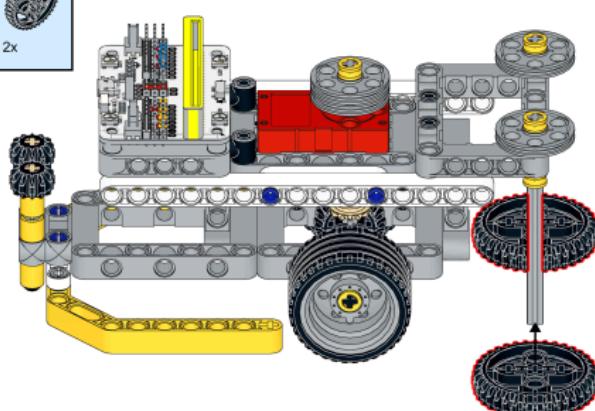


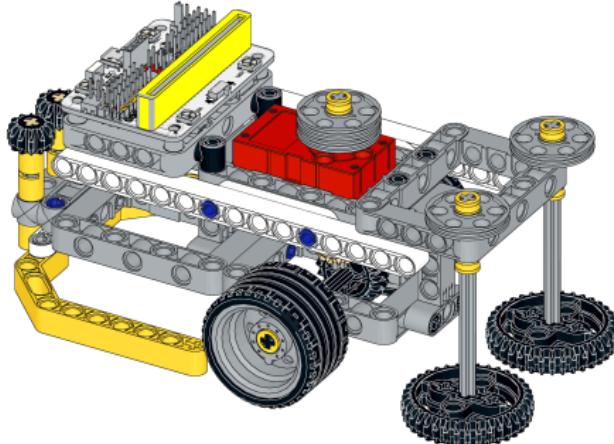
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15**16****17**

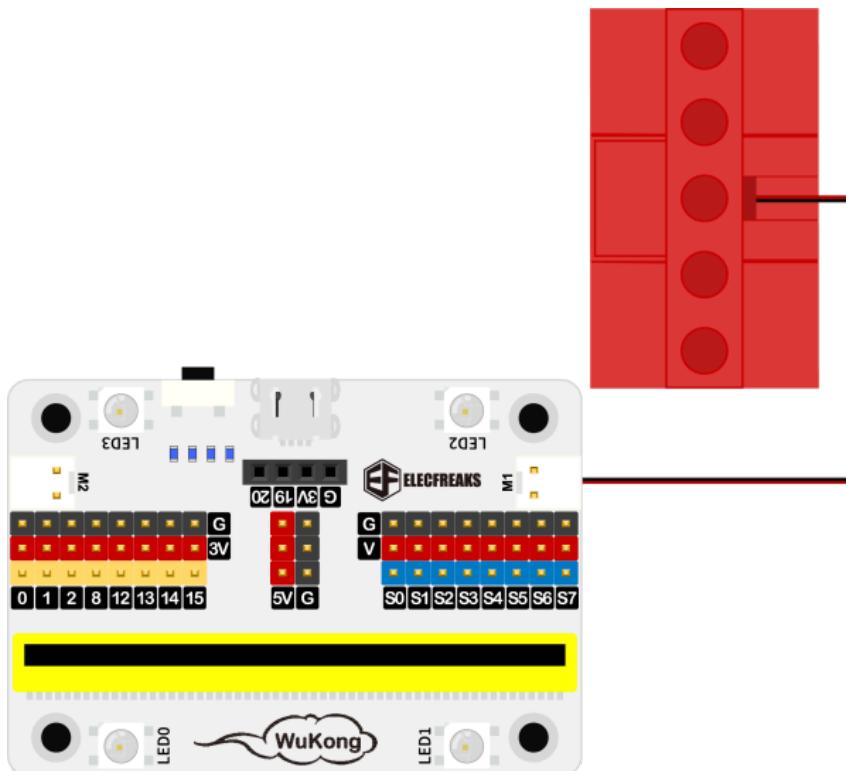
18**19****20**

21**22****23**

24

18.5. Hardware Connection

Connect a [motor](#) to M1 port on [Wukong breakout board](#).



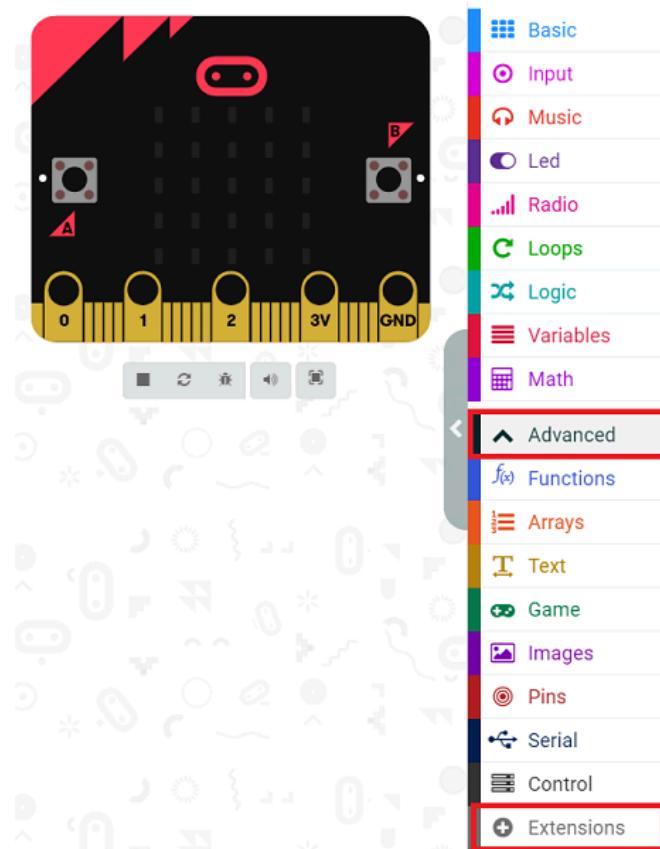
18.6. Software Platform

[MakeCode](#)

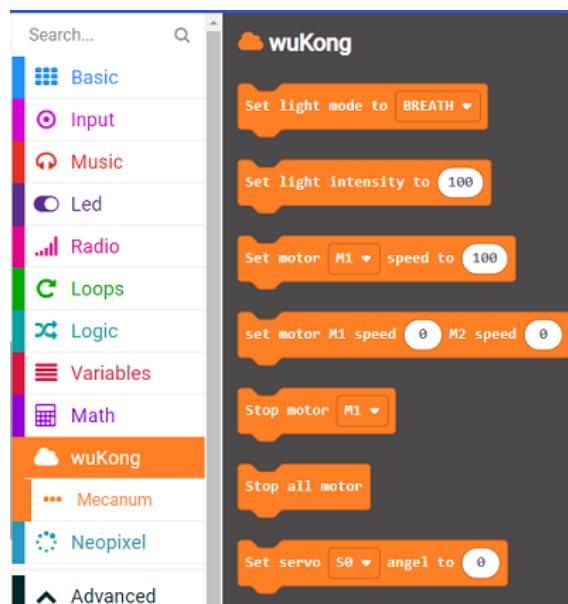
18.7. Coding

Add extensions

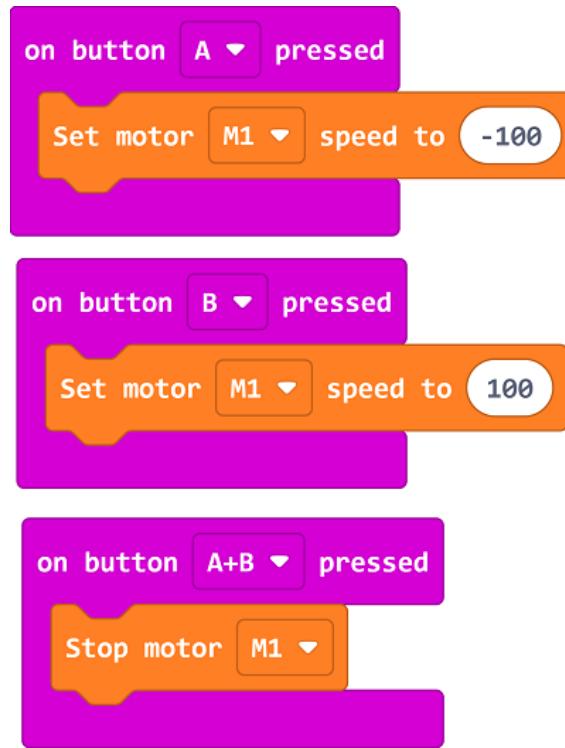
Click "Advanced" in the MakeCode to see more choices.



Search with Wukong in the dialogue box to download it.



Program



Link:https://makecode.microbit.org/_18WVrTE5LTzb

Result

When button A is pressed, the sweeper moves forward and starts sweeping, when button B is pressed, the sweeper stops moving and ends sweeping.

By ELECFREAKS Team

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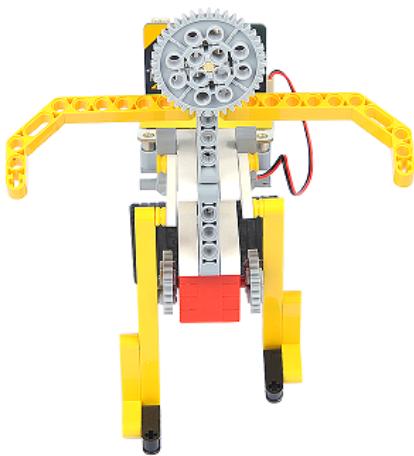
Case 17: The Rickshaw

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- [19.2. Link:](#)
- [19.3. Materials Required](#)
- [19.4. Bricks build-up](#)
- [19.5. Hardware Connection](#)
- [19.6. Software Platform](#)
- [19.7. Coding](#)

19.1. Purpose

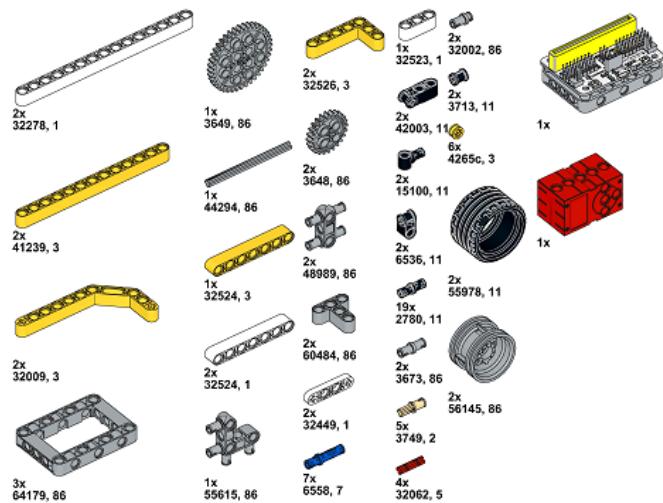
To make a rickshaw.



19.2. Link:

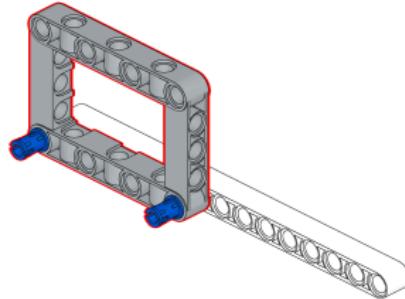
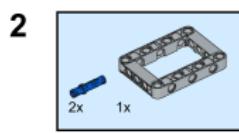
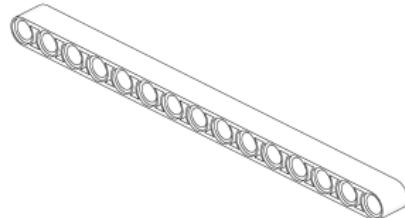
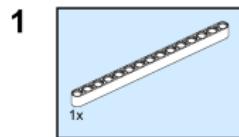
[micro:bit Wonder Building Kit](#)

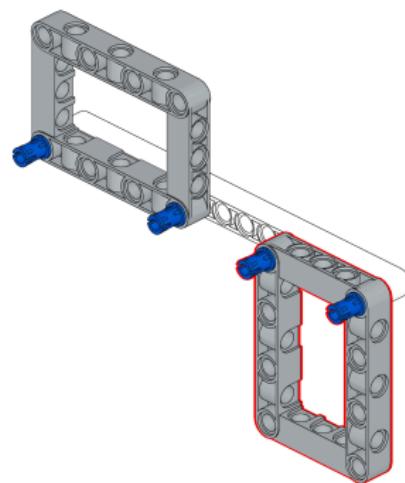
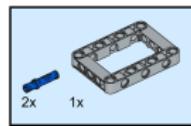
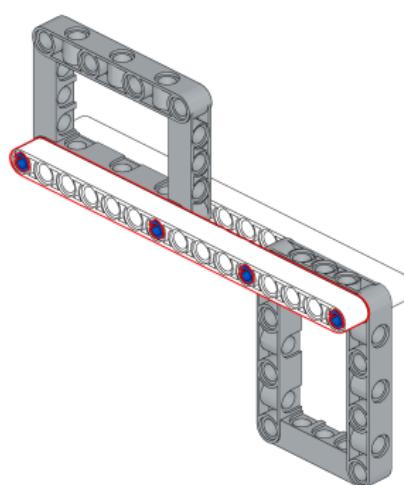
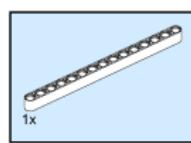
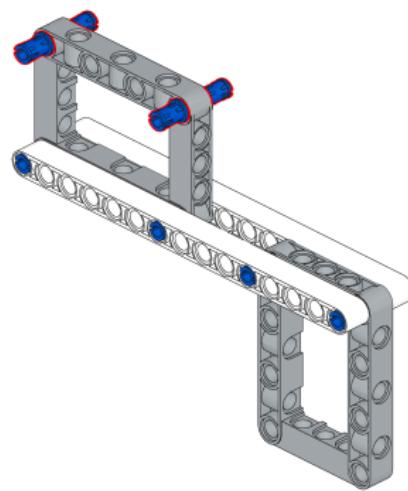
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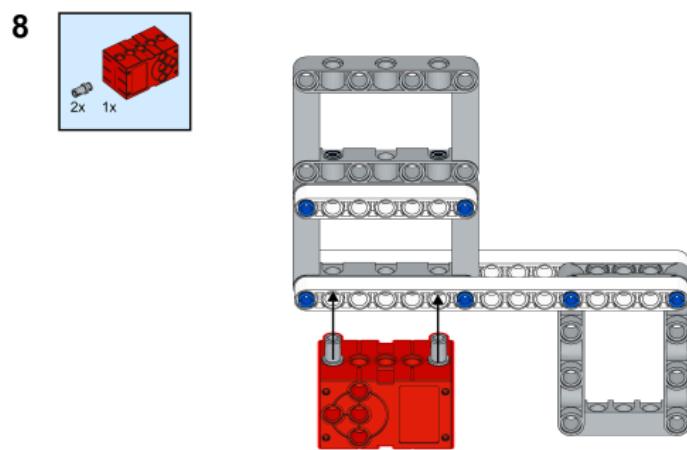
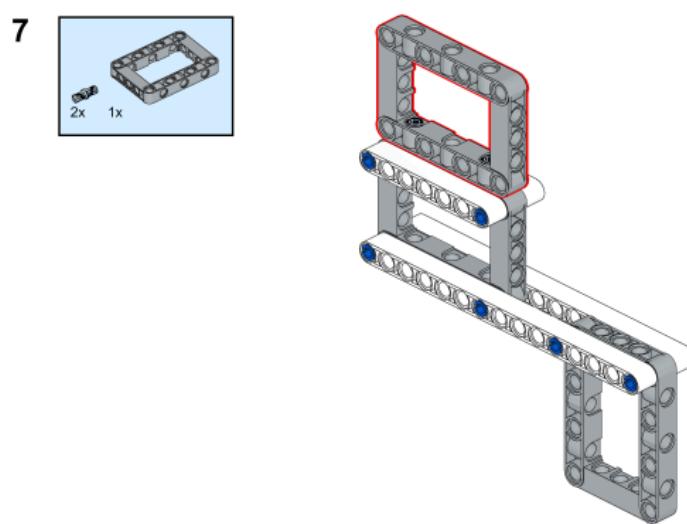
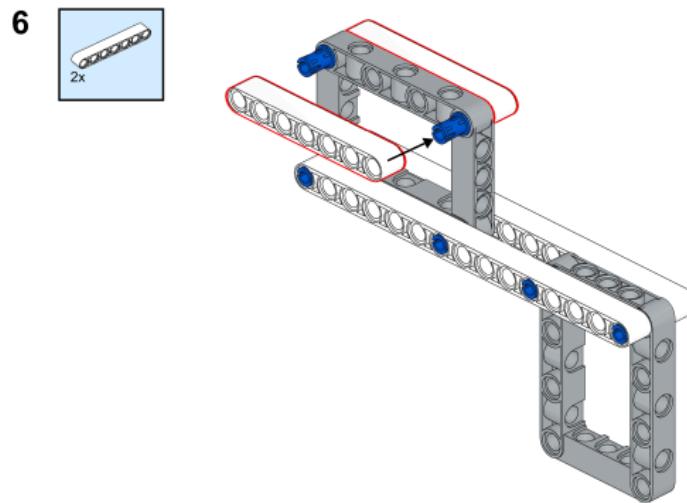


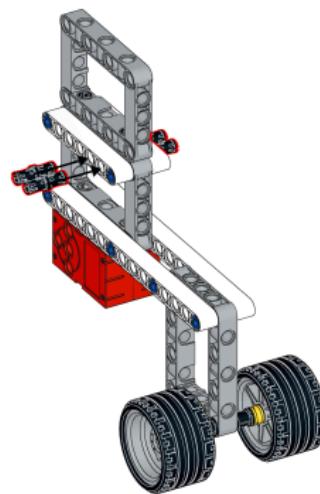
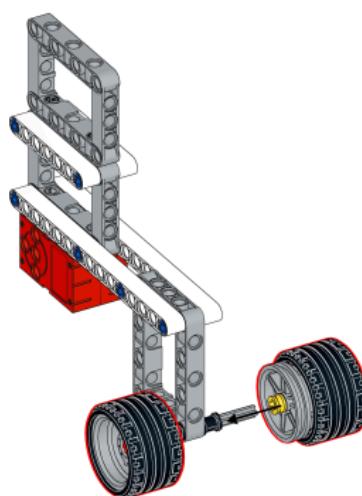
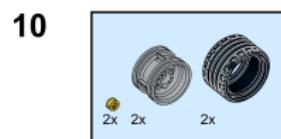
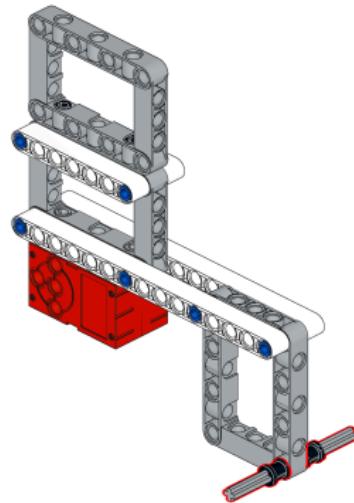
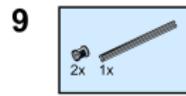
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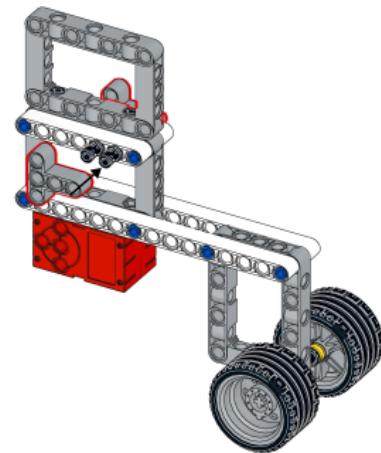
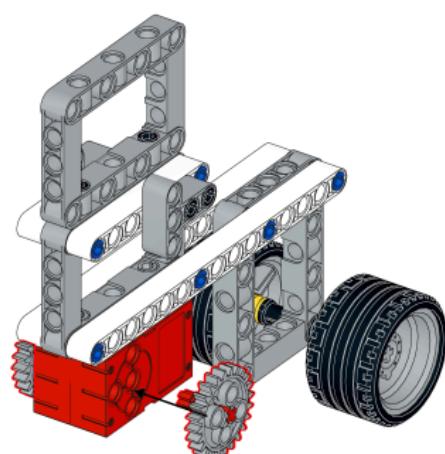
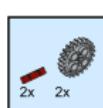
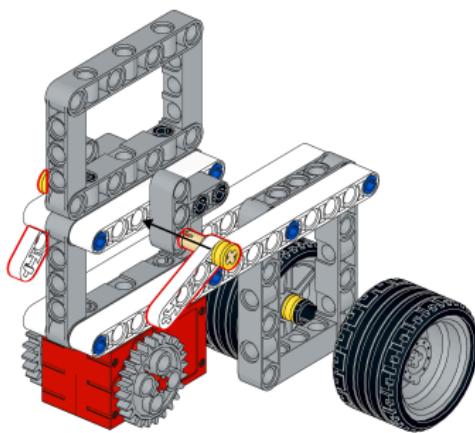
19.4. Bricks build-up

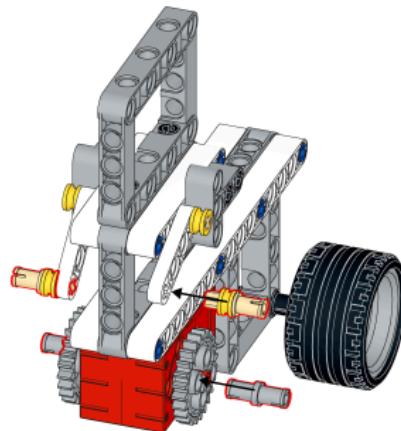
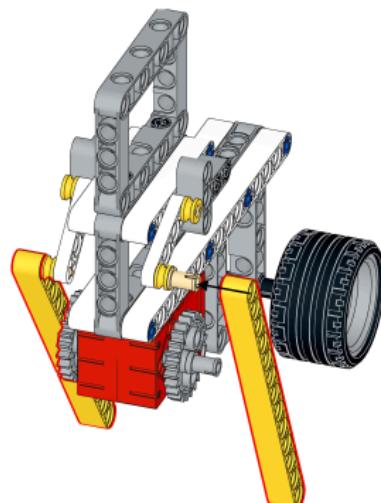
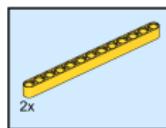
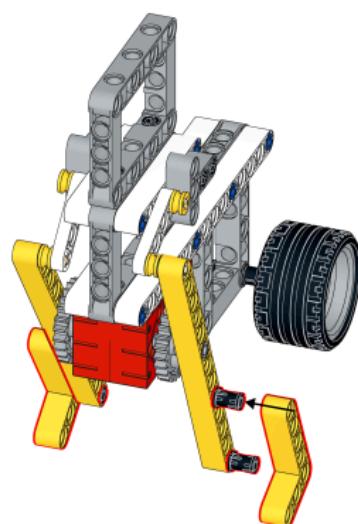
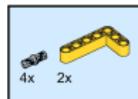


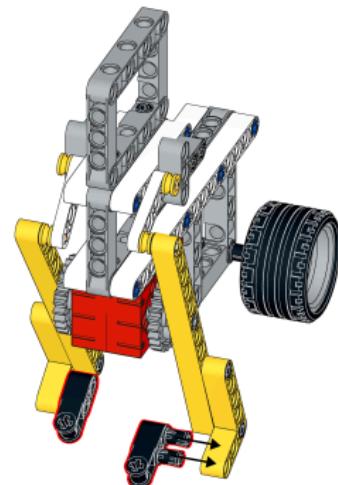
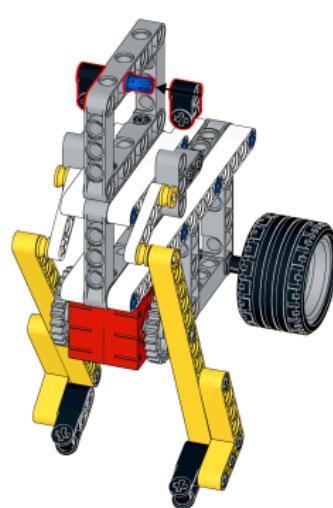
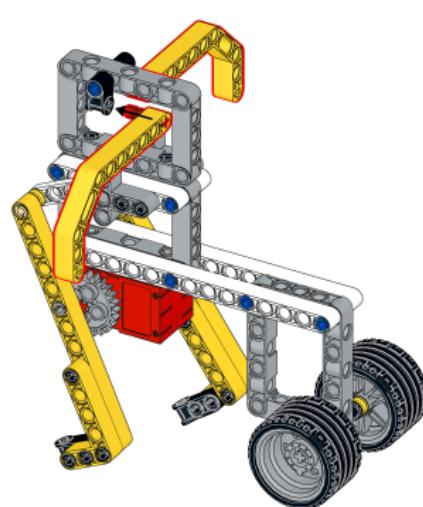
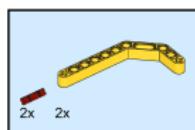
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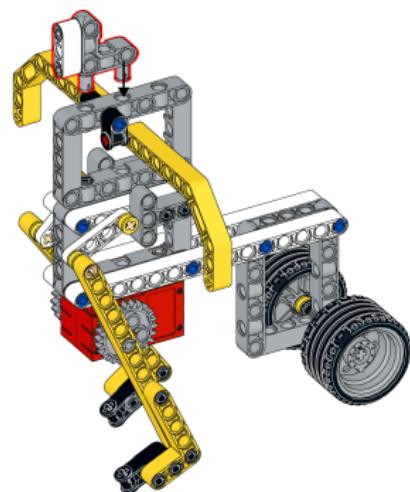
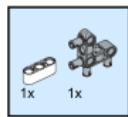
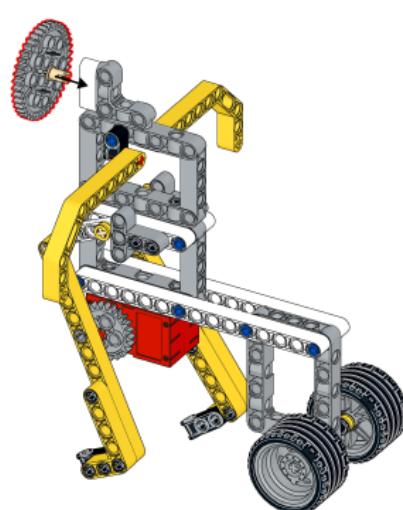
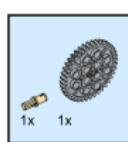
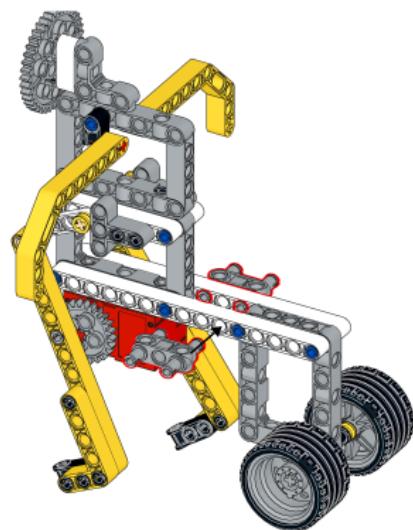


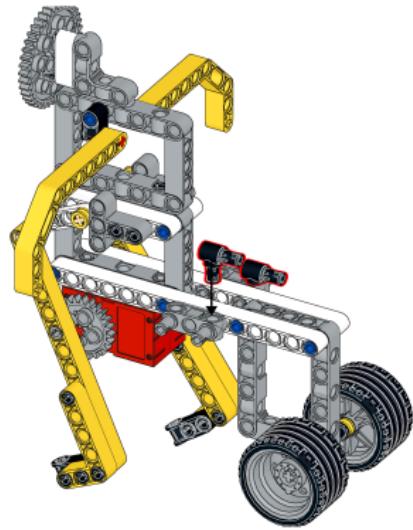
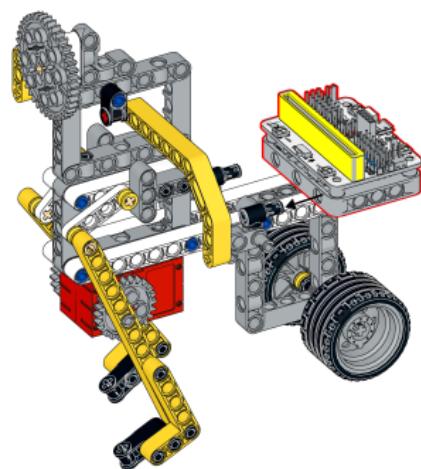
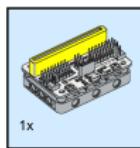
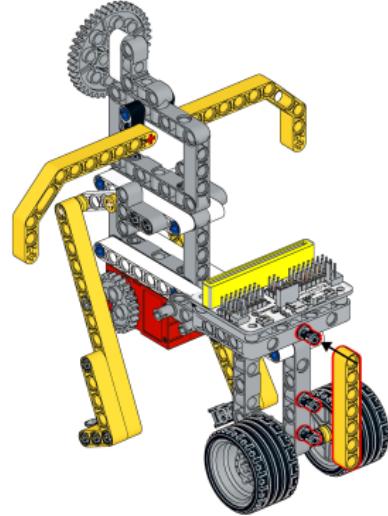
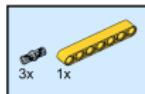


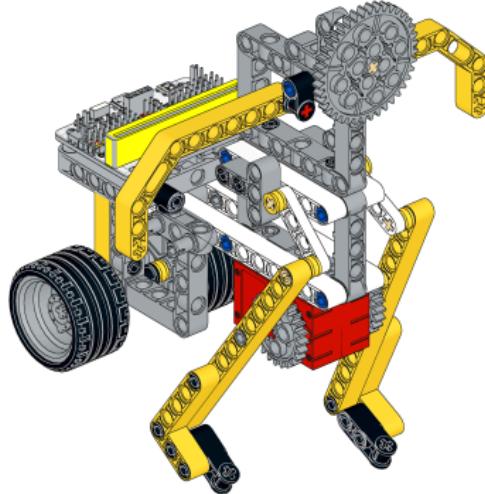
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18**19****20**

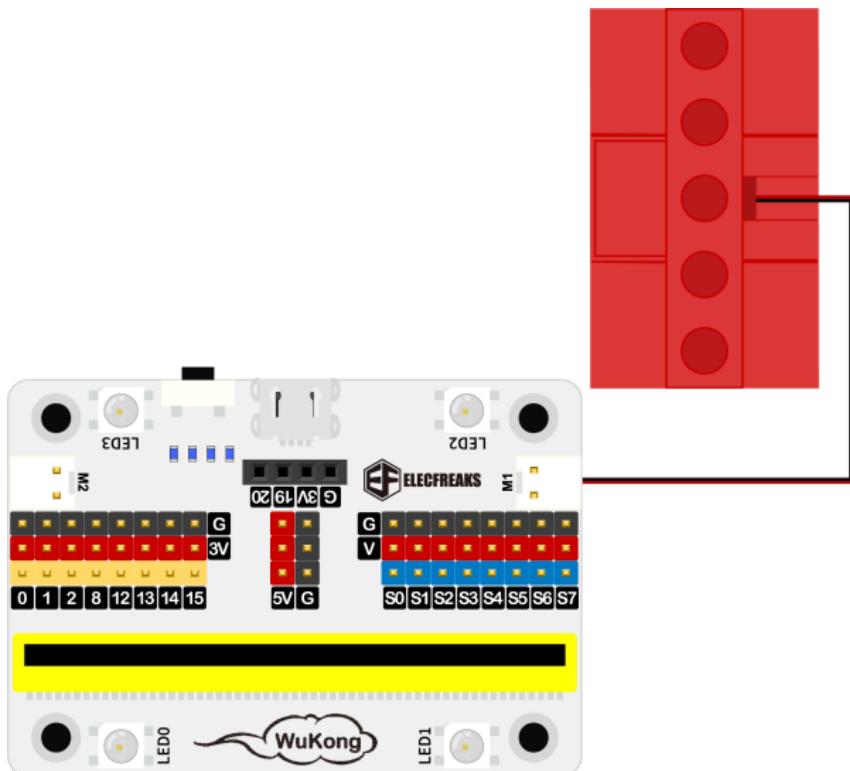
21**22****23**

24**25****26**

27

19.5. Hardware Connection

Connect a [motor](#) to M1 port on [Wukong breakout board](#).



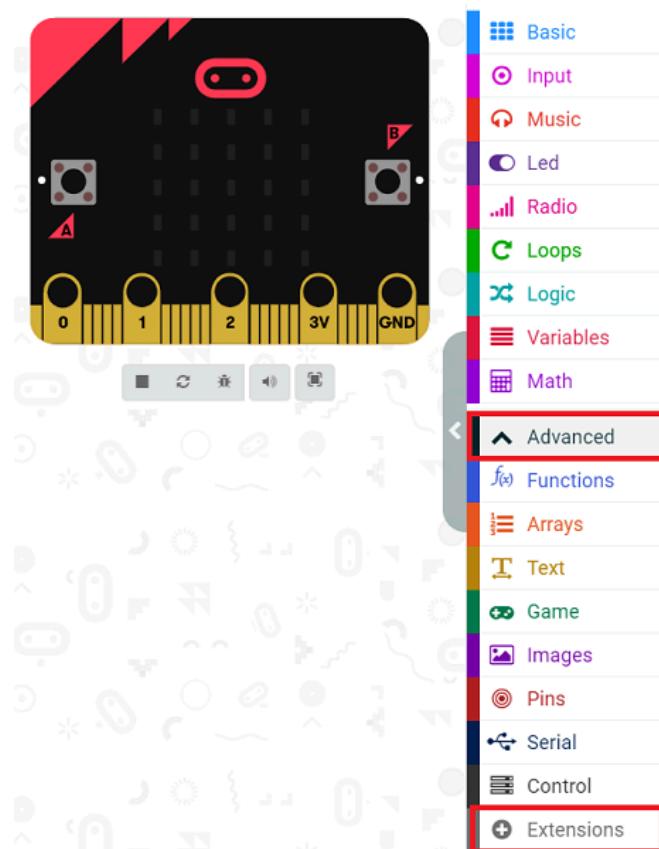
19.6. Software Platform

[MakeCode](#)

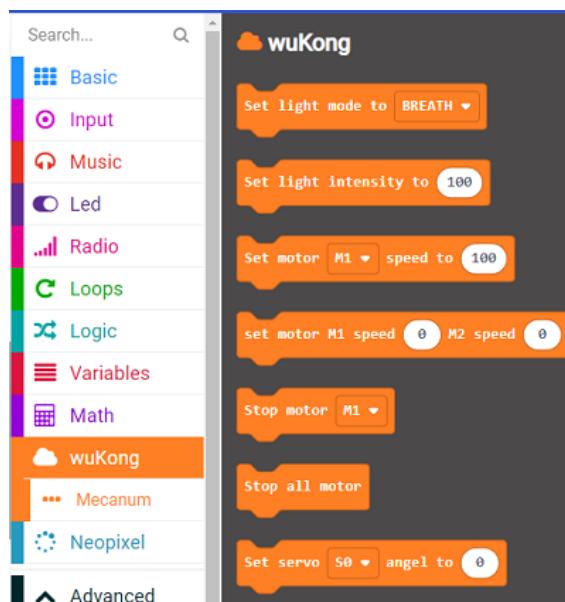
19.7. Coding

Add extensions

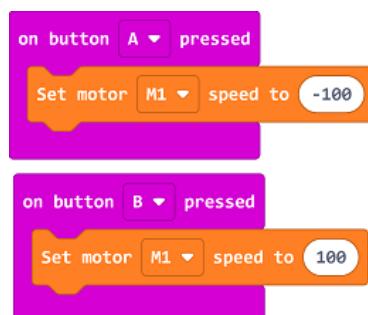
Click "Advanced" in the MakeCode to see more choices.



Search with Wukong in the dialogue box to download it.



Program



Link:https://makecode.microbit.org/_448W1dKFEXT

Result

When button A is pressed the rickshaw moves forward, when button B is pressed the rickshaw moves backward, when button A+B is pressed the it stops moving.

By ELECFREAKS Team

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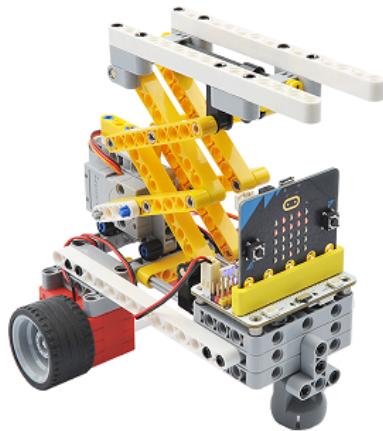
Case 18: The Aerial Ladder Truck

Contents

- [20.1. Purpose](#)
- [20.2. Link:](#)
- [20.3. Materials Required](#)
- [20.4. Bricks build-up](#)
- [20.5. Hardware Connection](#)
- [20.6. Software Platform](#)
- [20.7. Coding](#)

20.1. Purpose

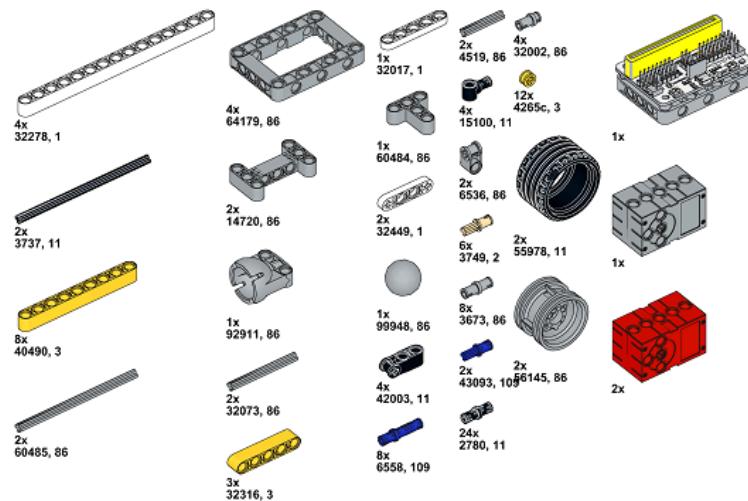
To make an aerial ladder truck.



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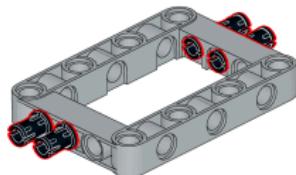
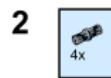
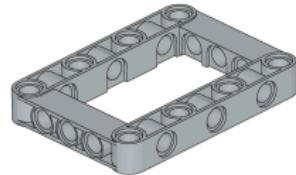
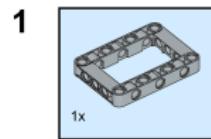
[micro:bit Wonder Building Kit Joystick bit](#)

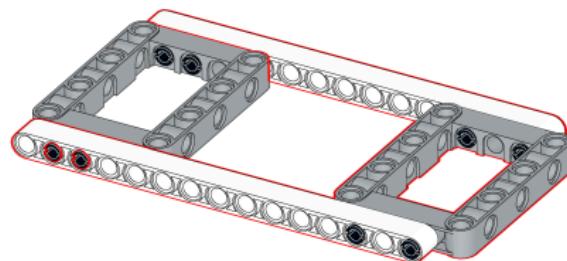
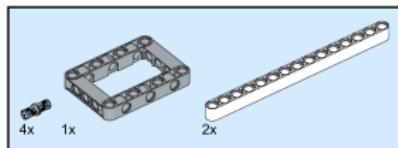
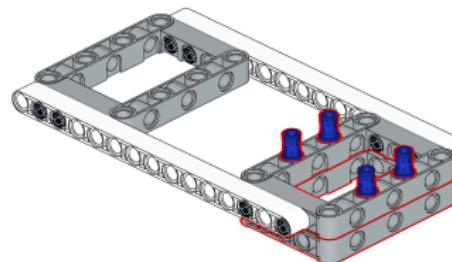
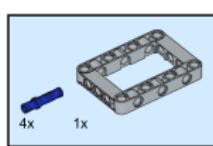
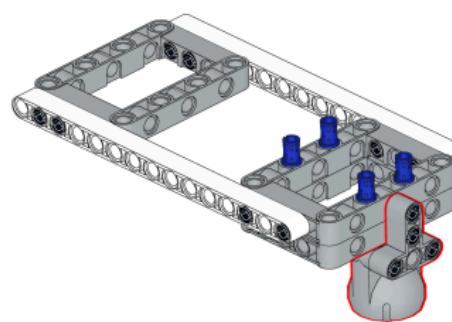
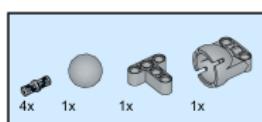
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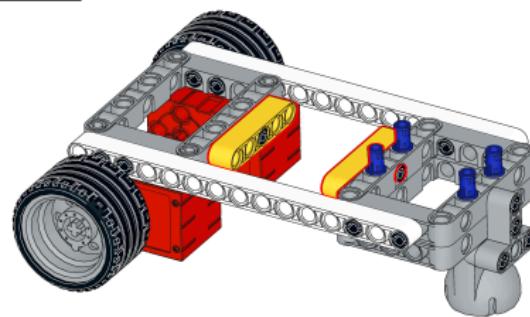
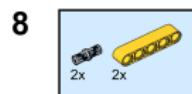
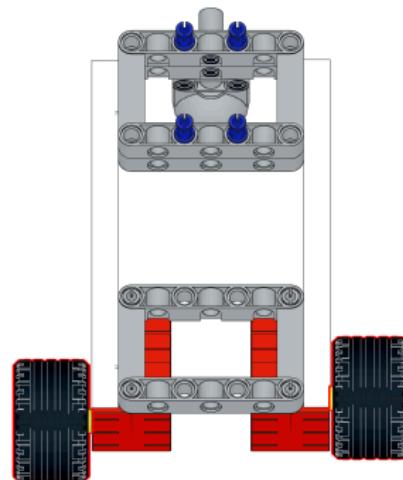
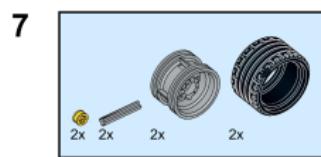
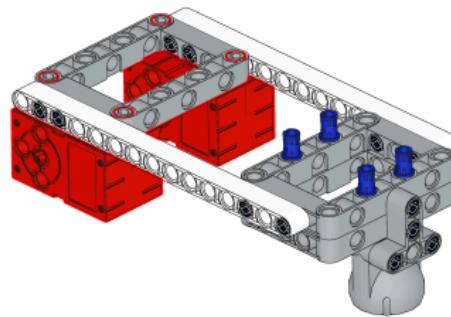
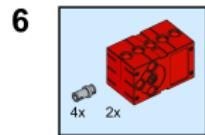


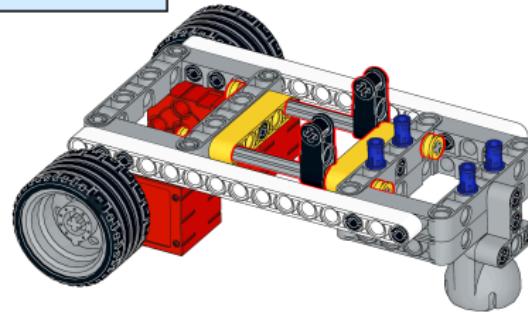
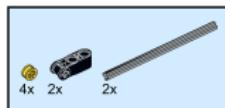
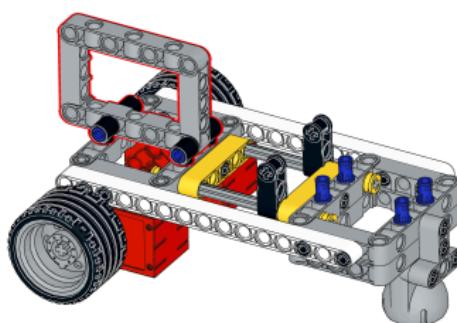
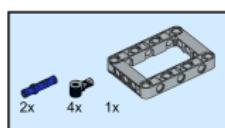
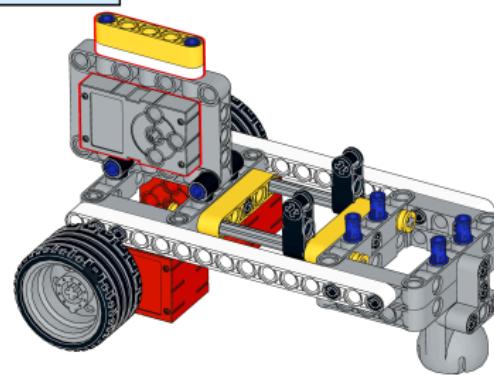
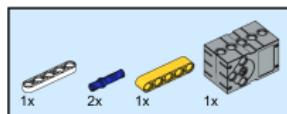
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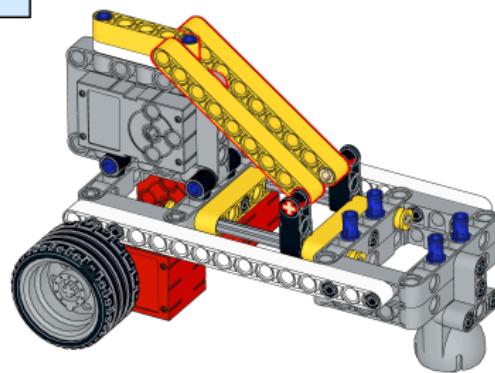
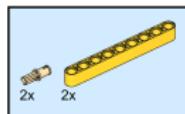
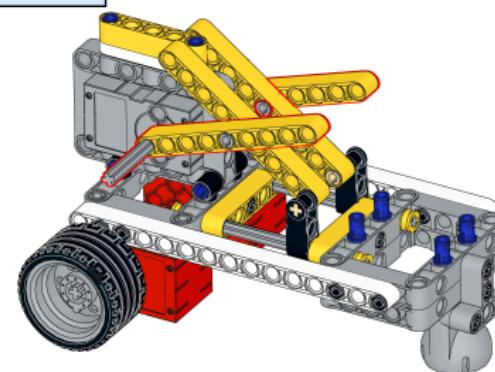
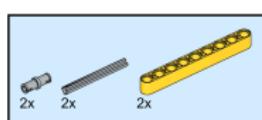
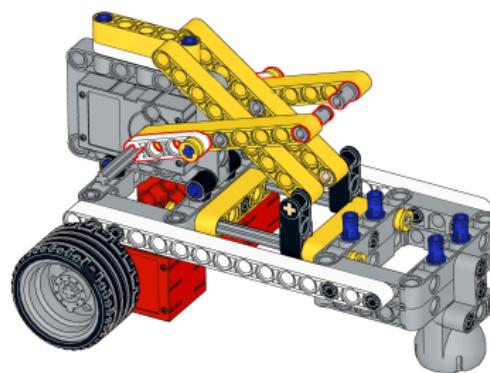
20.4. Bricks build-up

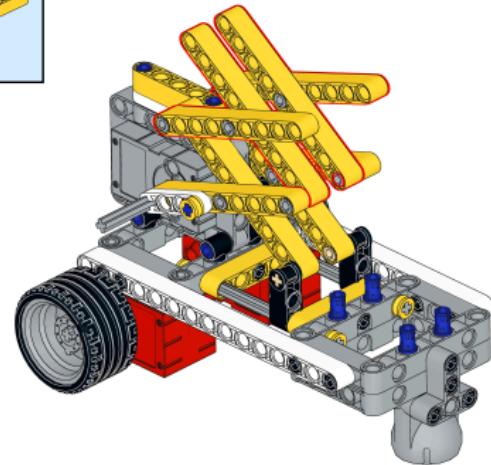
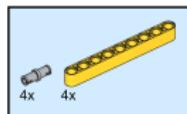
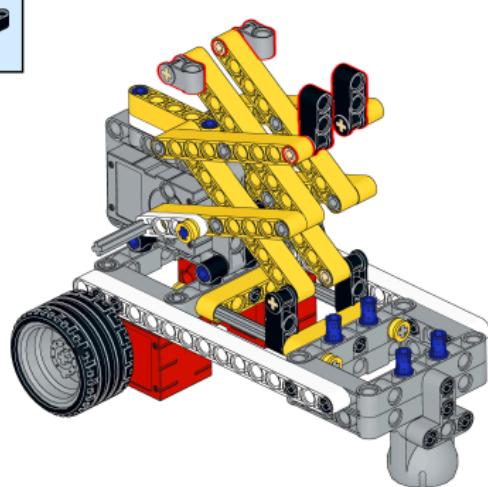
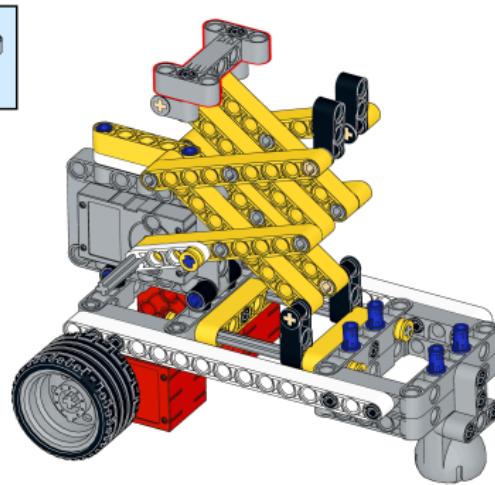
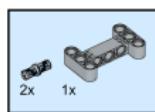


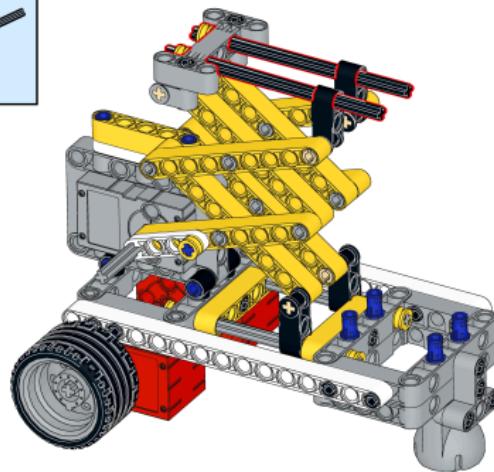
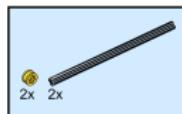
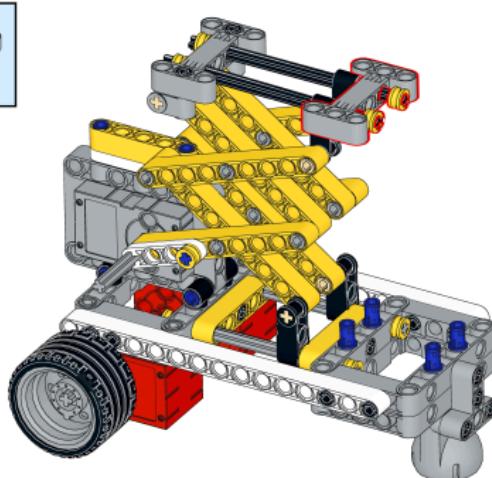
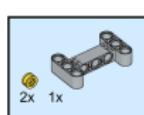
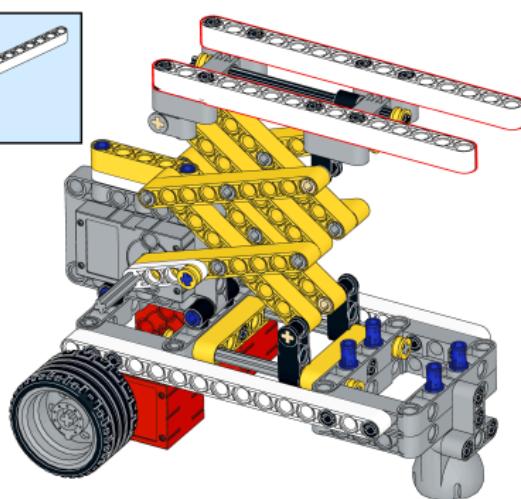
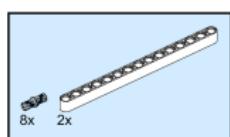
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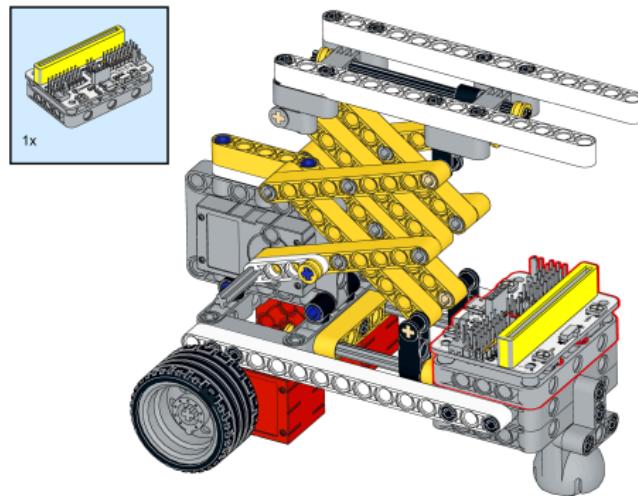
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15**16****17**

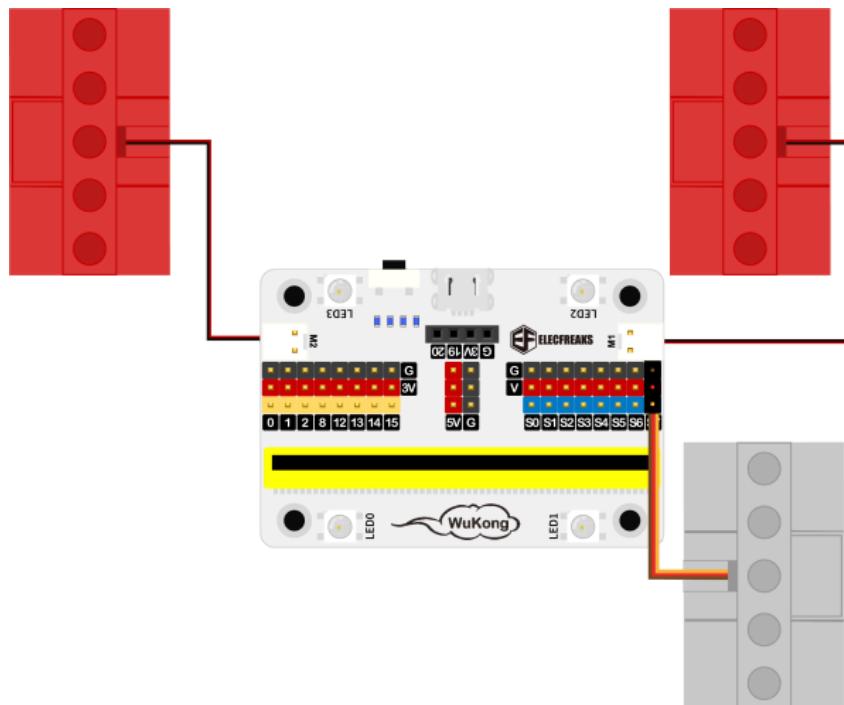
18**19****20**

21



20.5. Hardware Connection

Connect two [motors](#) to M1 and M2, the [servo](#) to S0 ports on [Wukong breakout board](#).



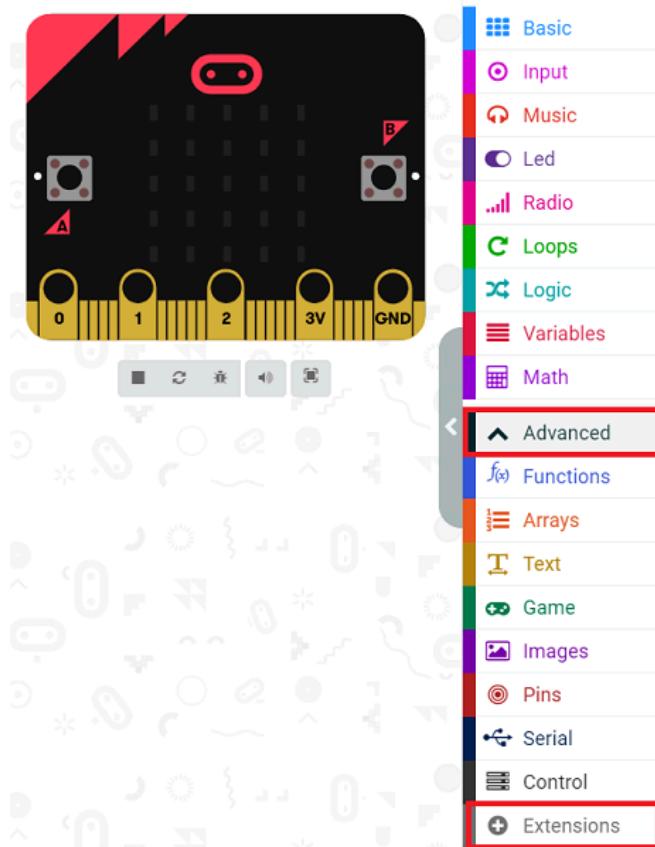
20.6. Software Platform

[MakeCode](#)

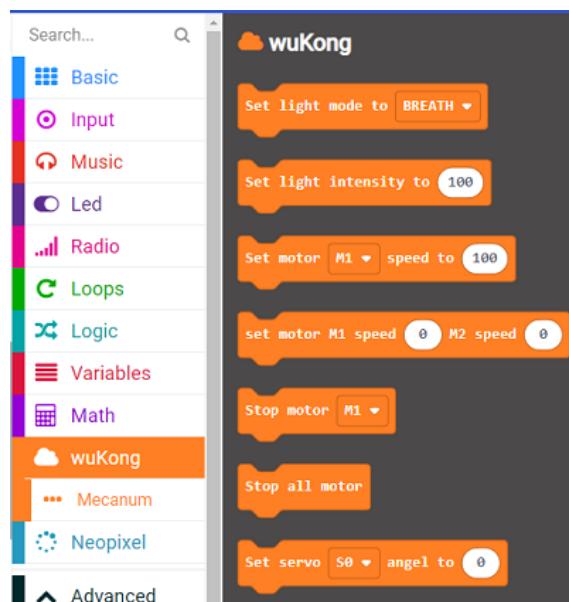
20.7. Coding

Add extensions

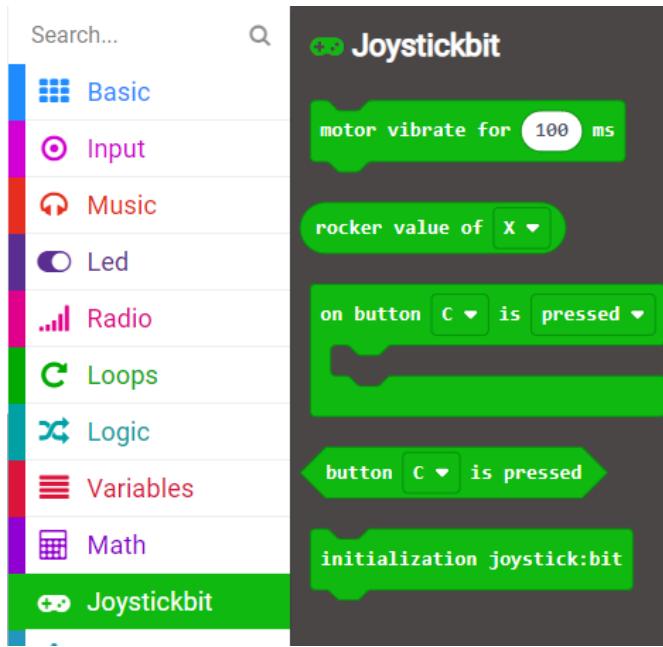
Click “Advanced” in the MakeCode to see more choices.



Search with Wukong in the dialogue box to download it.



Search with joystickbit in the dialogue box to download it.



Program

For Joystick:bit:



The Scratch script starts with an **on start** event which initializes the joystick and sets the radio group to 1. It then enters a **forever** loop. Inside the loop, it checks the X rocker value. If it's less than 200, it sends a radio message of 4. If it's greater than 800, it sends a radio message of 3. It then checks the Y rocker value. If it's less than 200, it sends a radio message of 2. If it's greater than 800, it sends a radio message of 1. Next, it checks if button C is pressed. If so, it sends a radio message of 5. If button D is pressed, it sends a radio message of 6. If neither button is pressed, it checks if button D is not pressed. If true, it sends a radio message of 0. If button C is not pressed, it also sends a radio message of 0. Finally, if none of the conditions are met, it sends a radio message of 0.

Link:https://makecode.microbit.org/_f5DVqMKrtgYA For the aerial ladder truck:

```

on start
  radio set group 1

on radio received [receivedNumber]
  set v to [receivedNumber]

forever
  if v = 1 then
    set motor M1 speed [-100] M2 speed [-100]
  else if v = 2 then
    set motor M1 speed [100] M2 speed [100]
  else if v = 3 then
    set motor M1 speed [50] M2 speed [-50]
  else if v = 4 then
    set motor M1 speed [-50] M2 speed [50]
  else if v = 0 then
    Stop all motor
  else if v = 5 then
    Set [360°] servo S7 angle to [20]
  else if v = 6 then
    Set [360°] servo S7 angle to [72]
end

```

The Scratch script starts with an "on start" event which initializes the radio group to 1. It then listens for a "radio received" message. If the received number is 1, both motors M1 and M2 are set to speed -100. If the received number is 2, both motors M1 and M2 are set to speed 100. If the received number is 3, motor M1 is set to speed 50 and motor M2 is set to speed -50. If the received number is 4, motor M1 is set to speed -50 and motor M2 is set to speed 50. If the received number is 0, all motors are stopped. If the received number is 5, servo S7 is set to an angle of 20 degrees. If the received number is 6, servo S7 is set to an angle of 72 degrees.

Link:https://makecode.microbit.org/_2vYd4UPpWf24

Result

Use the handle to control the ladder truck, the up and down, left and right directions of the rocker are to control the forward and backward, the left and right movement of the ladder truck, the C and D buttons are to control the lift of the ladder truck.

By ELECFREAKS Team

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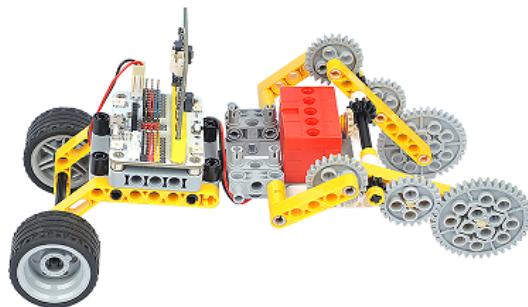
Case 19: The Crawler

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- [21.1. Purpose](#)
- [21.2. Link:](#)
- [21.3. Materials Required](#)
- [21.4. Bricks build-up](#)
- [21.5. Hardware Connection](#)
- [21.6. Software Platform](#)
- [21.7. Coding](#)

21.1. Purpose

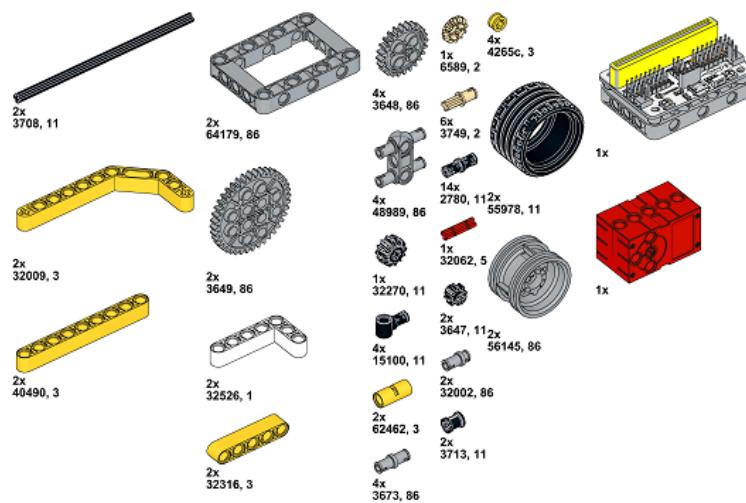
To make a crawler.



21.2. Link:

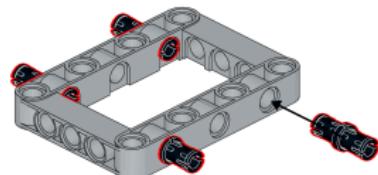
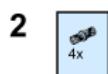
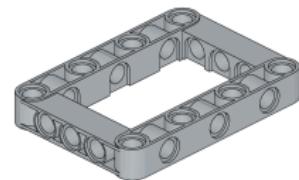
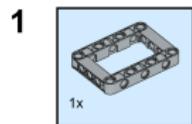
[micro:bit Wonder Building Kit](#)

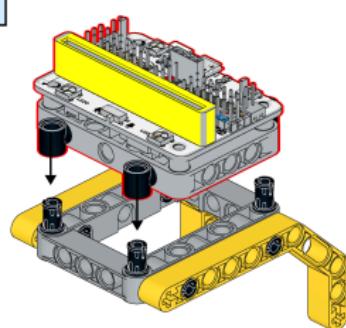
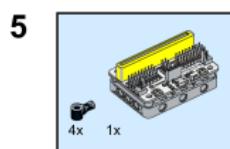
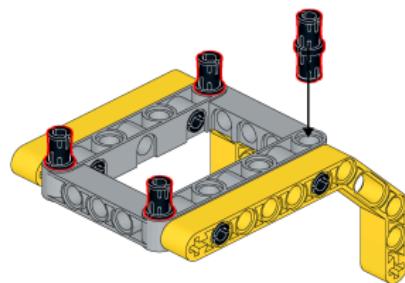
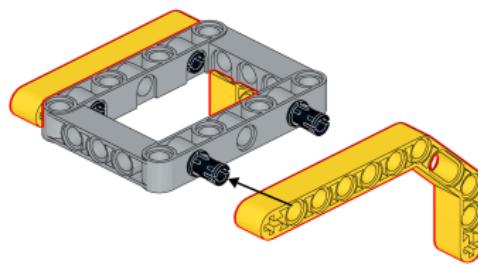
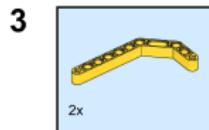
21.3. Materials Required

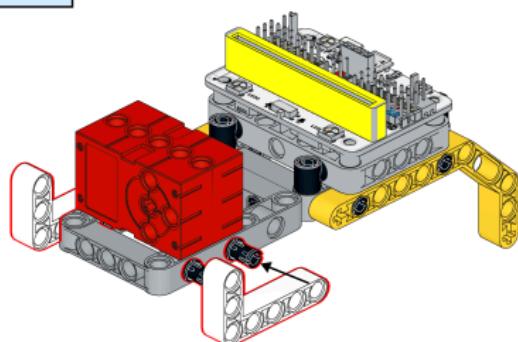
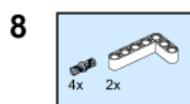
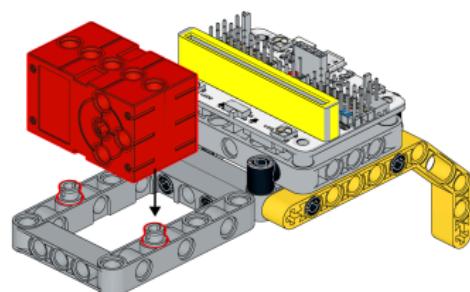
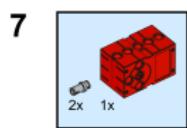
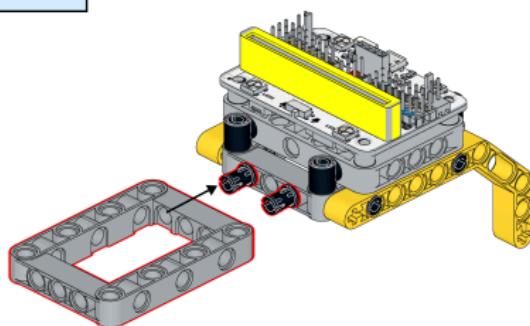
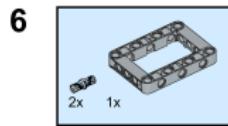


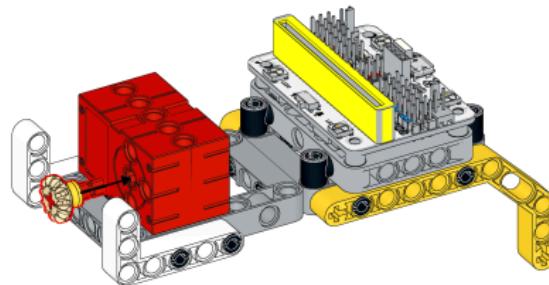
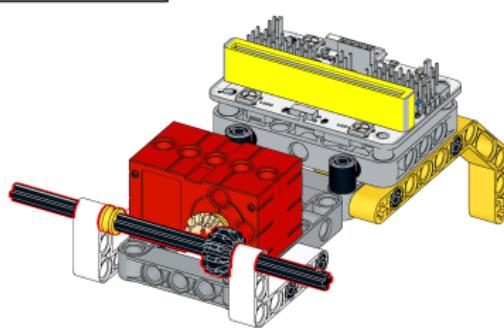
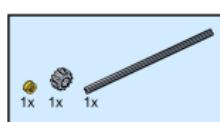
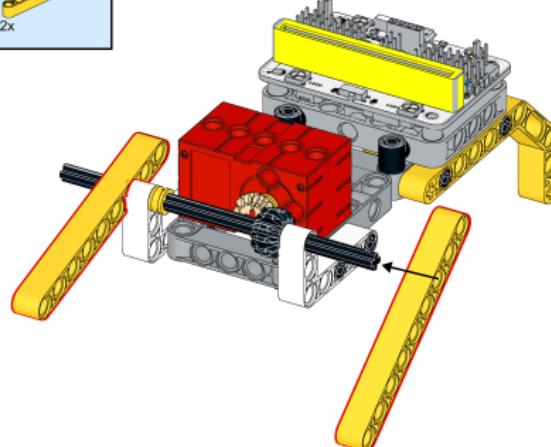
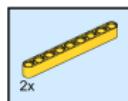
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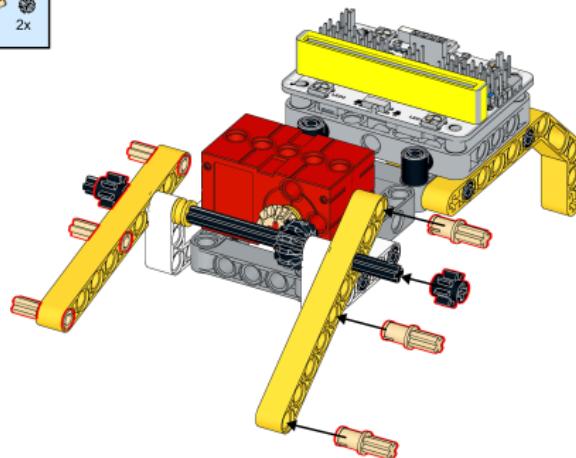
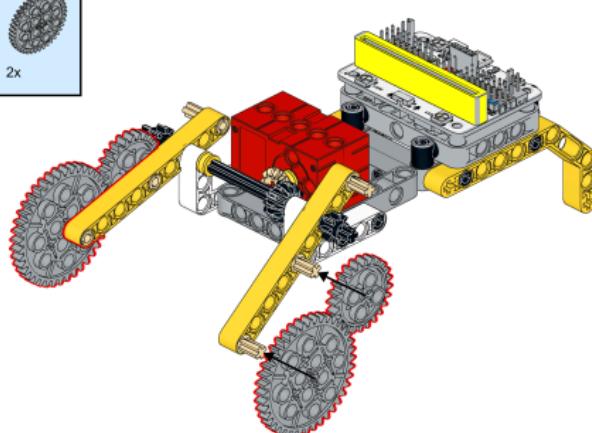
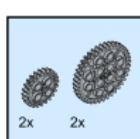
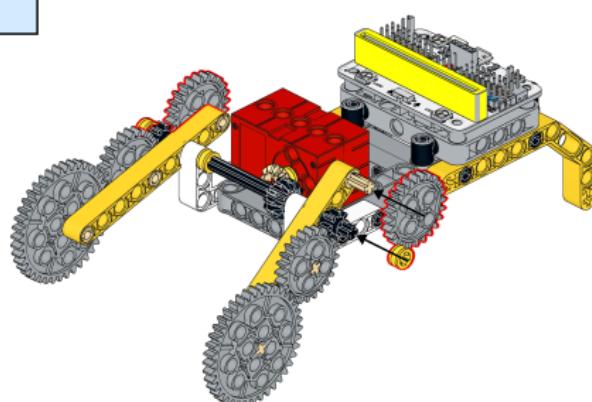
21.4. Bricks build-up

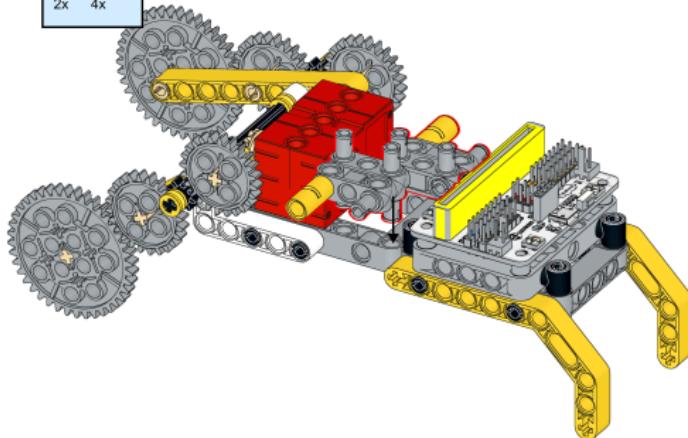
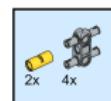
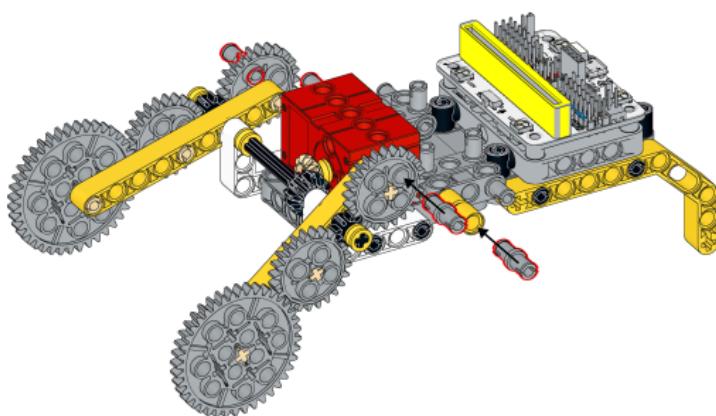
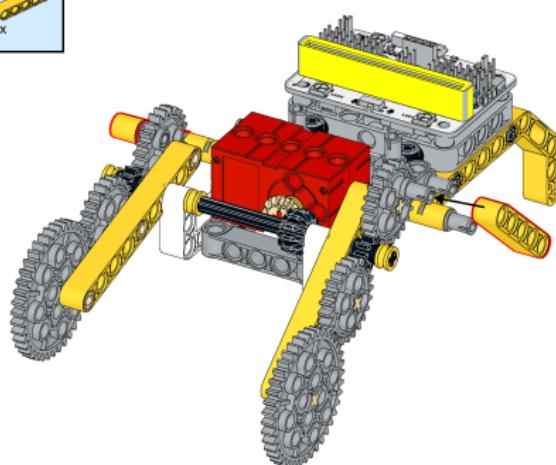


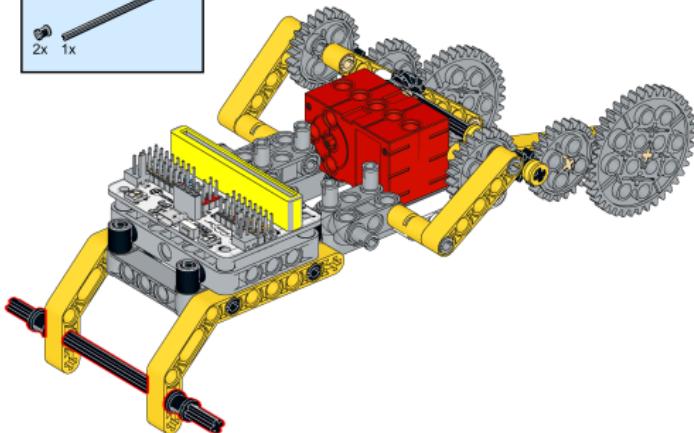
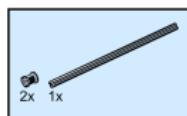
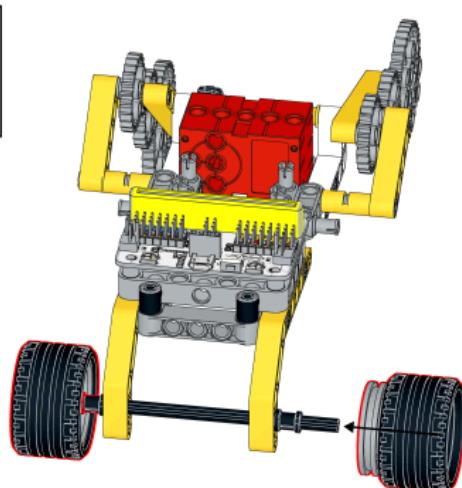
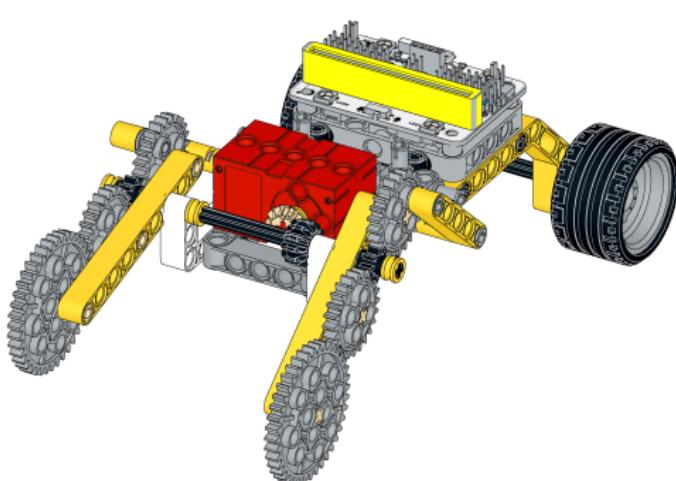




9**10****11**

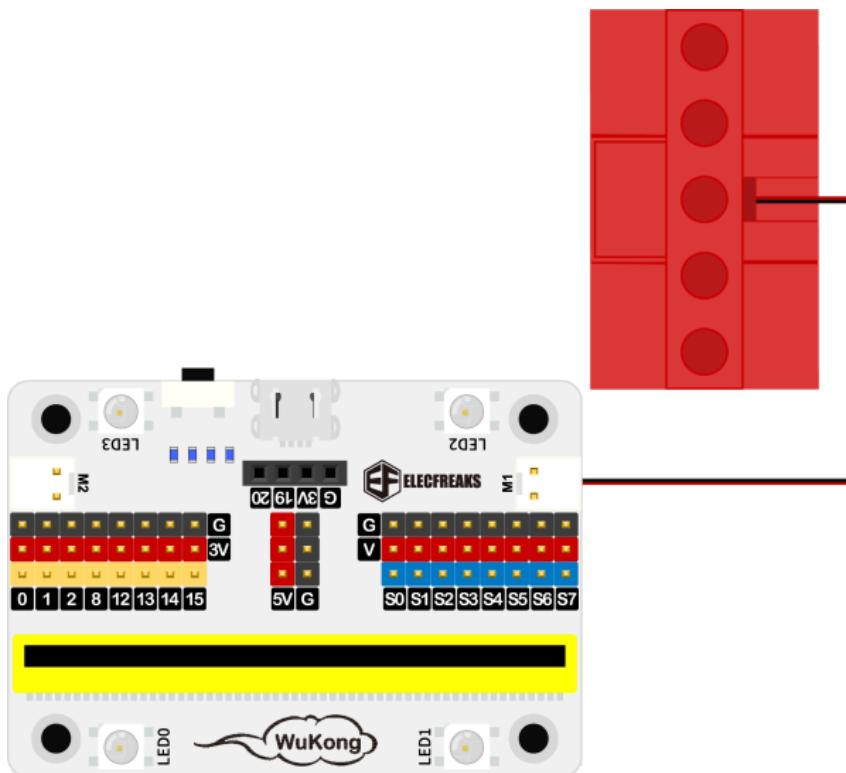
12**13****14**

15**16****17**

18**19****20**

21.5. Hardware Connection

Connect a [motor](#) to M1 port on [Wukong breakout board](#).



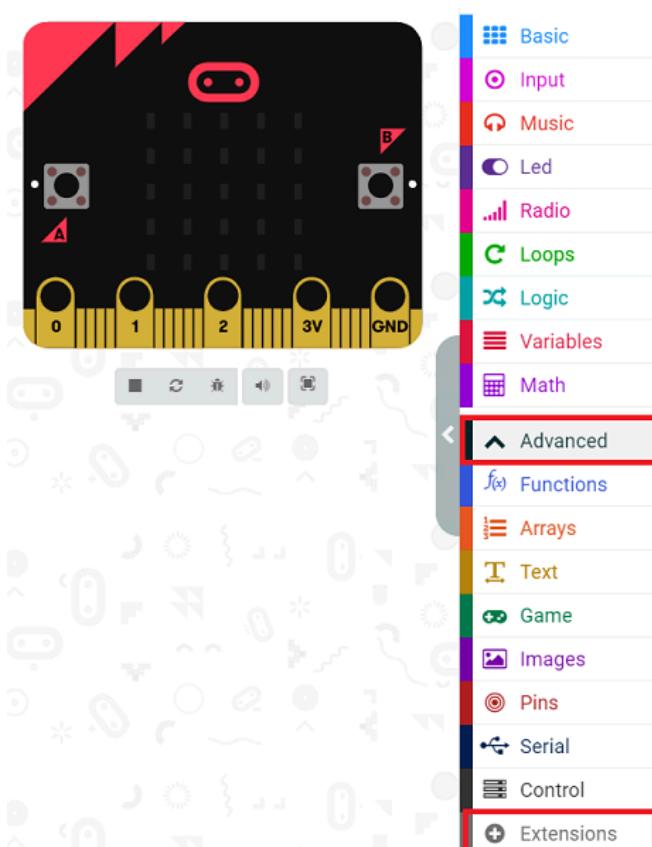
21.6. Software Platform

[MakeCode](#)

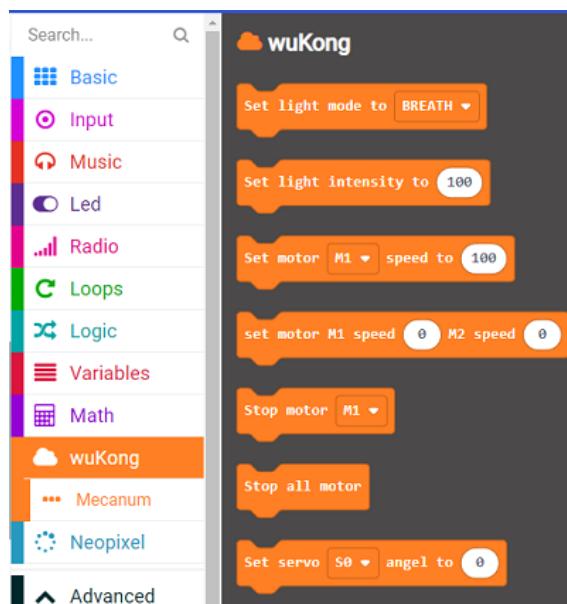
21.7. Coding

Add extensions

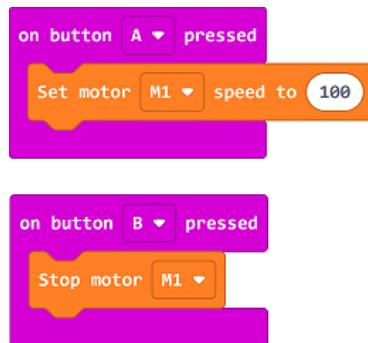
Click "Advanced" in the MakeCode to see more choices.



Search with Wukong in the dialogue box to download it.



Program



Link: https://makecode.microbit.org/_289eegA6E7jP

Result

The crawler moves forward when button A is pressed, and stops moving when button B is pressed.

By ELECFREAKS Team

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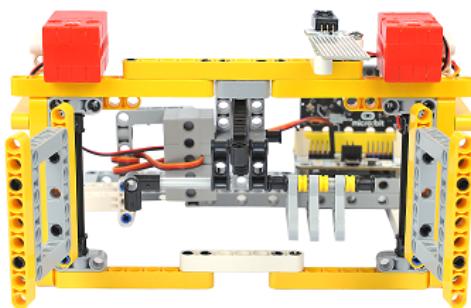
Case 20: The Smart Airer

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- [22.2. Link:](#)
- [22.3. Materials Required](#)
- [22.4. Bricks build-up](#)
- [22.5. Installation Methods of Hardwares](#)
- [22.6. Hardware Connection](#)
- [22.7. Software Platform](#)
- [22.8. Coding](#)

22.1. Purpose

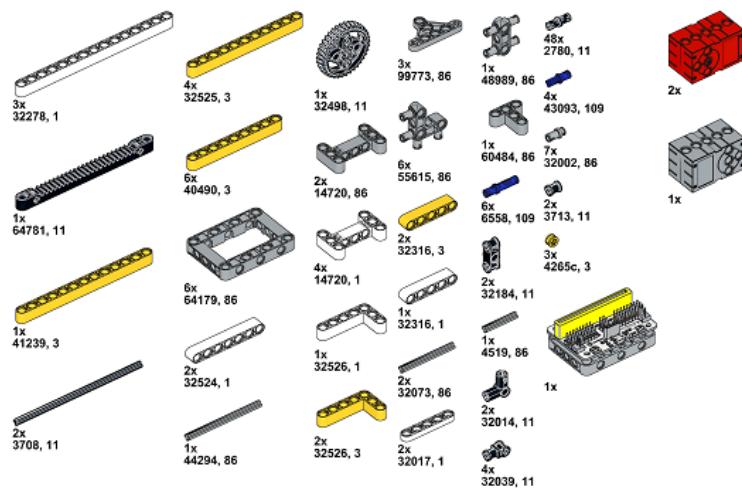
To make a smart airer.



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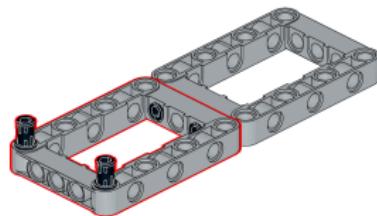
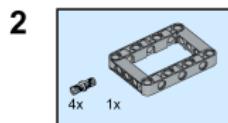
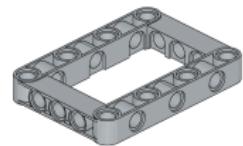
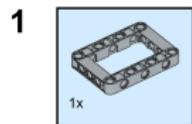
[micro:bit Wonder Building Kit](#)

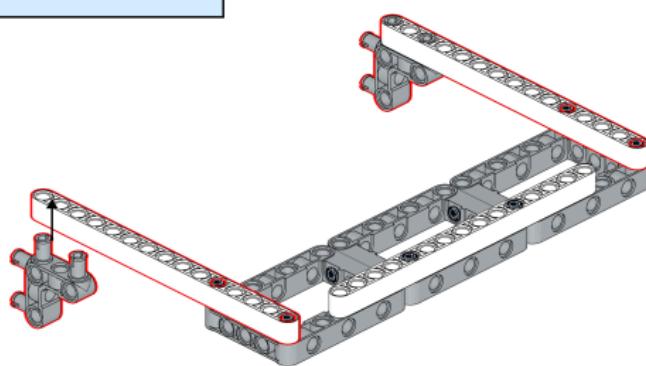
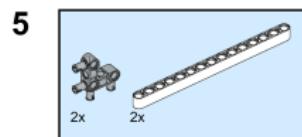
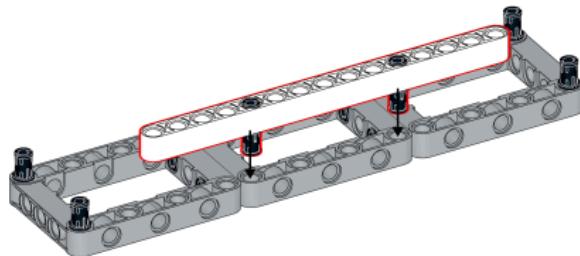
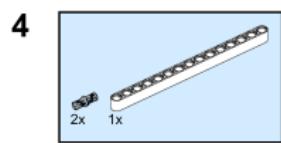
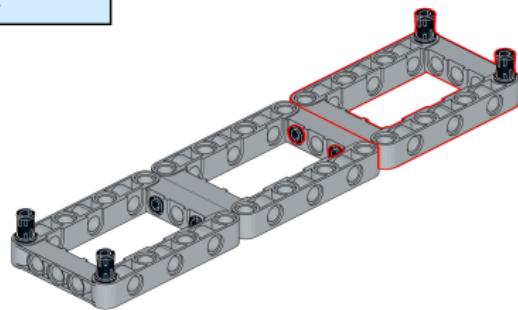
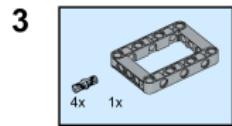
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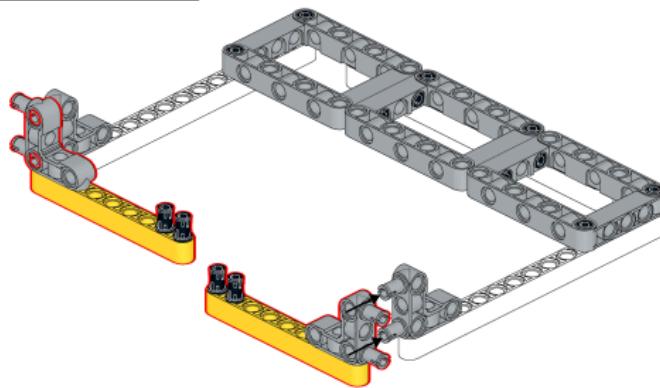
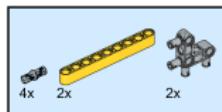
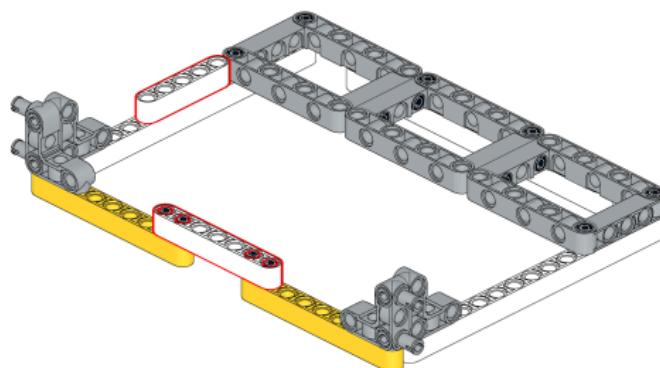
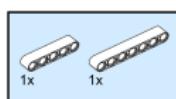
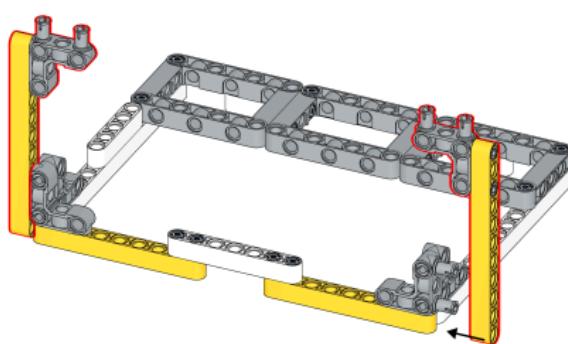
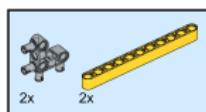


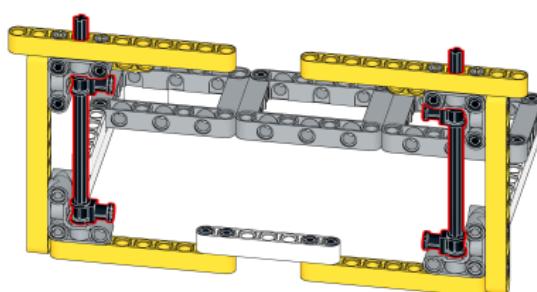
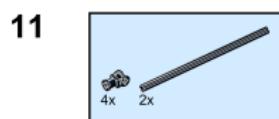
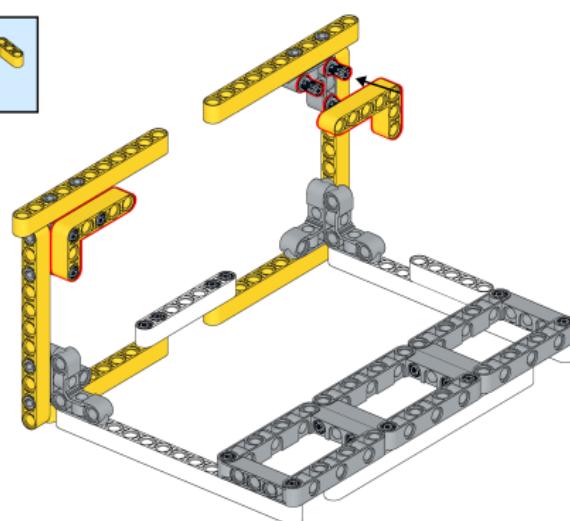
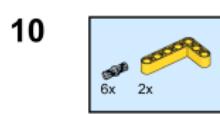
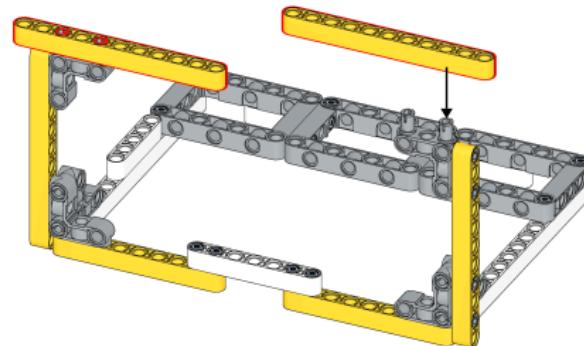
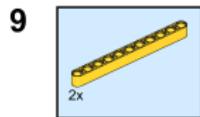
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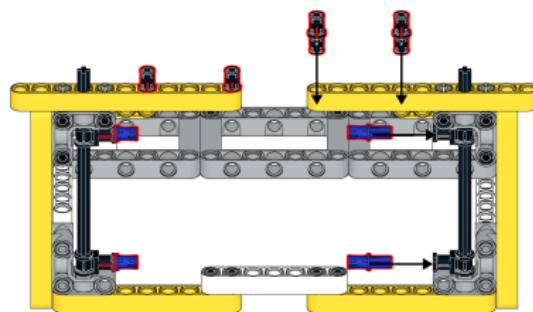
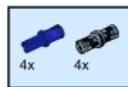
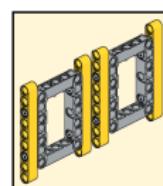
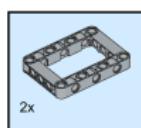
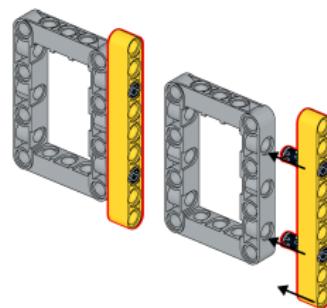
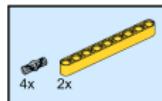
22.4. Bricks build-up

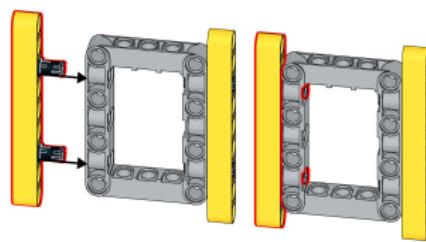
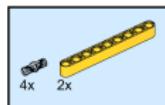
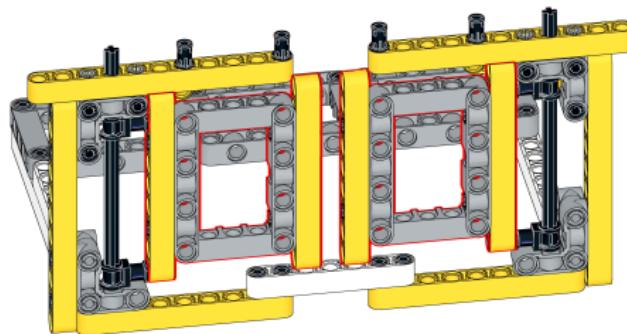
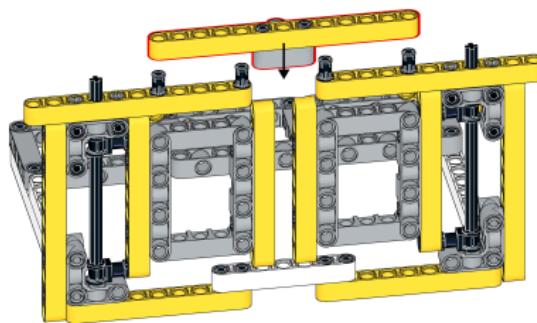
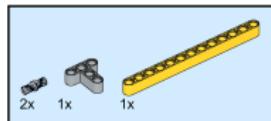


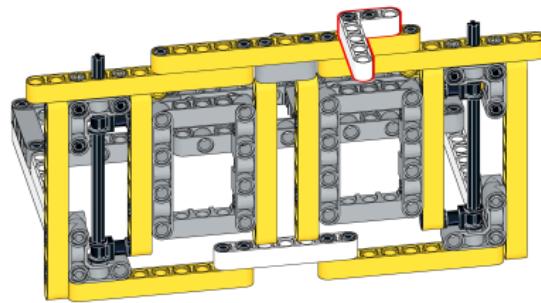
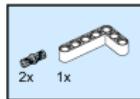
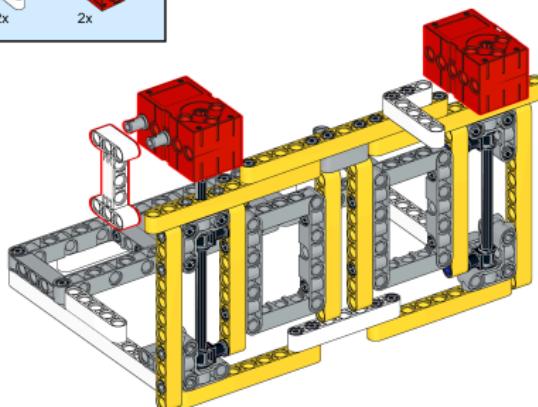
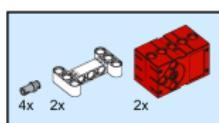
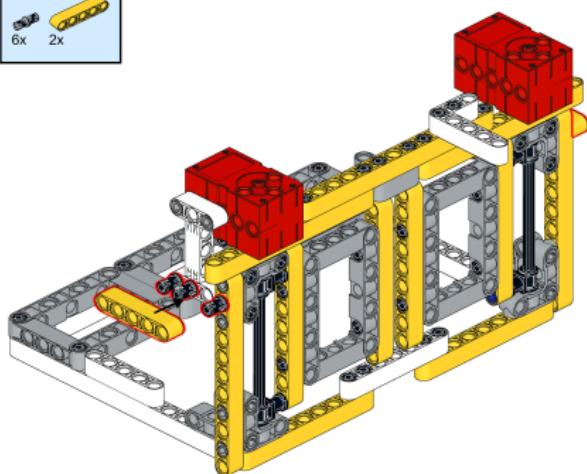
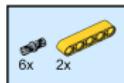


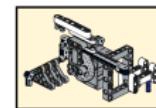
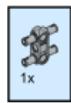
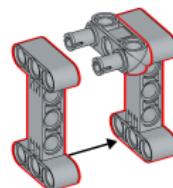
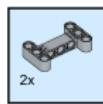
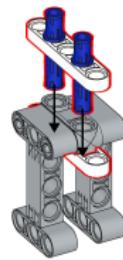
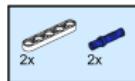
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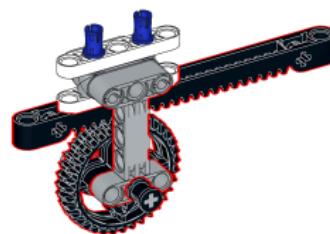
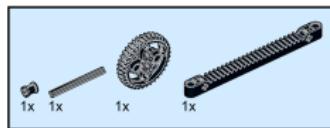
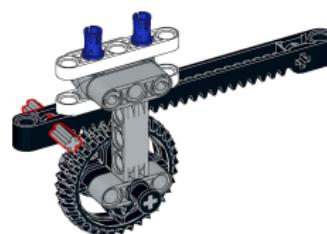
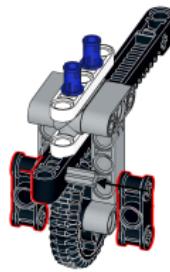


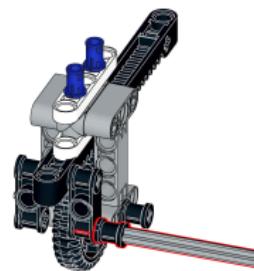
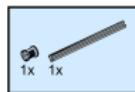
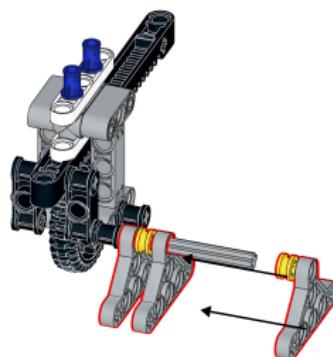
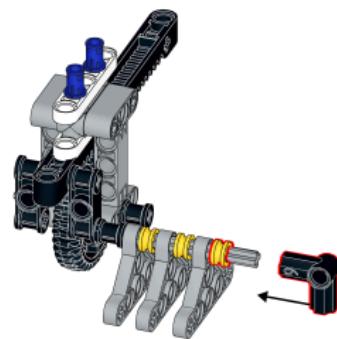
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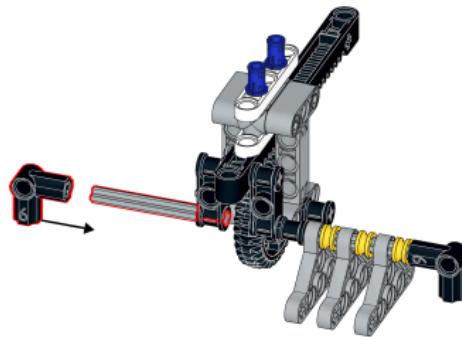
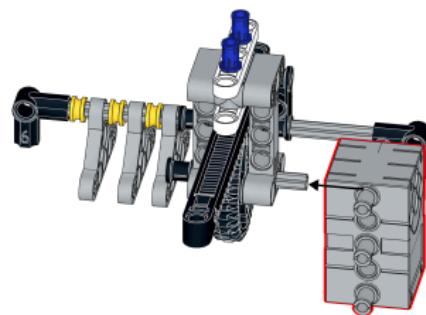
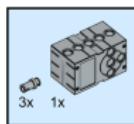
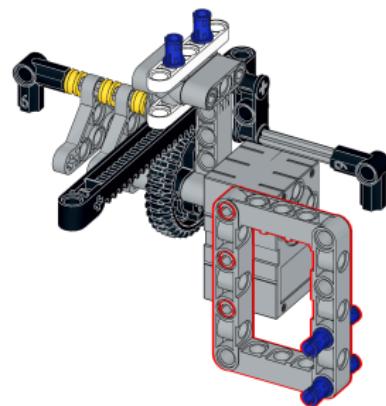
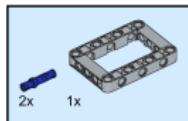
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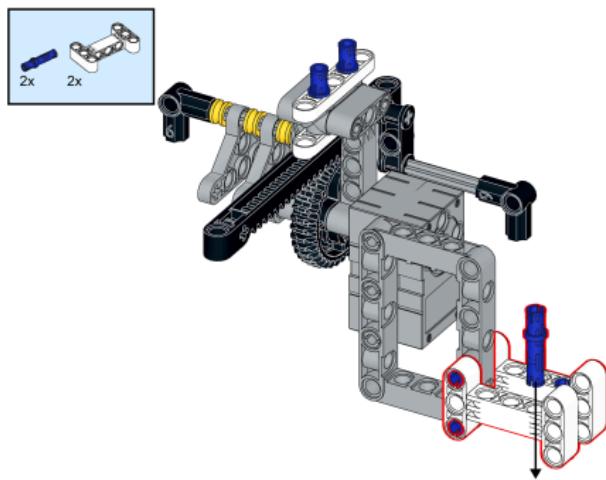
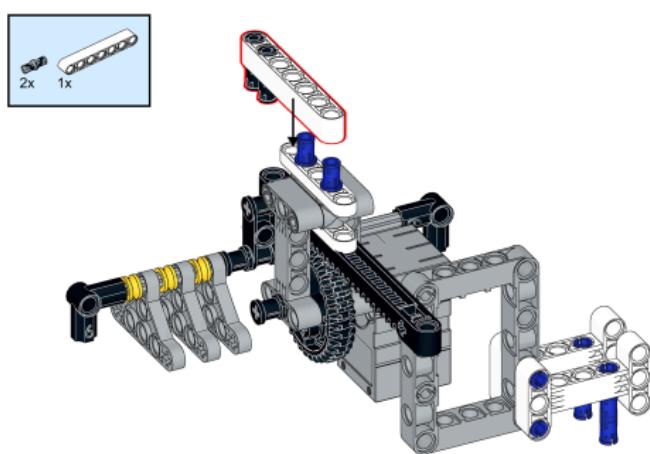
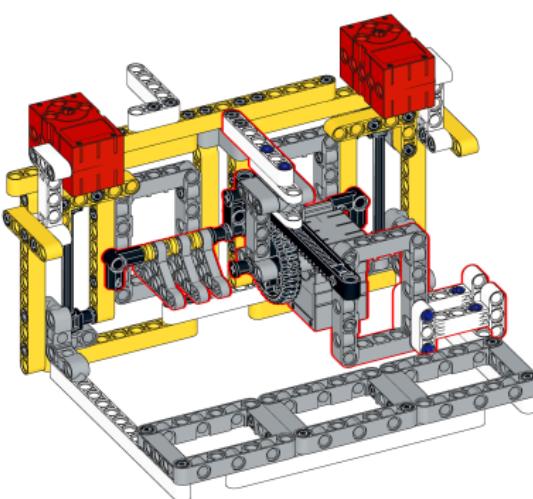
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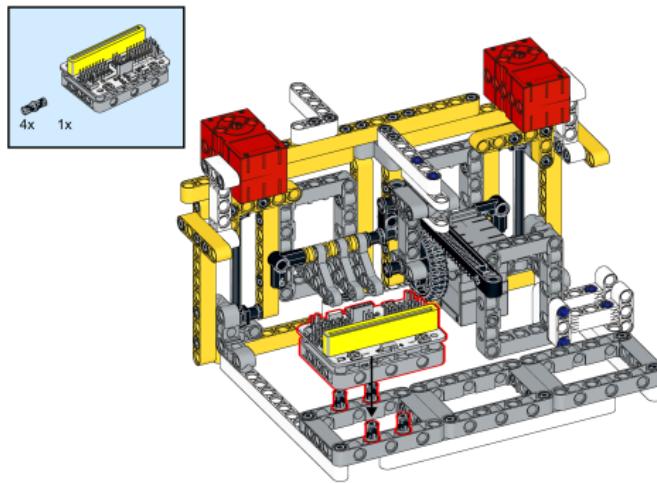
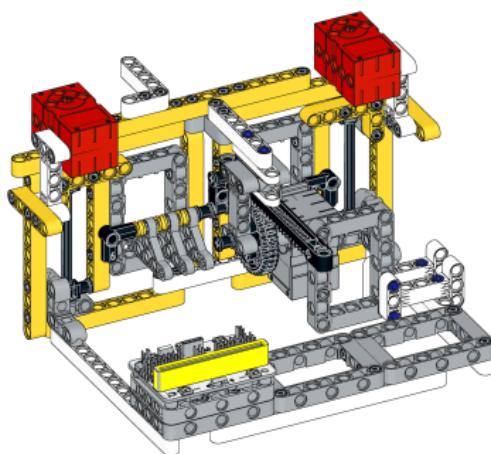
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27**28****29**

30**31****32**

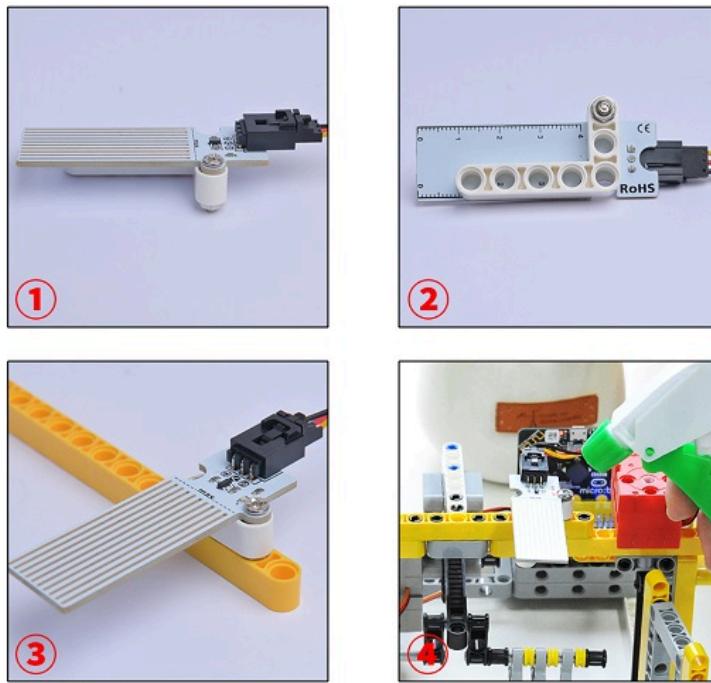
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36**37**

22.5. Installation Methods of Hardwares

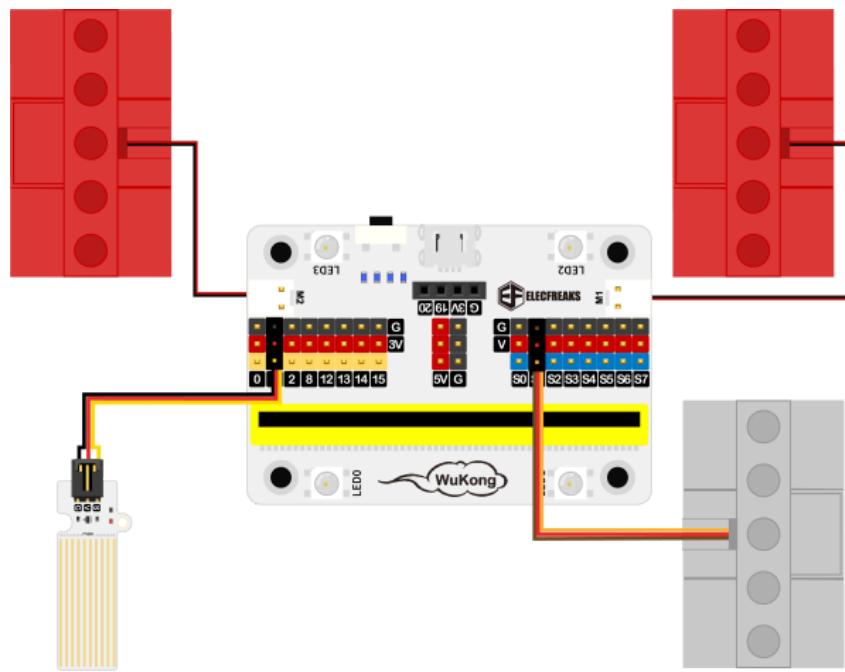
Install the water level sensor with the bricks.

Sensor Connection Diagram



22.6. Hardware Connection

Connect two [motors](#) to M1 and M2, the [servo](#) to S1 and the [water level sensor](#) to P1 ports on [Wukong breakout board](#).



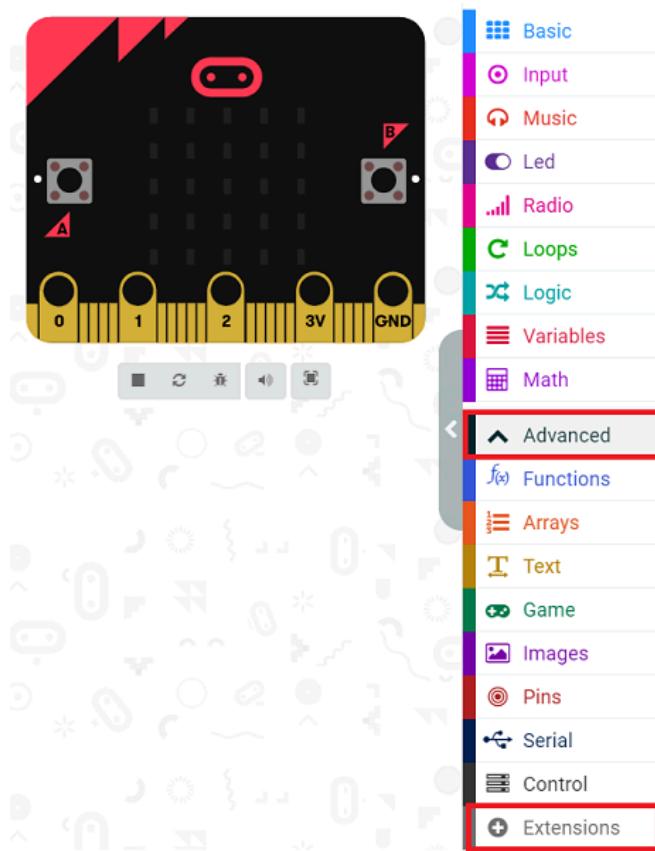
22.7. Software Platform

[MakeCode](#)

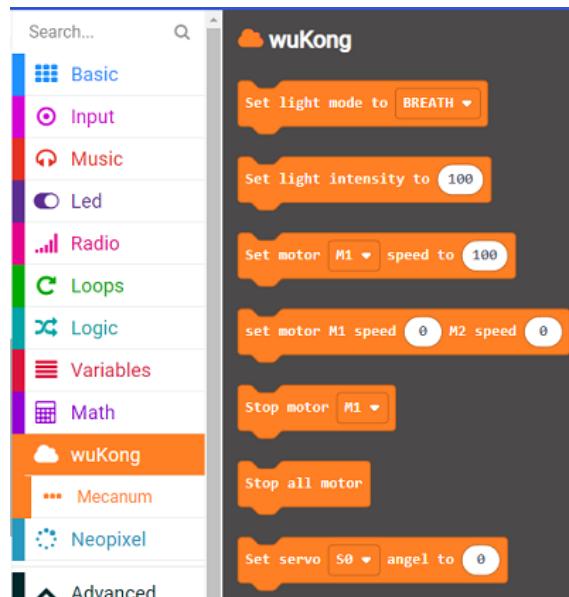
22.8. Coding

Add extensions

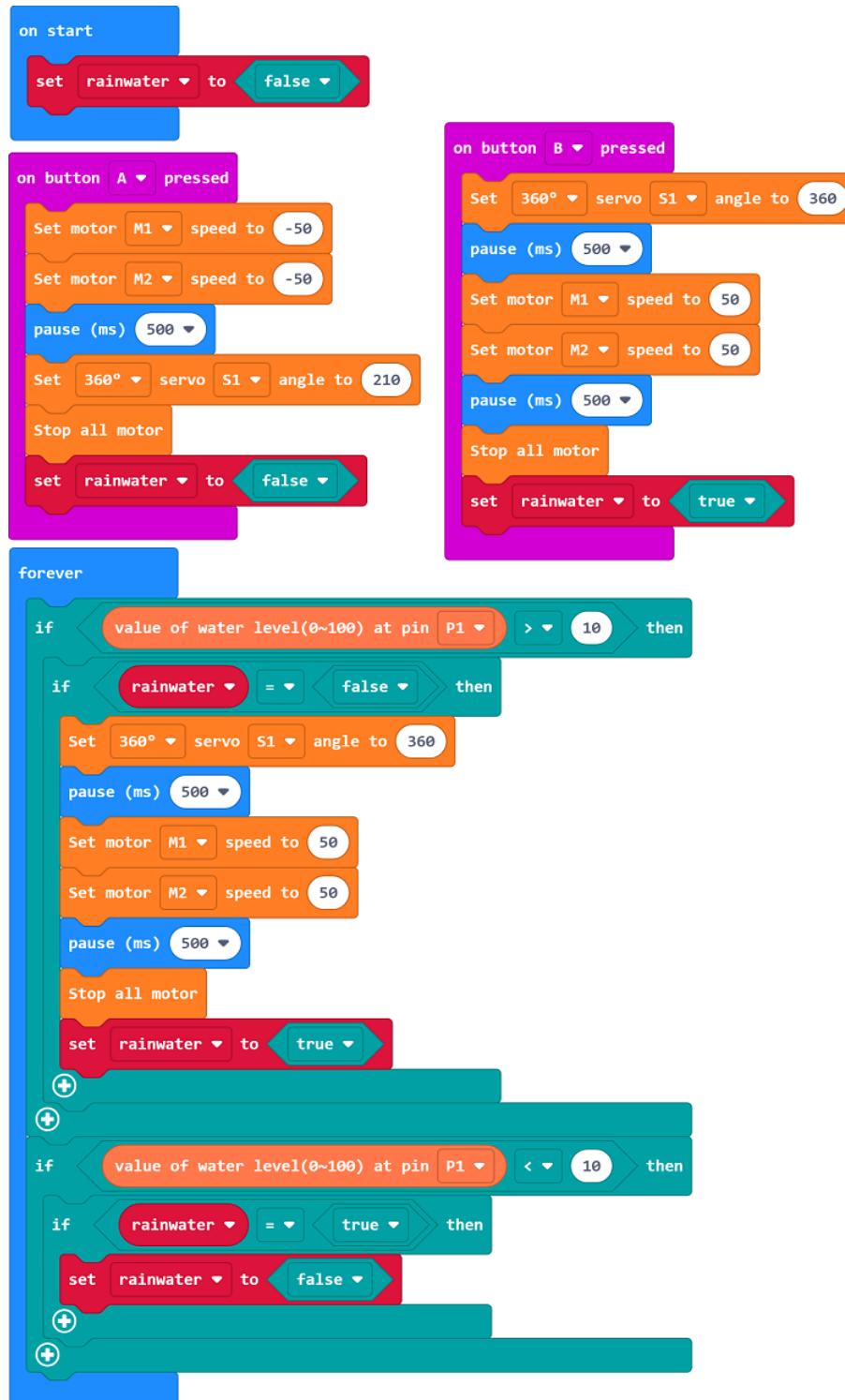
Click "Advanced" in the MakeCode to see more choices.



Search with Wukong in the dialogue box to download it.



Program



Link:https://makecode.microbit.org/_diR3FMErAfWF

Result

when button A is pressed, the two windows open outward and the airer extends outward. When button B is pressed, the airer retracts inward and the two windows close inward. When button A is pressed, the two windows open outward and the airer extends outward, the water level sensor will detect the current rain value, and when the rain value is greater than 10, the airer will automatically retract and the two windows will automatically close.

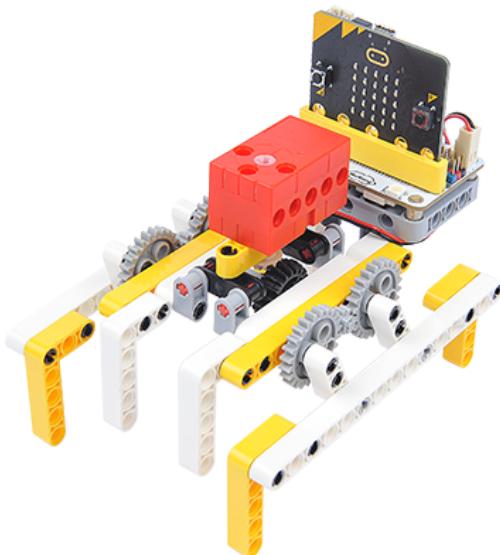
Case 21: The Spider Walker

Contents

- [23.1. Purpose](#)
- [23.2. Link:](#)
- [23.3. Materials Required](#)
- [23.4. Bricks build-up](#)
- [23.5. Hardware Connection](#)
- [23.6. Software Platform](#)
- [23.7. Coding](#)

23.1. Purpose

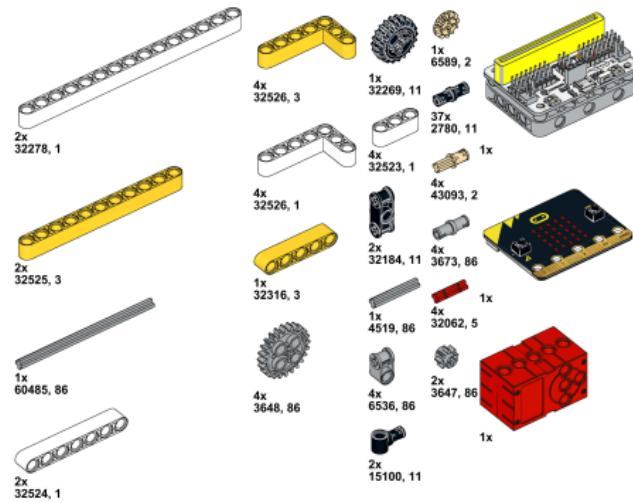
Make a spider walker.



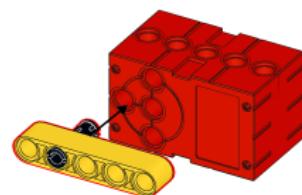
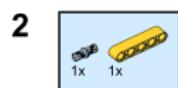
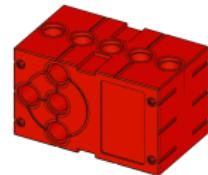
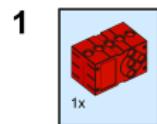
23.2. Link:

[micro:bit Wonder Building Kit](#)

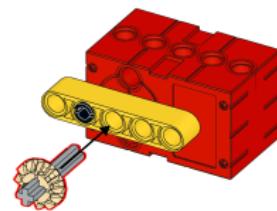
23.3. Materials Required



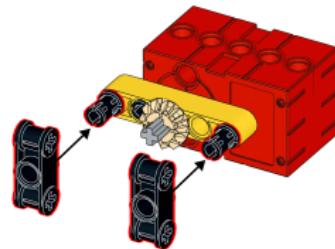
23.4. Bricks build-up



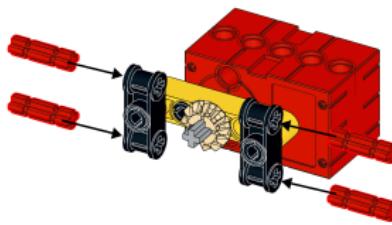
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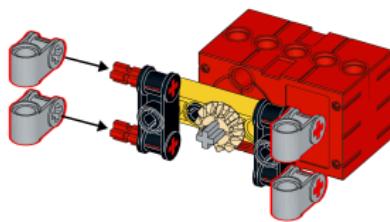
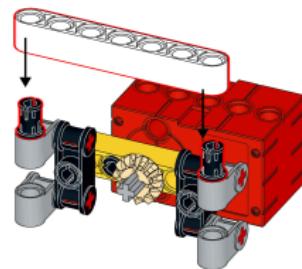
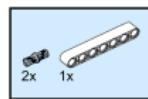
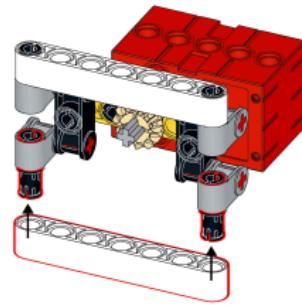
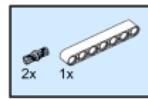


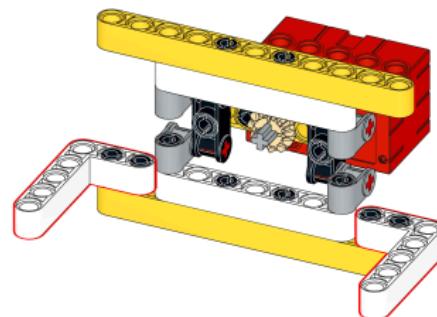
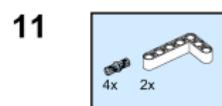
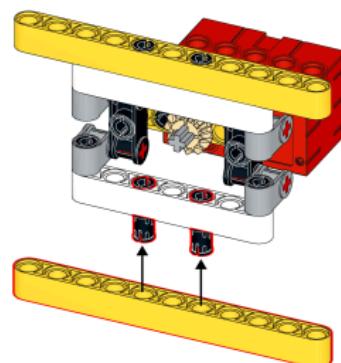
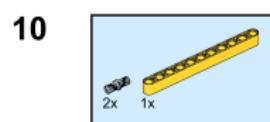
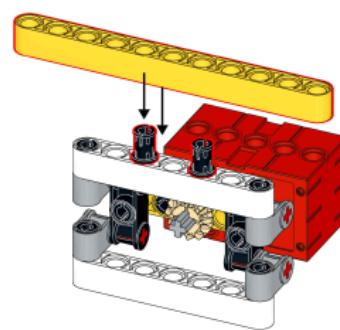
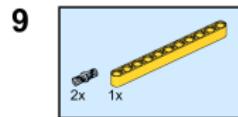
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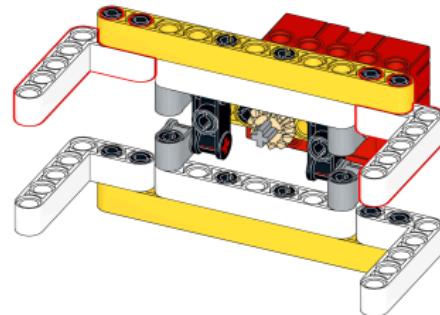
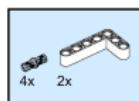
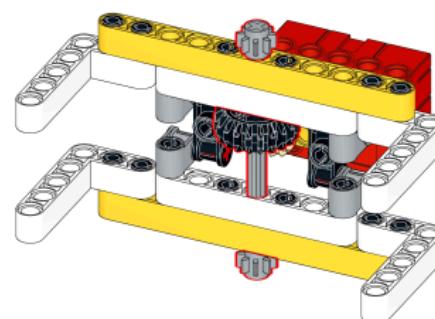
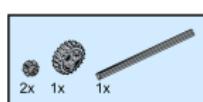
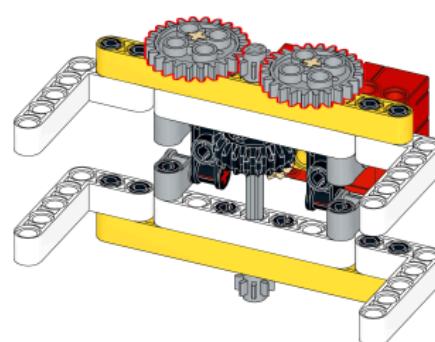


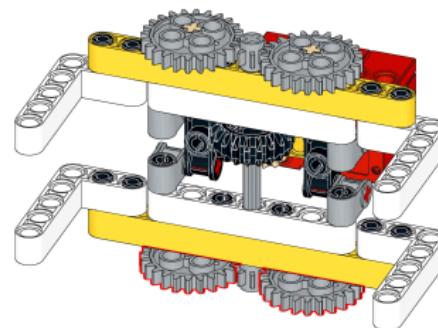
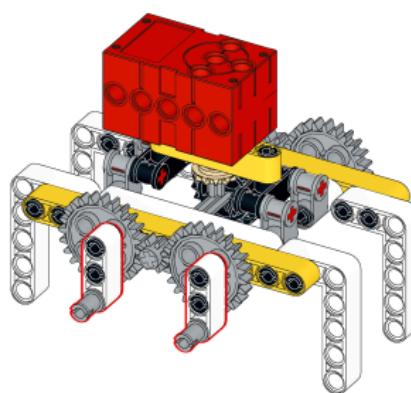
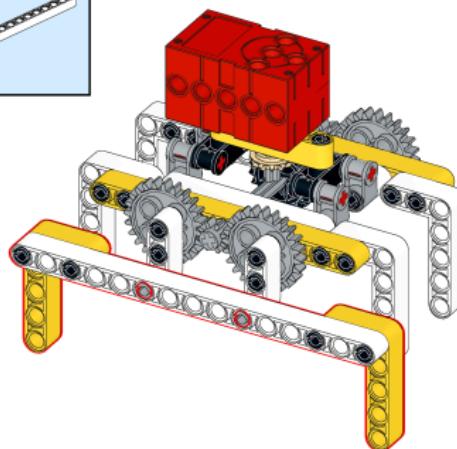
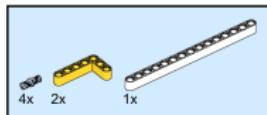
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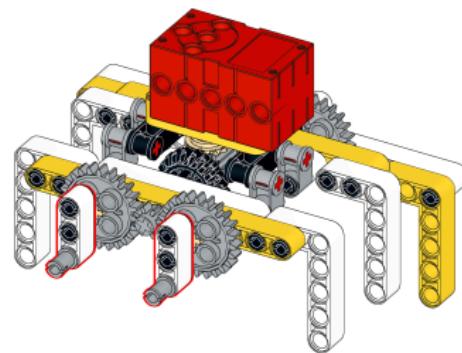
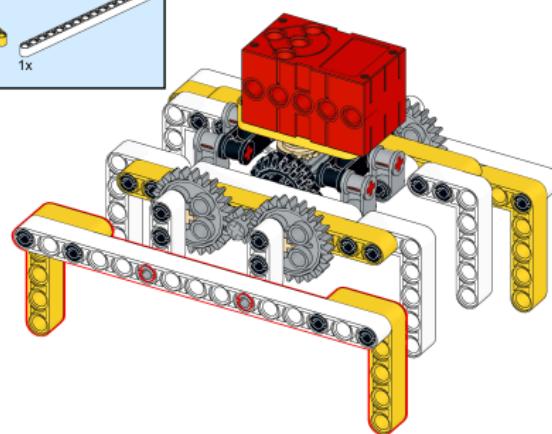
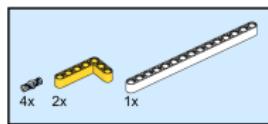
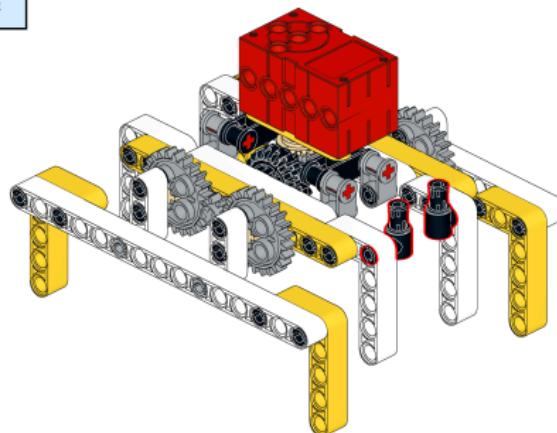


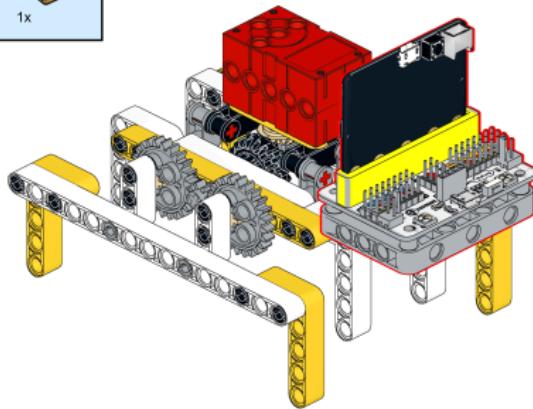
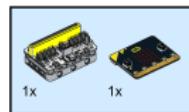
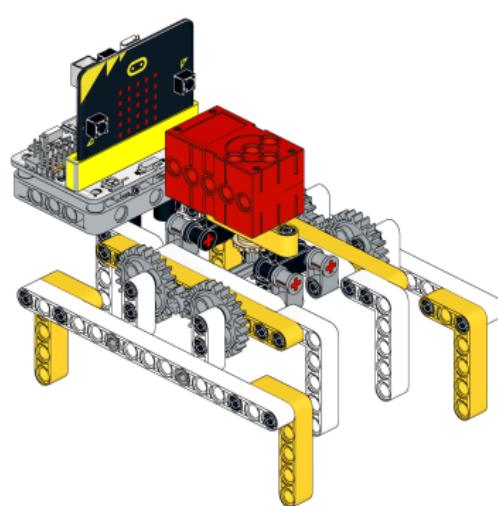
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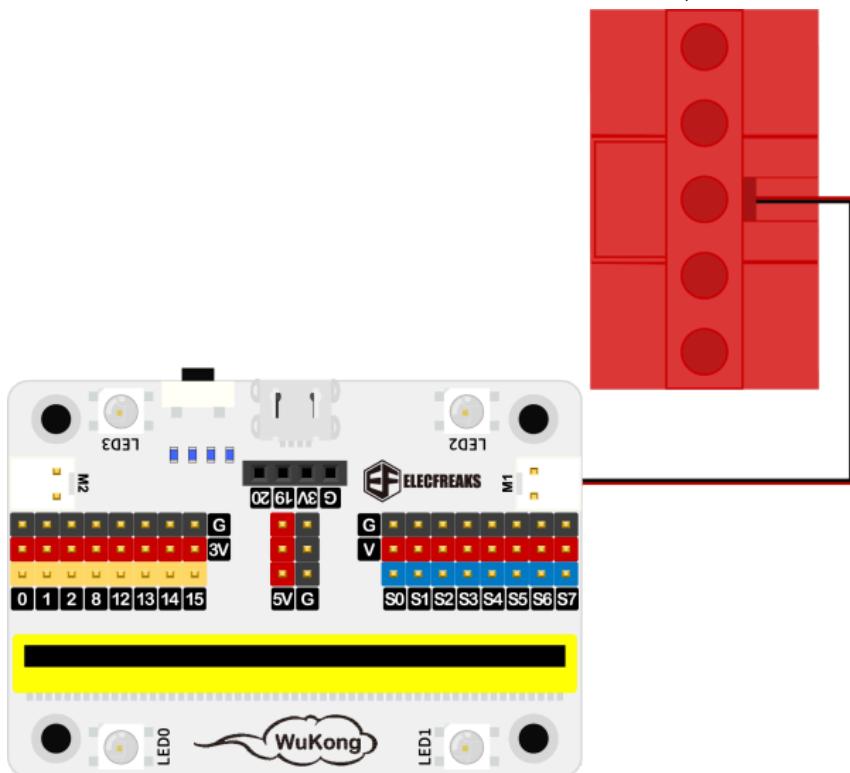
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18**19****20**

21**22**

23.5. Hardware Connection

Connect a [motor](#) to M1 port on [Wukong breakout board](#).



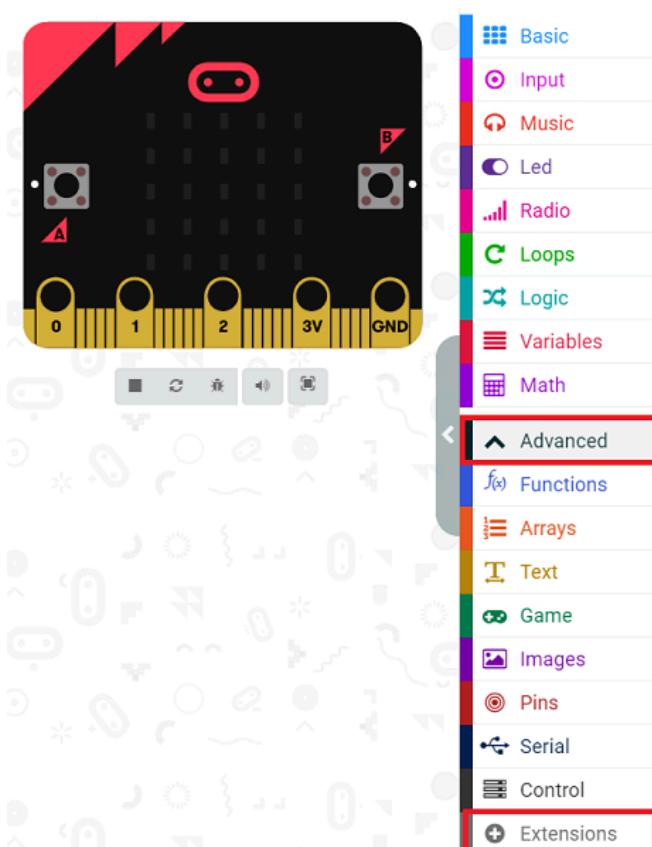
23.6. Software Platform

[MakeCode](#)

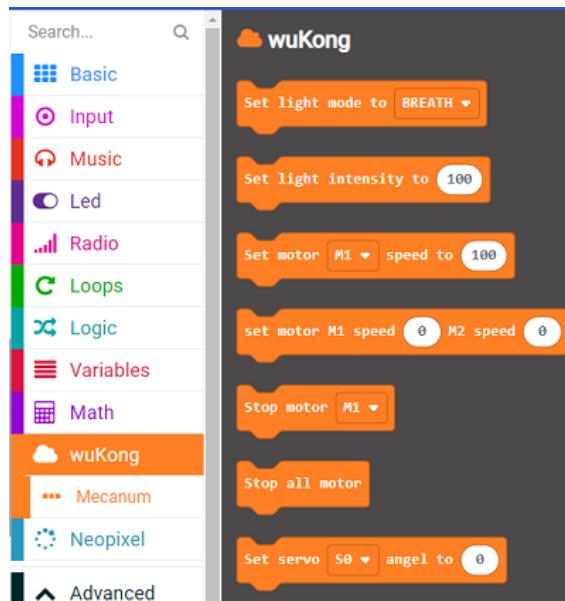
23.7. Coding

Add extensions

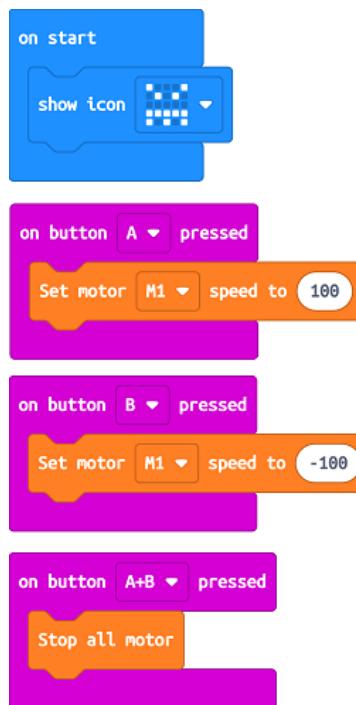
Click "Advanced" in the MakeCode to see more choices.



Search with Wukong in the dialogue box to download it.



Program



Link:https://makecode.microbit.org/_fyVf4ii4v0p8

Result

The spider moves forward when button A is pressed, it moves backward when button B is pressed, and it stops moving when button A+B is pressed.

By ELECFREAKS Team

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Case 22: The Helicopter

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- [24.1. Purpose](#)
- [24.2. Link:](#)
- [24.3. Materials Required](#)
- [24.4. Bricks build-up](#)
- [24.5. Hardware Connection](#)
- [24.6. Software Platform](#)
- [24.7. Coding](#)

24.1. Purpose

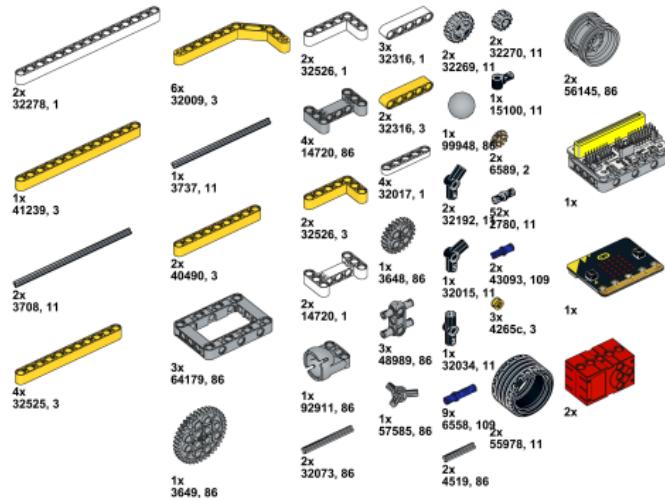
Make a helicopter.



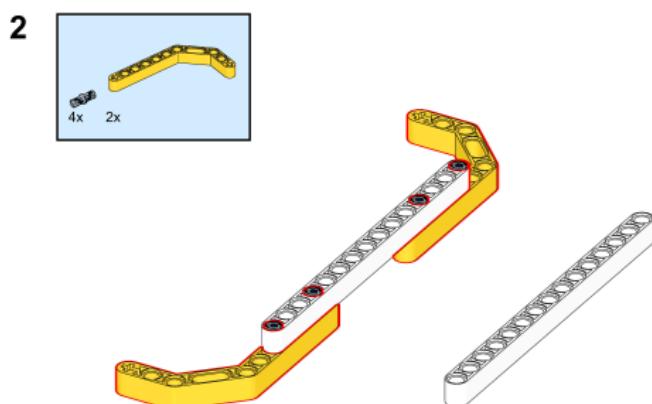
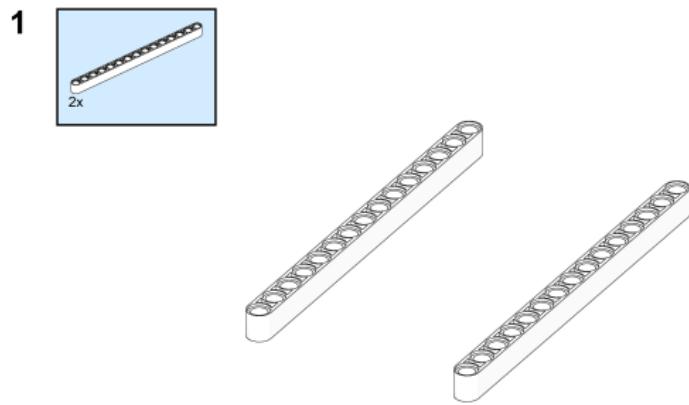
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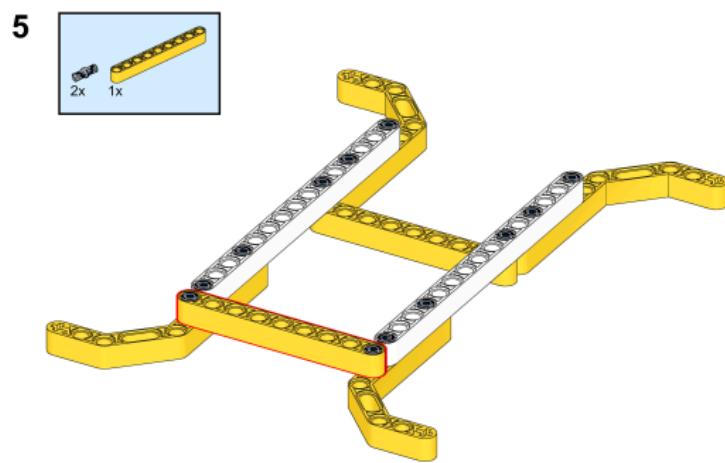
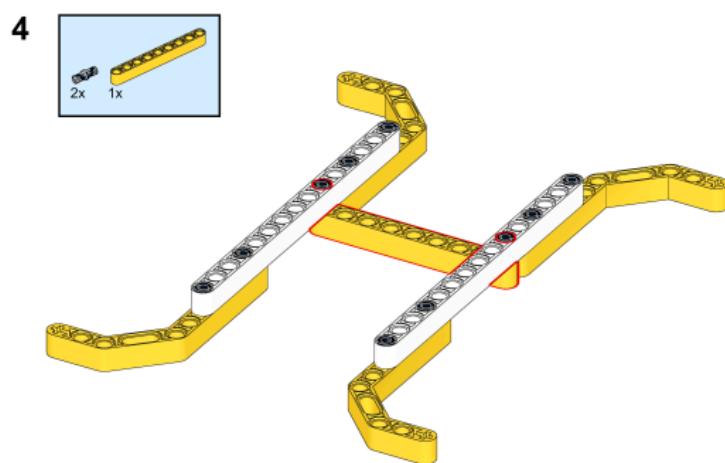
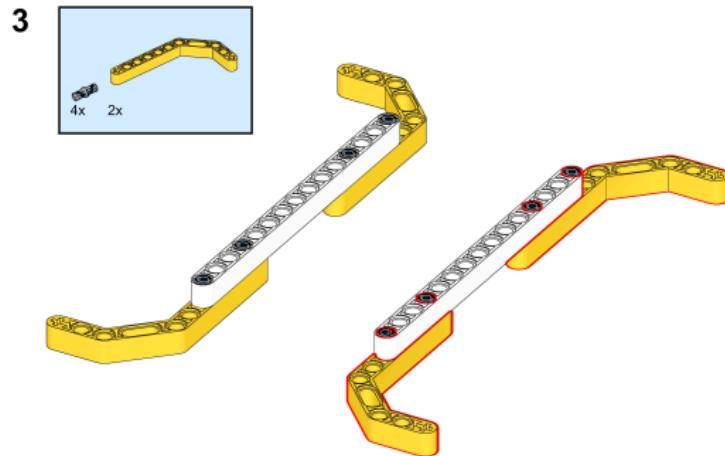
[micro:bit Wonder Building Kit](#)

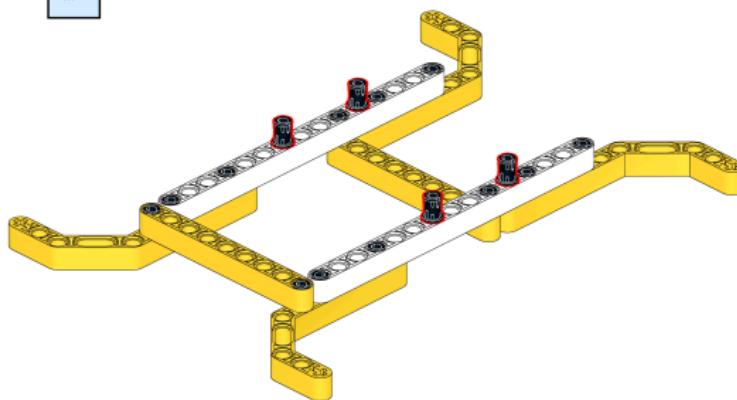
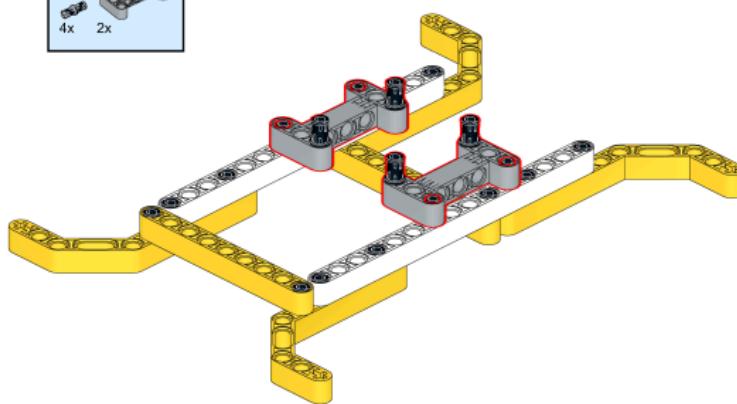
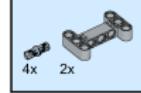
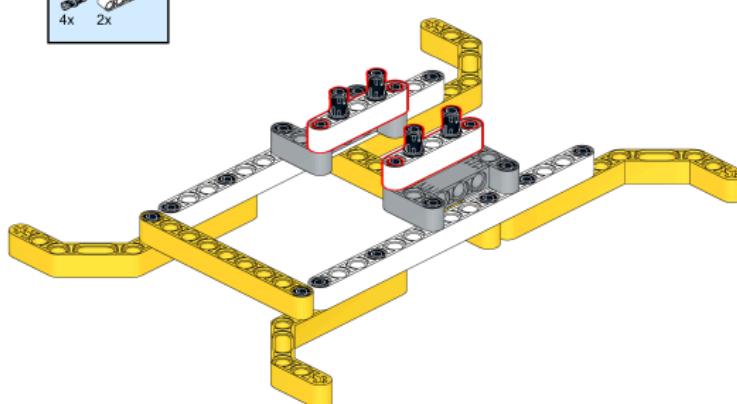
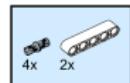
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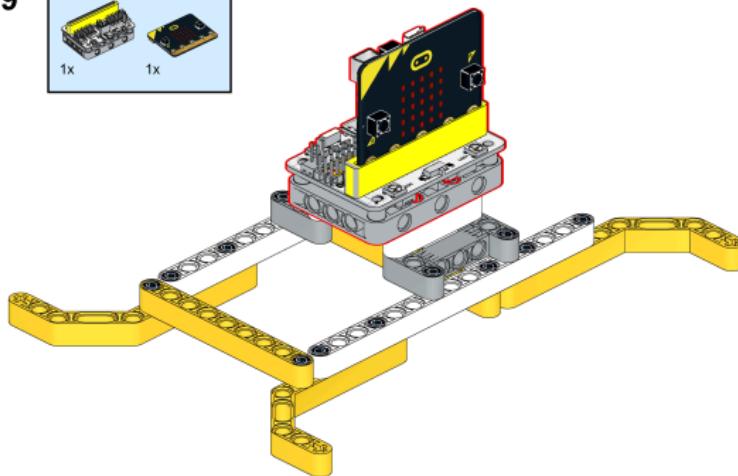
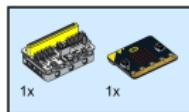
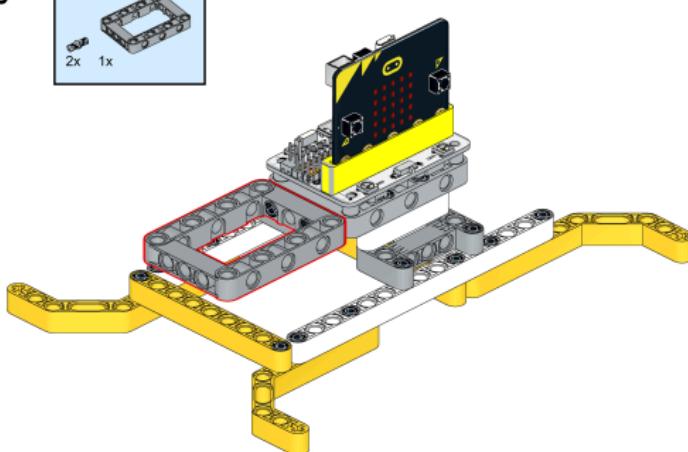
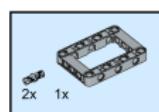
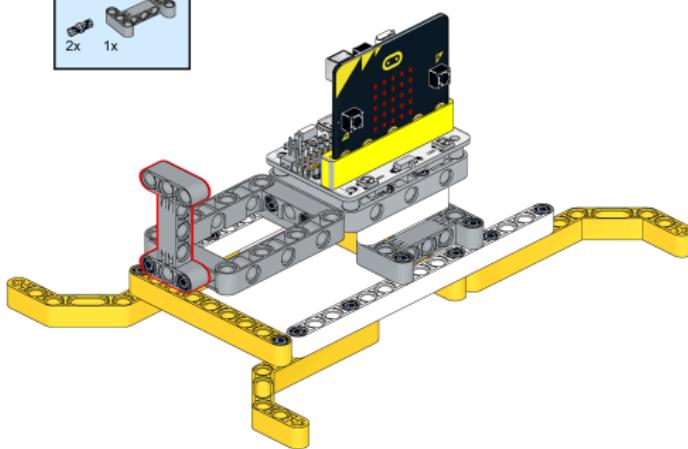
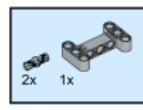


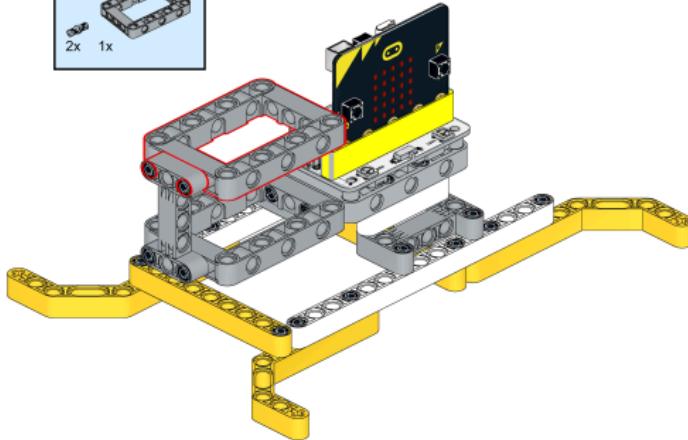
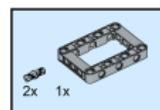
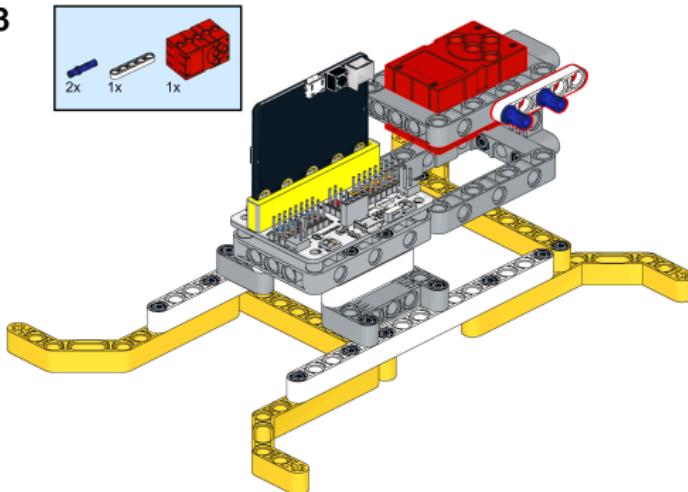
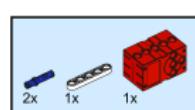
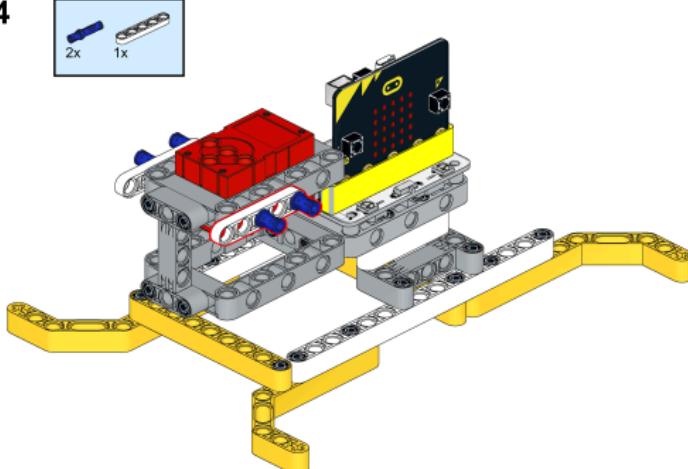
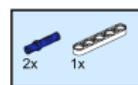
24.4. Bricks build-up

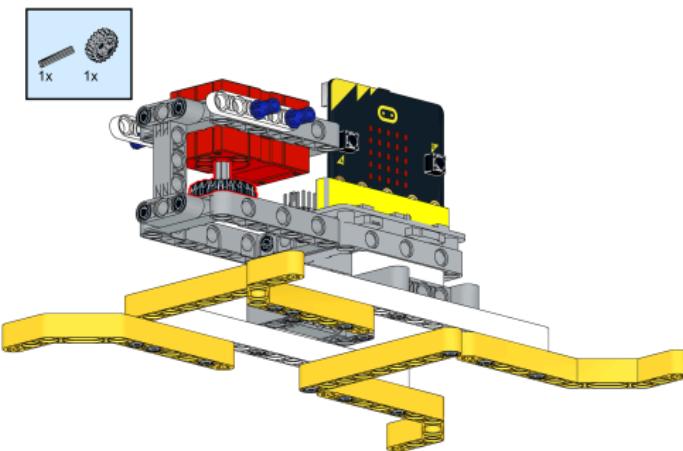
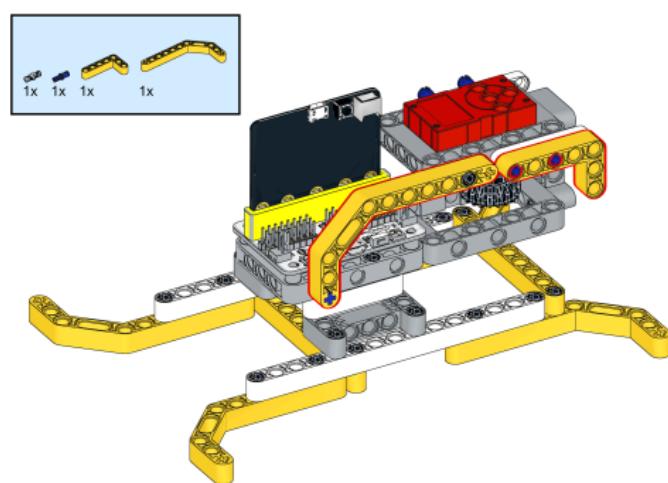
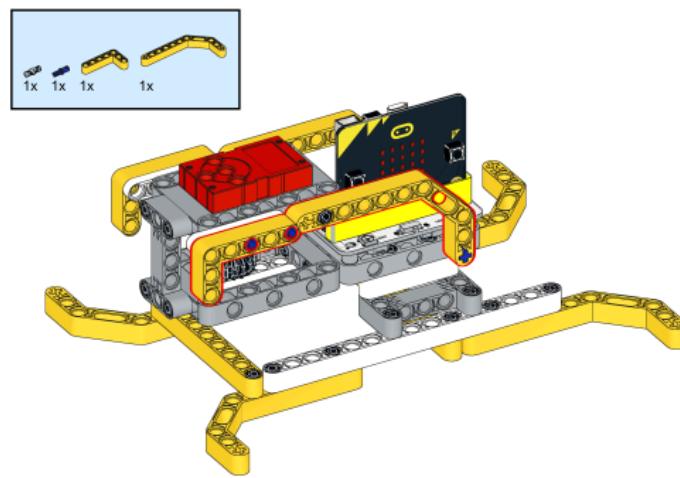


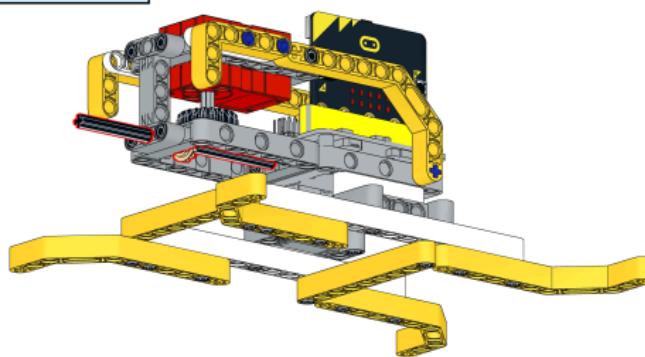
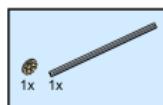
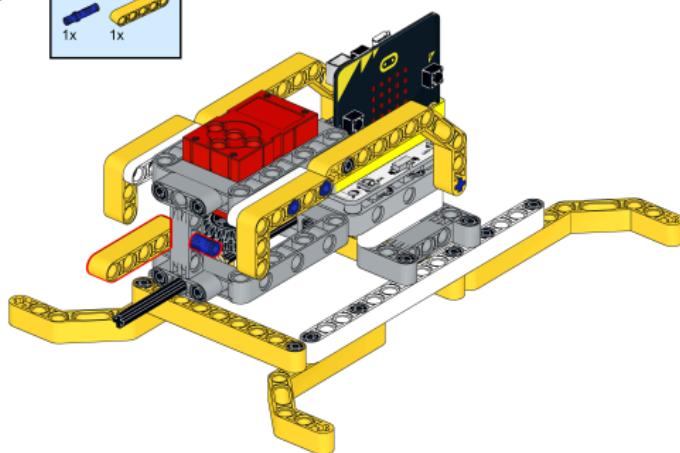
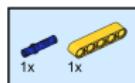
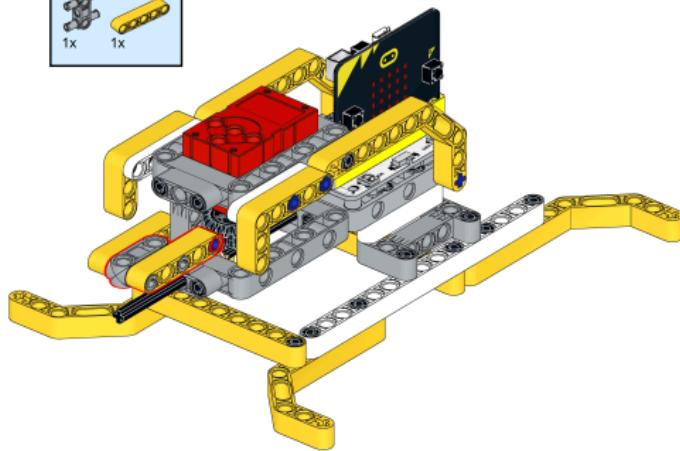
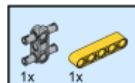


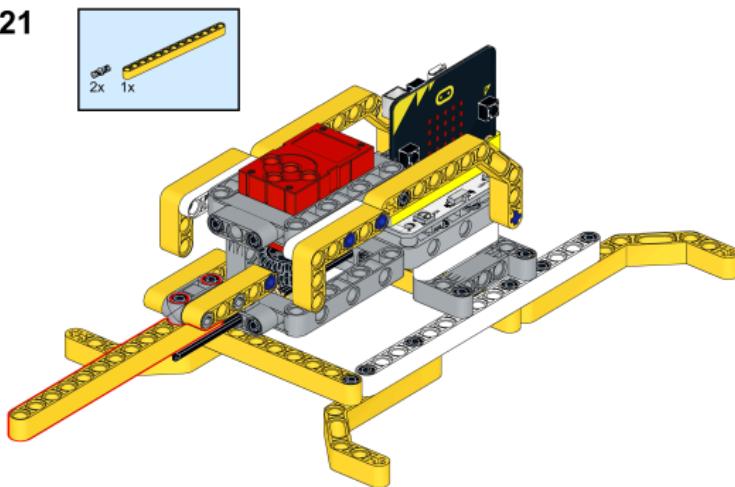
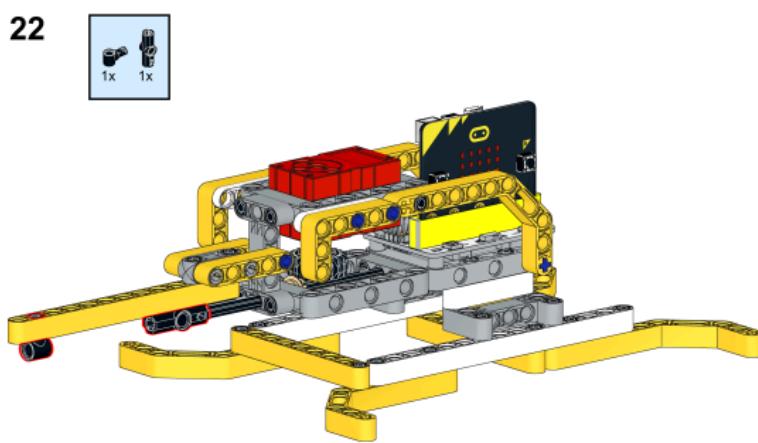
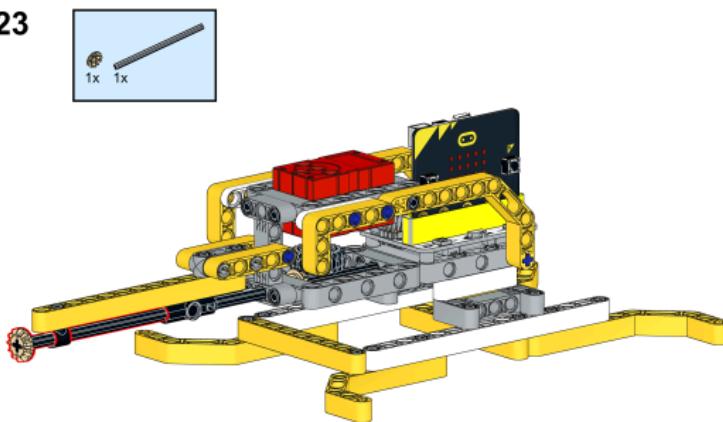
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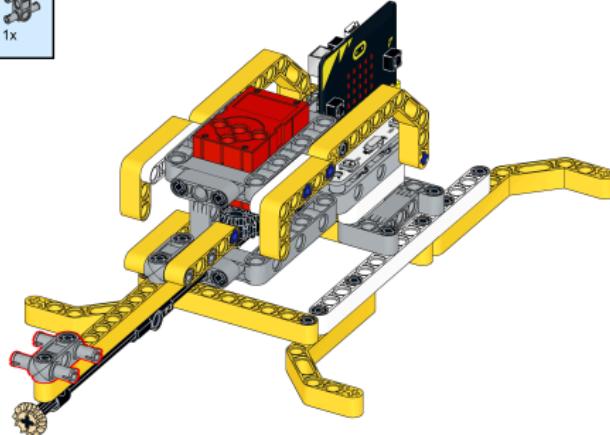
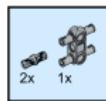
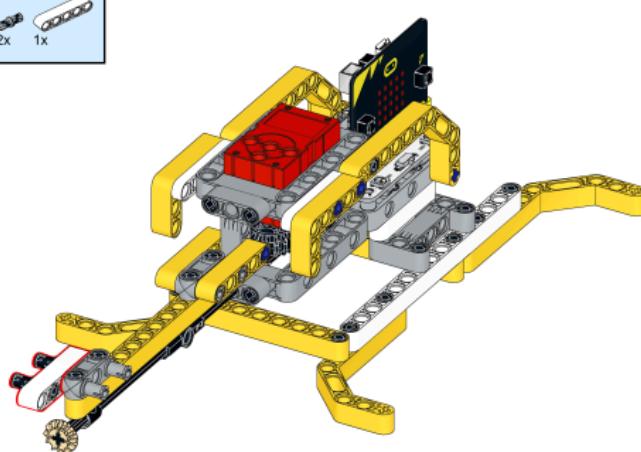
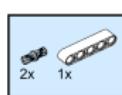
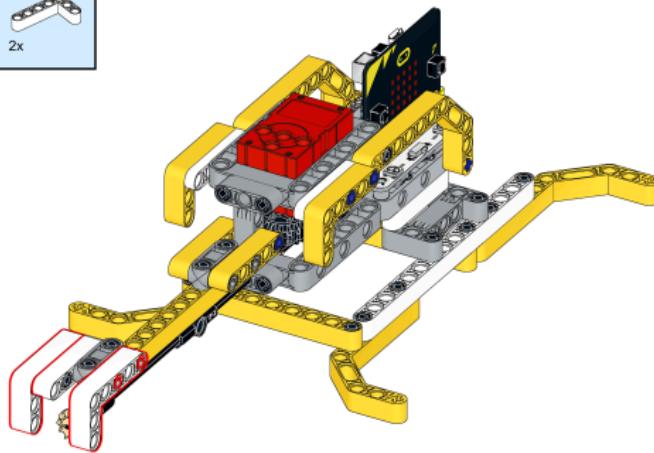
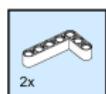
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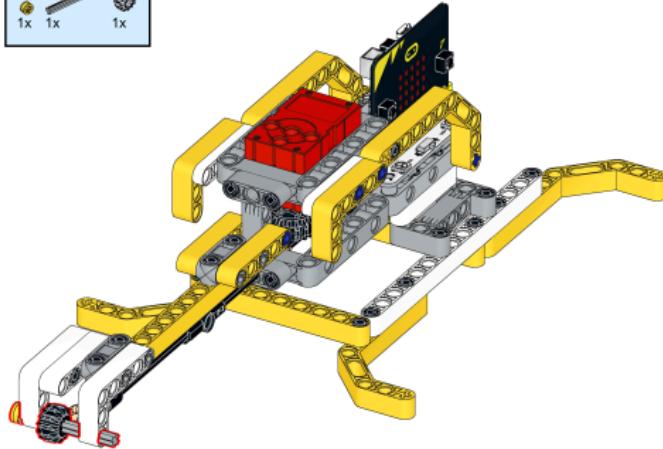
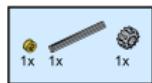
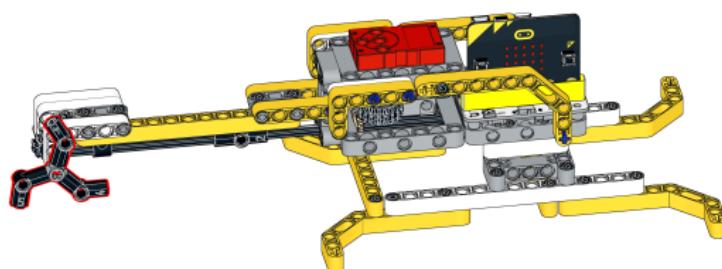
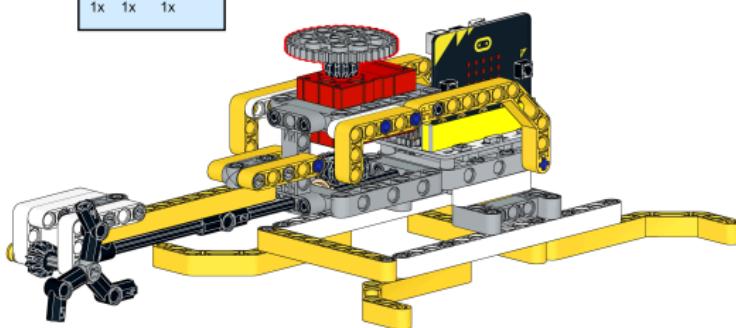
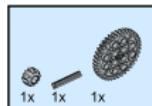
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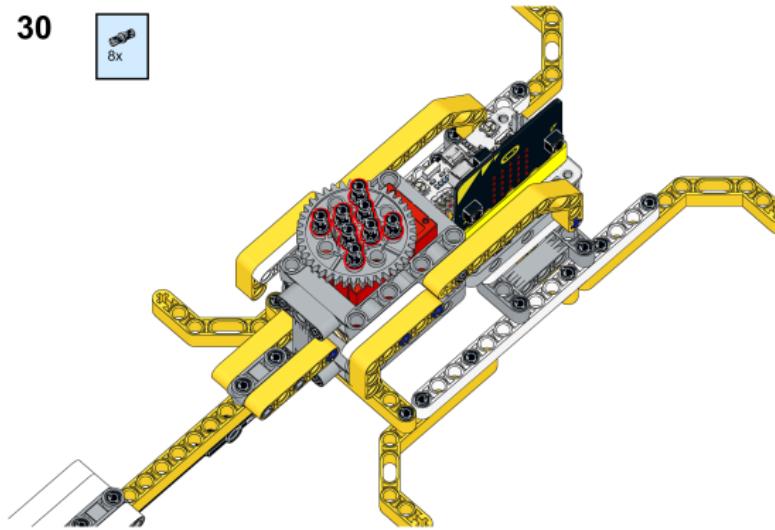
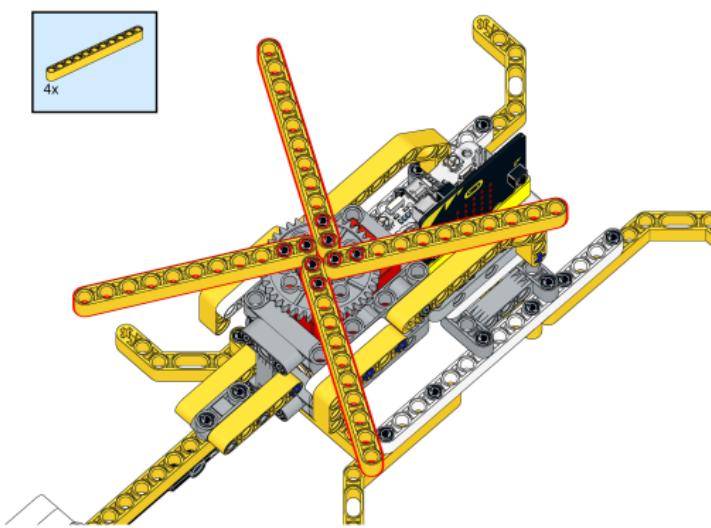
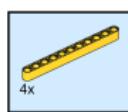
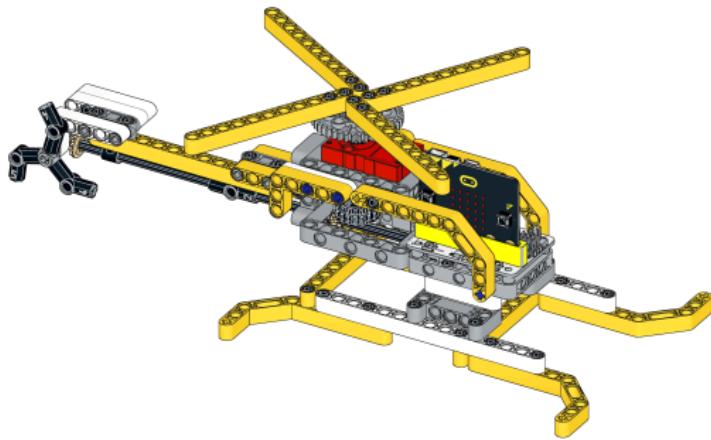
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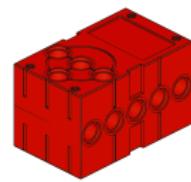
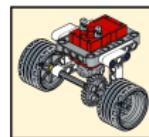
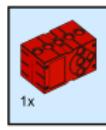
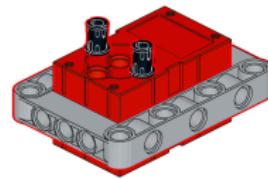
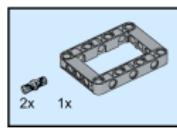
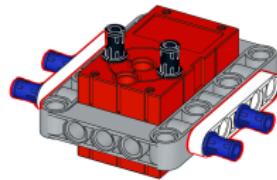
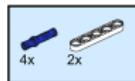
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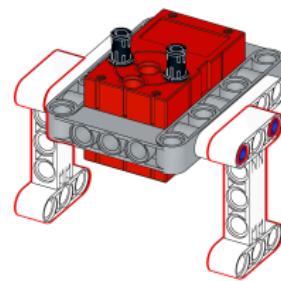
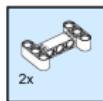
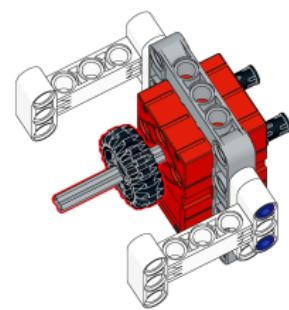
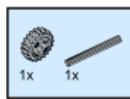
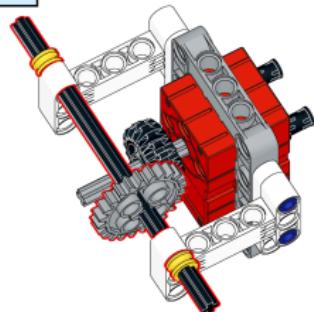
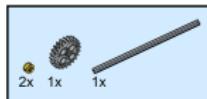
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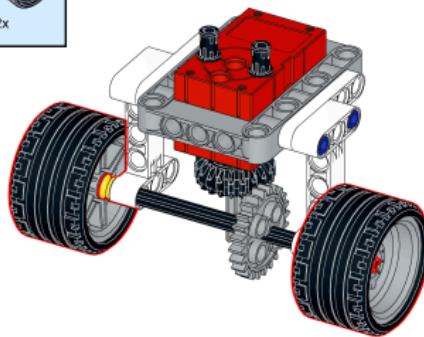
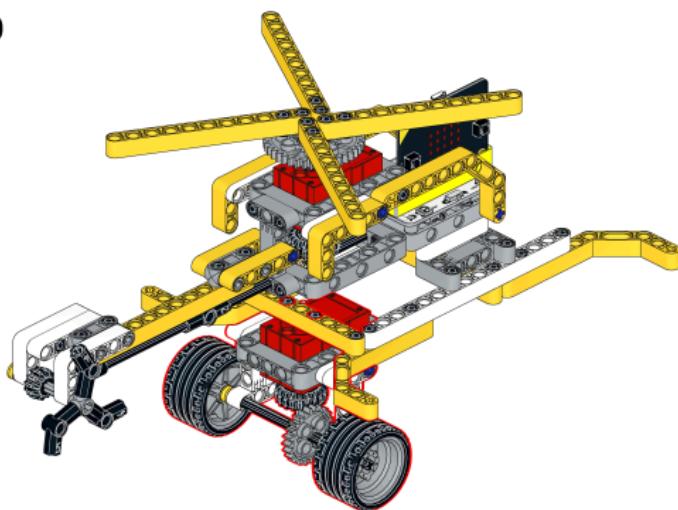
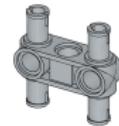
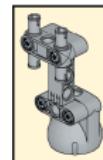
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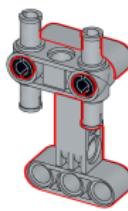
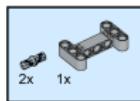
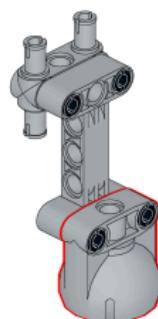
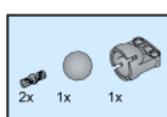
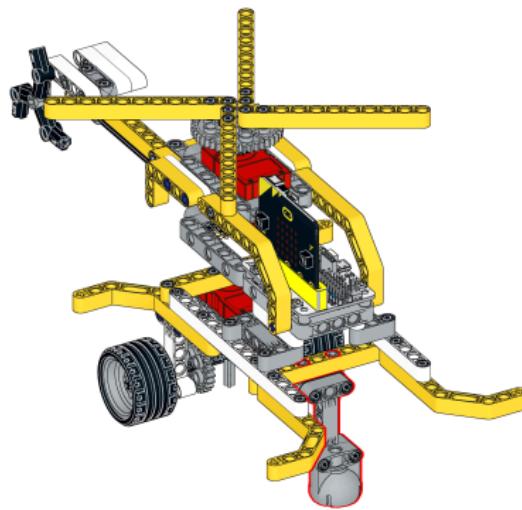
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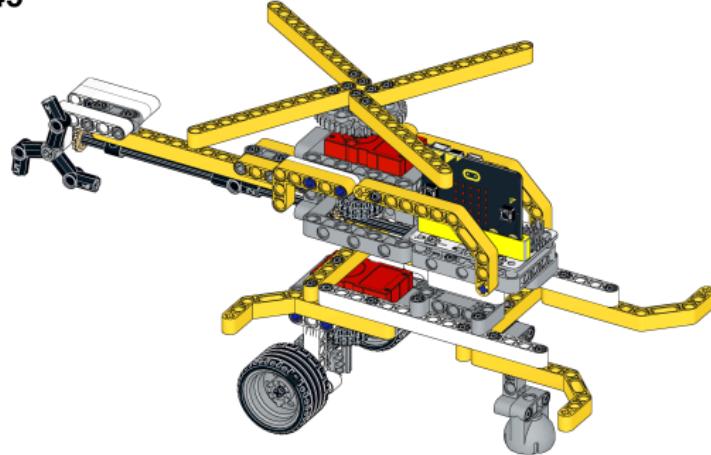
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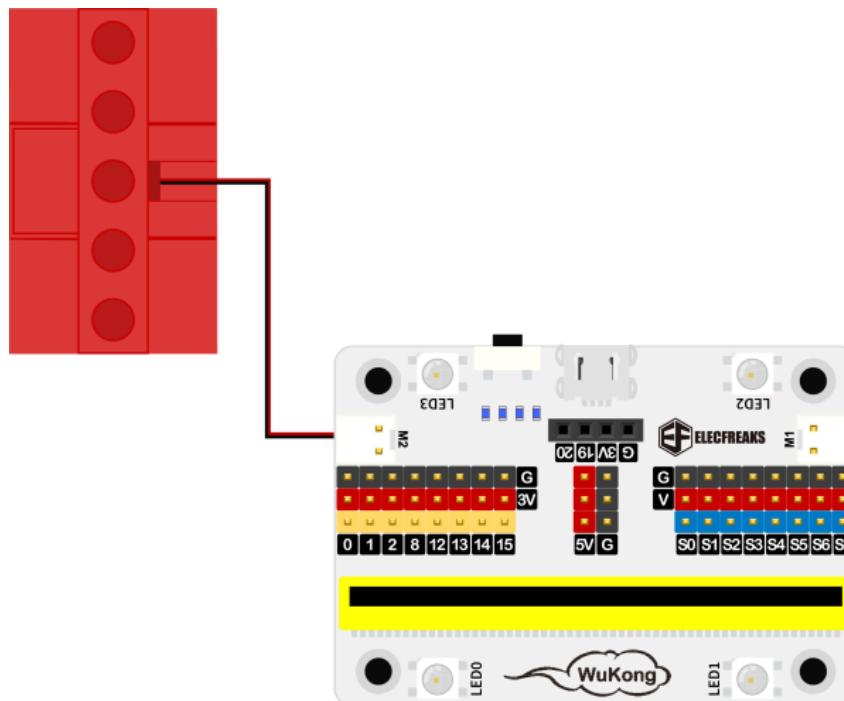
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45

24.5. Hardware Connection

Connect a [motor](#) to M2 port on [Wukong breakout board](#).



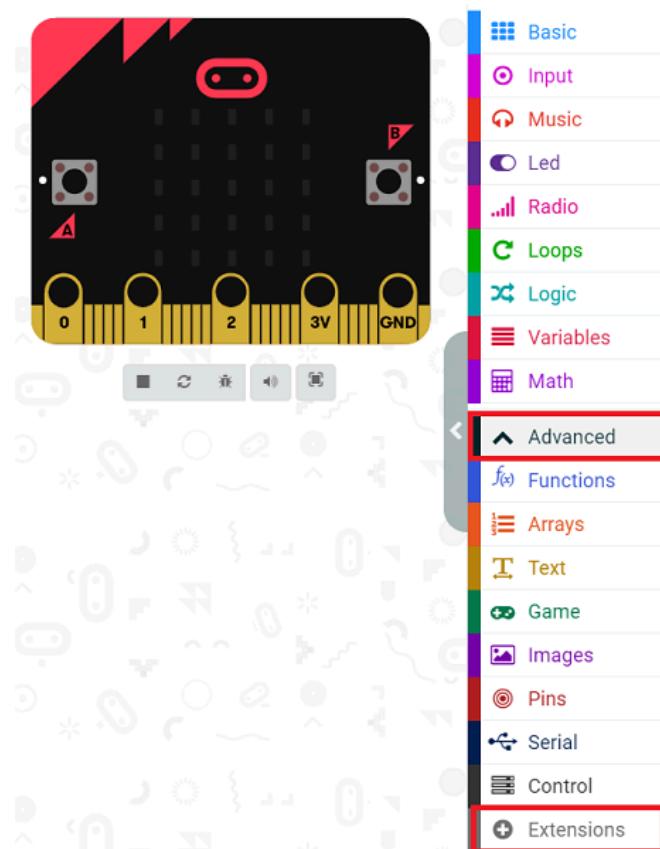
24.6. Software Platform

[MakeCode](#)

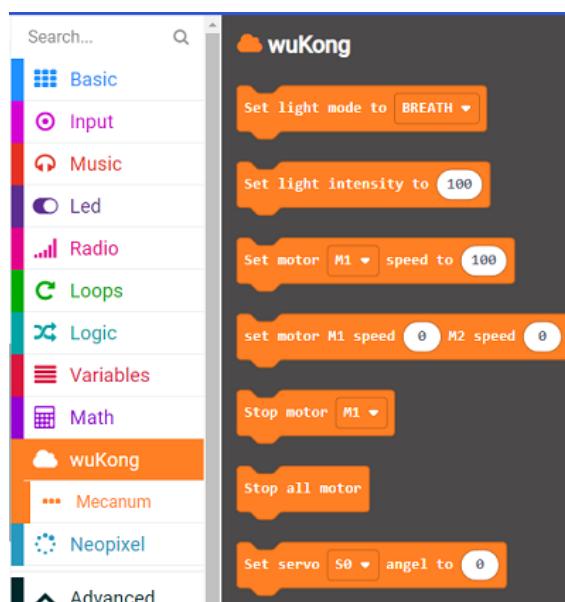
24.7. Coding

Add extensions

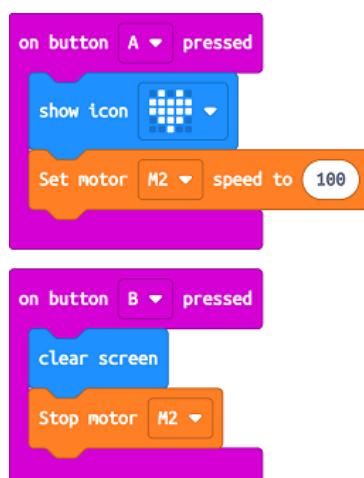
Click "Advanced" in the MakeCode to see more choices.



Search with Wukong in the dialogue box to download it.



Program



Link:https://makecode.microbit.org/_2zv14dduY6D7

Result

When button A is pressed, the micro:bit displays a heart pattern and the helicopter propeller starts to rotate; when button B is pressed, the micro:bit screen is cleared and the helicopter propeller stops rotating.

By ELECFREAKS Team

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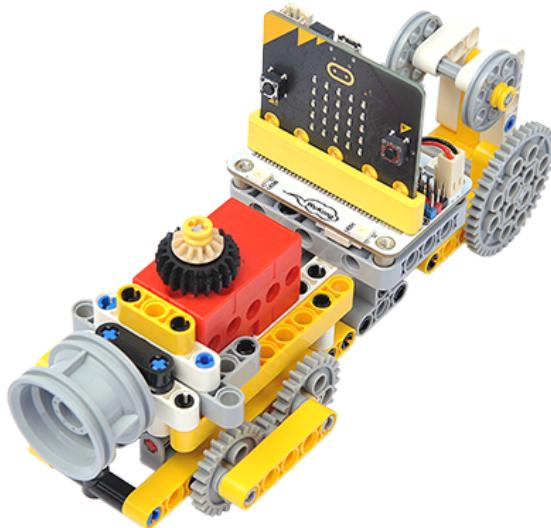
Case 23: The Locomotive

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- [25.1. Purpose](#)
- [25.2. Link:](#)
- [25.3. Materials Required](#)
- [25.4. Bricks build-up](#)
- [25.5. Hardware Connection](#)
- [25.6. Software Platform](#)
- [25.7. Coding](#)

25.1. Purpose

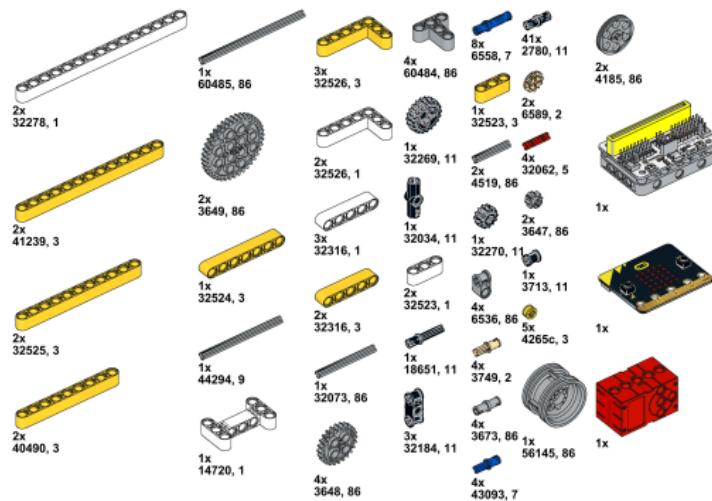
Make a locomotive.



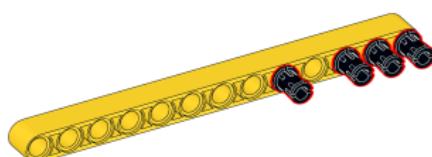
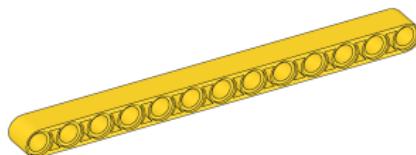
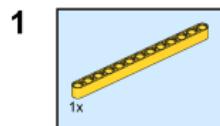
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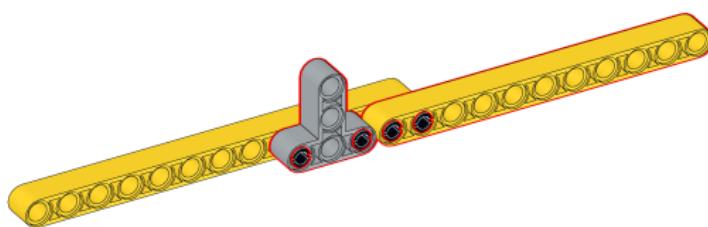
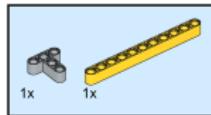
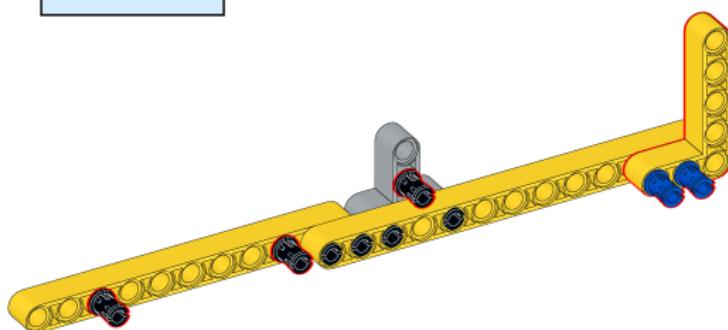
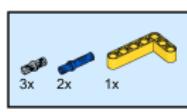
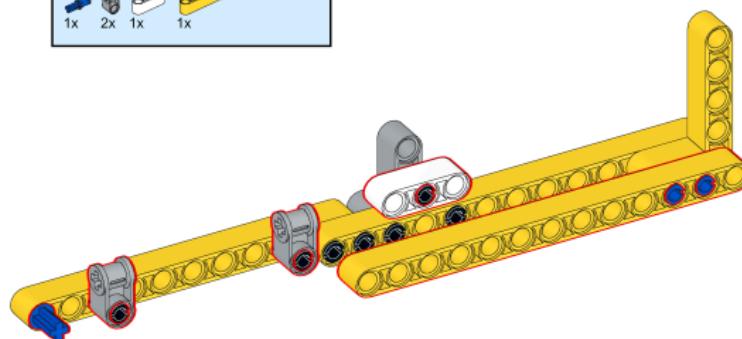
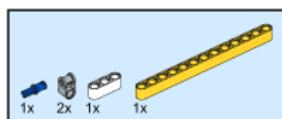
[micro:bit Wonder Building Kit](#)

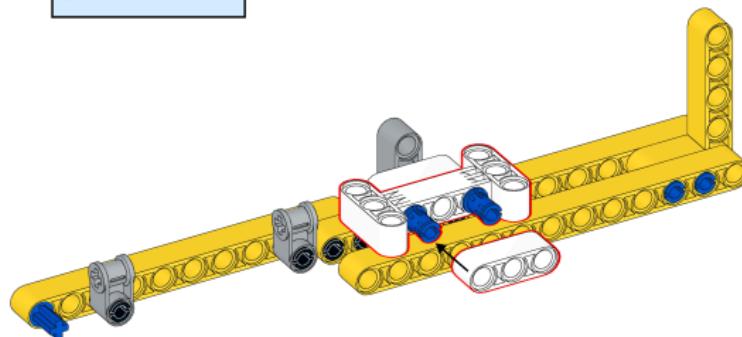
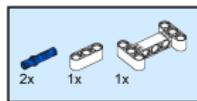
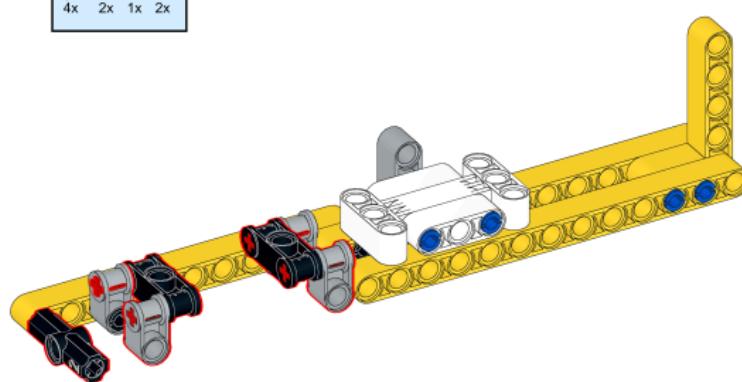
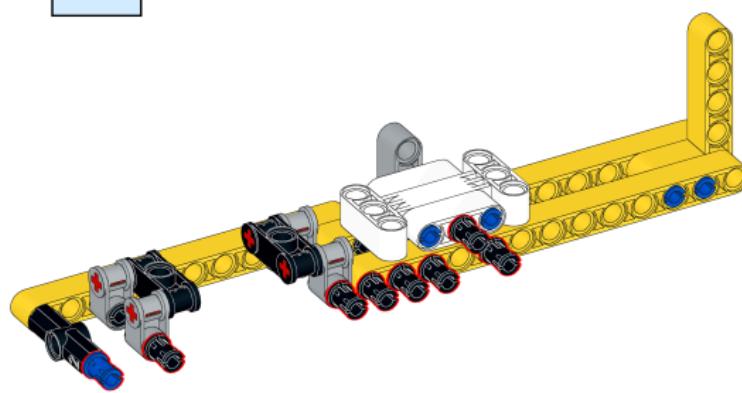
25.3. Materials Required

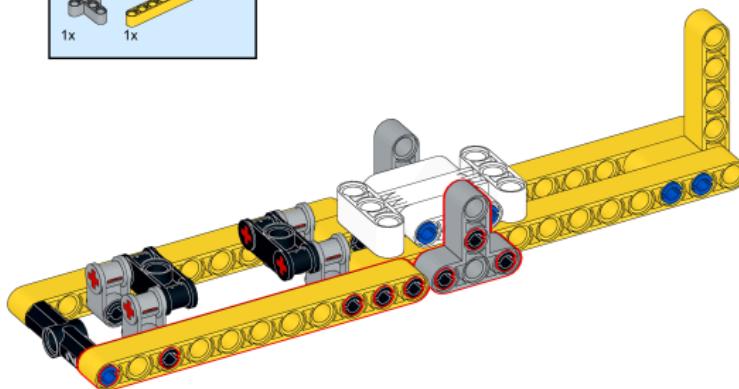
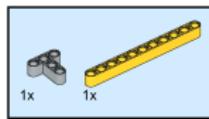
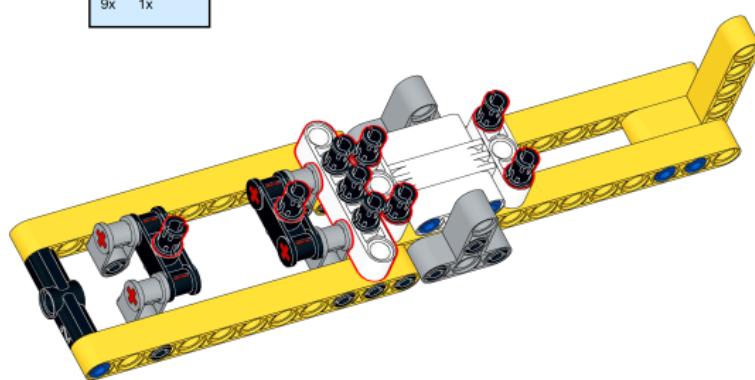
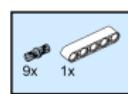
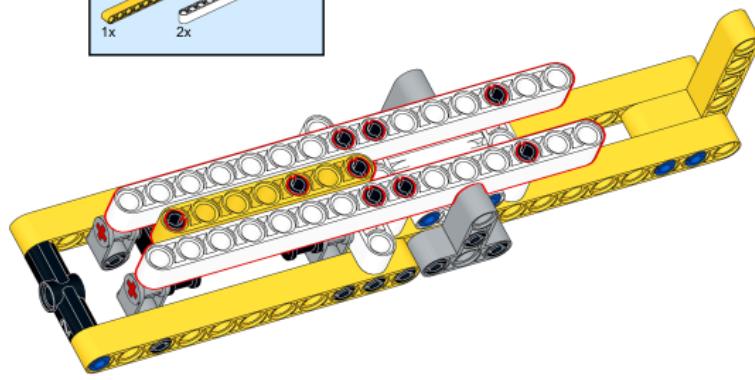
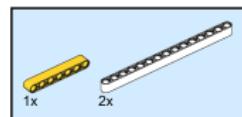


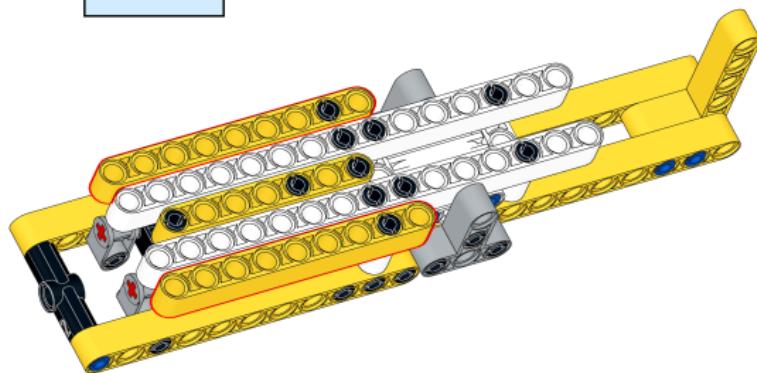
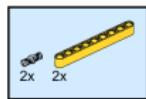
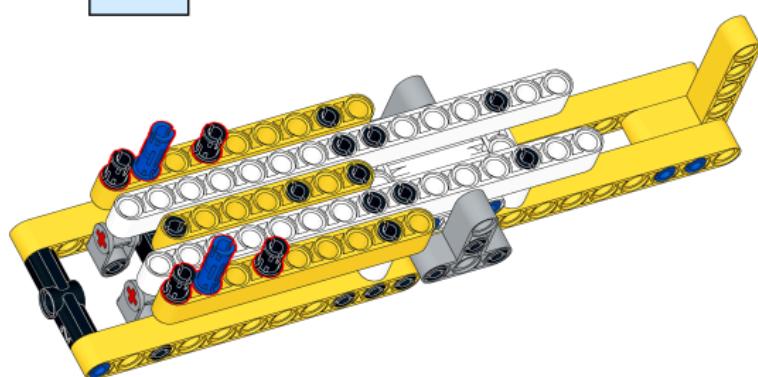
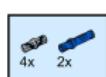
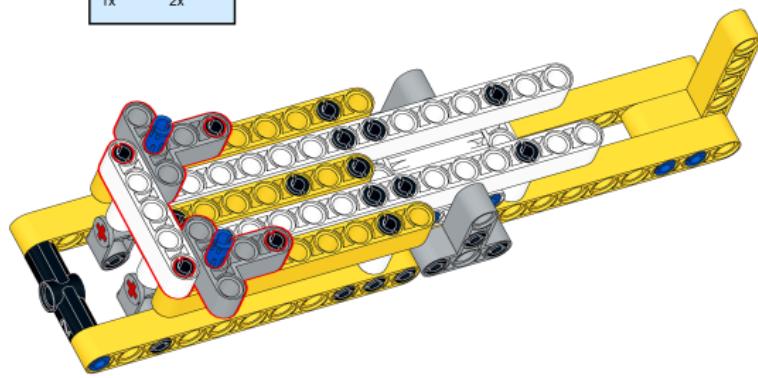
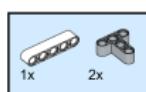
25.4. Bricks build-up

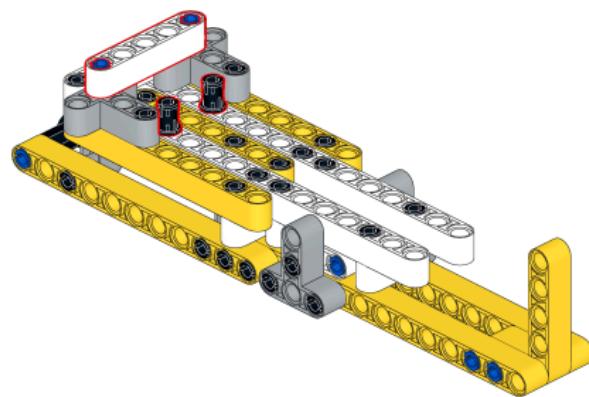
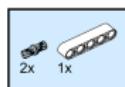
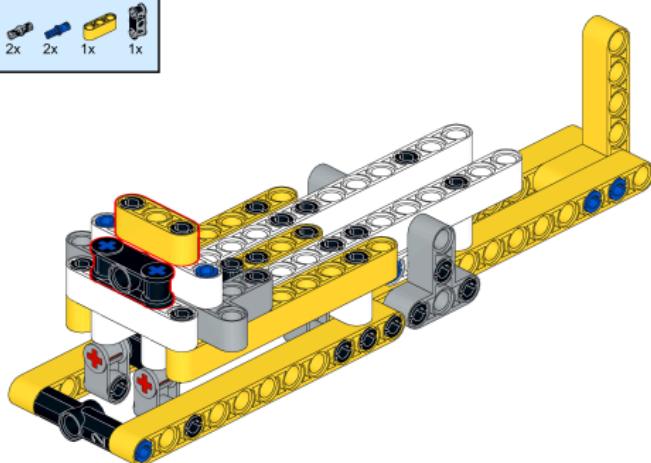
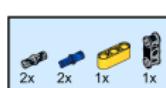
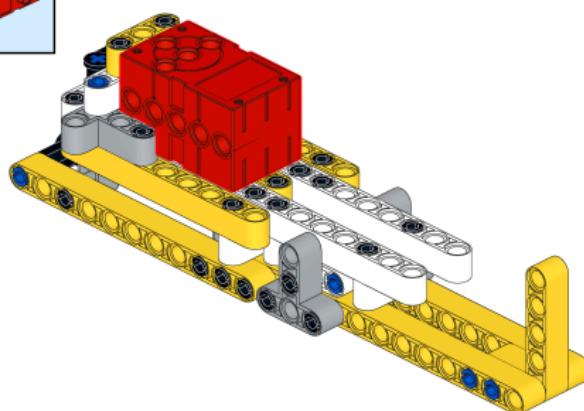
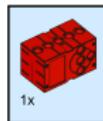


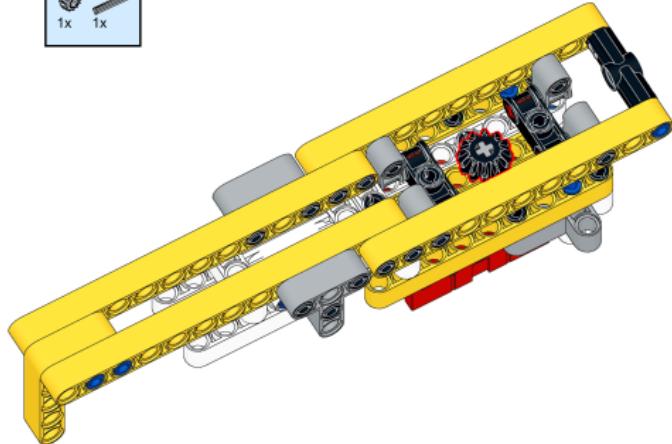
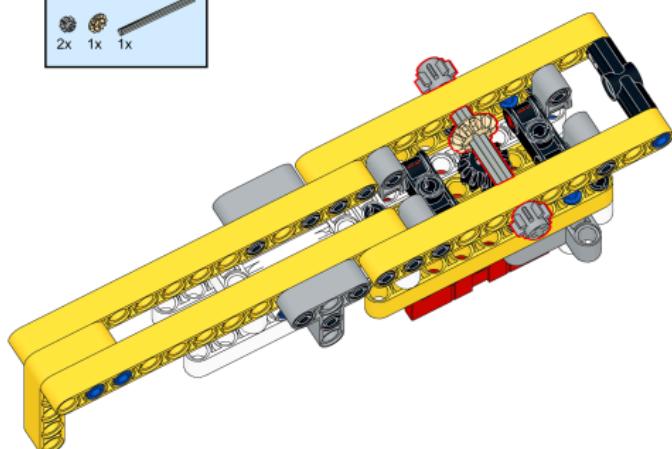
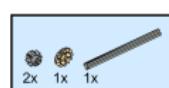
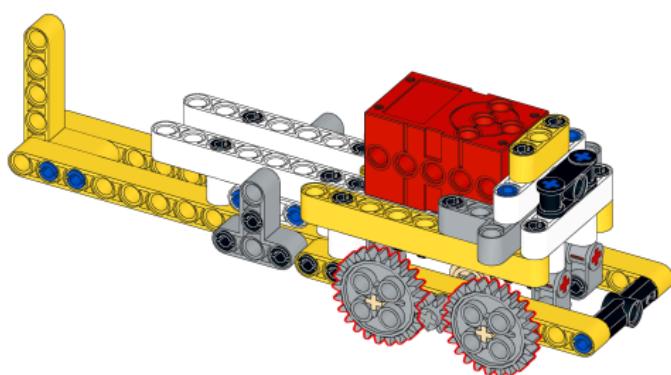
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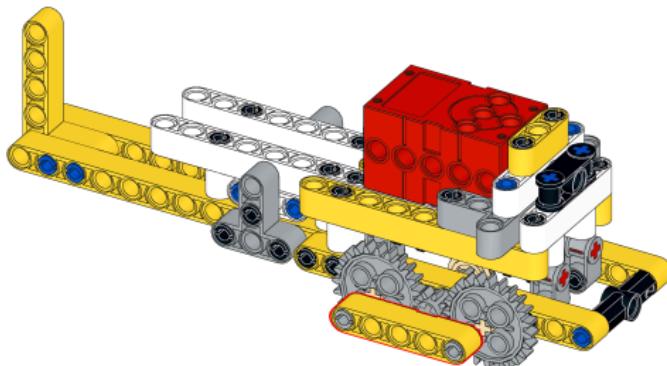
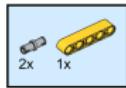
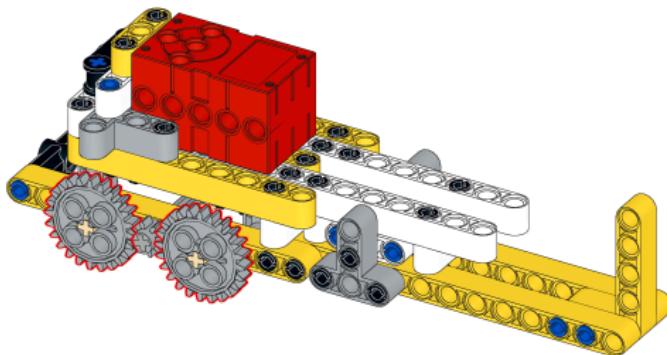
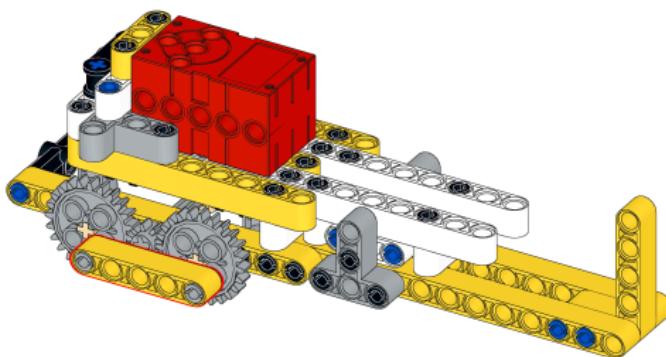
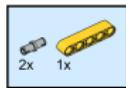
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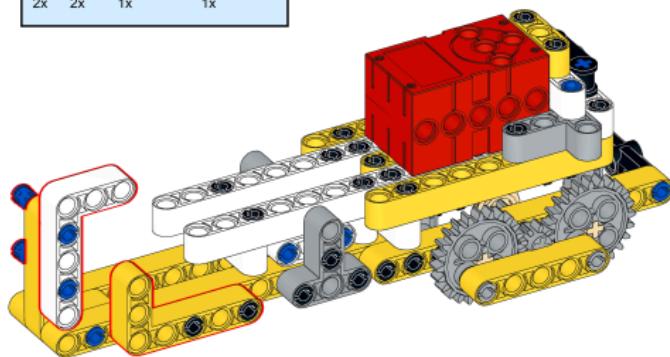
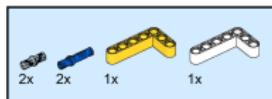
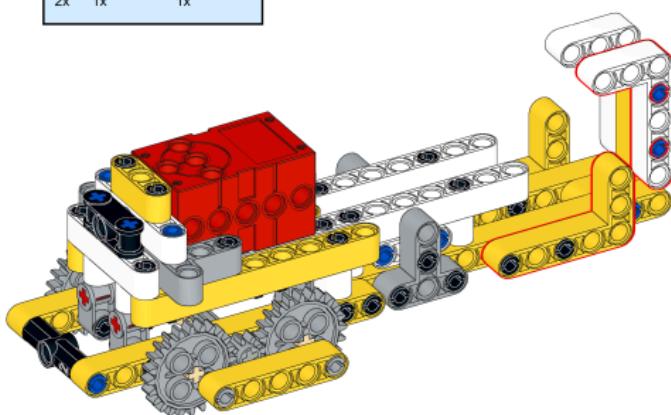
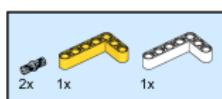
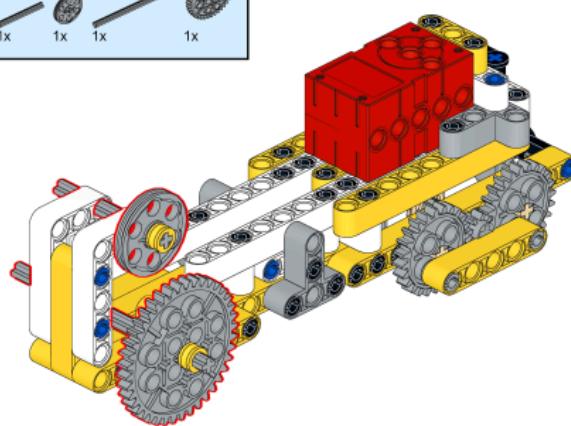
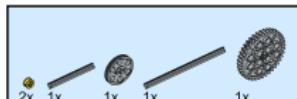
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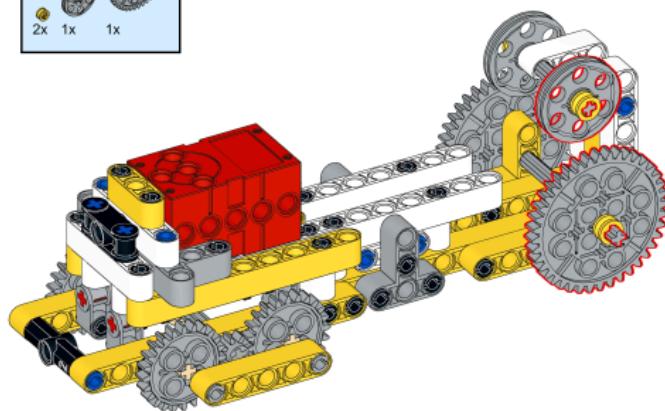
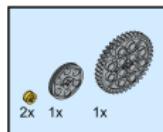
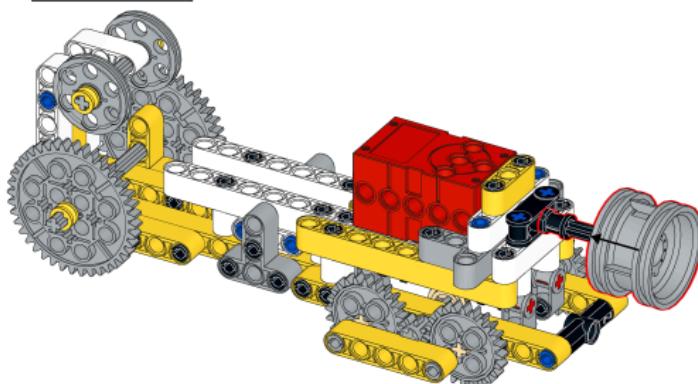
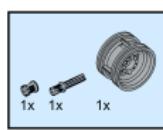
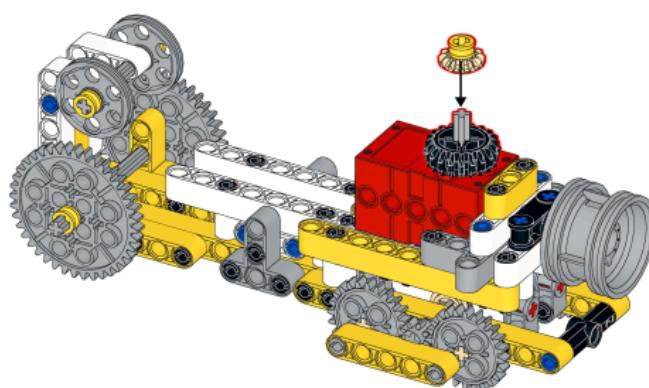
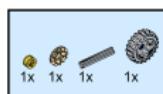
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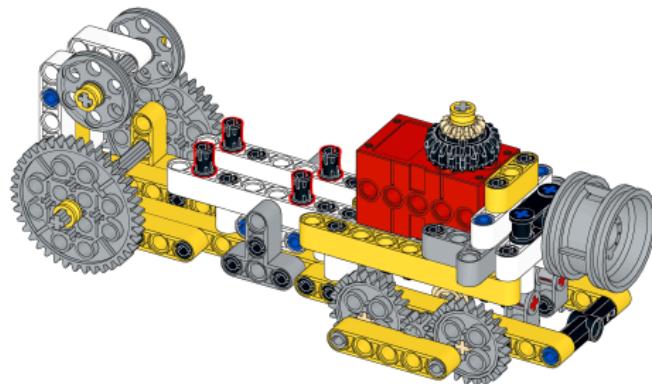
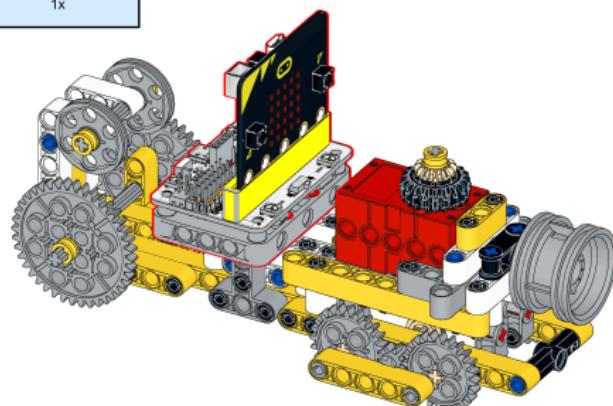
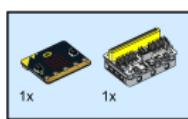
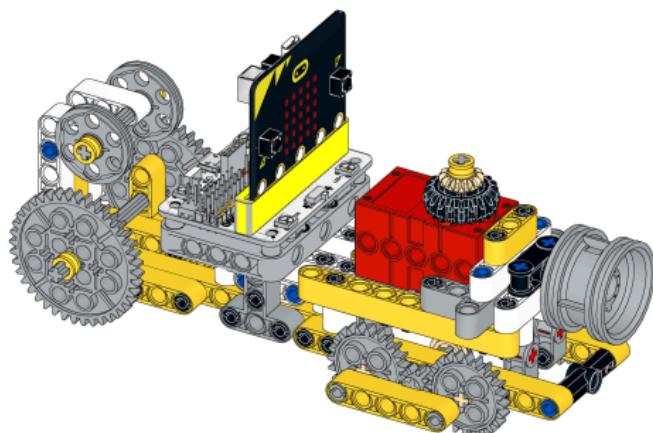
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21**22****23**

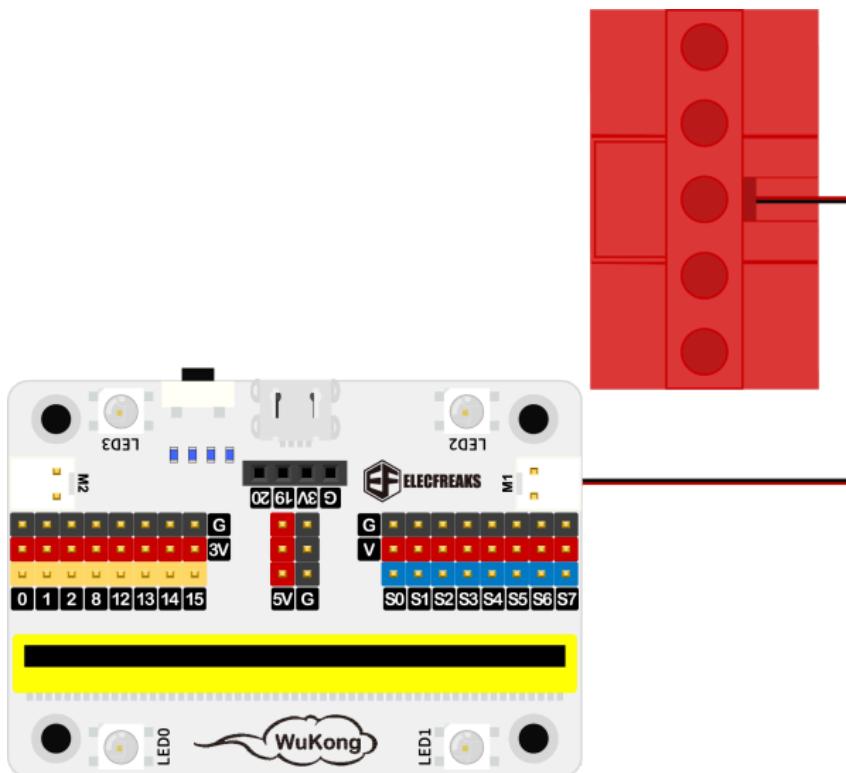
24**25****26**

27**28****29**

30**31****32**

25.5. Hardware Connection

Connect a [motor](#) to M1 port on [Wukong breakout board](#).



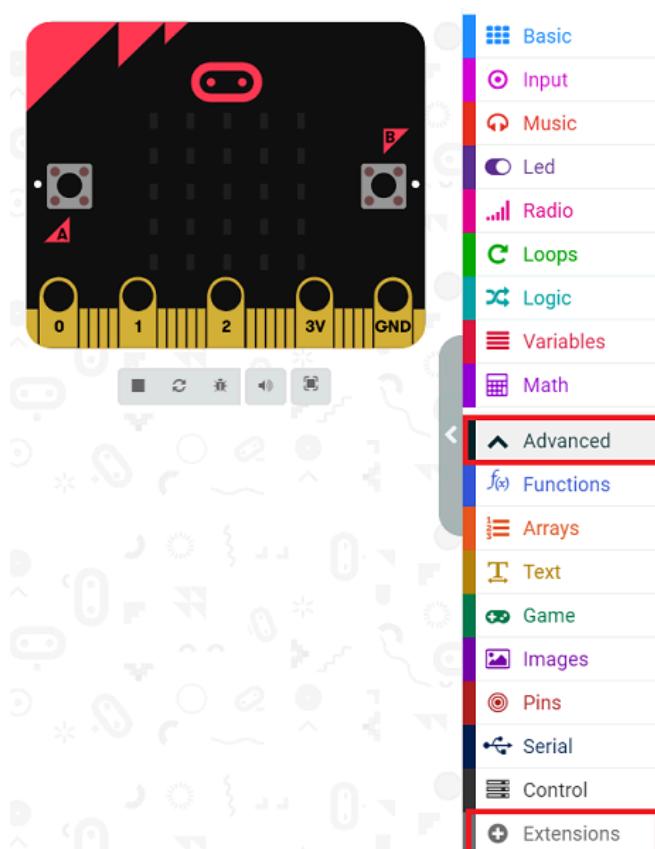
25.6. Software Platform

[MakeCode](#)

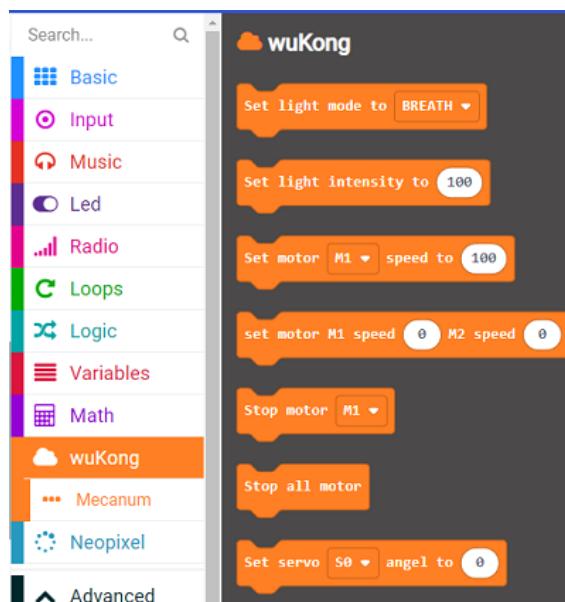
25.7. Coding

Add extensions

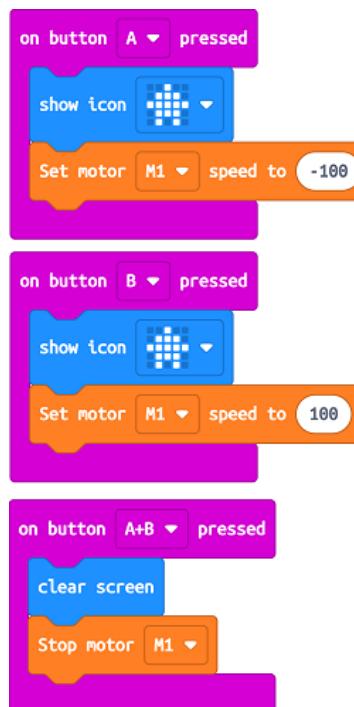
Click "Advanced" in the MakeCode to see more choices.



Search with Wukong in the dialogue box to download it.



Program



Link: https://makecode.microbit.org/_5WjDde1jAF6R

Result

When button A is pressed, the locomotive moves forward; when button B is pressed, the locomotive moves backward; when button A+B is pressed, the locomotive stops moving.

By ELECFREAKS Team

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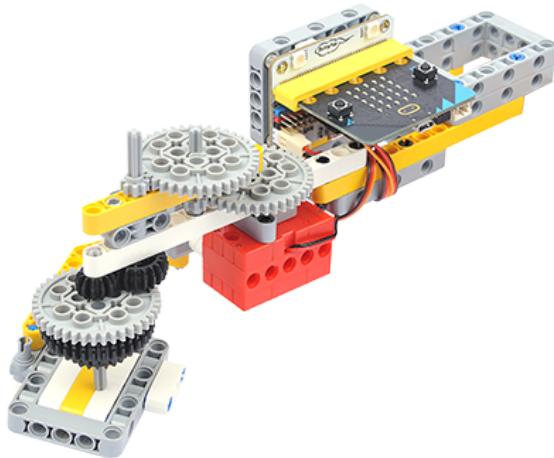
Case 24: The Top Emitter

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- [26.2. Link:](#)
- [26.3. Materials Required](#)
- [26.4. Bricks build-up](#)
- [26.5. Hardware Connection](#)
- [26.6. Software Platform](#)
- [26.7. Coding](#)

26.1. Purpose

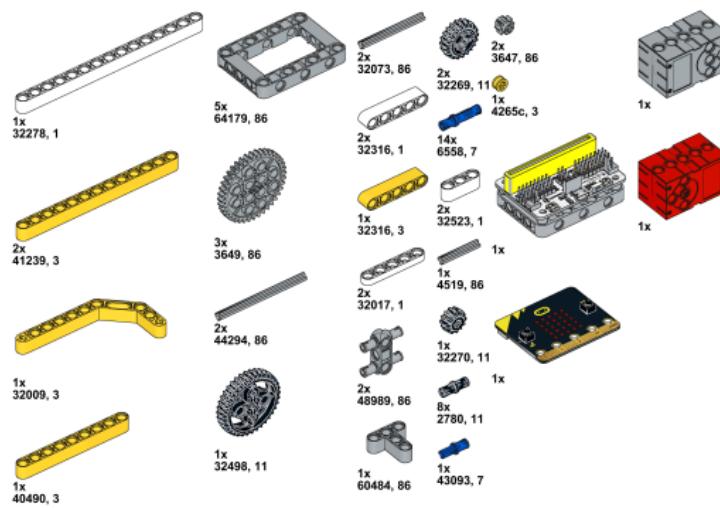
Make a top emitter.



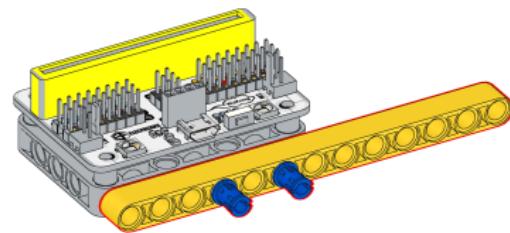
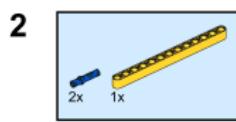
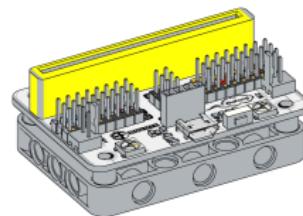
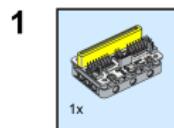
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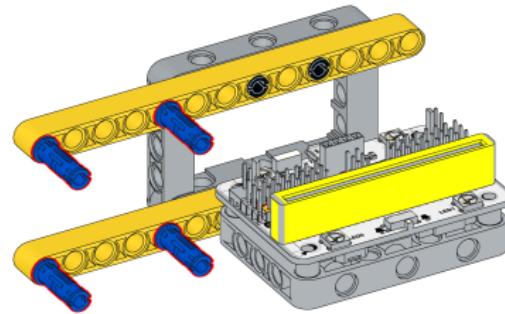
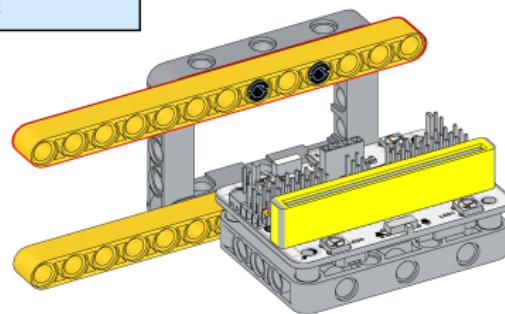
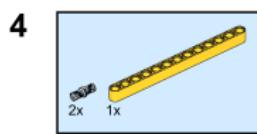
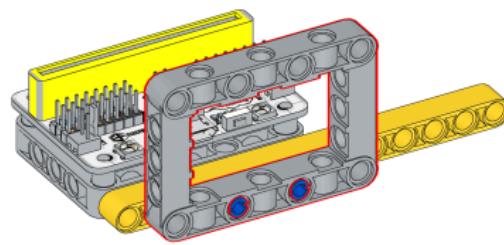
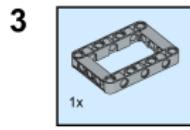
[micro:bit Wonder Building Kit](#)

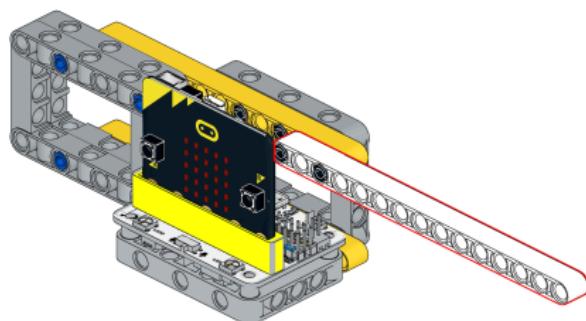
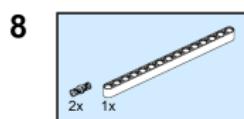
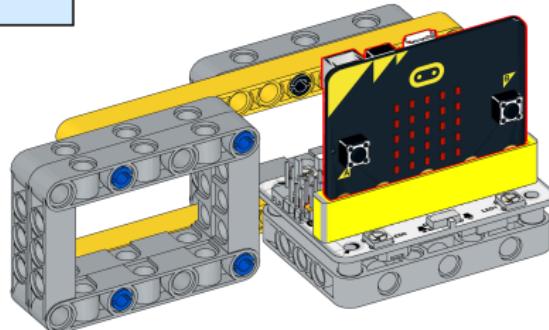
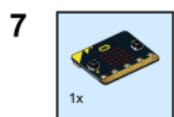
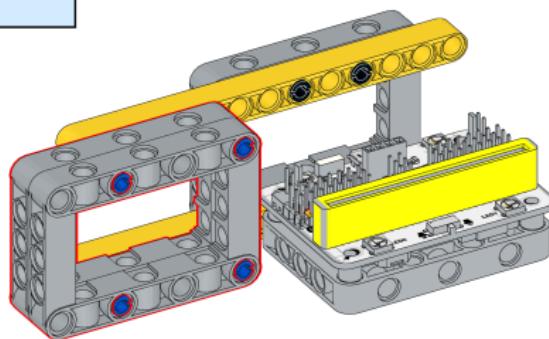
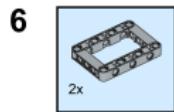
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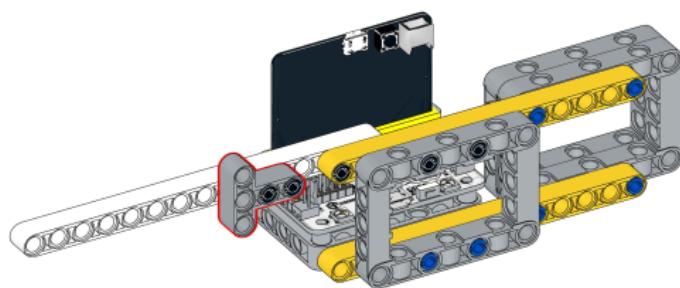
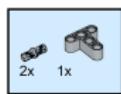
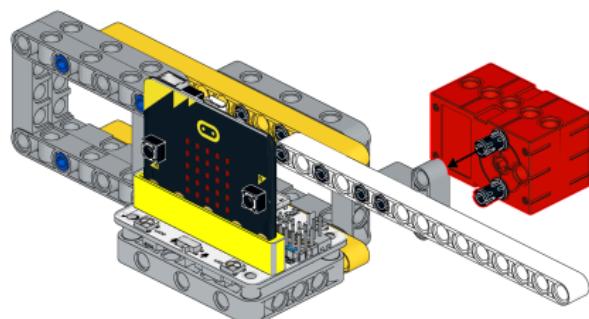
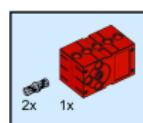
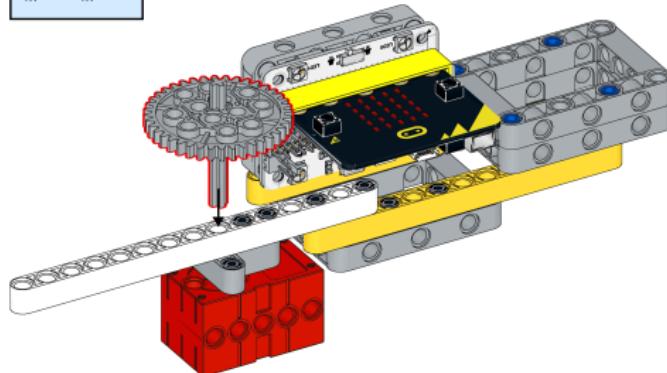
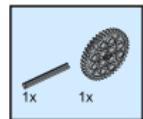


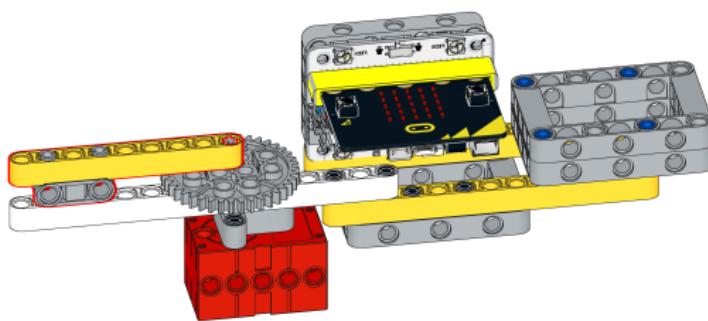
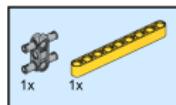
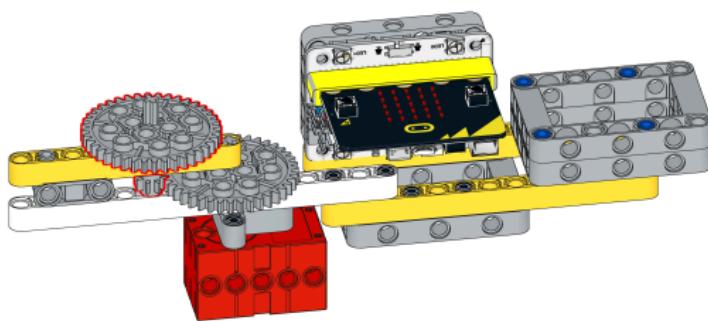
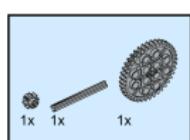
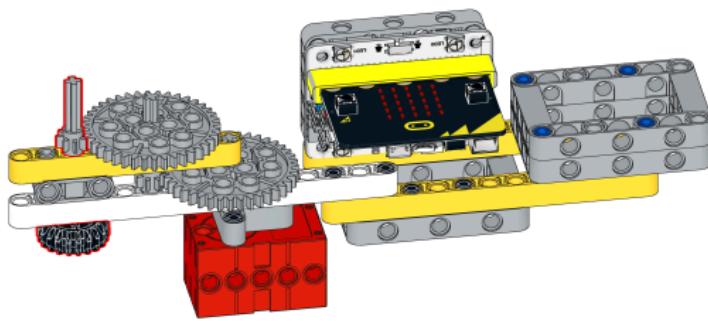
26.4. Bricks build-up

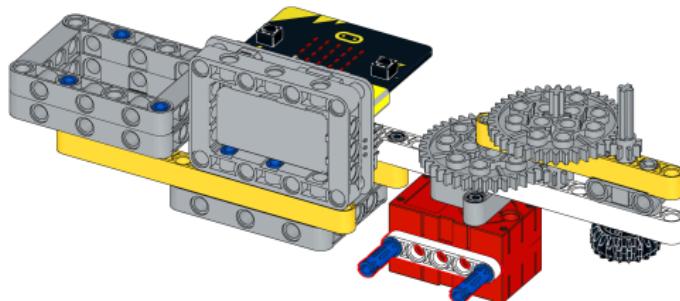
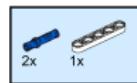
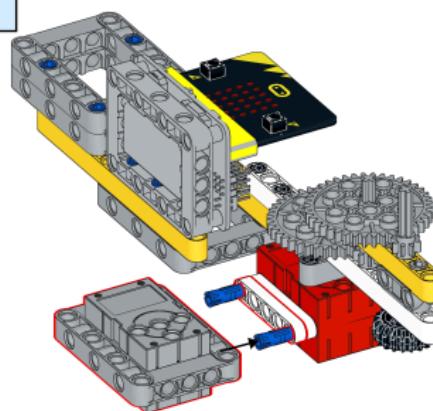
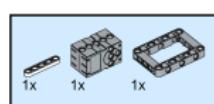
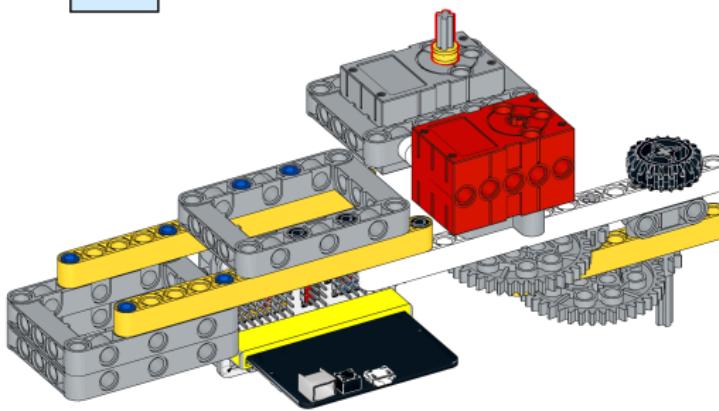


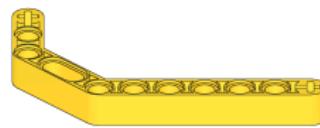
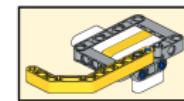
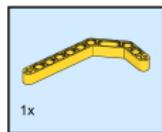
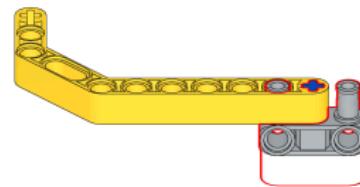
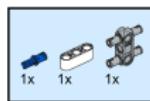
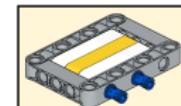


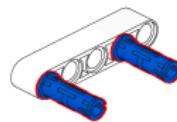
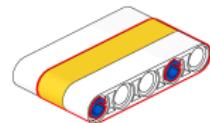
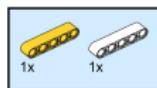
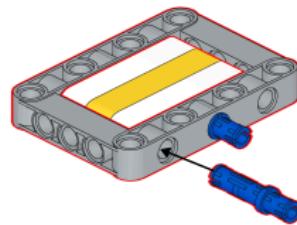
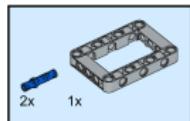


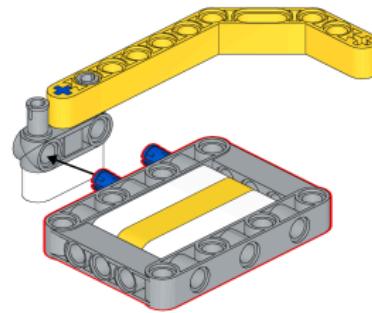
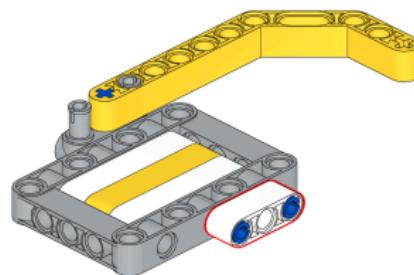
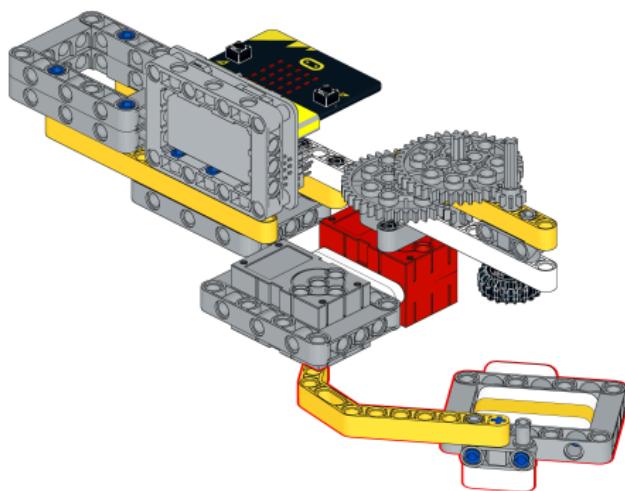
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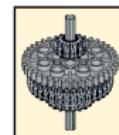
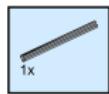
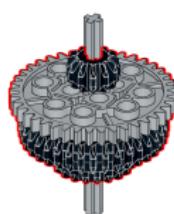
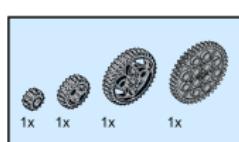
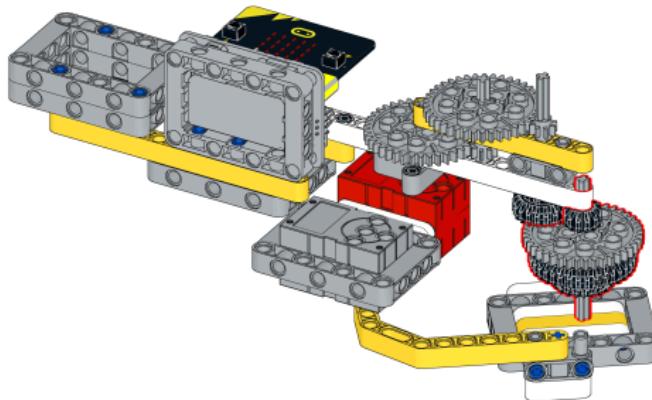
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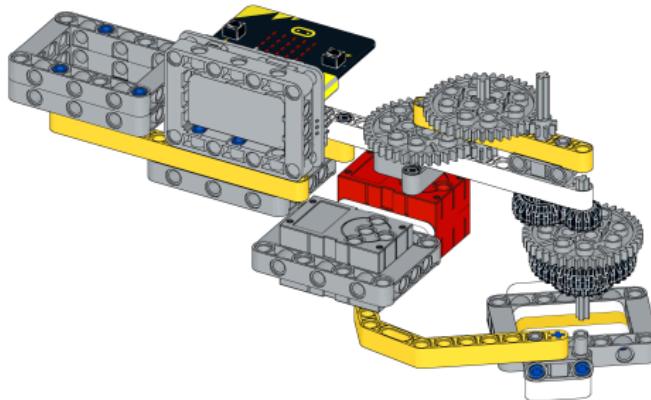
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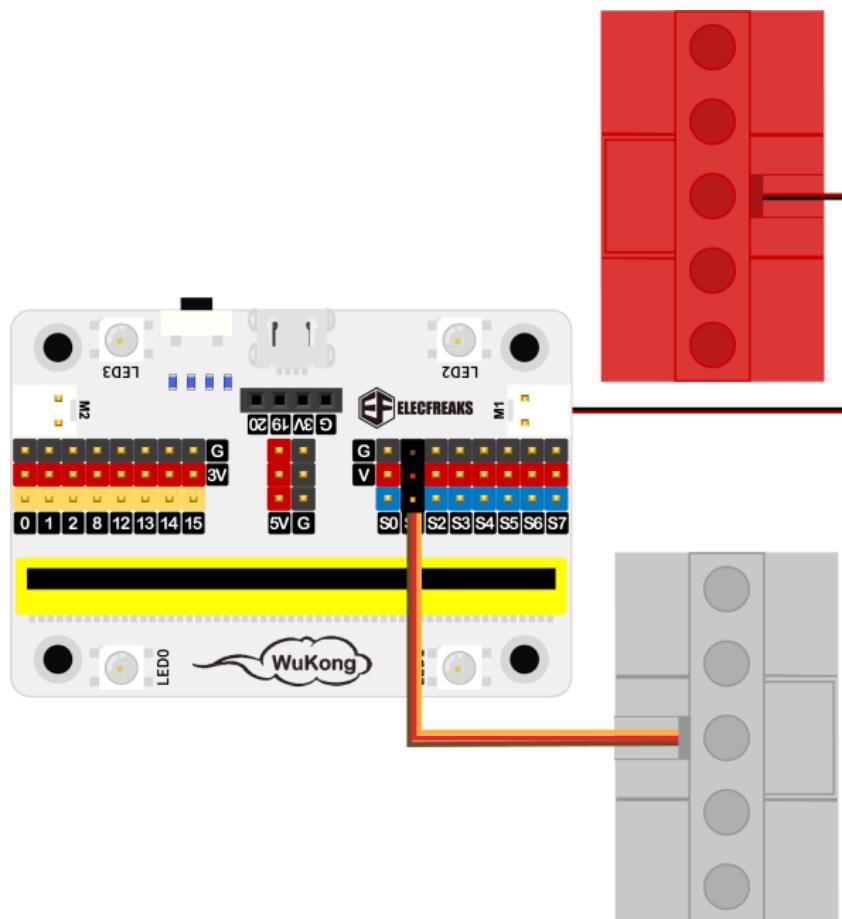
24**25****26**

27**28****29**

30

26.5. Hardware Connection

Connect a [motor](#) to M1, and the [servo](#) to S1 ports on [Wukong breakout board](#).



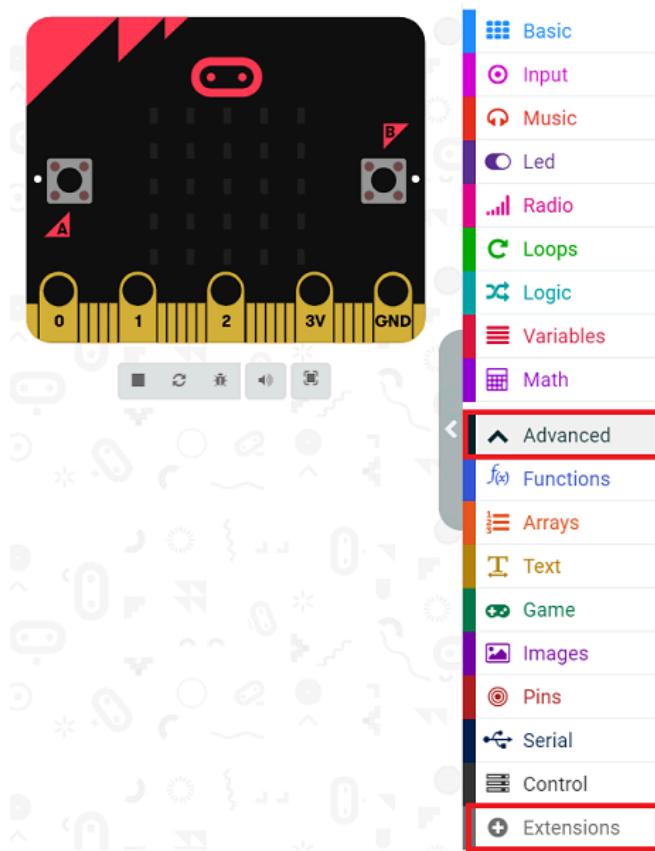
26.6. Software Platform

[MakeCode](#)

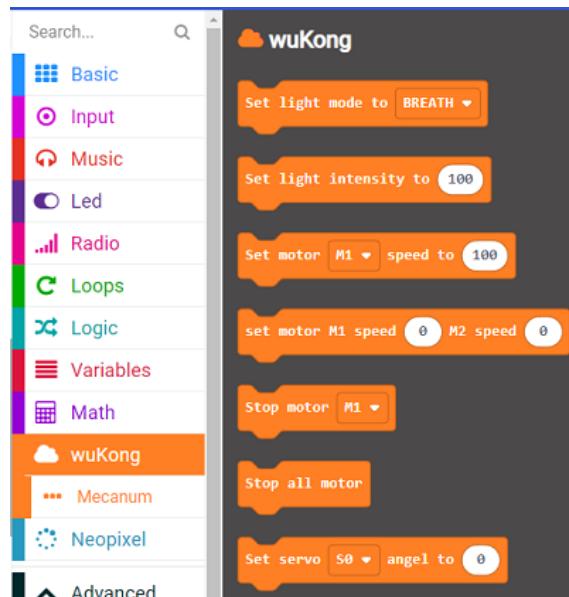
26.7. Coding

Add extensions

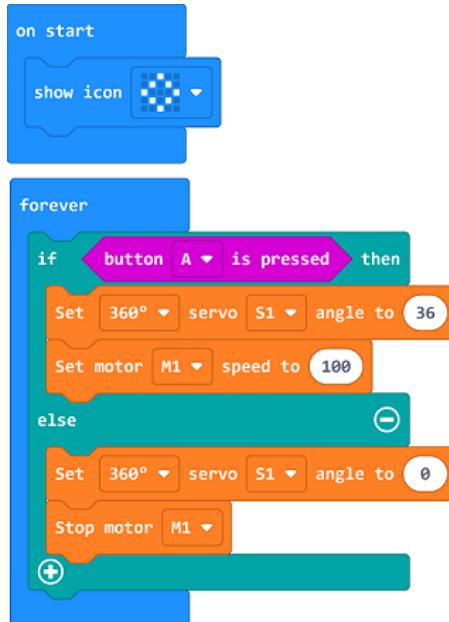
Click "Advanced" in the MakeCode to see more choices.



Search with Wukong in the dialogue box to download it.



Program



Link:https://makecode.microbit.org/_Vw1agAfMAccF

Result

Place the gyro in the acceleration position, when the button A is pressed (long press) , the bottom baffle will support the small gyro on the baffle to accelerate the rotation; release the A button, the bottom baffle will move to the right, and the gyro falls off, then the motor will stop rotating.

By ELECFREAKS Team

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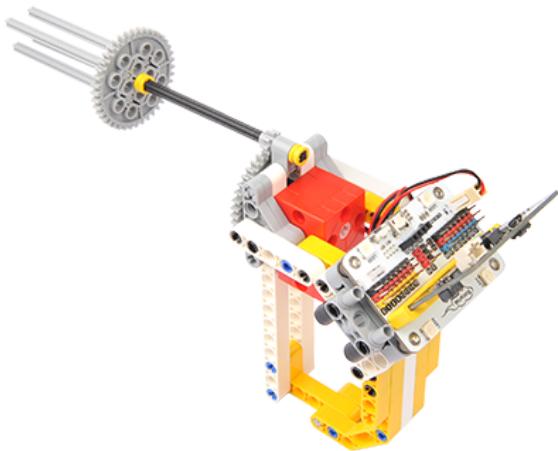
Case 25: The Egg Beater

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- [27.2. Link:](#)
- [27.3. Materials Required](#)
- [27.4. Bricks build-up](#)
- [27.5. Hardware Connection](#)
- [27.6. Software Platform](#)
- [27.7. Coding](#)

27.1. Purpose

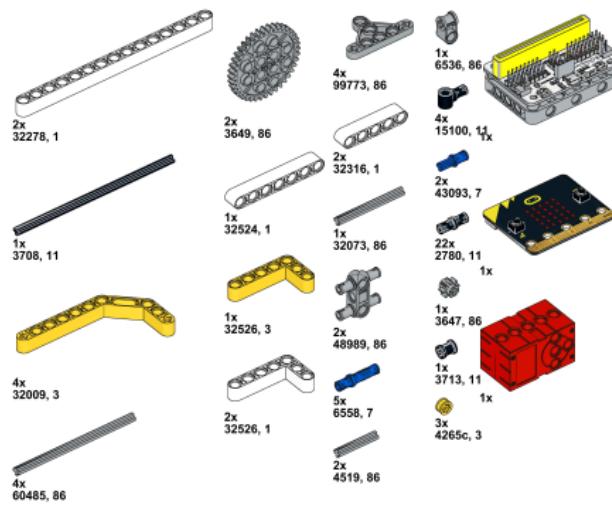
Make an egg beater.



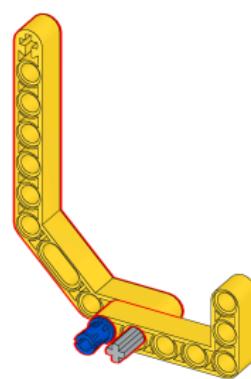
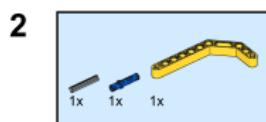
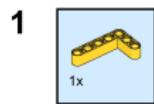
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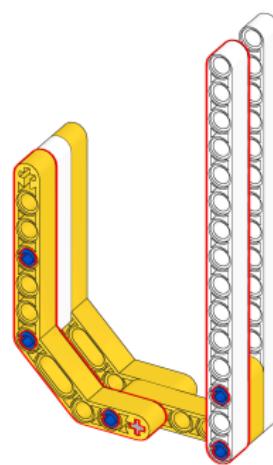
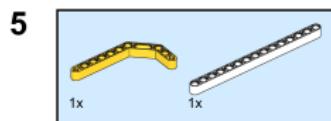
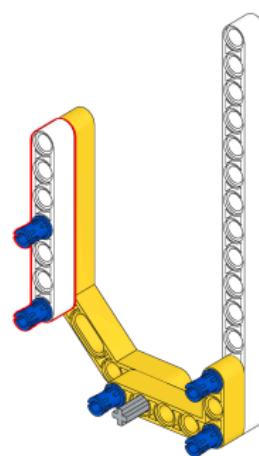
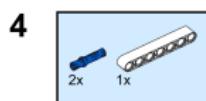
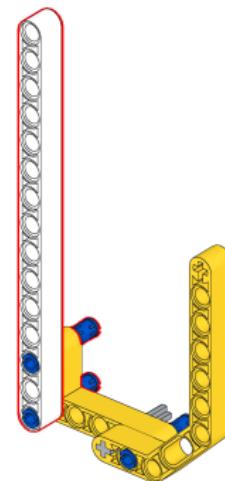
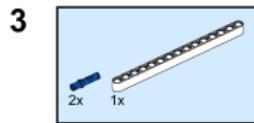
[micro:bit Wonder Building Kit](#)

27.3. Materials Required



27.4. Bricks build-up

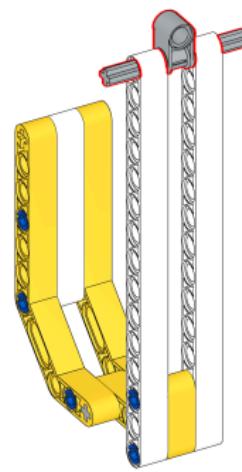




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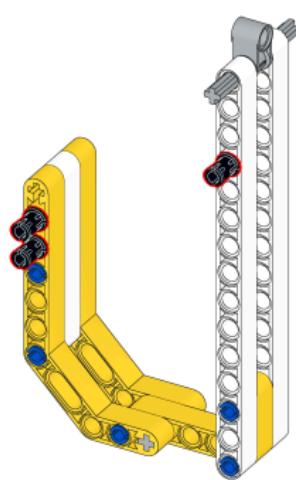
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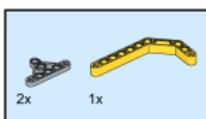
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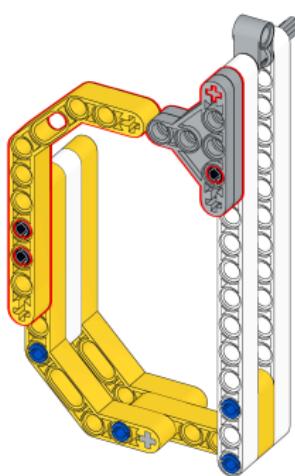
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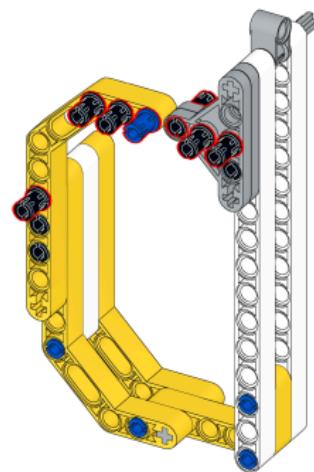
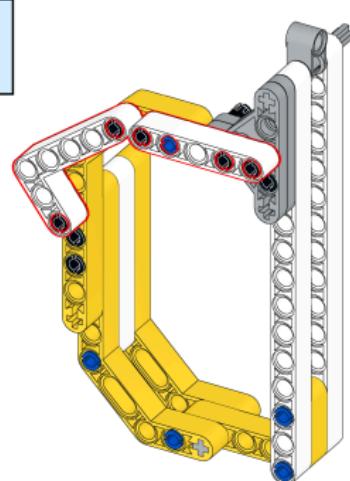
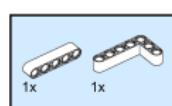
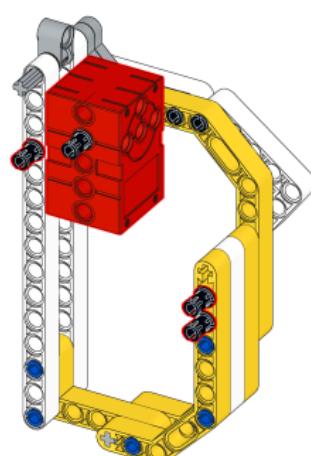
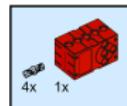


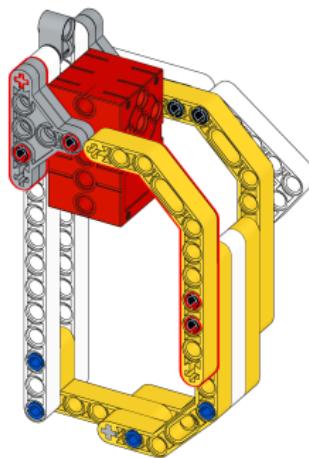
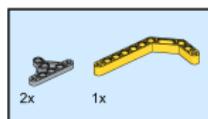
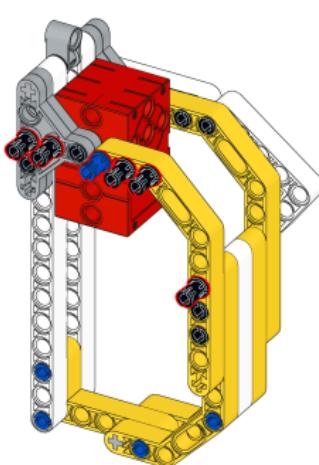
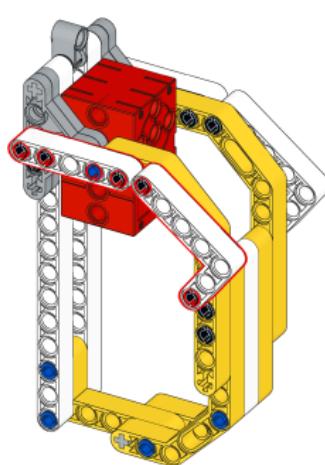
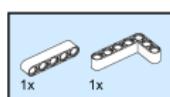
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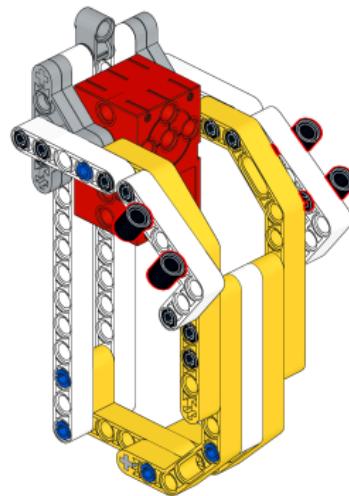
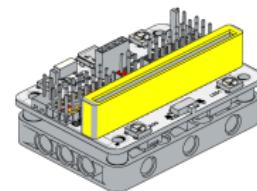
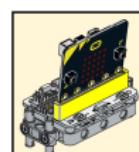
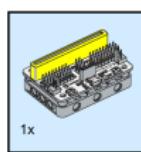
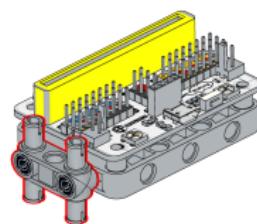
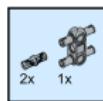


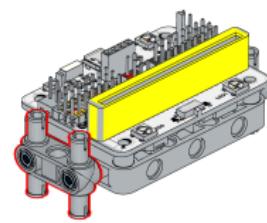
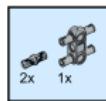
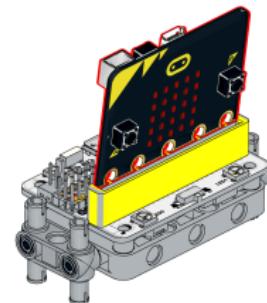
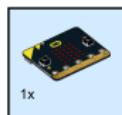
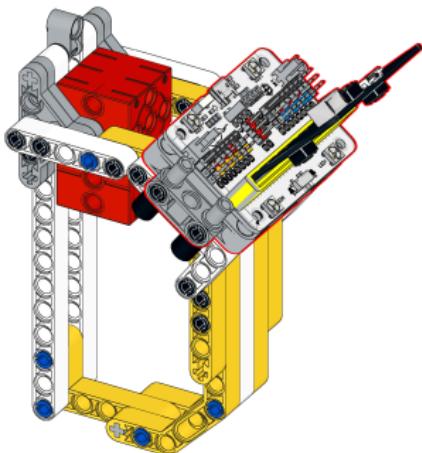
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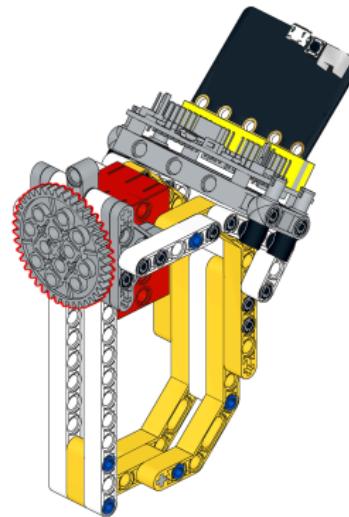
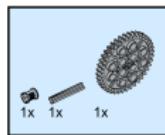
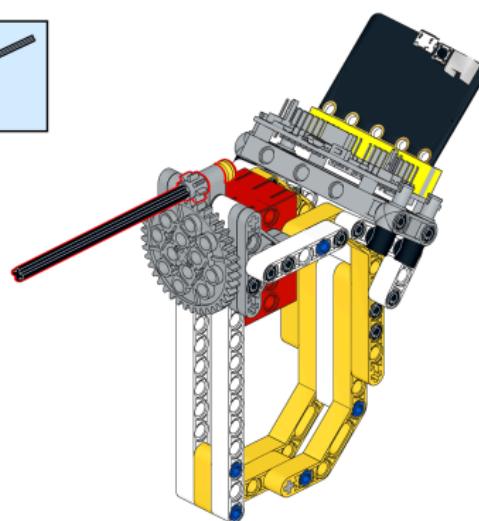
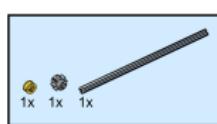
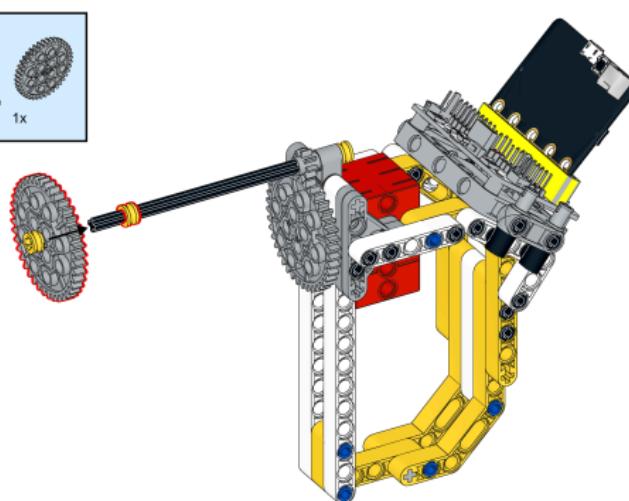


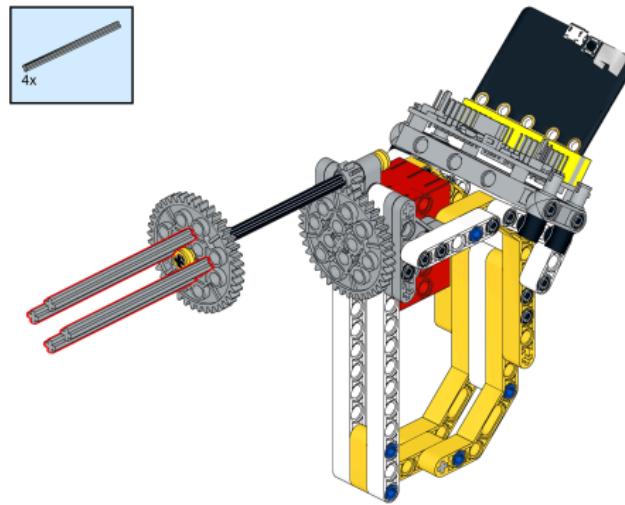
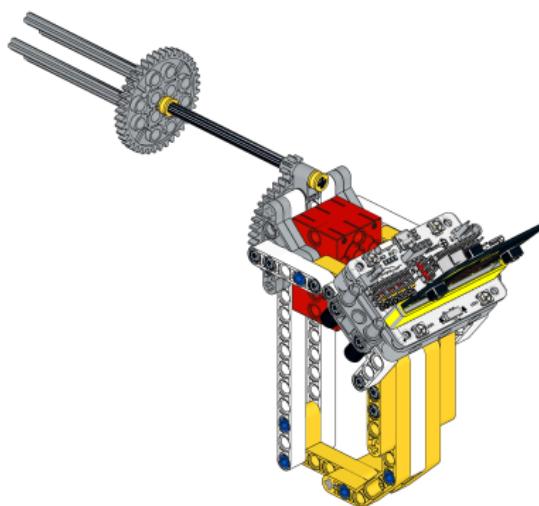
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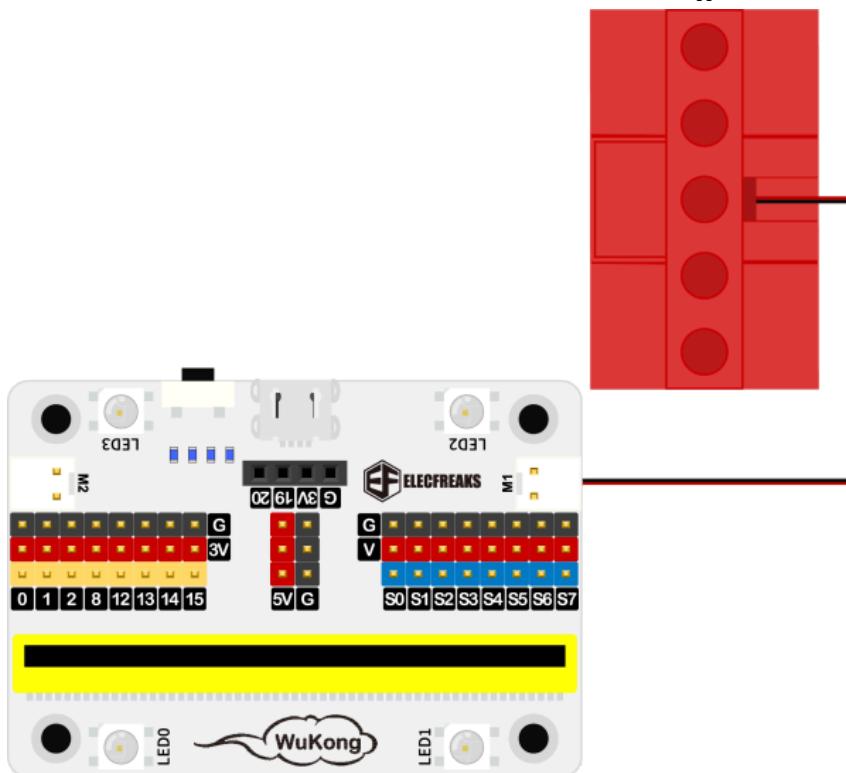
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24**25**

27.5. Hardware Connection

Connect a [motor](#) to M1 port on [Wukong breakout board](#).



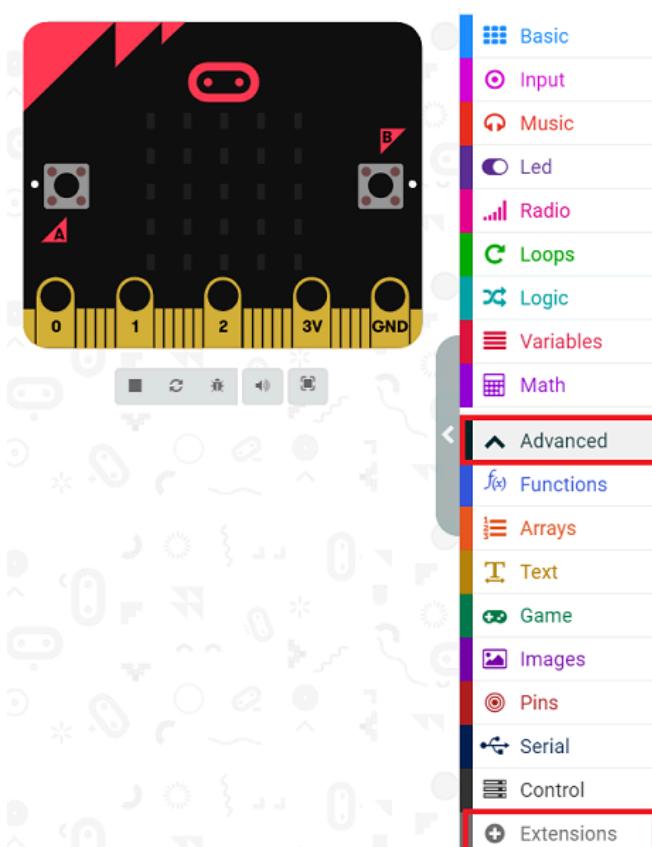
27.6. Software Platform

[MakeCode](#)

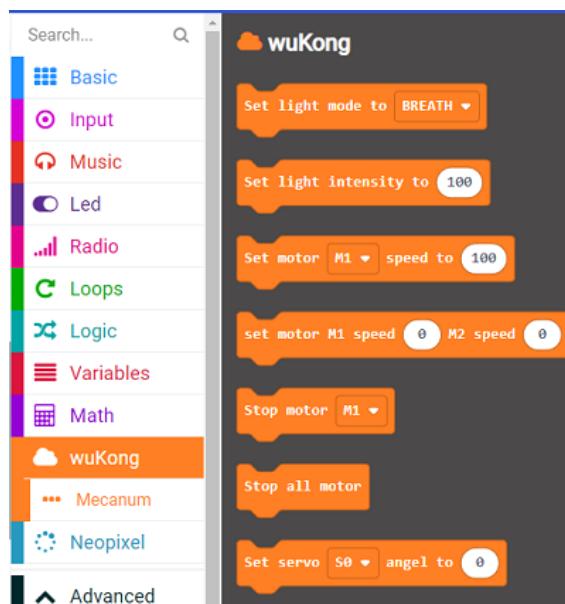
27.7. Coding

Add extensions

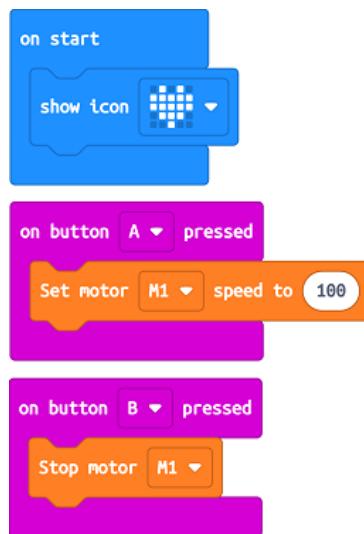
Click “Advanced” in the MakeCode to see more choices.



Search with Wukong in the dialogue box to download it.



Program



Link:https://makecode.microbit.org/_UHqVom5dM35P

Result

When the micro:bit is powering on, it displays a heart icon. When button A is pressed, the egg beater starts rotating, and when button B is pressed, it stops rotating.

By ELECFREAKS Team

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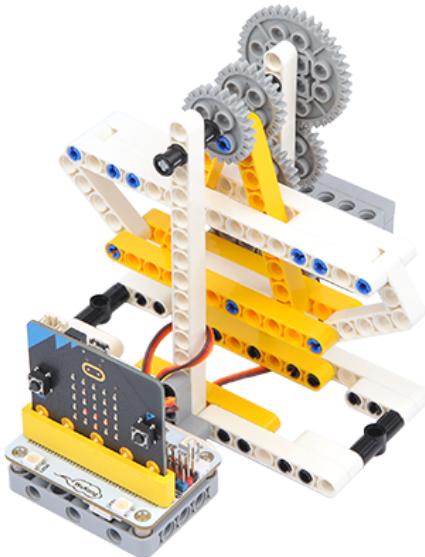
Case 26: The Corsair

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- [28.1. Purpose](#)
- [28.2. Link:](#)
- [28.3. Materials Required](#)
- [28.4. Bricks build-up](#)
- [28.5. Hardware Connection](#)
- [28.6. Software Platform](#)
- [28.7. Coding](#)

28.1. Purpose

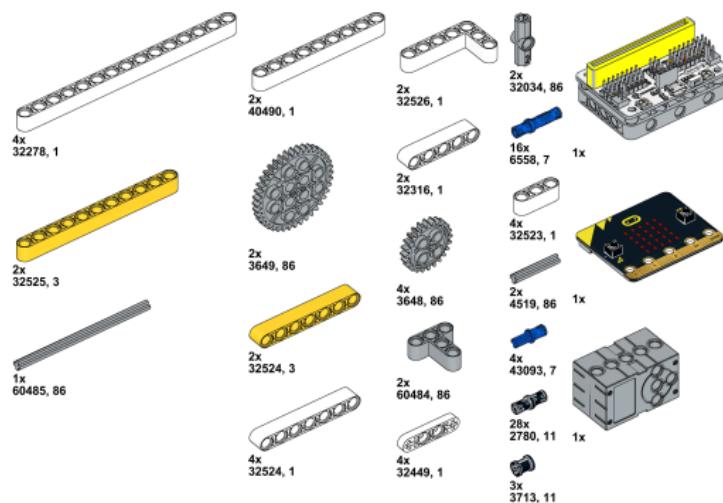
Make a corsair.



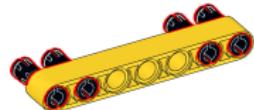
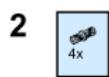
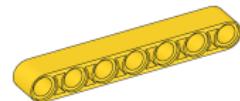
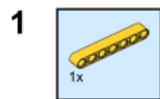
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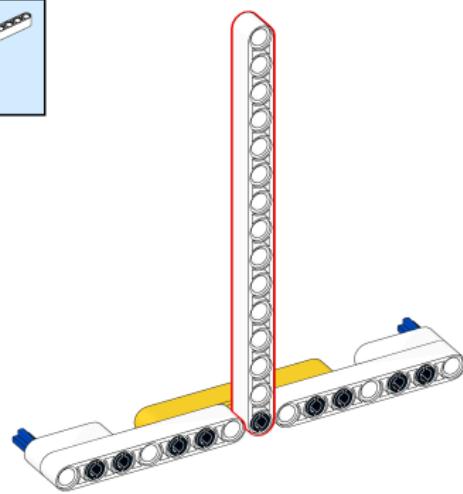
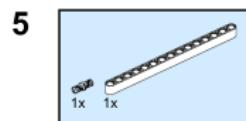
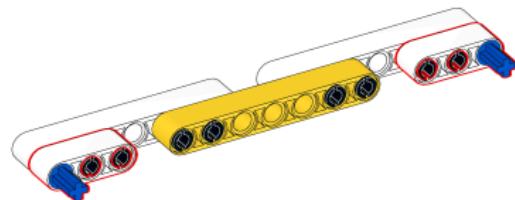
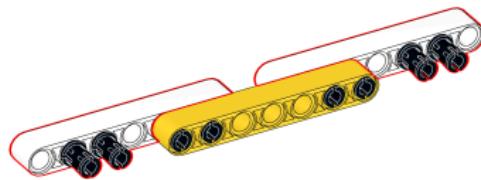
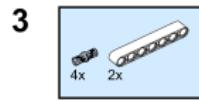
[micro:bit Wonder Building Kit](#)

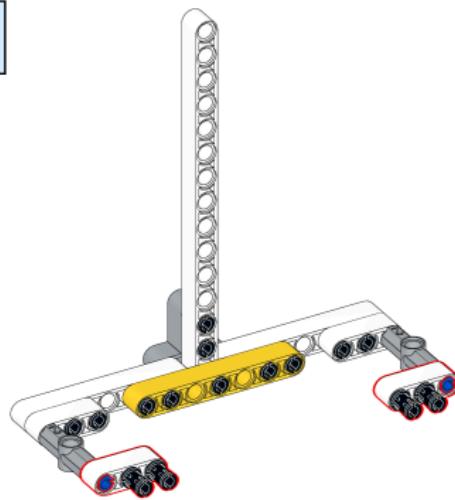
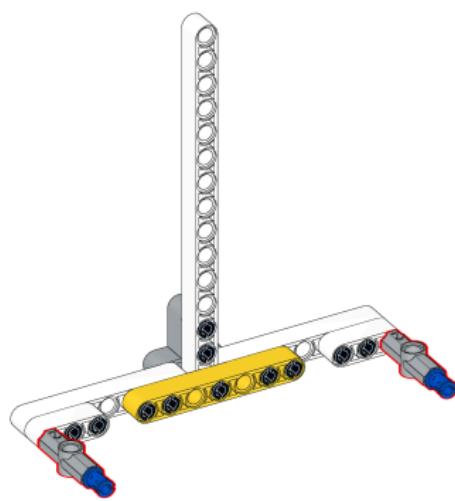
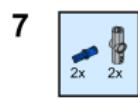
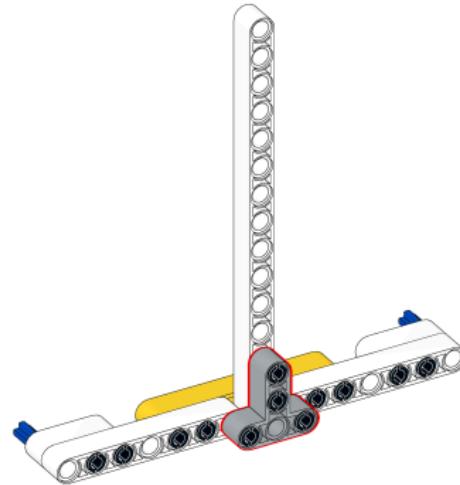
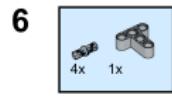
28.3. Materials Required

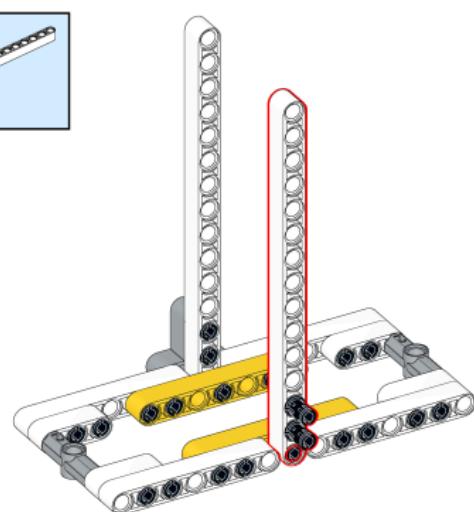
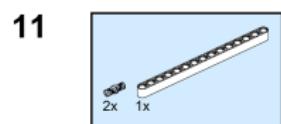
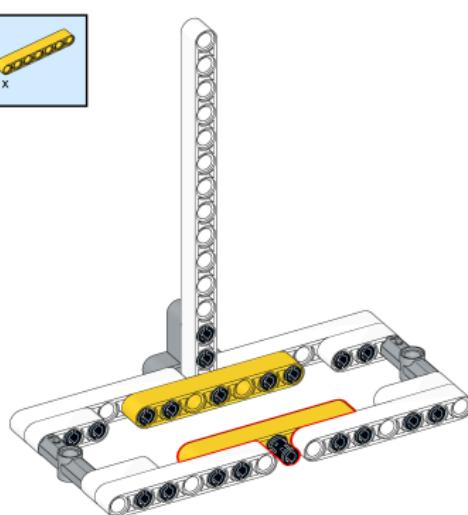
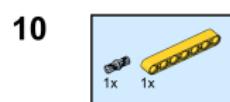
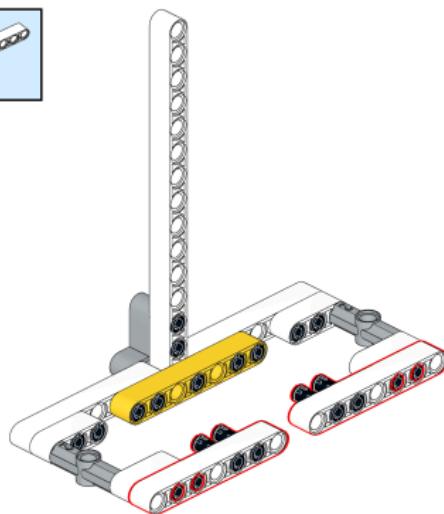
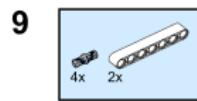


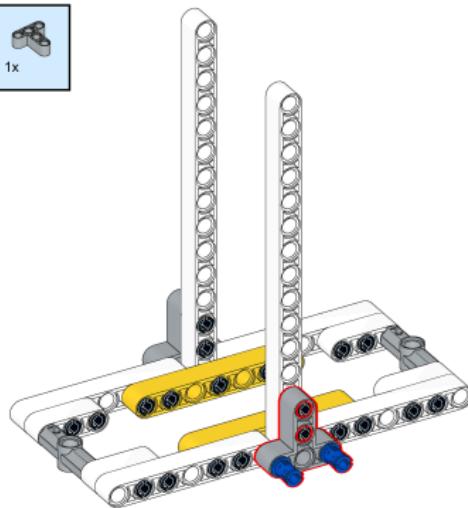
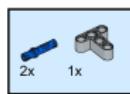
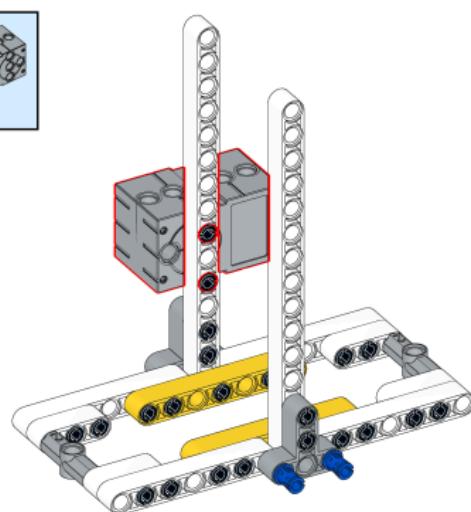
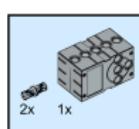
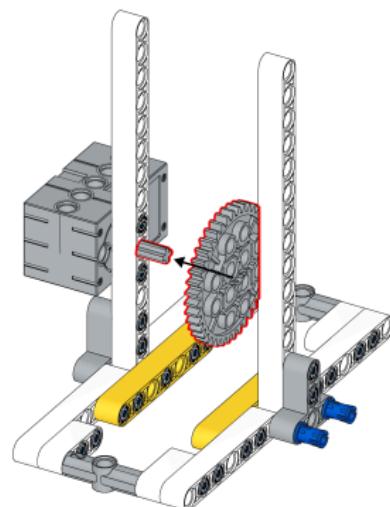
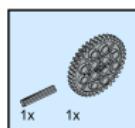
28.4. Bricks build-up

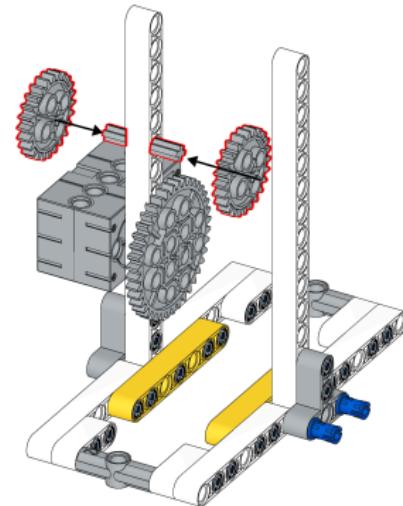
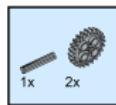
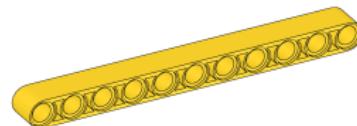
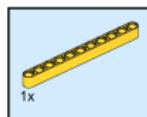
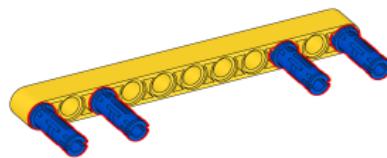


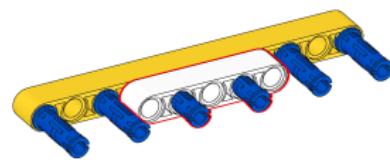
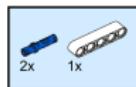
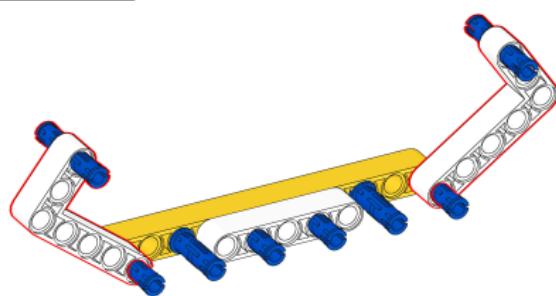
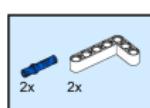
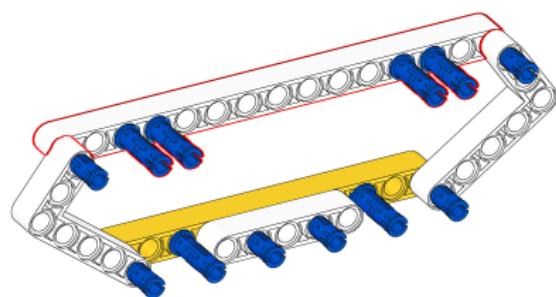
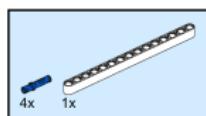


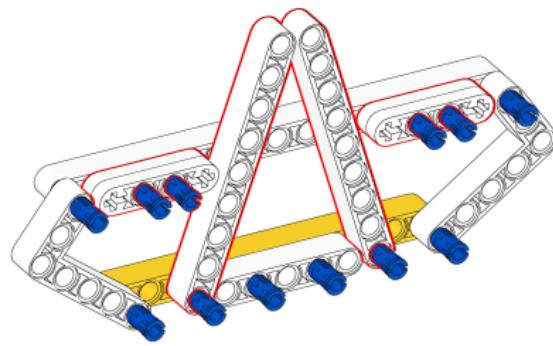
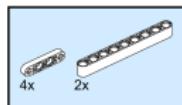
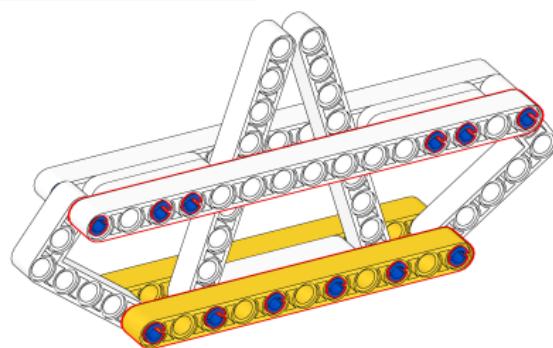
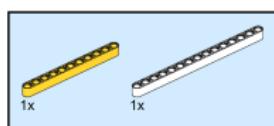
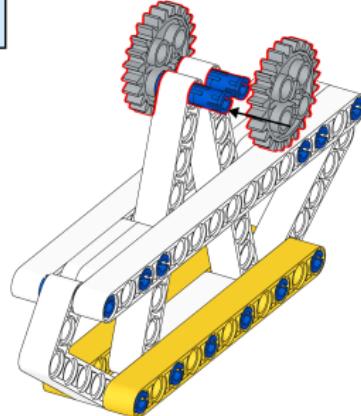
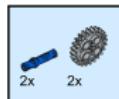


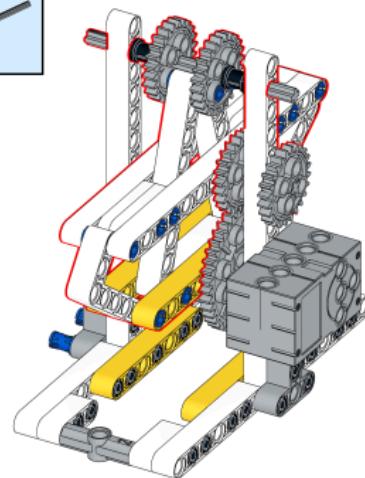
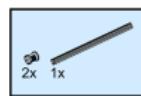
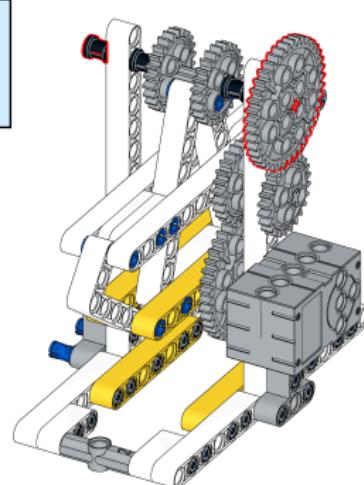
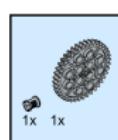
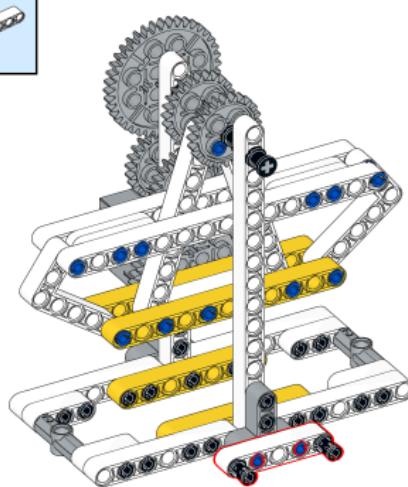
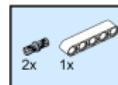


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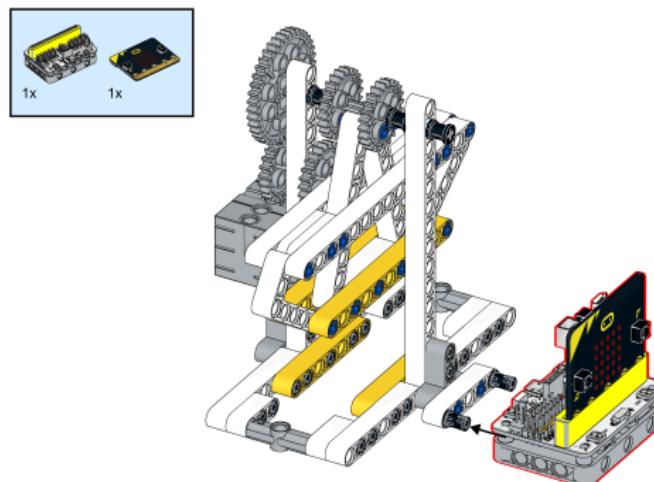
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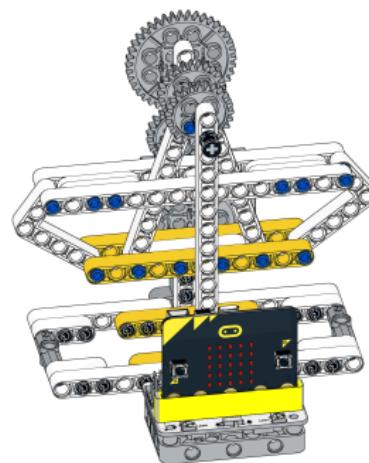
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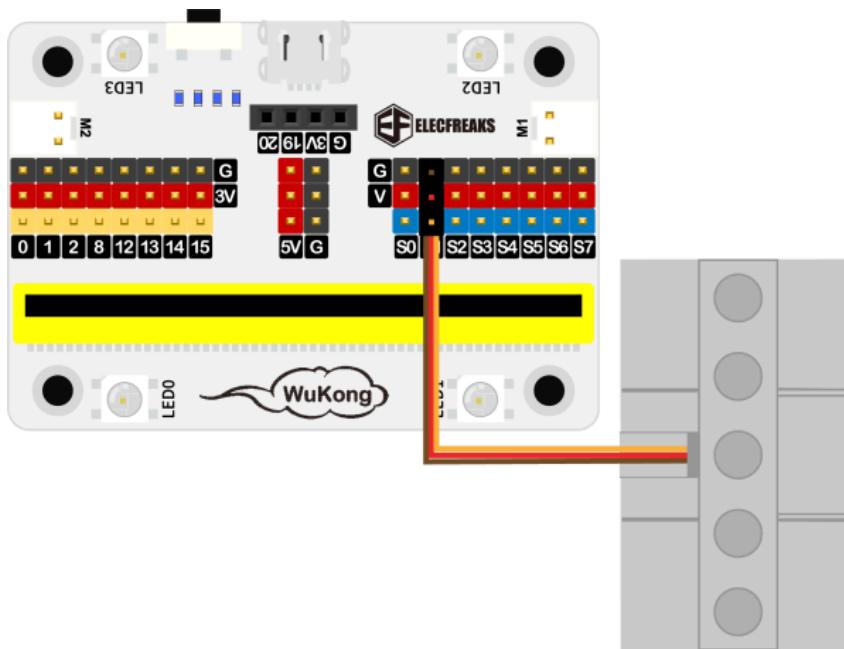


28



28.5. Hardware Connection

Connect a [servo](#) to S1 port on [Wukong breakout board](#).



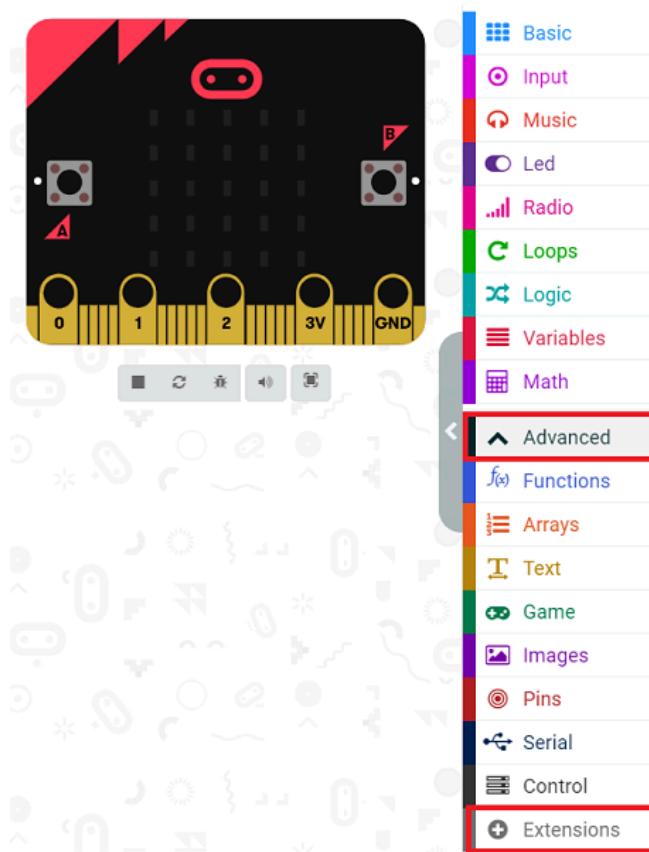
28.6. Software Platform

[MakeCode](#)

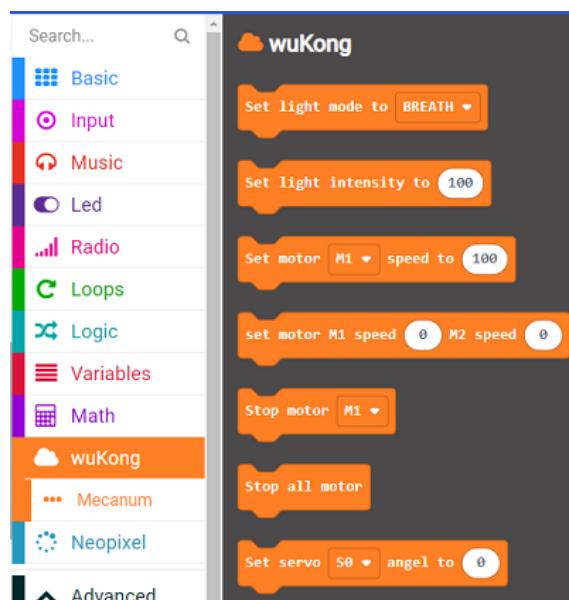
28.7. Coding

Add extensions

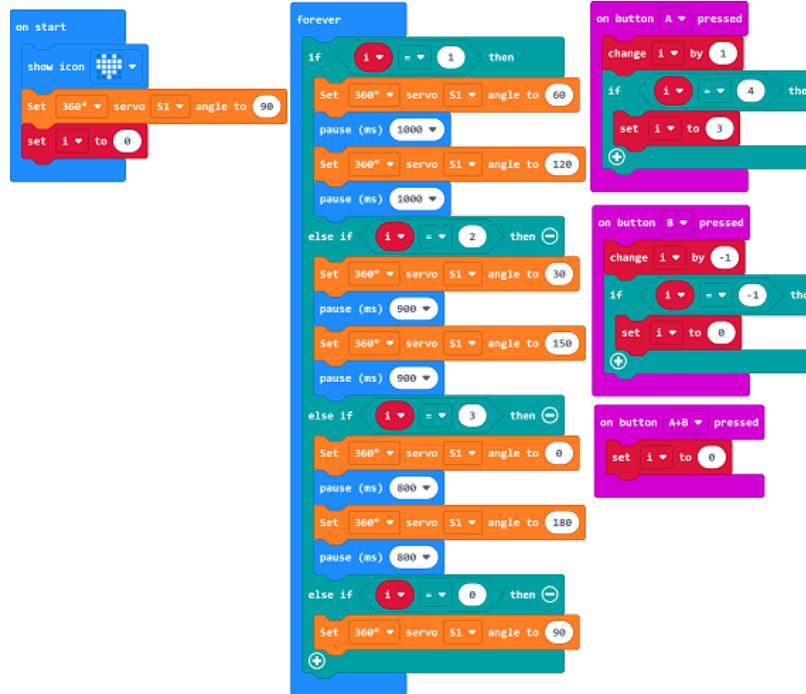
Click “Advanced” in the MakeCode to see more choices.



Search with Wukong in the dialogue box to download it.



Program



Link:https://makecode.microbit.org/_VrPehd4athgo

Result

When the micro:bit is powering on, it displays a heart icon. When button A is pressed, the corsair begins to swing; when button B is pressed for the second time, the swing amplitude increases, the third time press the A button amplitude and the swing goes to the maximum, the fourth time press the A button, swing amplitude has change; when the button B is pressed, the swing amplitude begins to decrease, when repeatedly pressed B button in three times, it stopped swinging.

By ELECFREAKS Team

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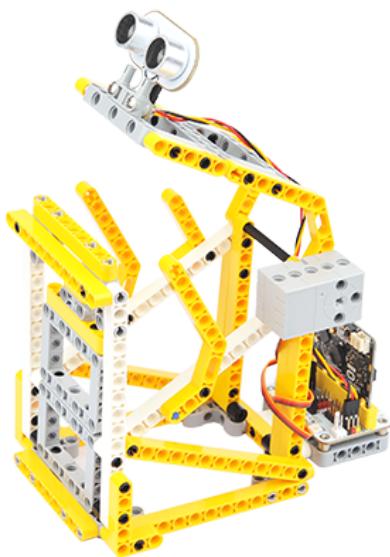
Case 27: The Smart Garbage Can

Contents

- [29.1. Purpose](#)
- [29.2. Link:](#)
- [29.3. Materials Required](#)
- [29.4. Bricks build-up](#)
- [29.5. Installation Methods of Hardwares](#)
- [29.6. Hardware Connection](#)
- [29.7. Software Platform](#)
- [29.8. Coding](#)

29.1. Purpose

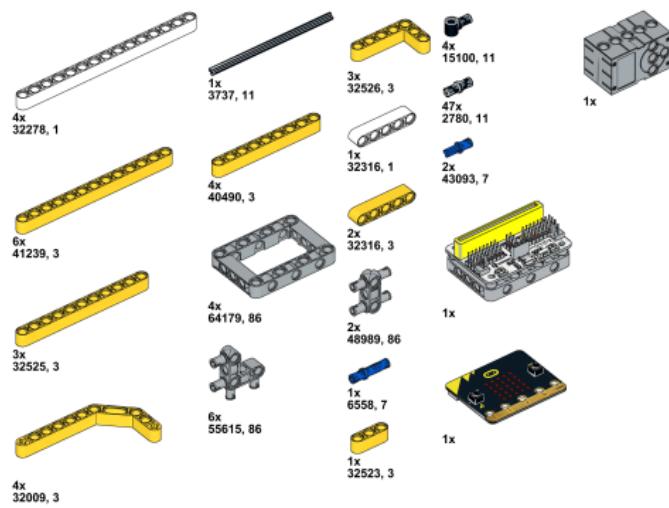
Make a smart garbage can.



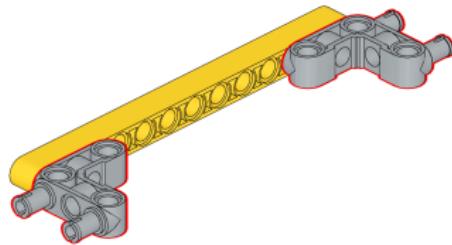
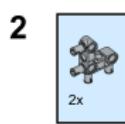
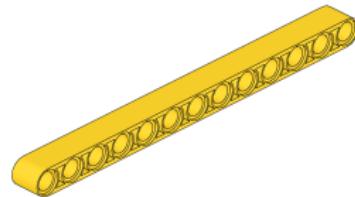
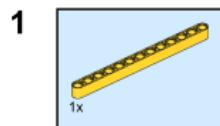
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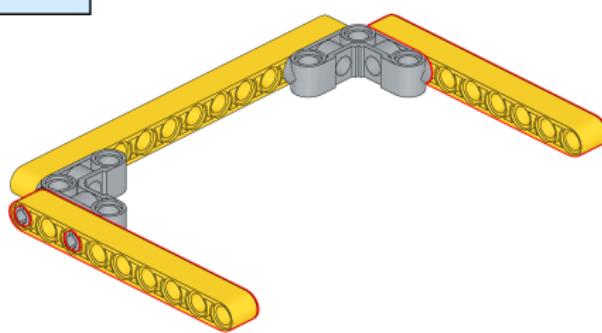
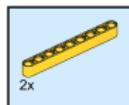
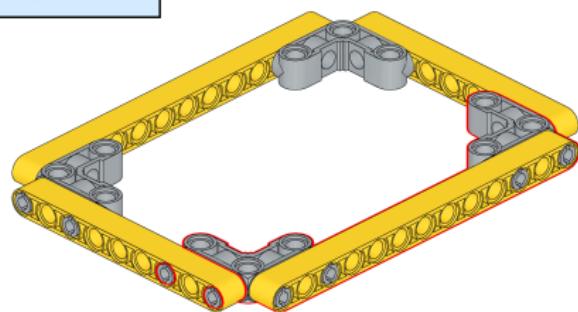
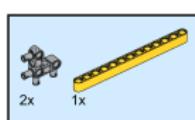
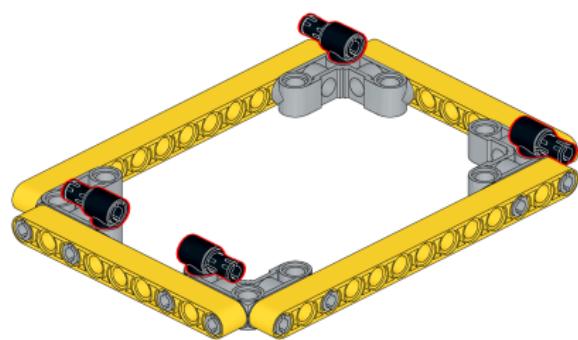
[micro:bit Wonder Building Kit](#)

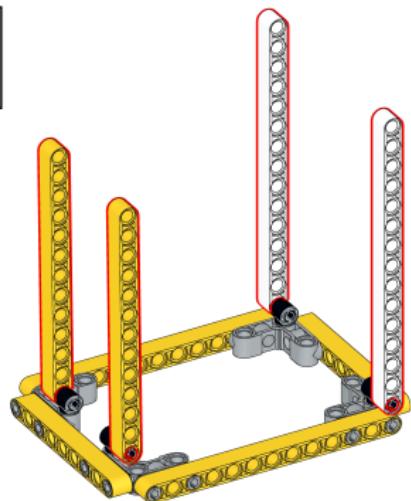
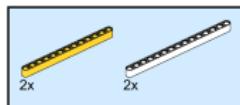
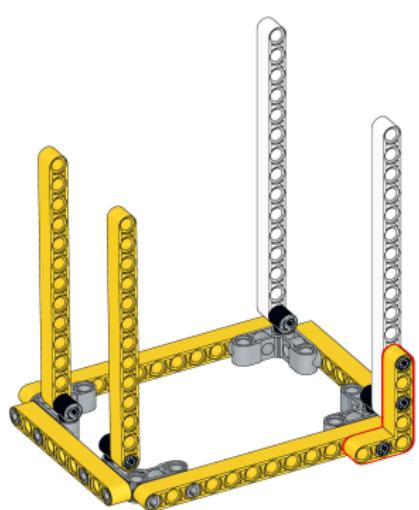
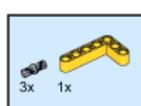
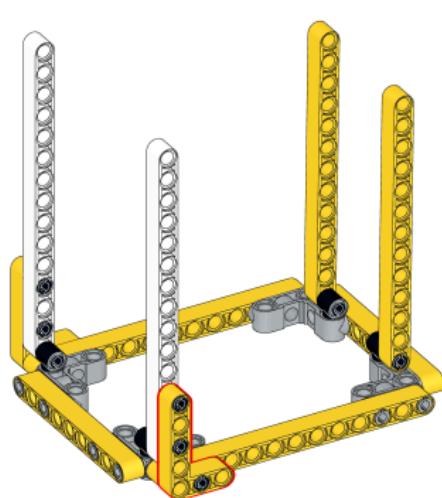
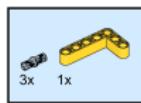
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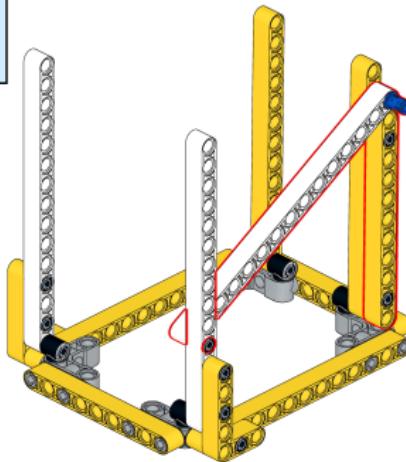
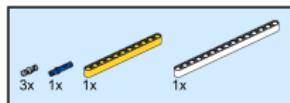
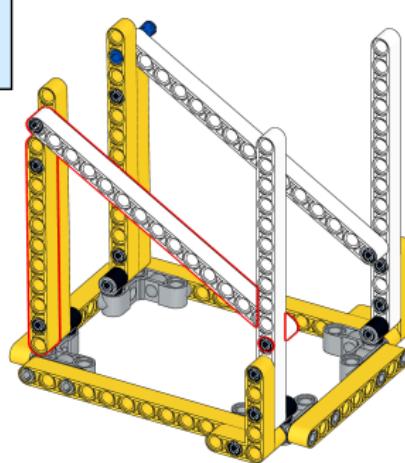
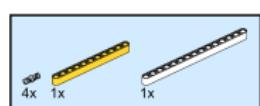
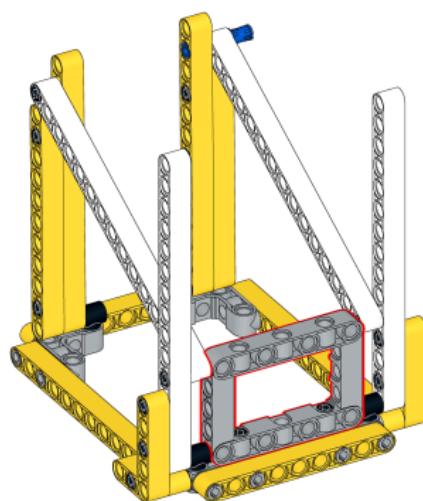
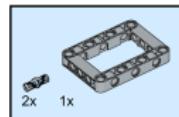


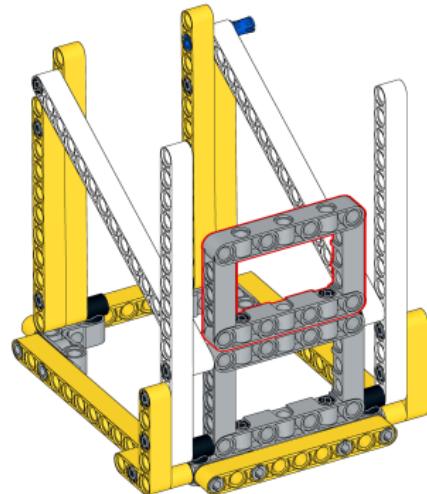
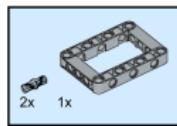
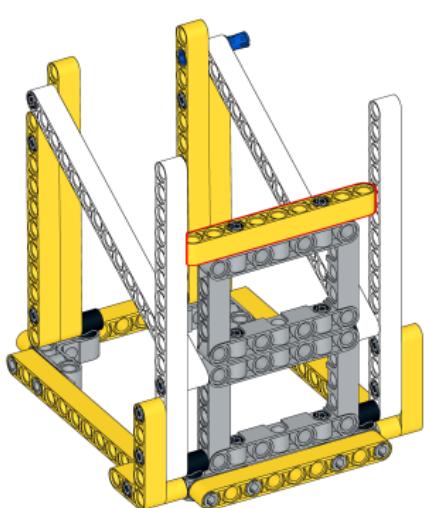
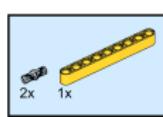
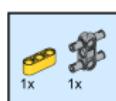
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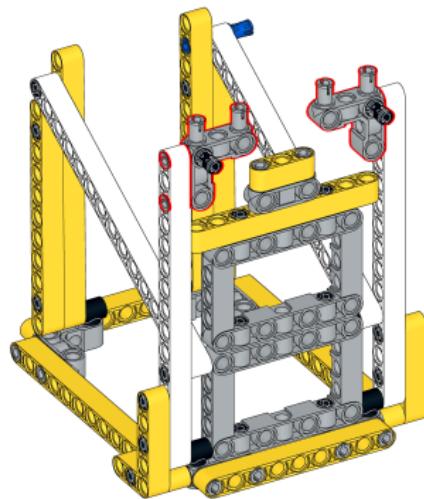
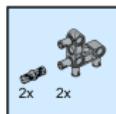
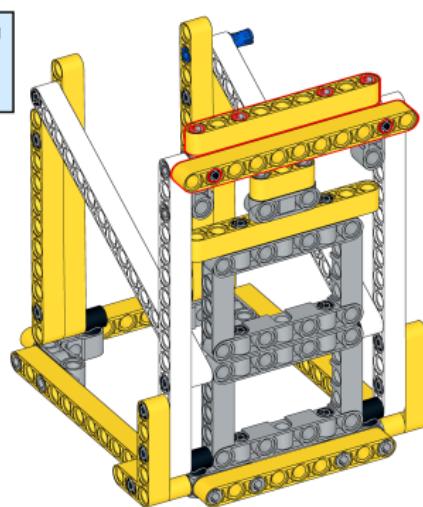
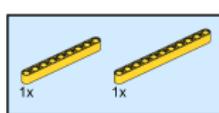
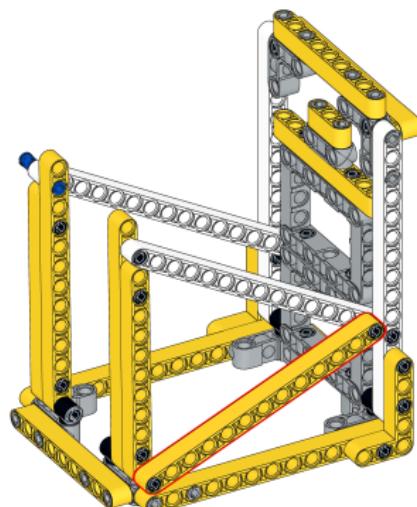
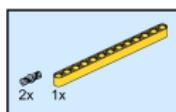


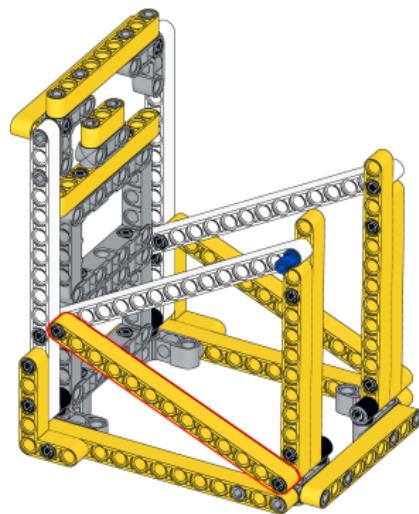
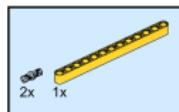
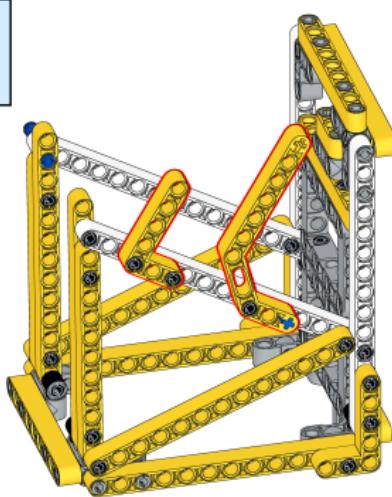
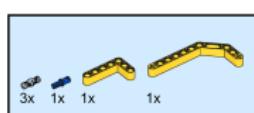
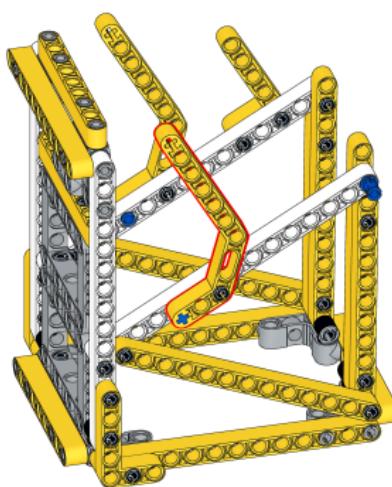
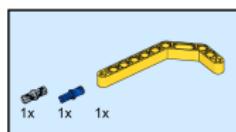
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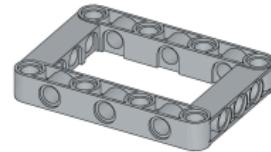
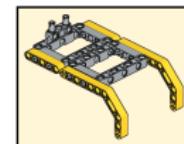
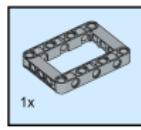
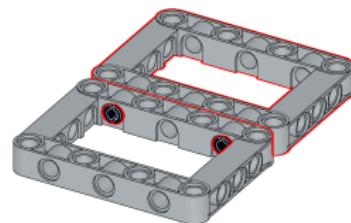
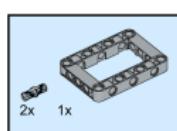
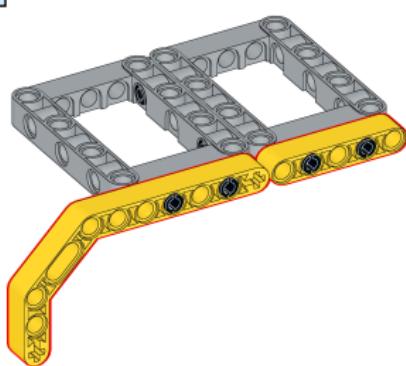
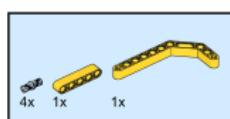
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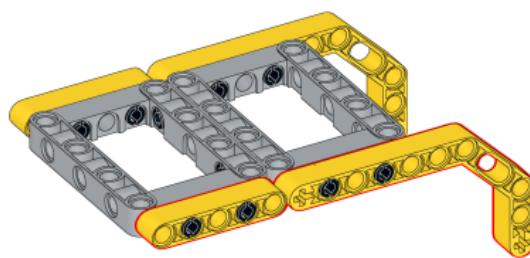
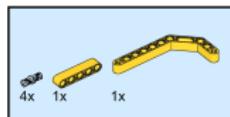
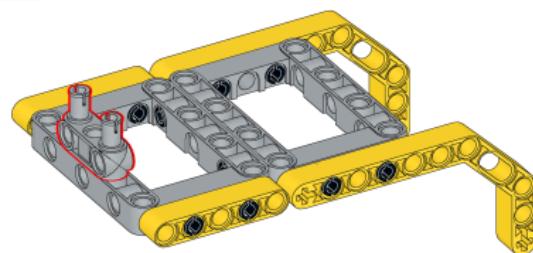
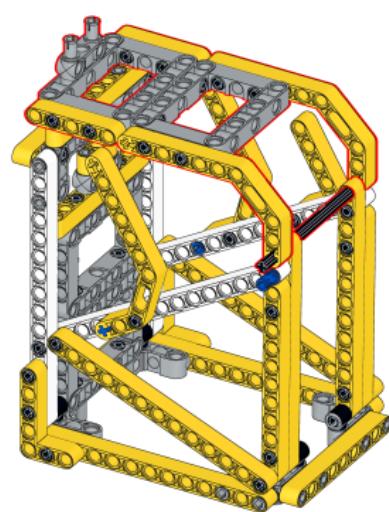
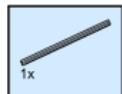
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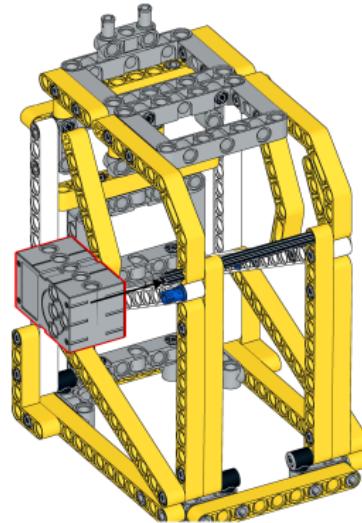
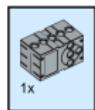
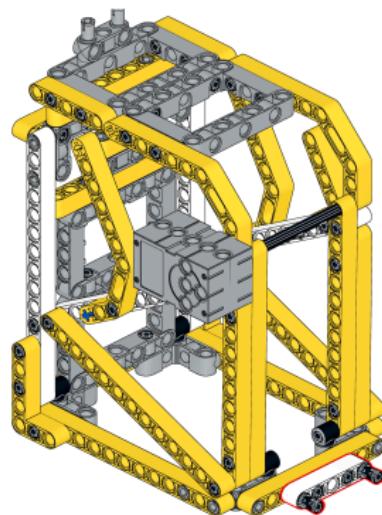
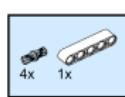
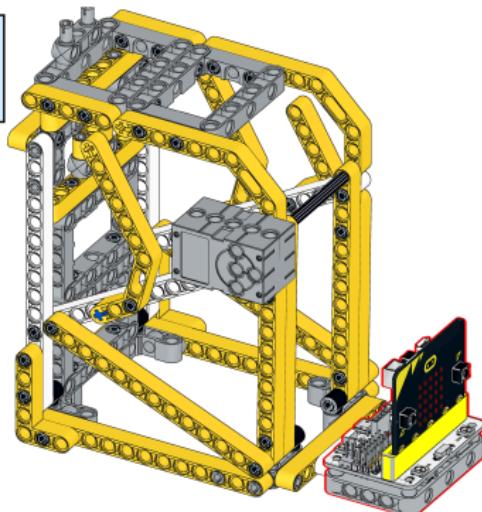
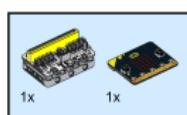
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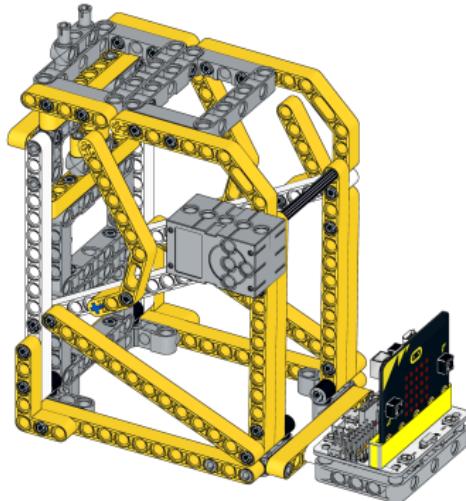
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24**25****26**

27**28****29**

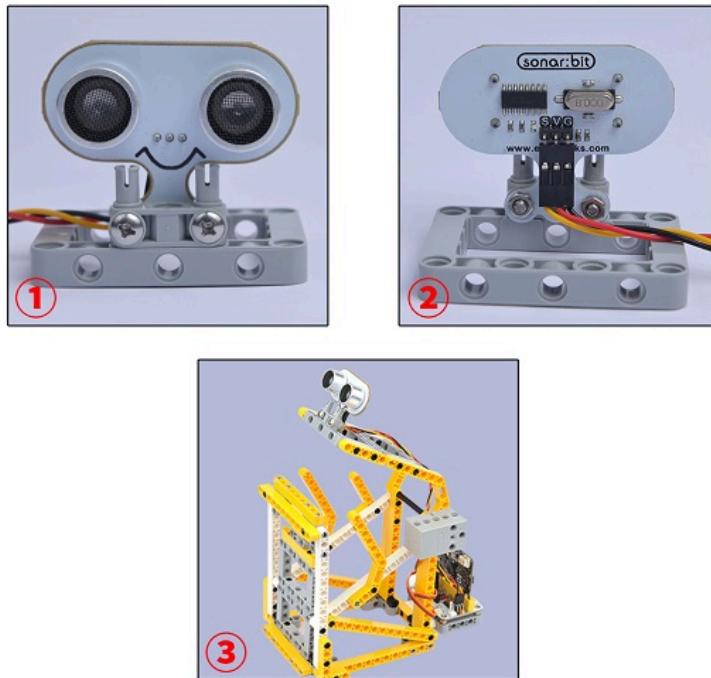
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29.5. Installation Methods of Hardwares

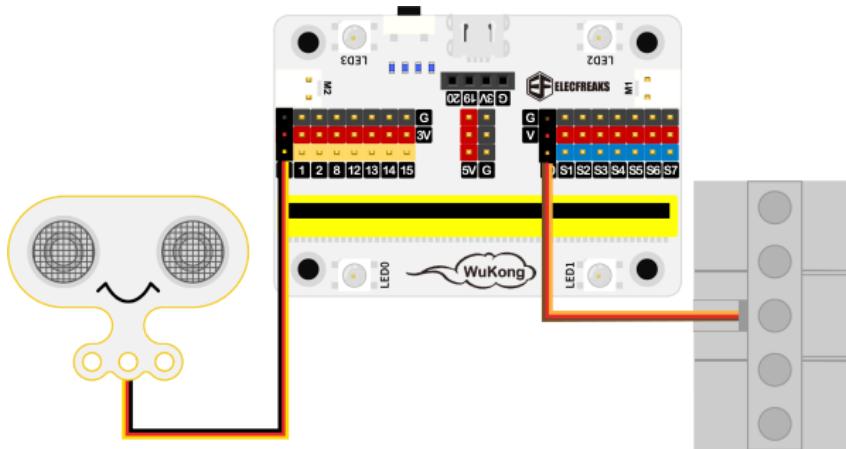
Install the sonar:bit with the bricks.

Sensor Connection Diagram



29.6. Hardware Connection

Connect a [servo](#) to S0 and a [sonar:bit](#) to P0 port on [Wukong breakout board](#).



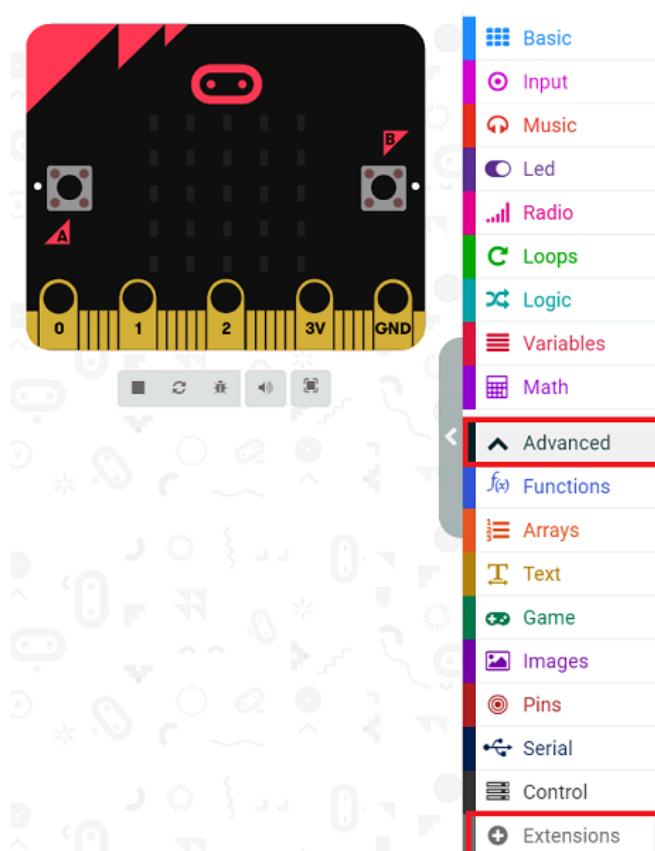
29.7. Software Platform

[MakeCode](#)

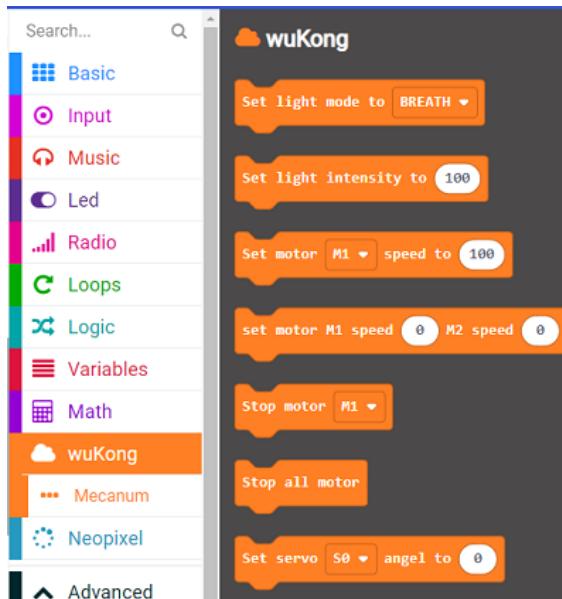
29.8. Coding

Add extensions

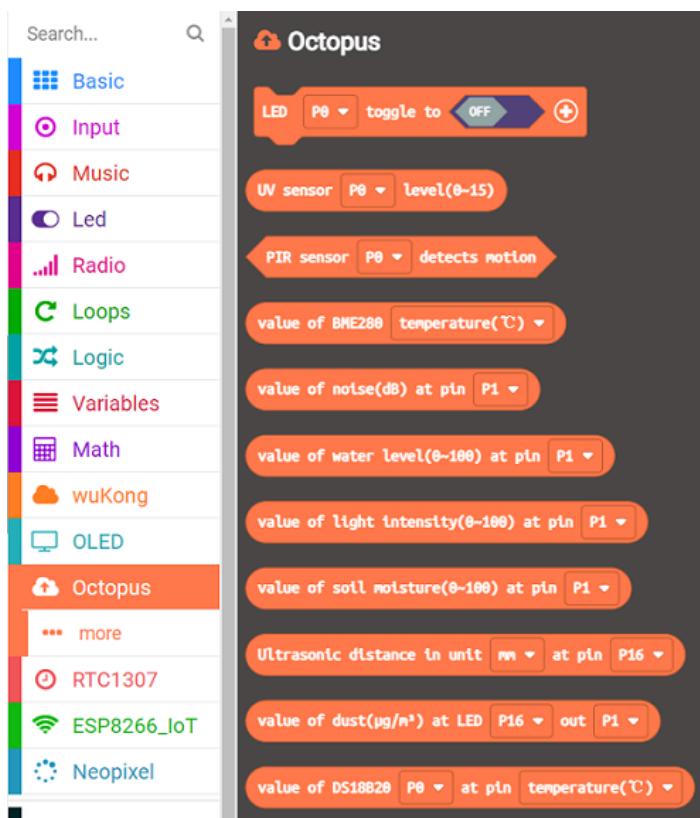
Click “Advanced” in the MakeCode to see more choices.



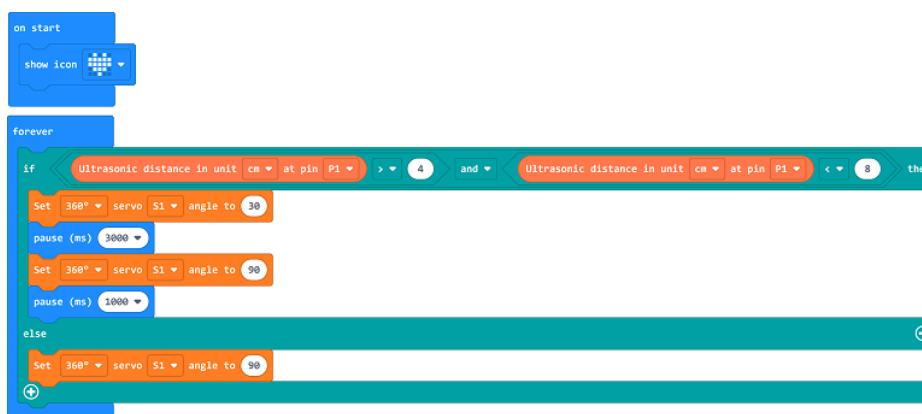
Search with Wukong in the dialogue box to download it.



Search with IOT:bit in the dialogue box to download it.



Program



Link:https://makecode.microbit.org/_XeMXzj7z3JFx

Result

When the micro:bit is powering on, it displays a heart icon, then the lid will automatically open when the ultrasonic sensor detects someone approaching, and it will automatically close after three seconds.

By ELECFREAKS Team

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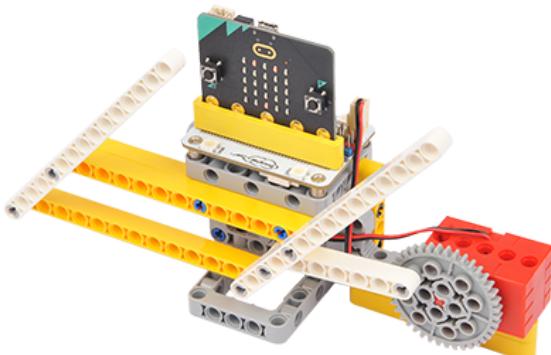
Case 28:The Wiper

Contents

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- [30.2. Link:](#)
- [30.3. Materials Required](#)
- [30.4. Bricks build-up](#)
- [30.5. Hardware Connection](#)
- [30.6. Software Platform](#)
- [30.7. Coding](#)

30.1. Purpose

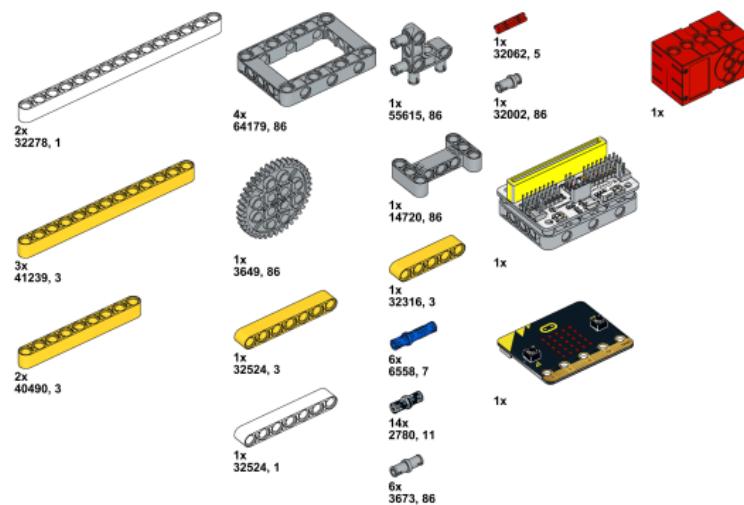
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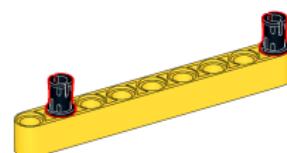
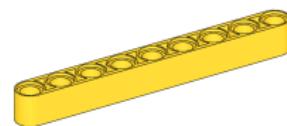
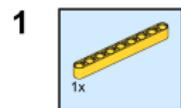
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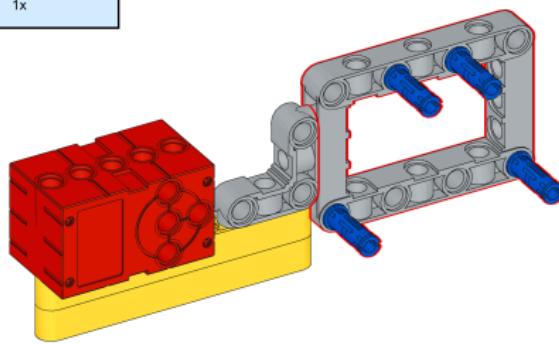
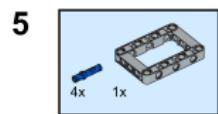
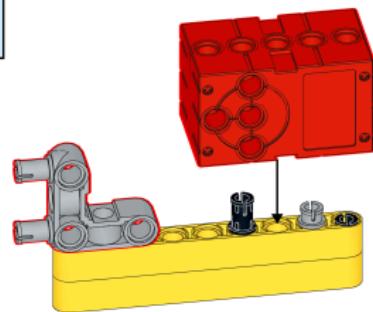
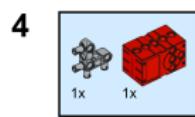
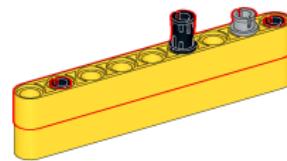
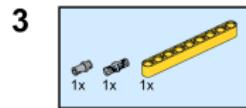
[micro:bit Wonder Building Kit](#)

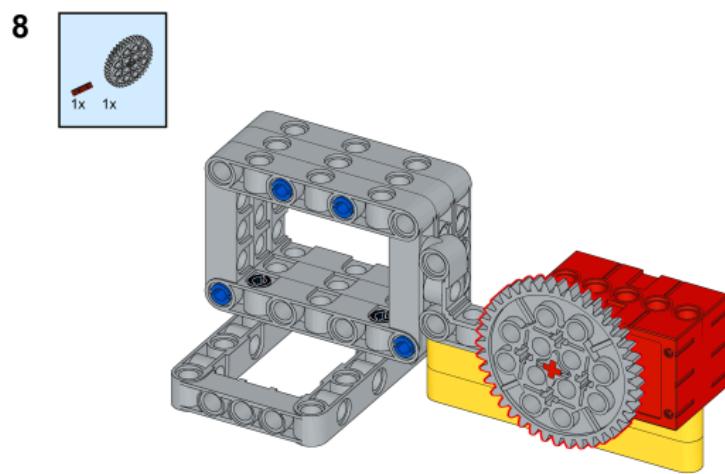
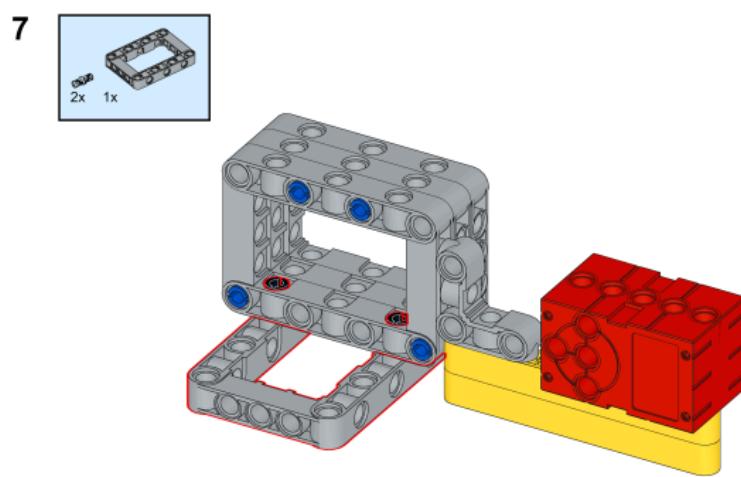
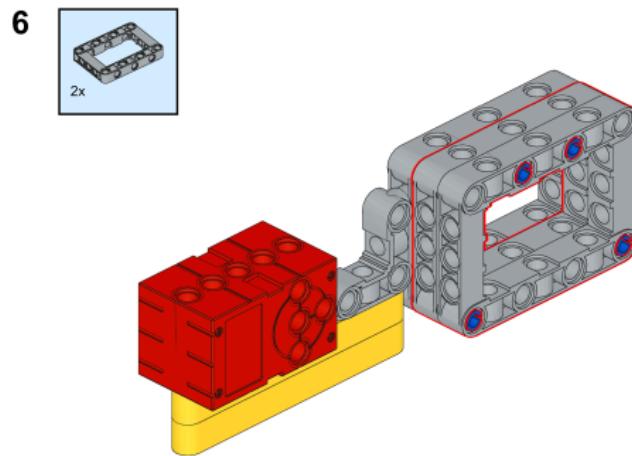
30.3. Materials Required

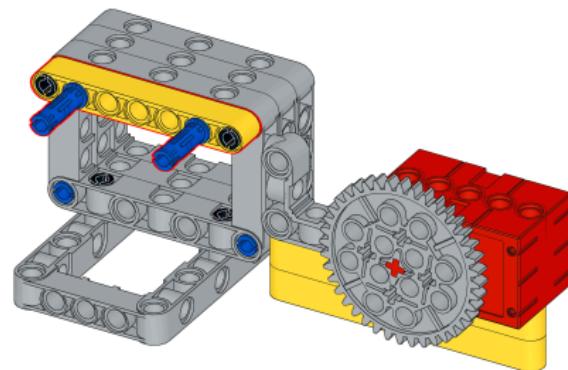
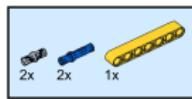
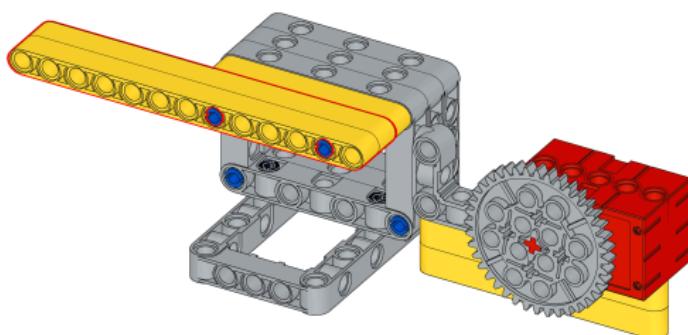
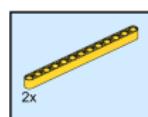
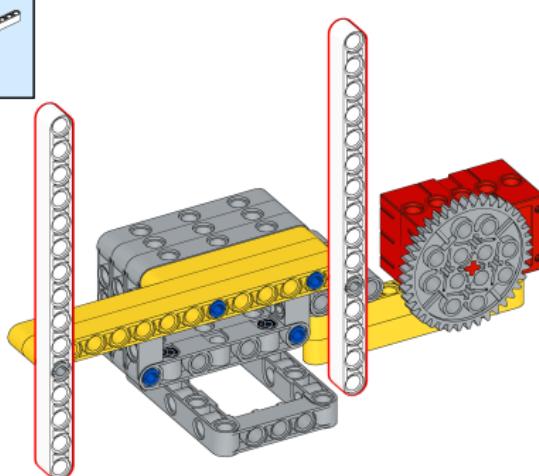
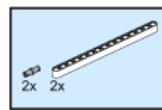


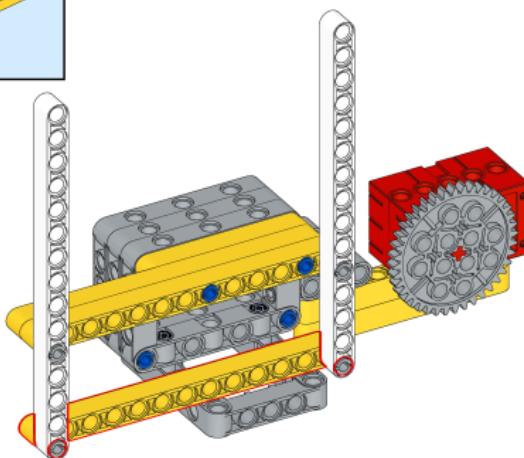
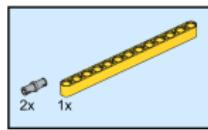
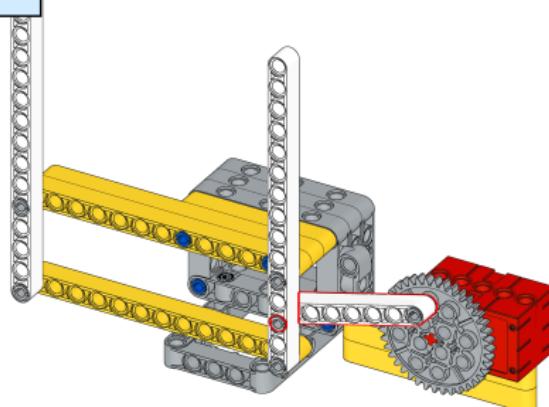
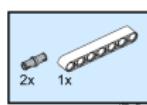
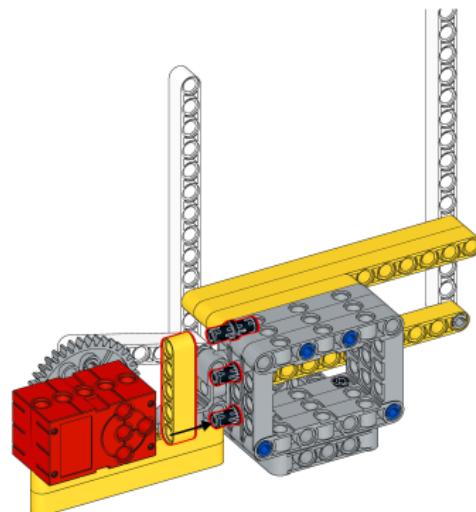
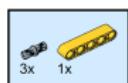
30.4. Bricks build-up

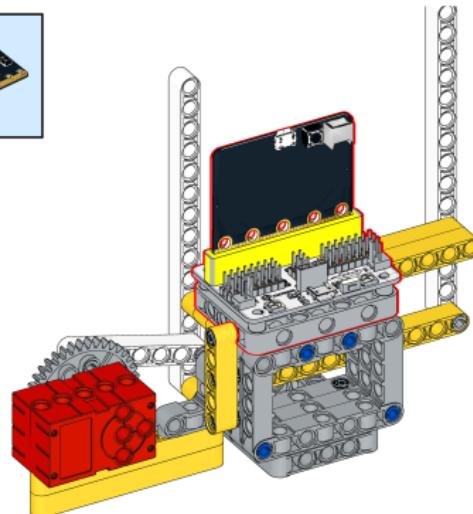
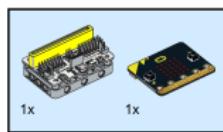
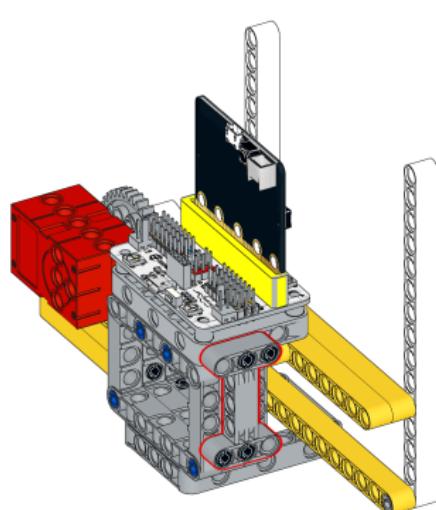
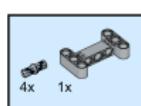
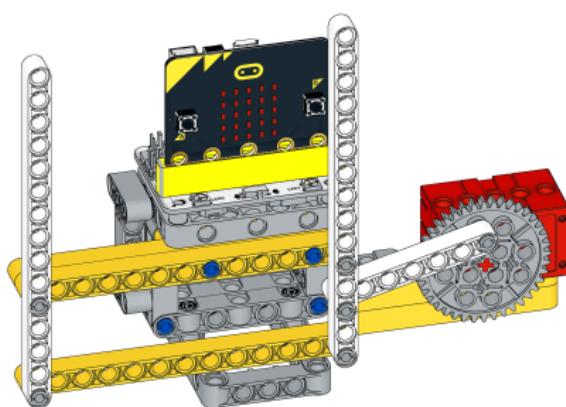






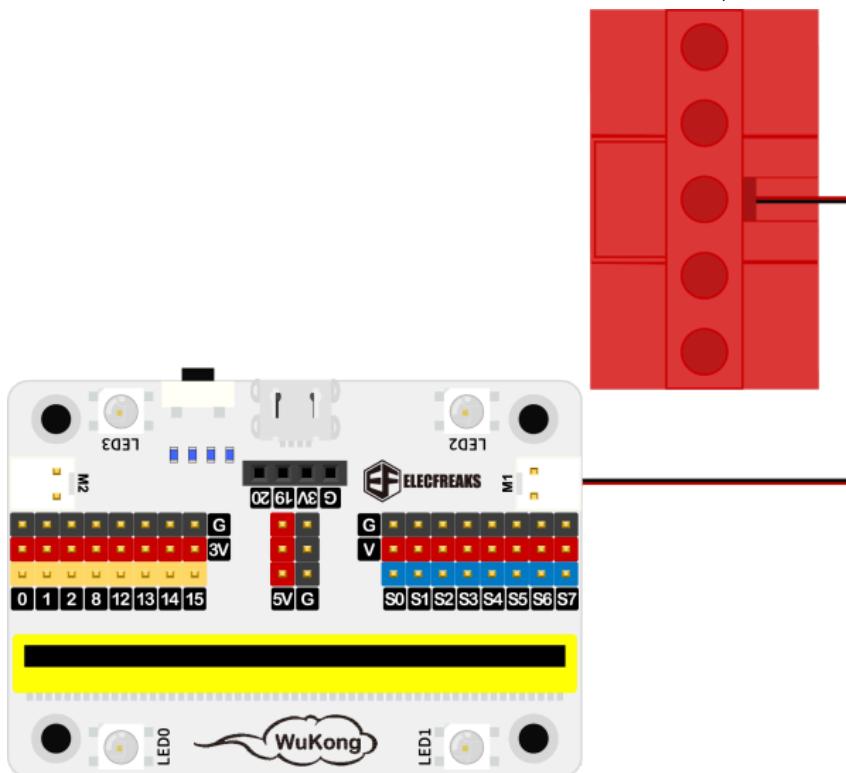
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12**13****14**

15**16****17**

30.5. Hardware Connection

Connect a [motor](#) to M1 port on [Wukong breakout board](#).



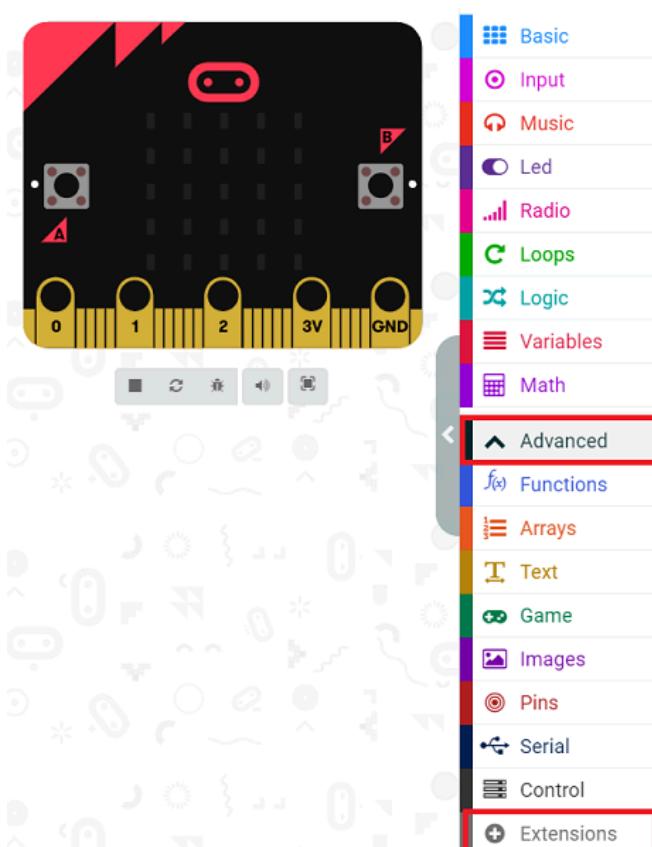
30.6. Software Platform

[MakeCode](#)

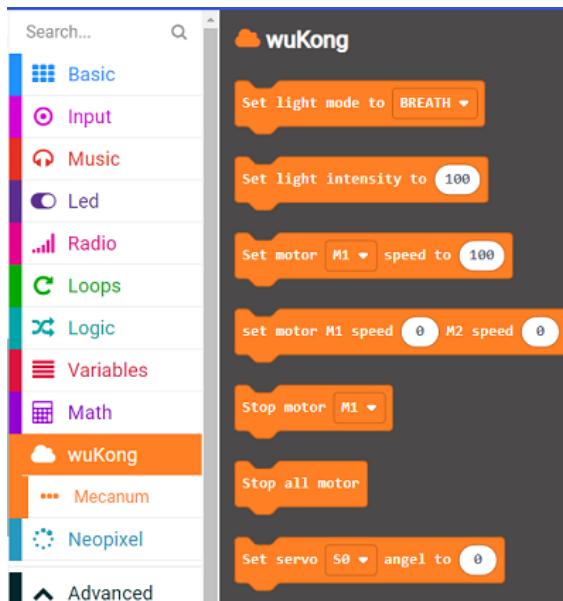
30.7. Coding

Add extensions

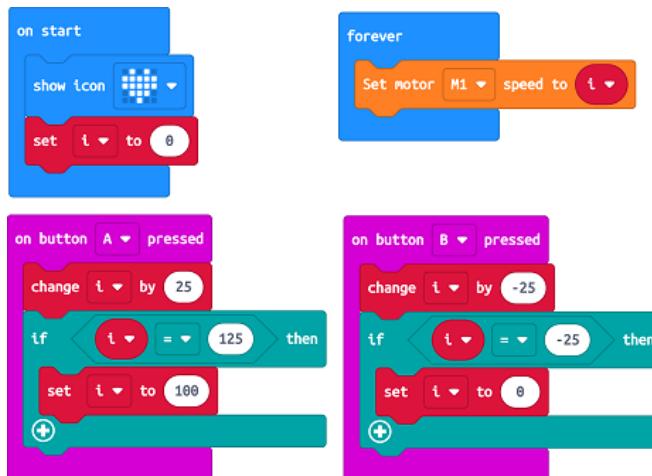
Click "Advanced" in the MakeCode to see more choices.



Search with Wukong in the dialogue box to download it.



Program



Link:https://makecode.microbit.org/_5RT3t9DX6Lv0

Result

When the micro:bit is powering on, it displays a heart icon. When button A is pressed, the wiper starts driving; when button A is pressed again, the wiper accelerates; and when button B is pressed, the wiper decelerates.

By ELECFREAKS Team

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Case 29: The Stone Thrower

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- [31.2. Link:](#)
- [31.3. Materials Required](#)
- [31.4. Bricks build-up](#)
- [31.5. Hardware Connection](#)
- [31.6. Software Platform](#)
- [31.7. Coding](#)

31.1. Purpose

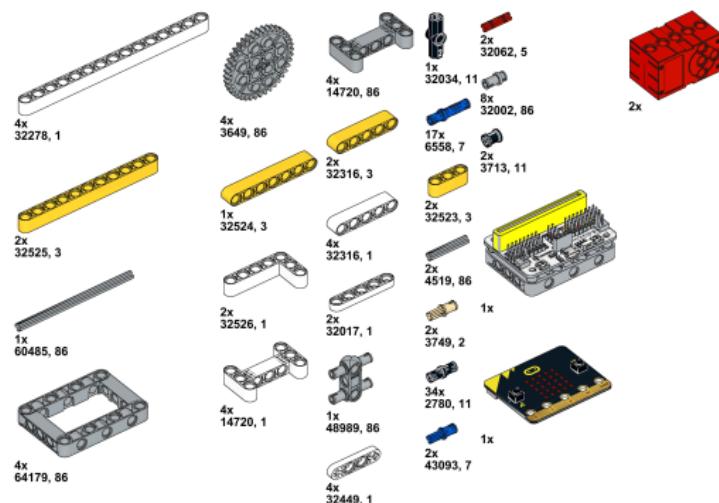
Make a stone thrower.



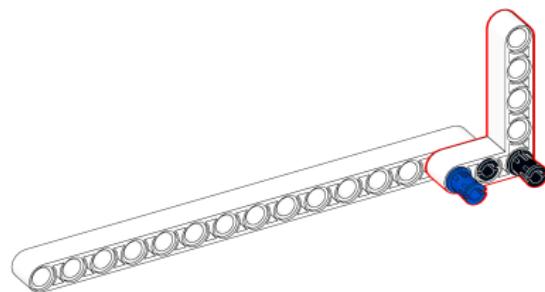
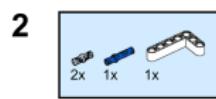
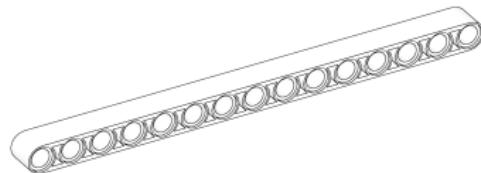
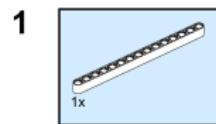
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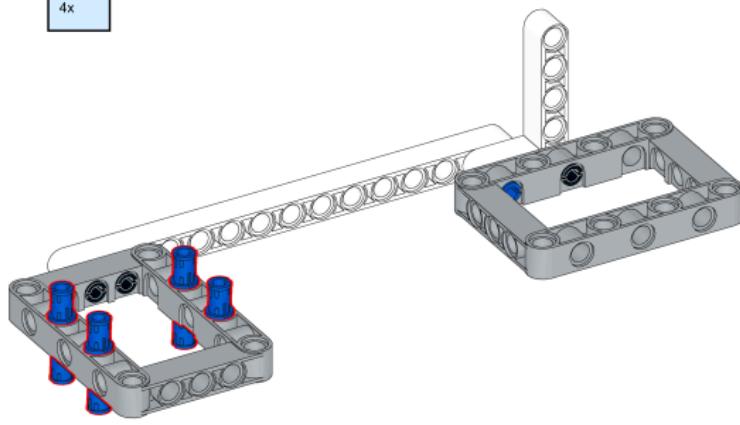
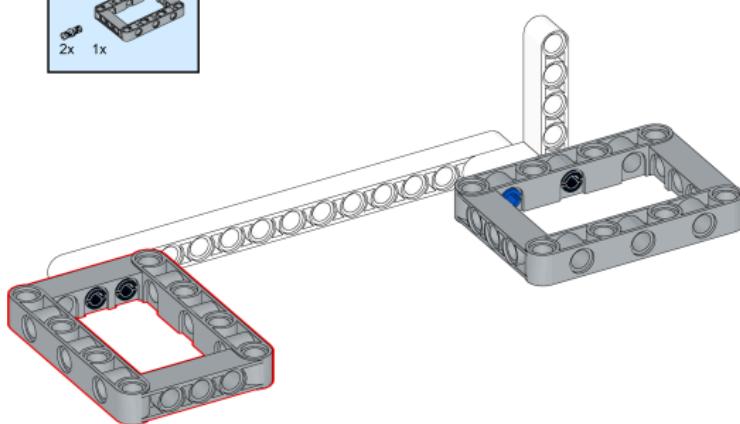
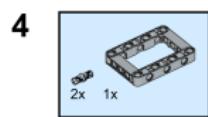
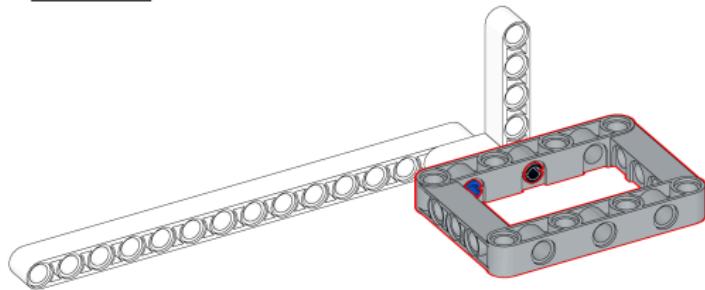
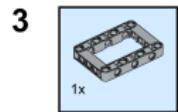
[micro:bit Wonder Building Kit](#)

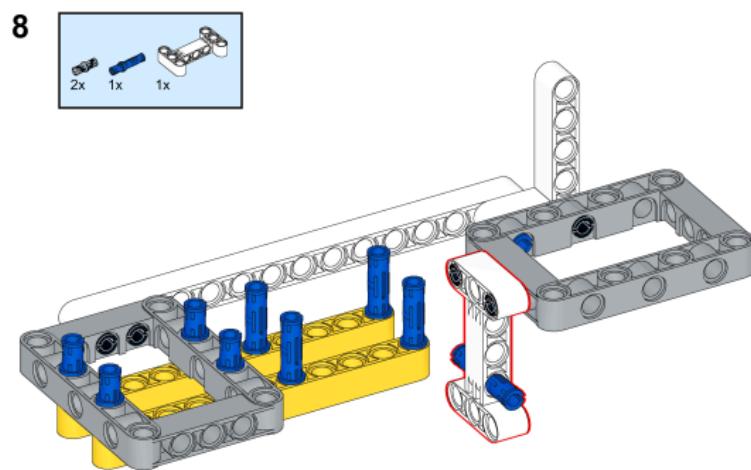
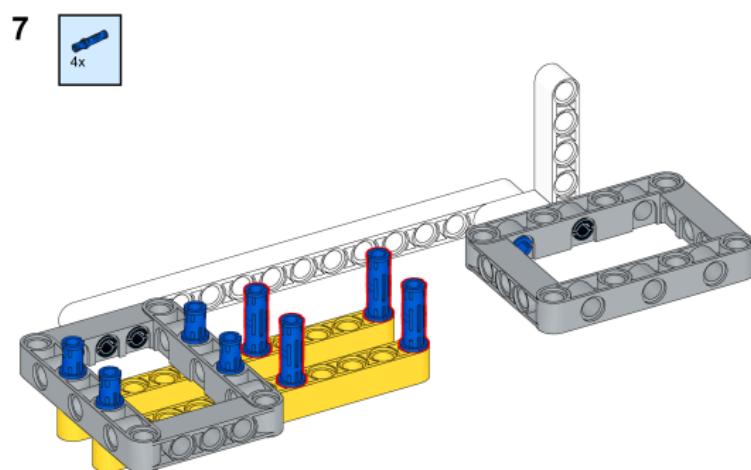
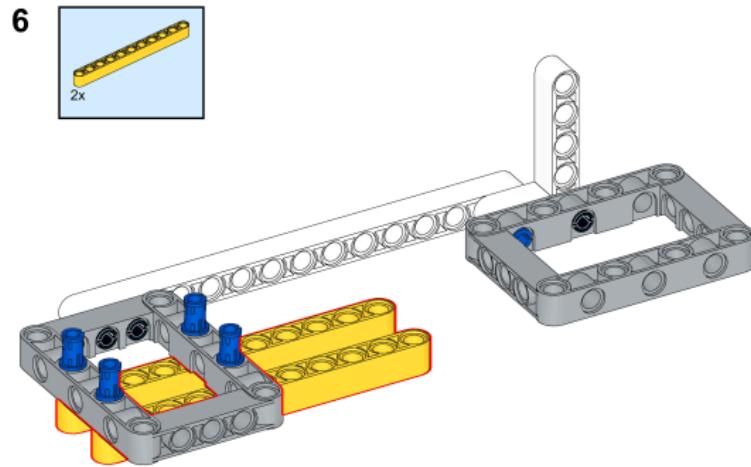
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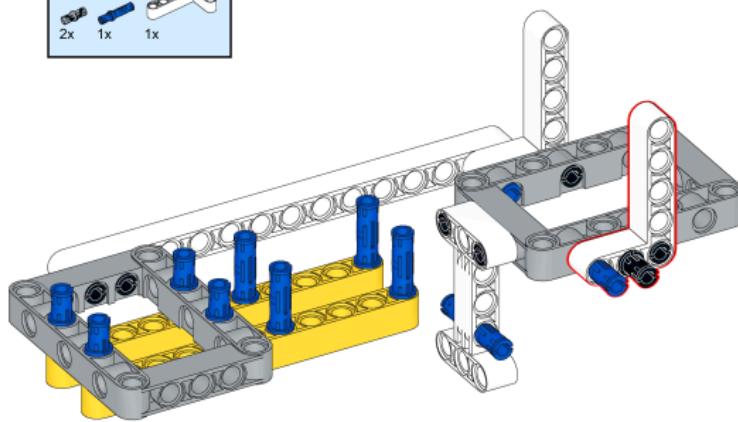
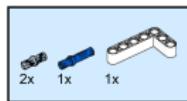
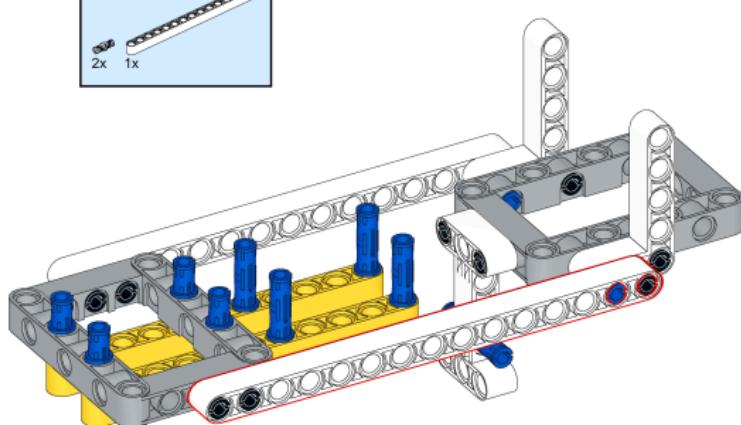
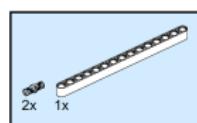
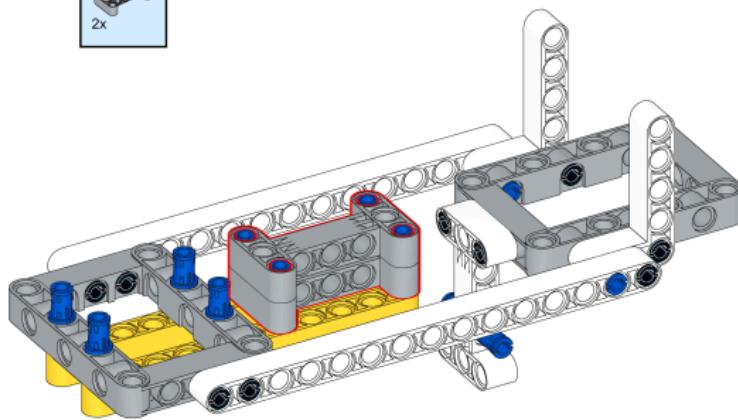


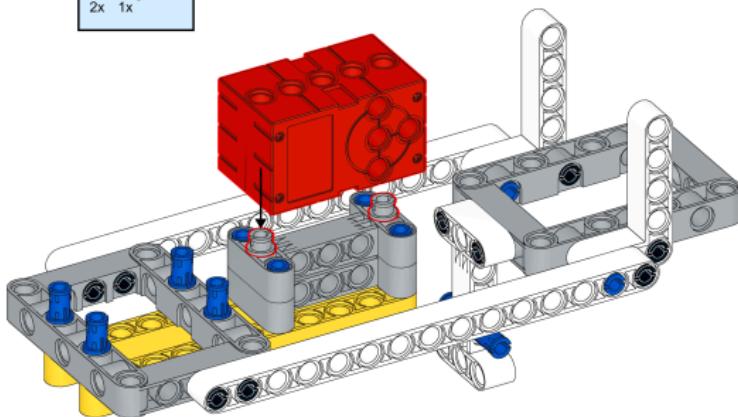
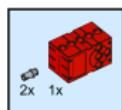
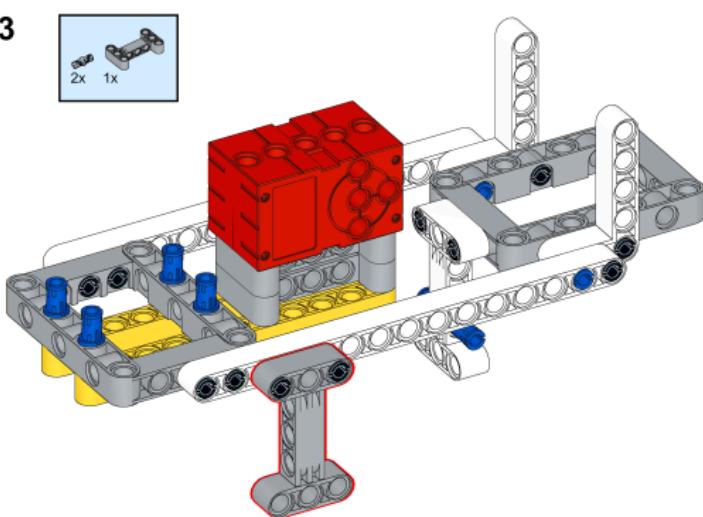
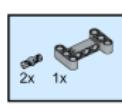
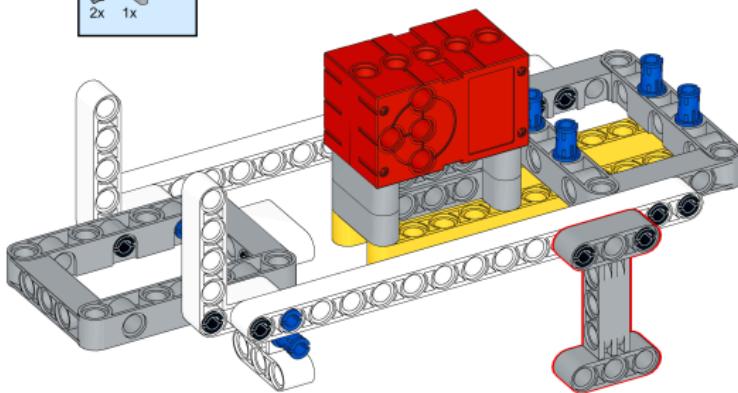
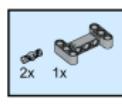
31.4. Bricks build-up

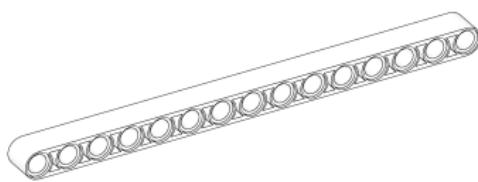
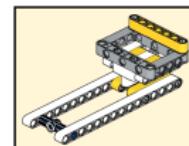
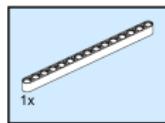
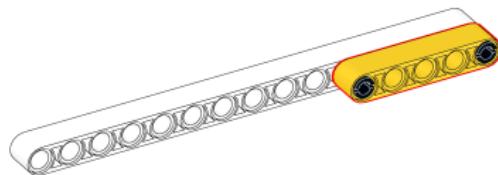
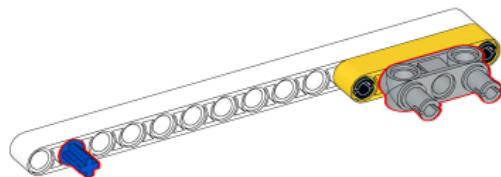
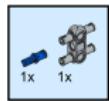


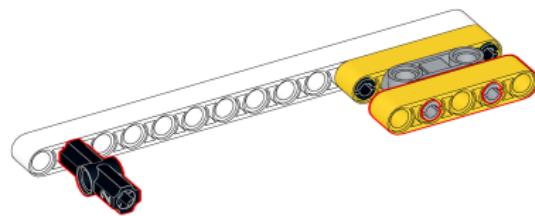
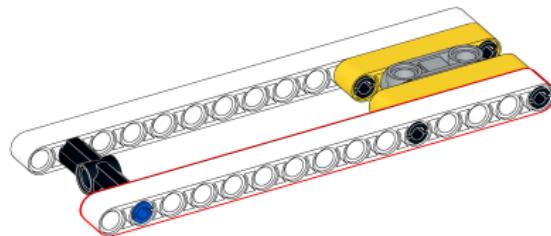
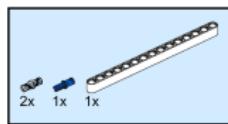
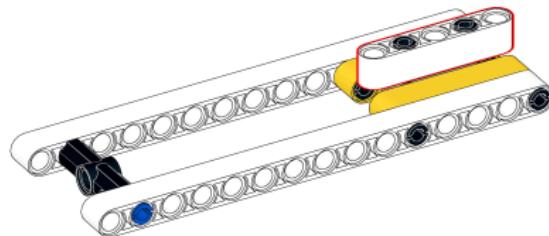
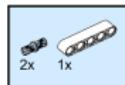


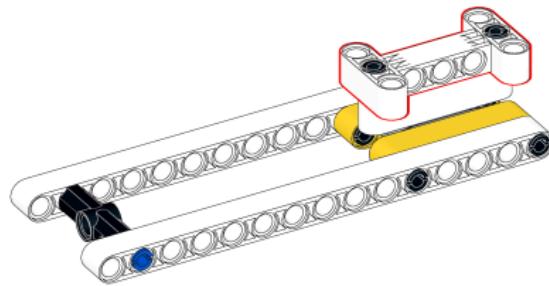
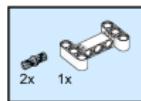
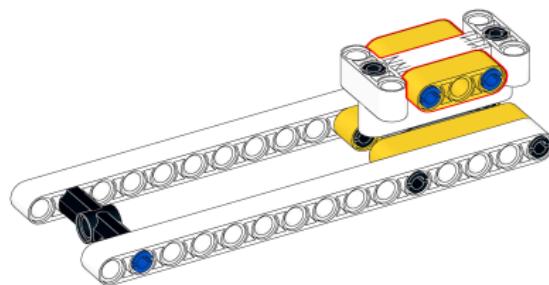
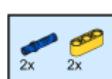
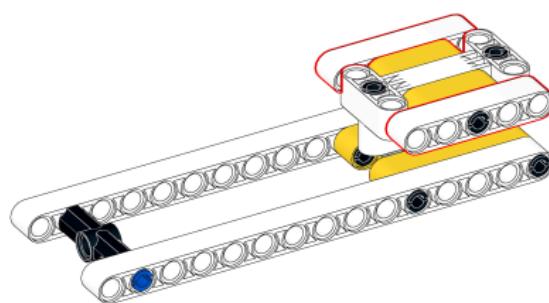


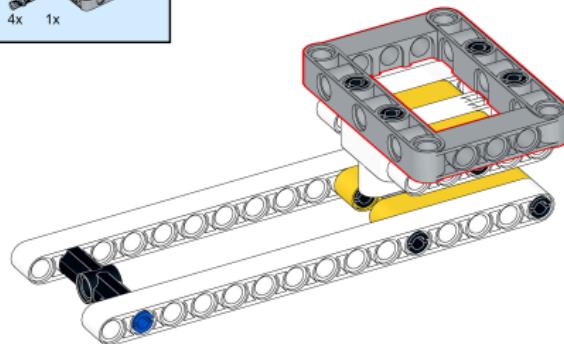
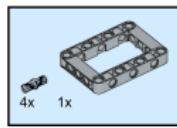
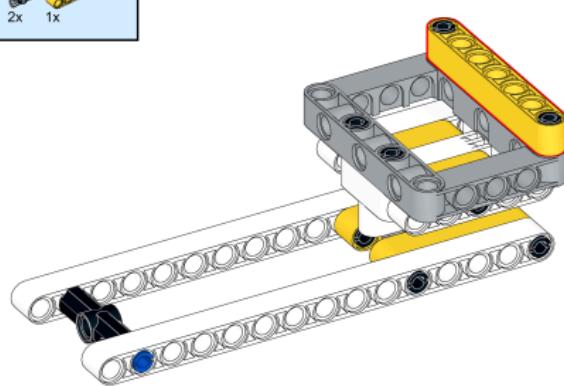
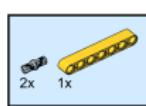
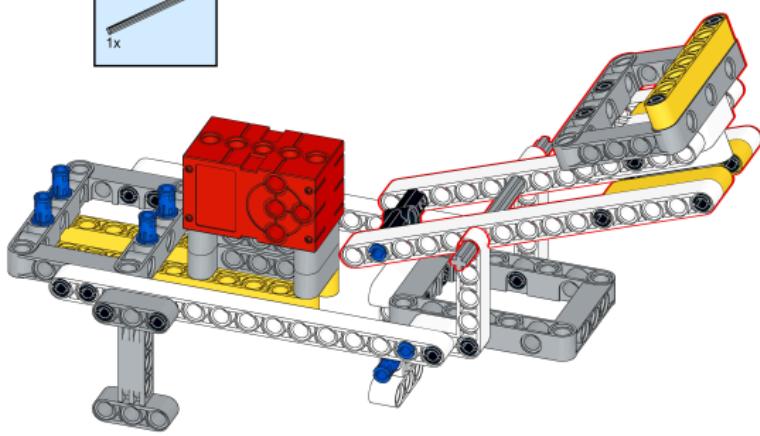
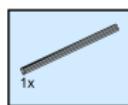
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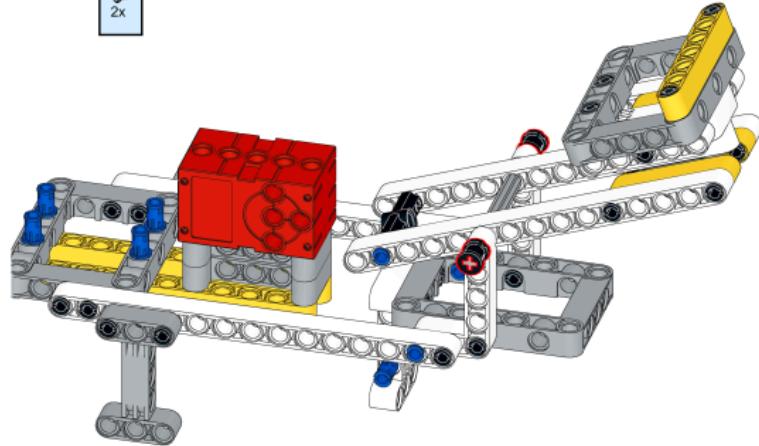
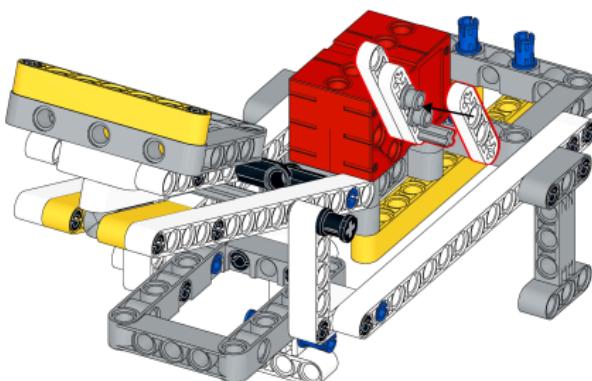
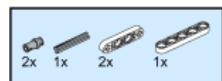
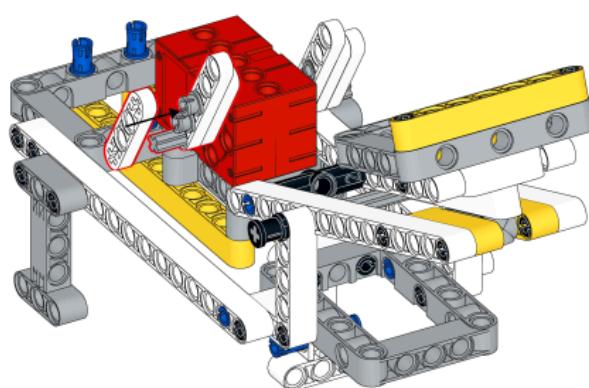
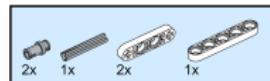
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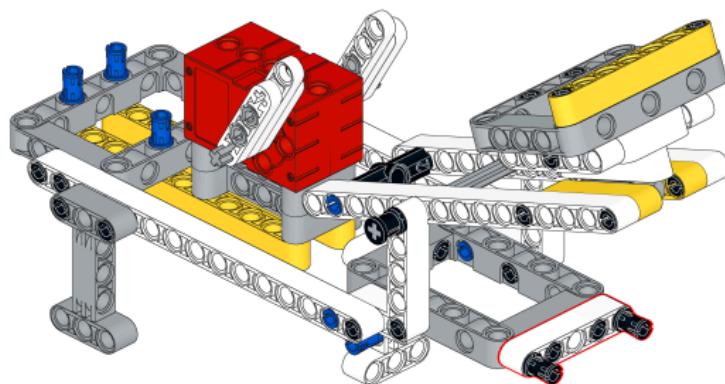
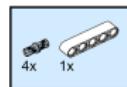
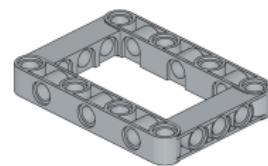
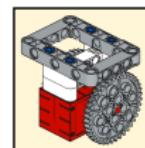
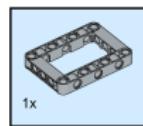
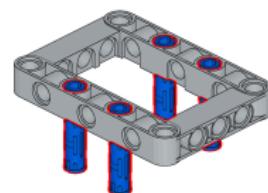
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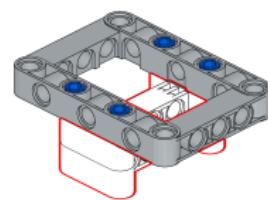
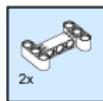
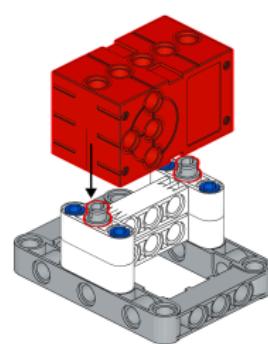
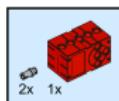
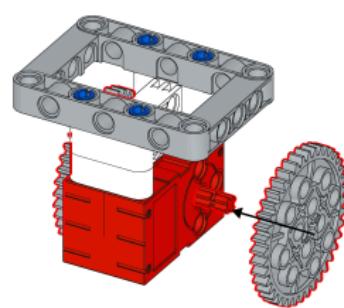
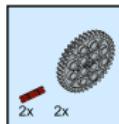
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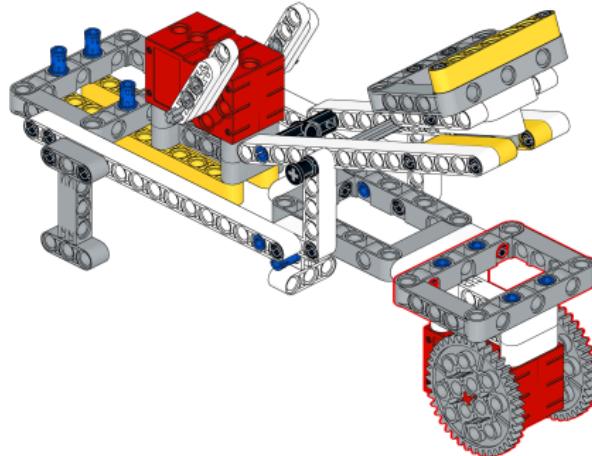
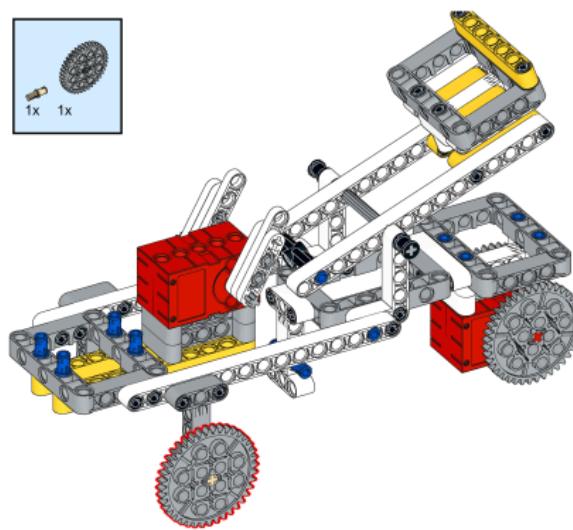
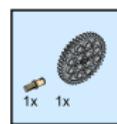
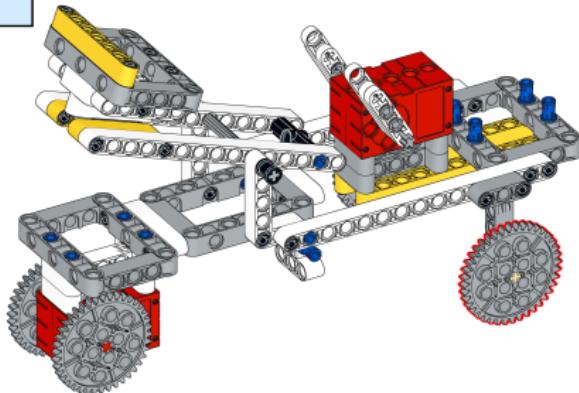
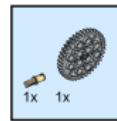
21**22****23**

24**25****26**

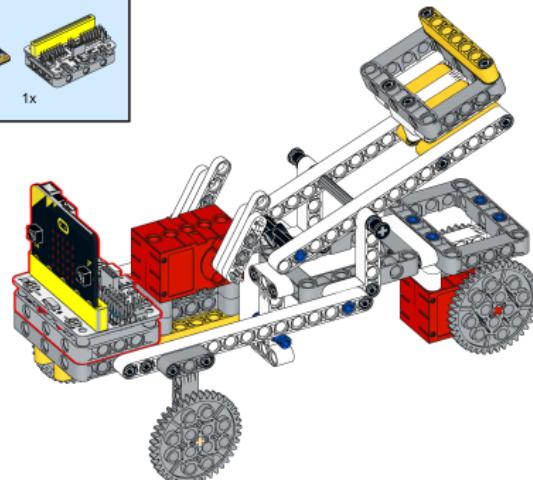
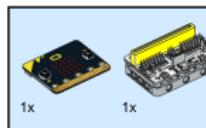
27**28****29**

30**31****32**

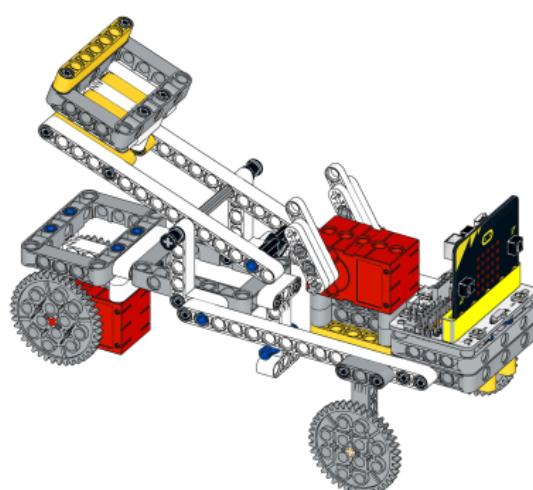
33**34****35**

36**37****38**

39

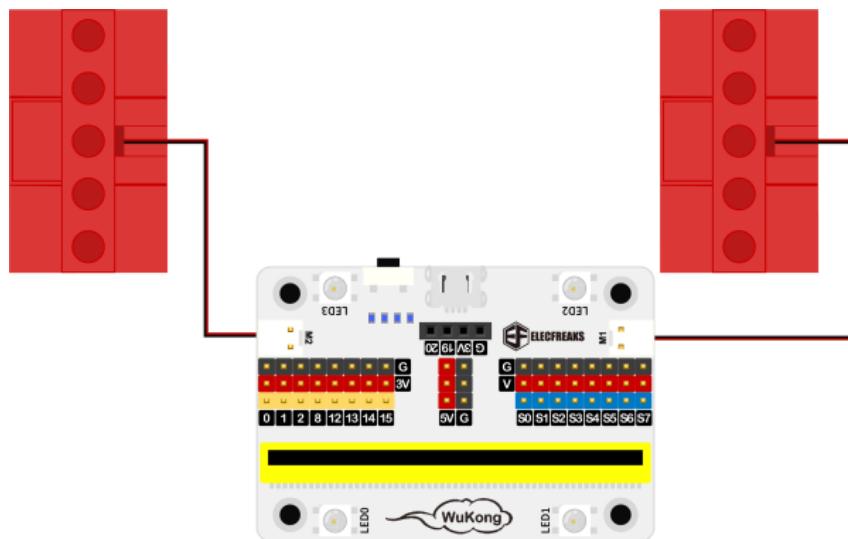


40



31.5. Hardware Connection

Connect two [motors](#) to M1 and M2 ports on [Wukong breakout board](#).



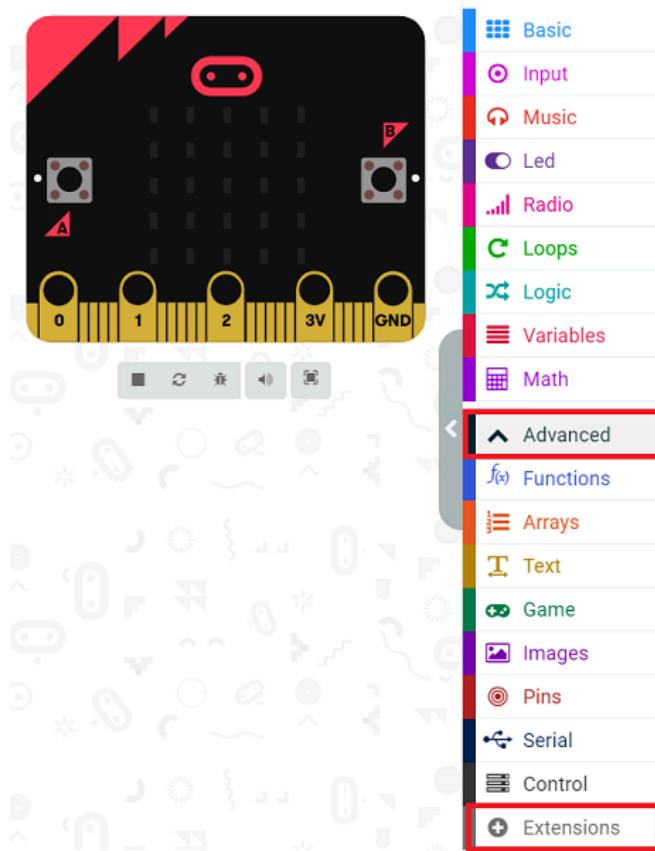
31.6. Software Platform

[MakeCode](#)

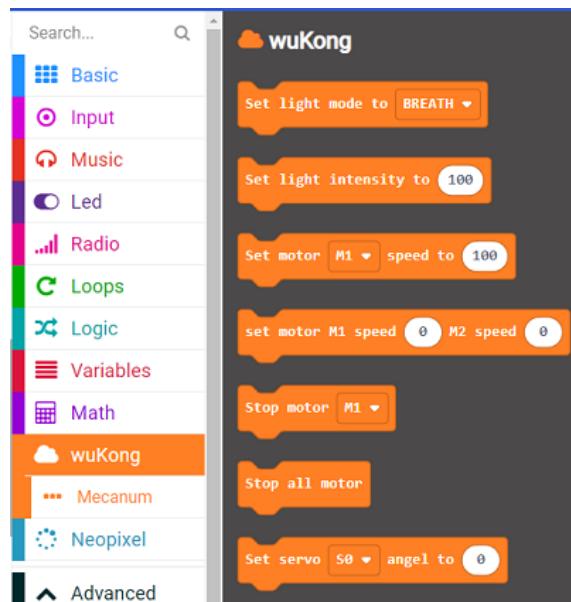
31.7. Coding

Add extensions

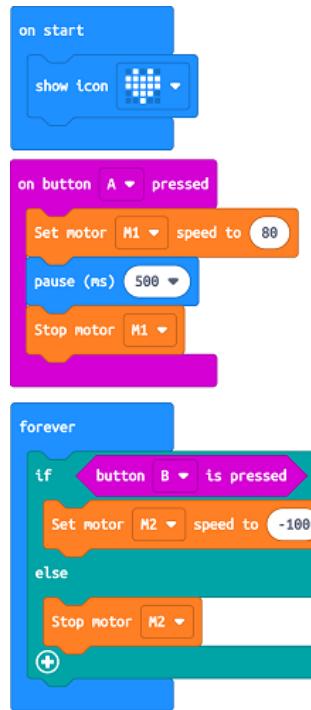
Click "Advanced" in the MakeCode to see more choices.



Search with Wukong in the dialogue box to download it.



Program



Link:https://makecode.microbit.org/_K6oek8JP8bgf

Result

When the micro:bit is powering on, it displays a heart icon. When button A is pressed, the stone thrower performs a stone throwing action; when button B is continuously pressed, the stone thrower moves forward; release button B and the stone thrower stops.

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Case 30: The Ambient Lighting

Contents

- [32.1. Purpose](#)
- [32.2. Link:](#)
- [32.3. Materials Required](#)
- [32.4. Bricks build-up](#)
- [32.5. Software Platform](#)
- [32.6. Coding](#)

32.1. Purpose

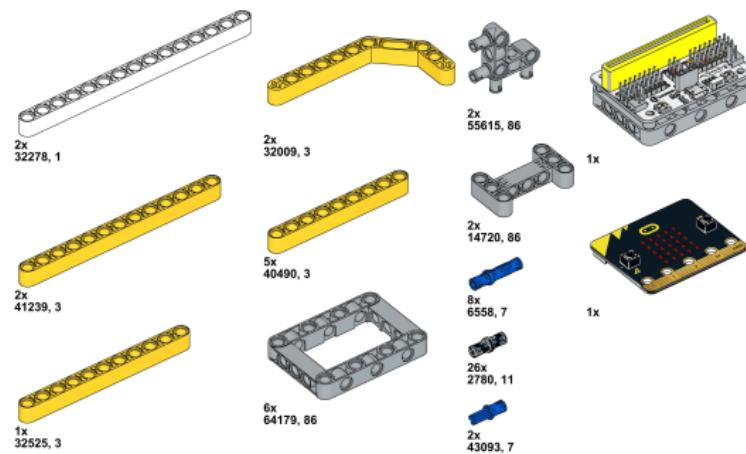
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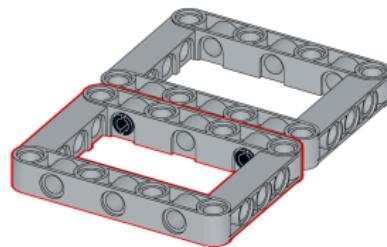
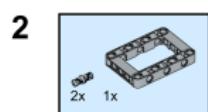
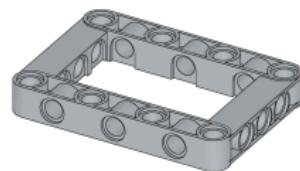
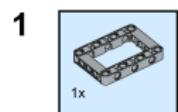
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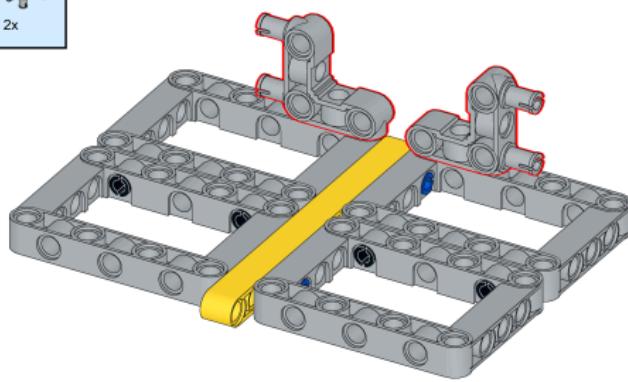
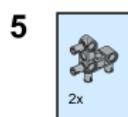
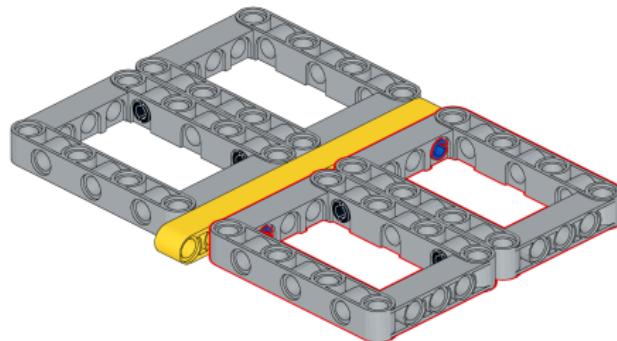
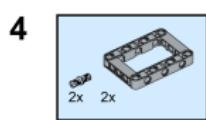
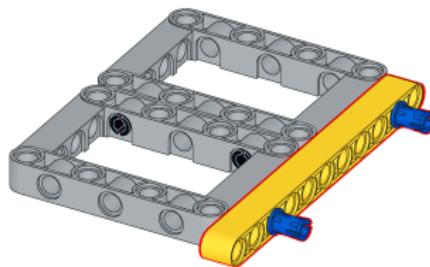
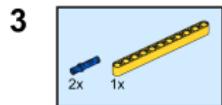
[micro:bit Wonder Building Kit](#)

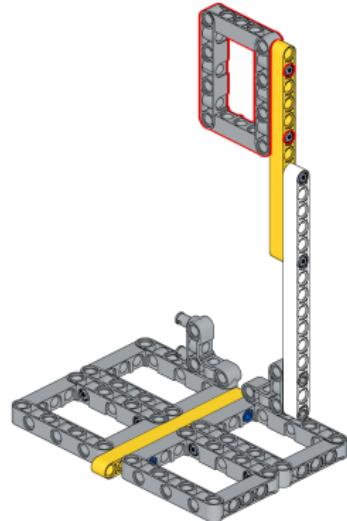
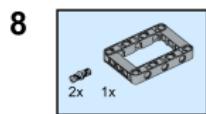
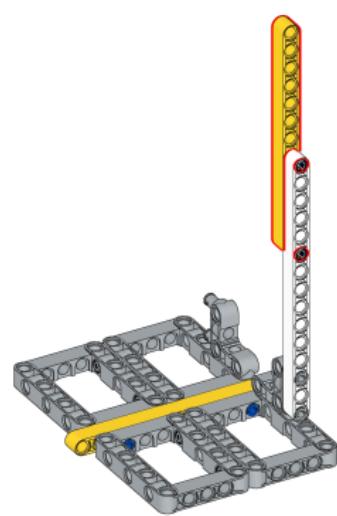
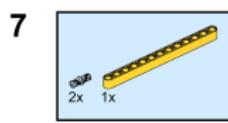
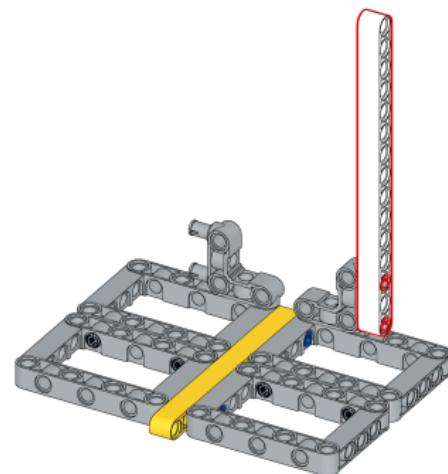
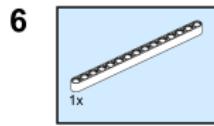
32.3. Materials Required

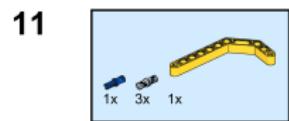
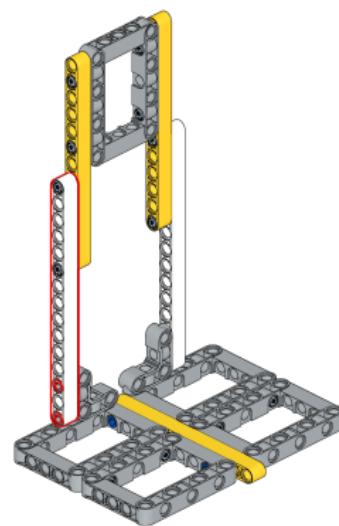
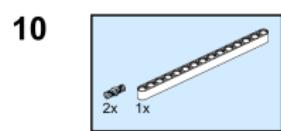
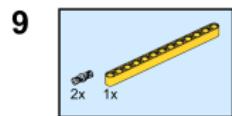


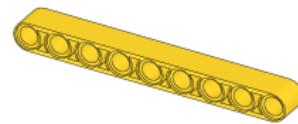
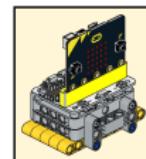
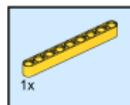
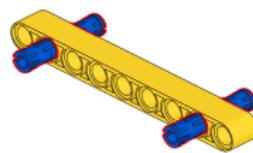
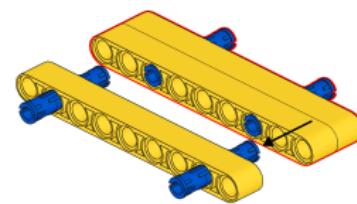
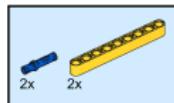
32.4. Bricks build-up

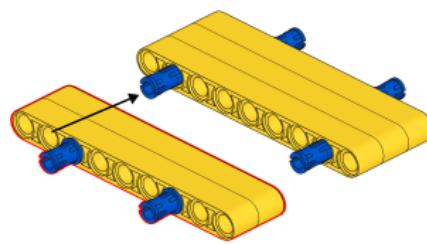
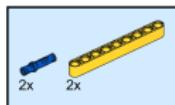
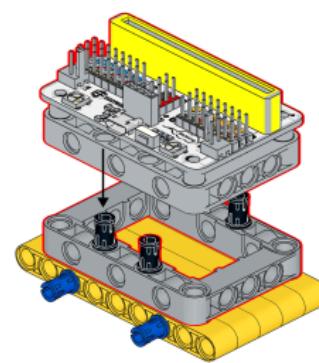
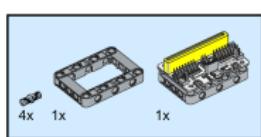
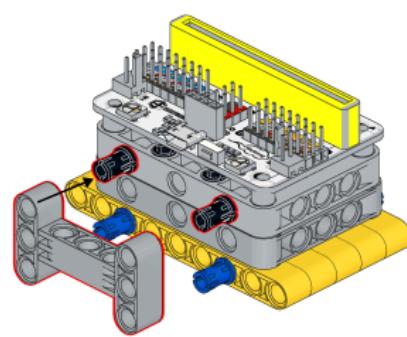
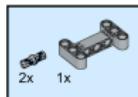


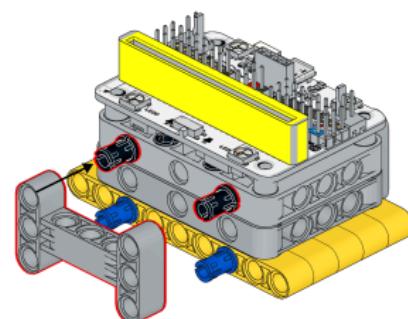
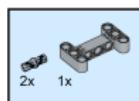
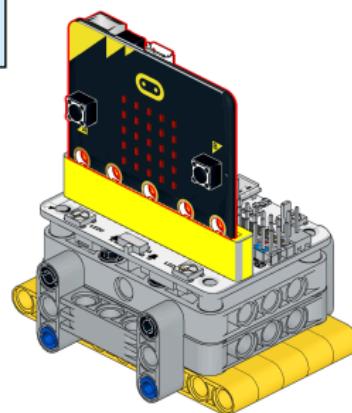
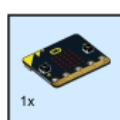
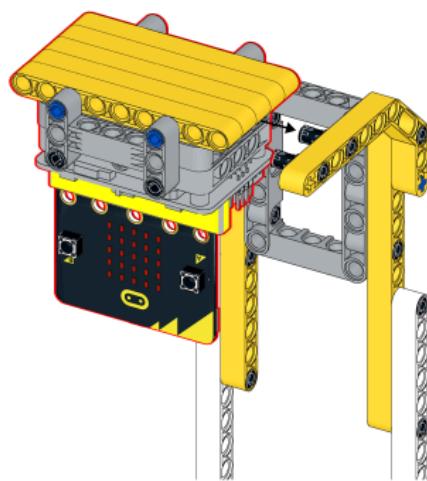




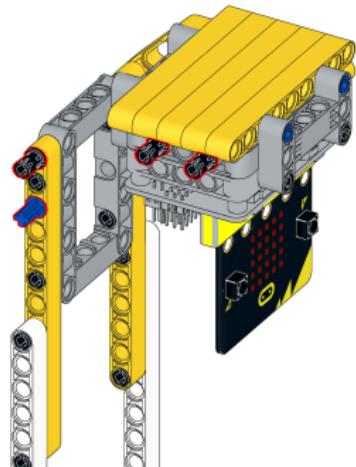


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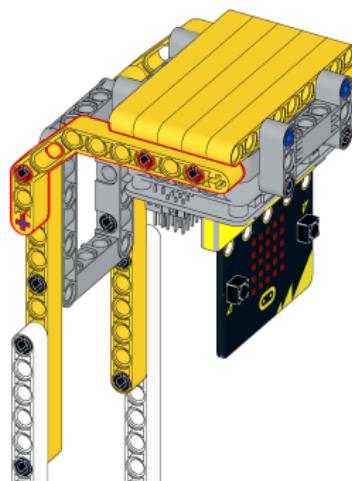
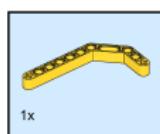
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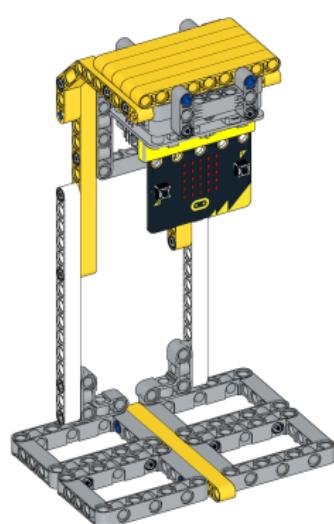
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22



23



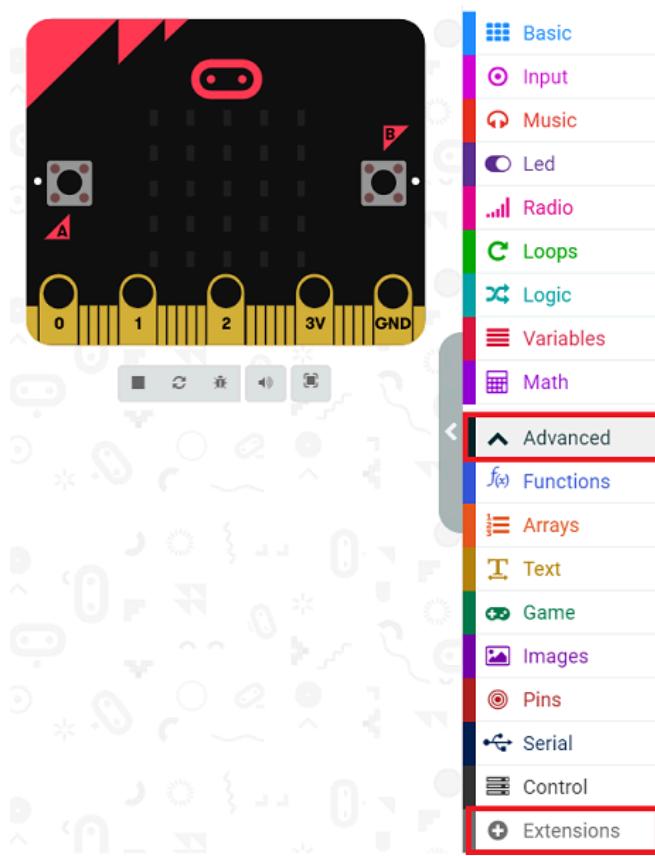
32.5. Software Platform

MakeCode

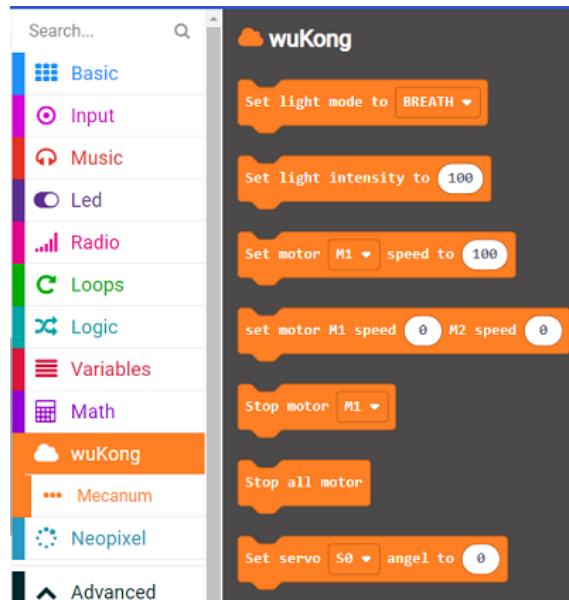
32.6. Coding

Add extensions

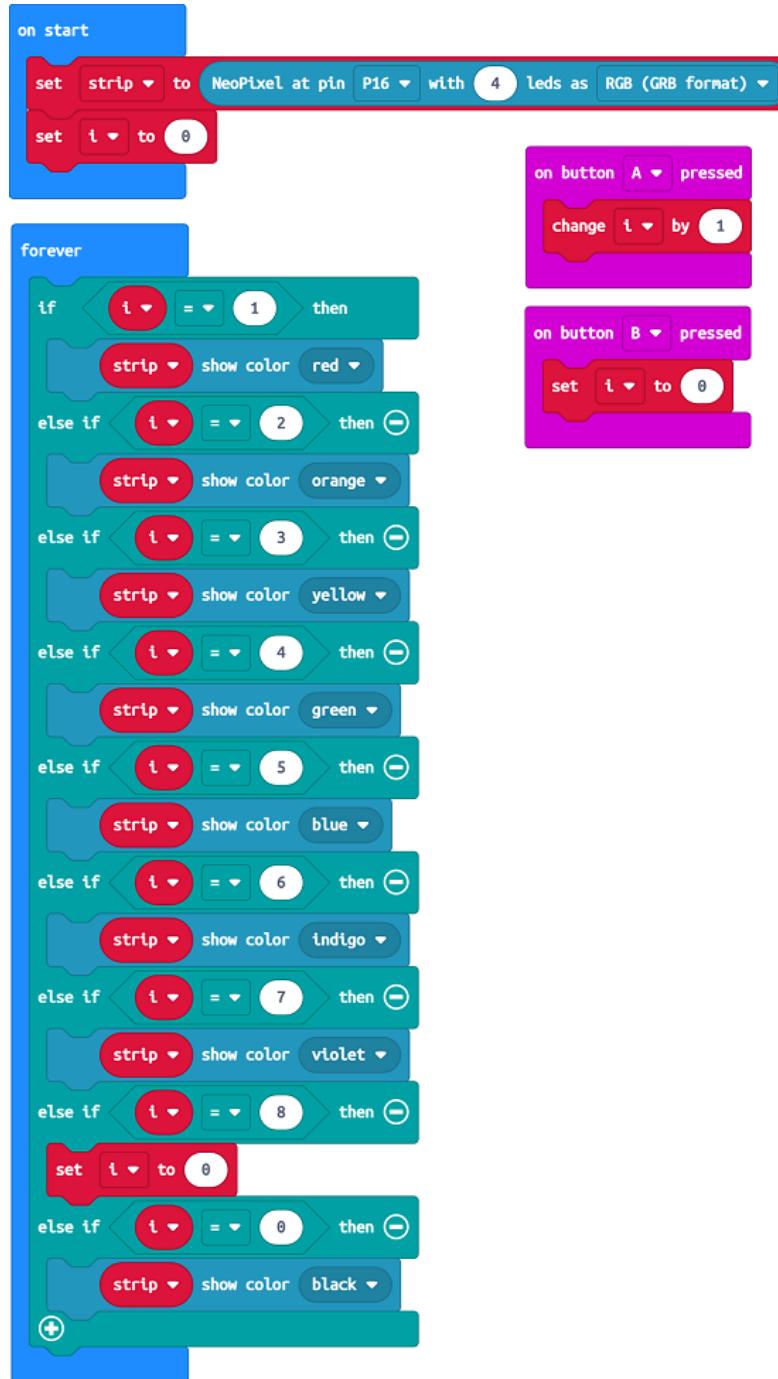
Click "Advanced" in the MakeCode to see more choices.



Search with Wukong in the dialogue box to download it.



Program



Link: https://makecode.microbit.org/_hHDAH6Fz6YCb

Result

When button A is pressed, the four Rainbow LEDs of the Wukong breakout board will light up. Pressing button A again, the color will change; and when button B is pressed, all LEDs are off.

By ELECFREAKS Team

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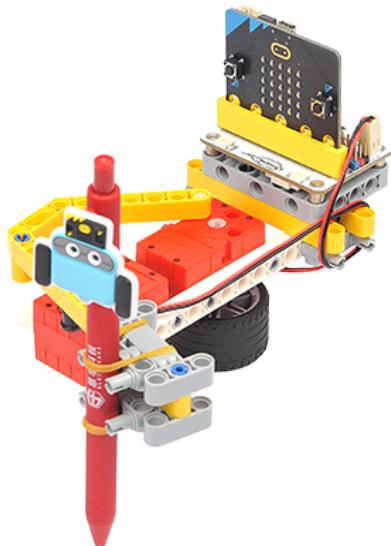
Case 31: The Drawing Machine

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- [33.2. Link:](#)
- [33.3. Materials Required](#)
- [33.4. Bricks build-up](#)
- [33.5. Hardware Connection](#)
- [33.6. Software Platform](#)
- [33.7. Coding](#)

33.1. Purpose

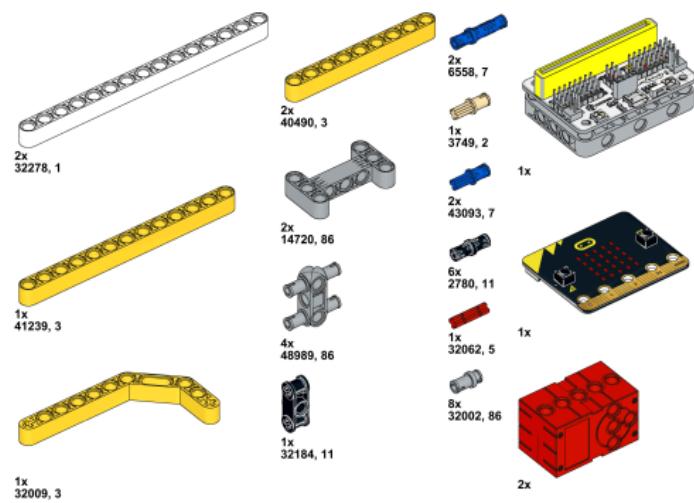
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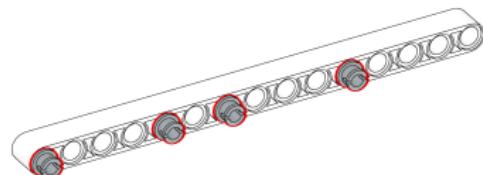
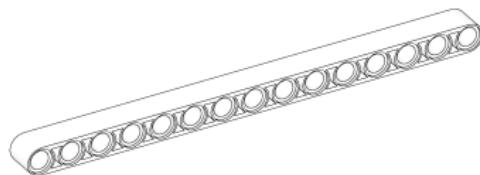
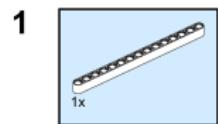
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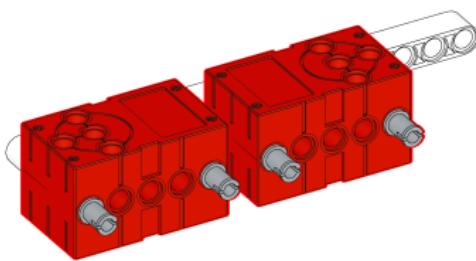
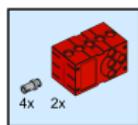
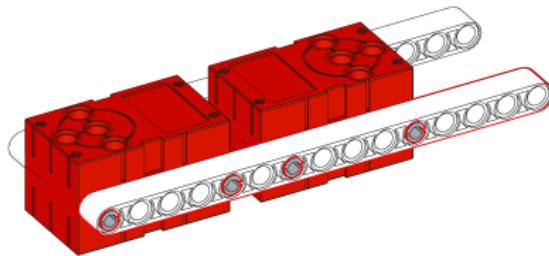
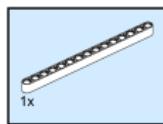
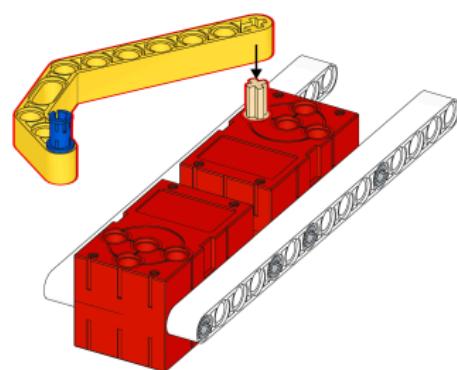
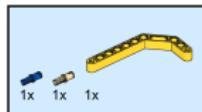
[micro:bit Wonder Building Kit](#)

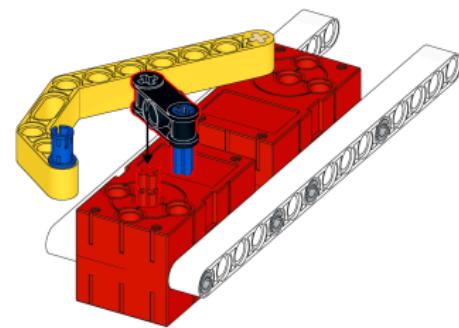
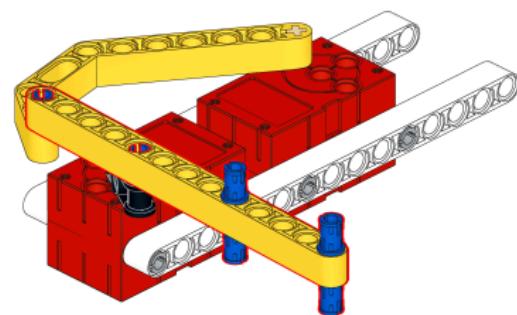
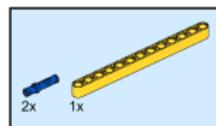
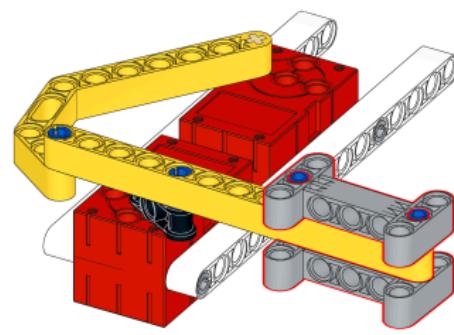
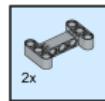
33.3. Materials Required



33.4. Bricks build-up

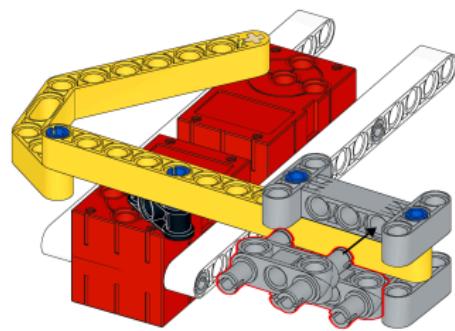
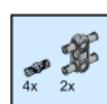


3**4****5**

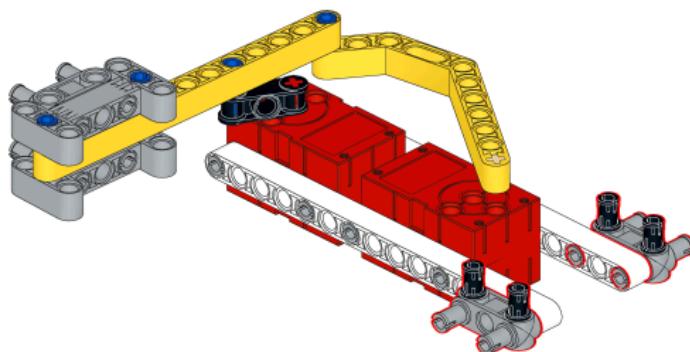
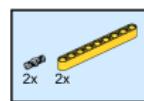
6**7****8**

9

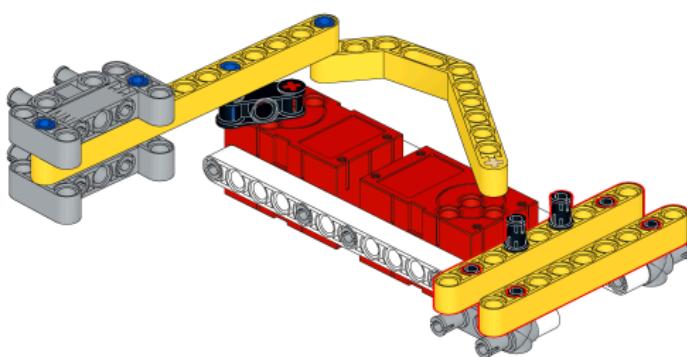
2x

**10**

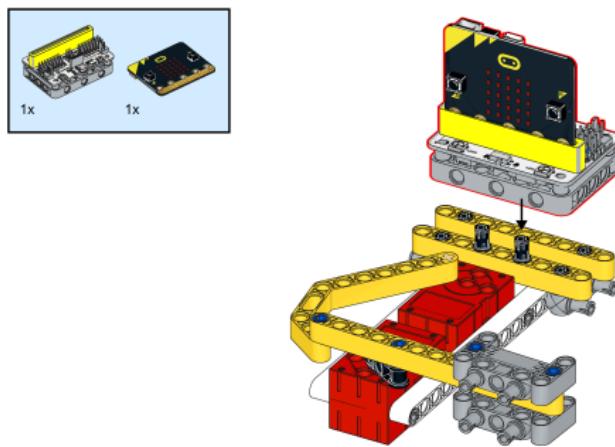
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**11**

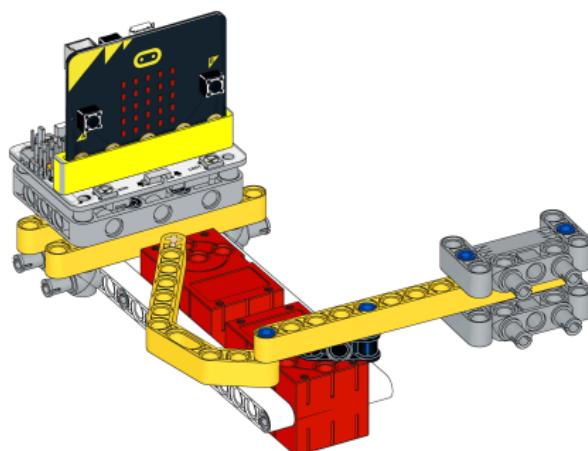
2x 2x



12

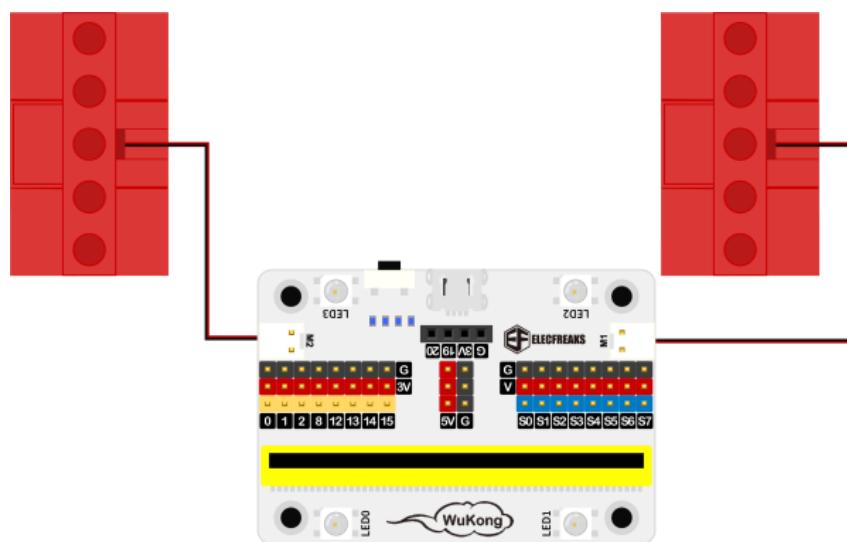


13



33.5. Hardware Connection

Connect two [motors](#) to M1 and M2 ports on [Wukong breakout board](#).



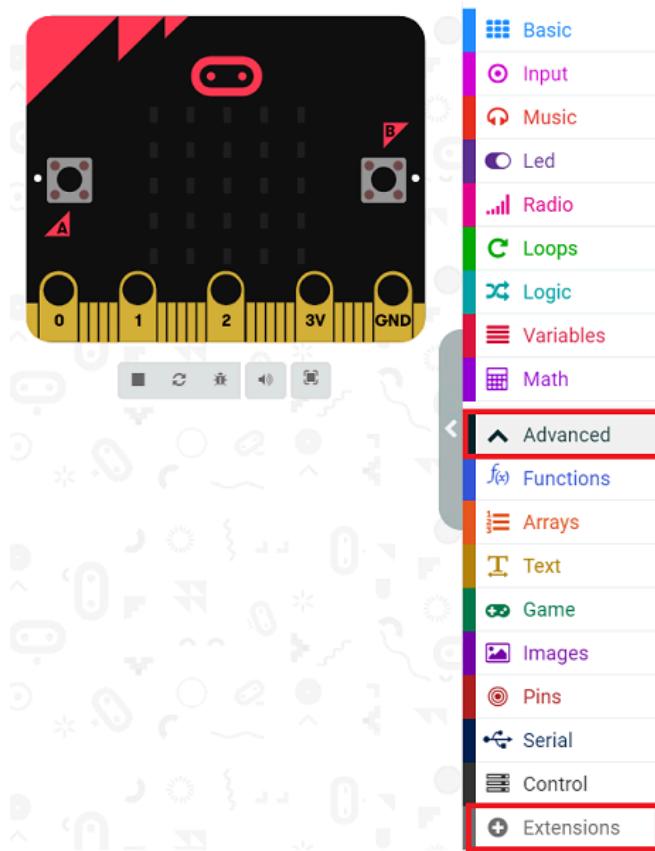
33.6. Software Platform

[MakeCode](#)

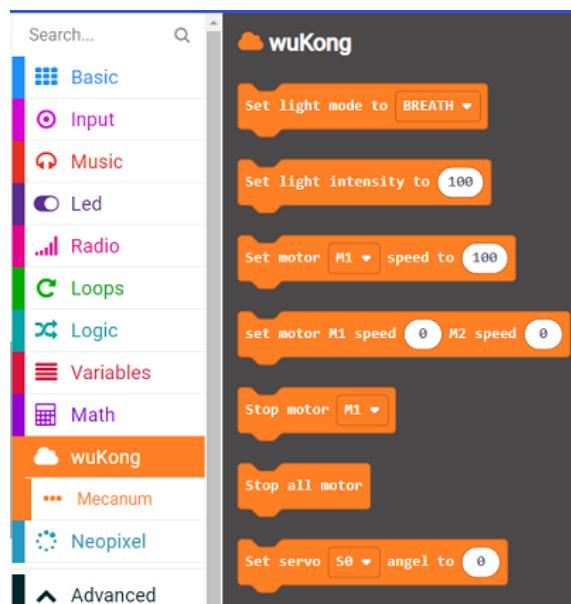
33.7. Coding

Add extensions

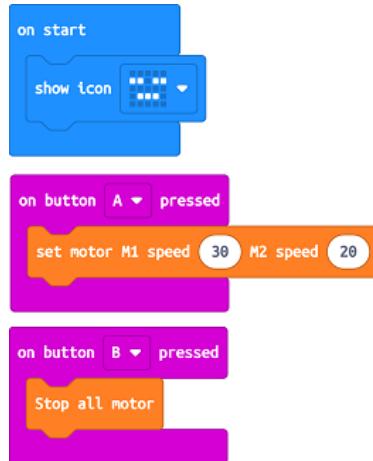
Click "Advanced" in the MakeCode to see more choices.



Search with Wukong in the dialogue box to download it.



Program



Link:https://makecode.microbit.org/_KRcLTWaab2sk

Result

Use the leather band to fix the pen on the gray double bolt parts, the drawing machine is placed on a piece of white paper, when the button A is pressed, the drawing machine begins to draw.

By adjusting the speed of the motor M1 and motor M2, you can draw different patterns; when the button B is pressed, the drawing machine stops.

By ELECFREAKS Team

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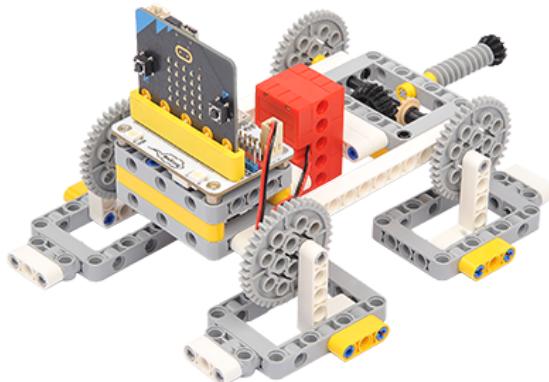
Case 32: Robot Dog

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- [34.2. Link:](#)
- [34.3. Materials Required](#)
- [34.4. Bricks build-up](#)
- [34.5. Hardware Connection](#)
- [34.6. Software Platform](#)
- [34.7. Coding](#)

34.1. Purpose

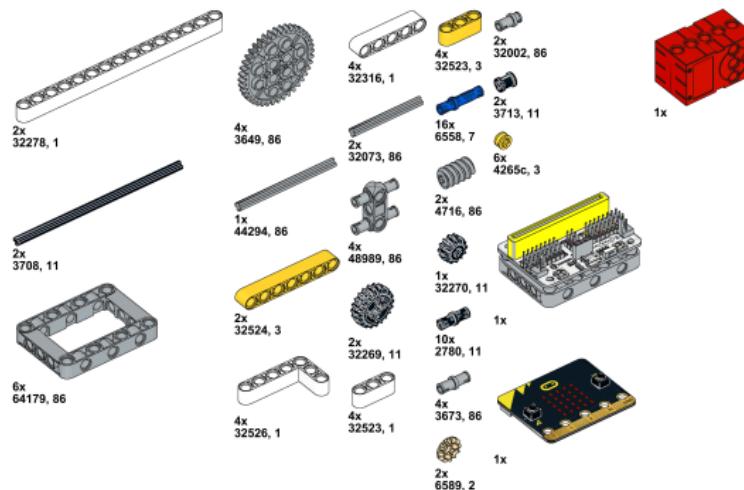
Make a robot dog.



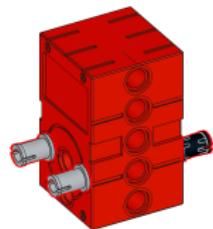
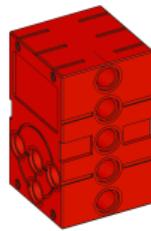
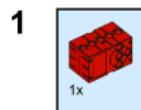
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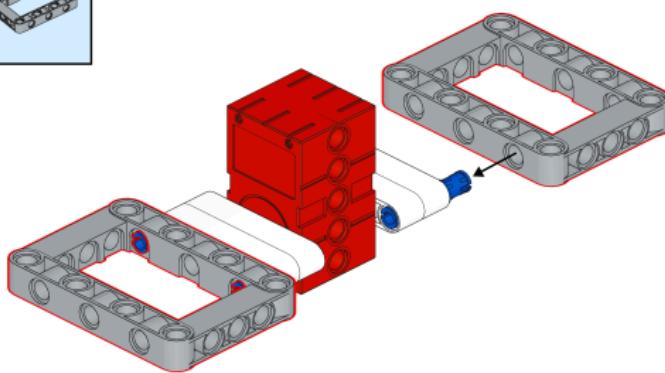
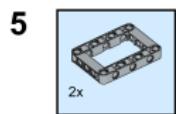
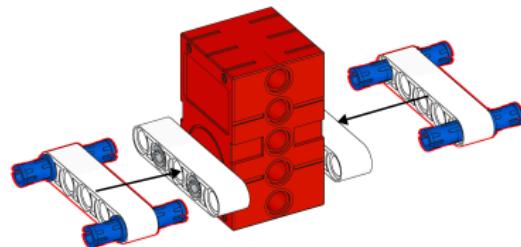
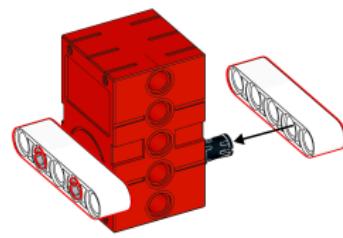
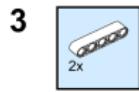
[micro:bit Wonder Building Kit](#)

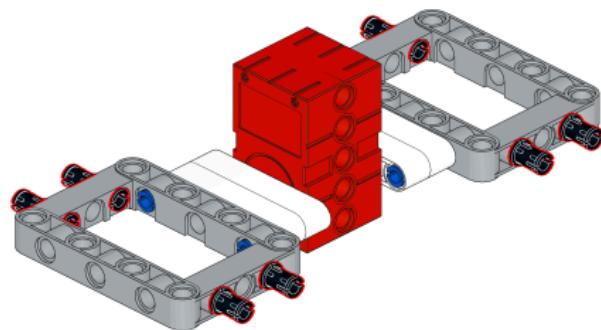
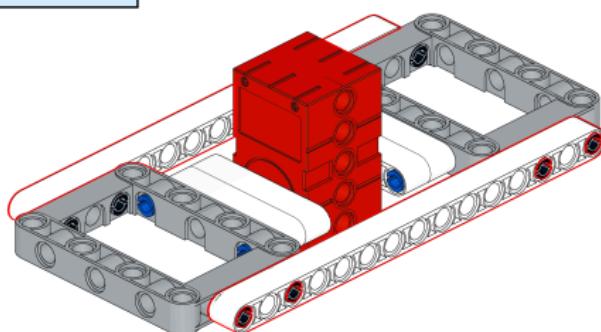
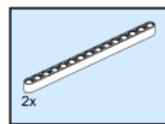
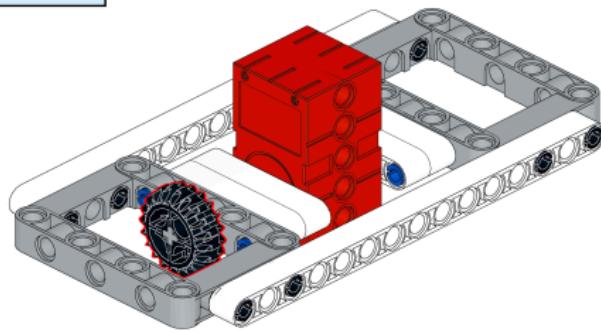
34.3. Materials Required

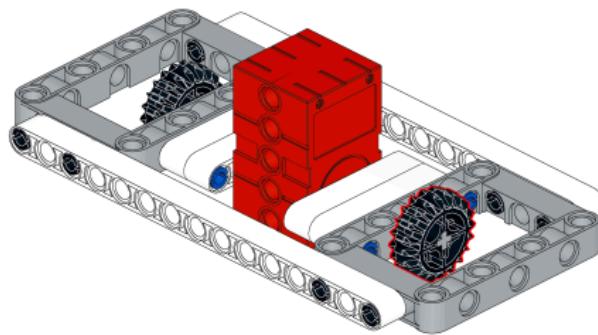
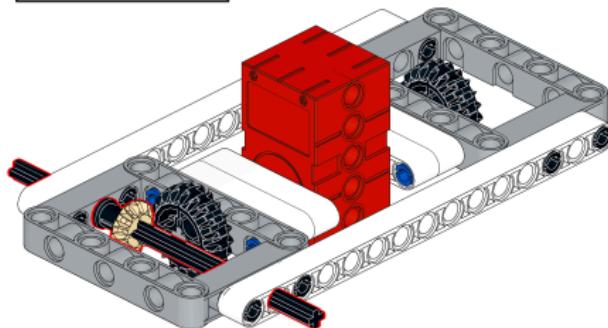
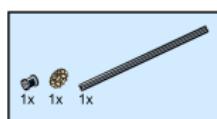
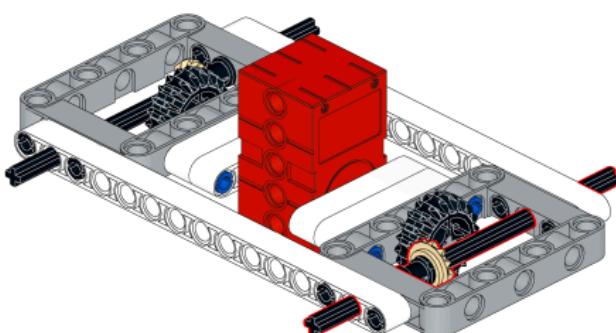
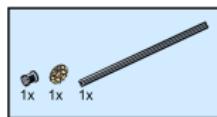


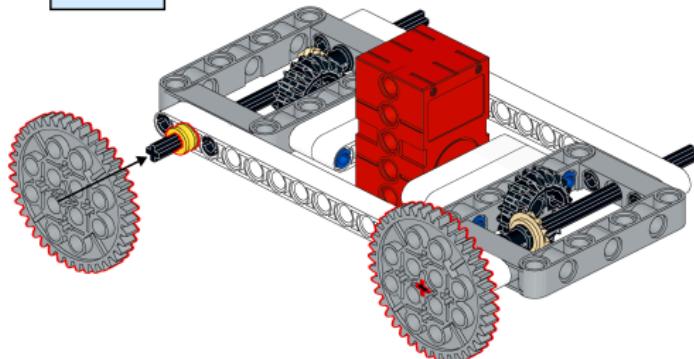
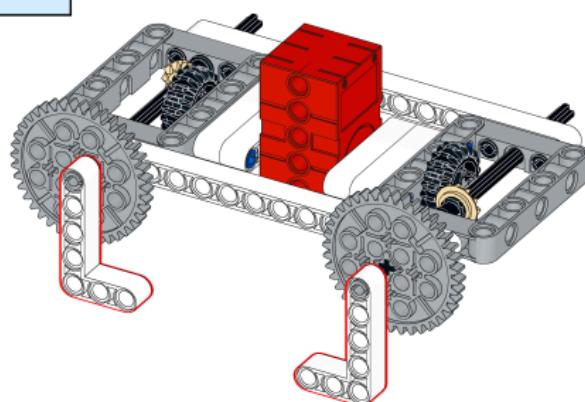
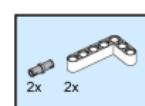
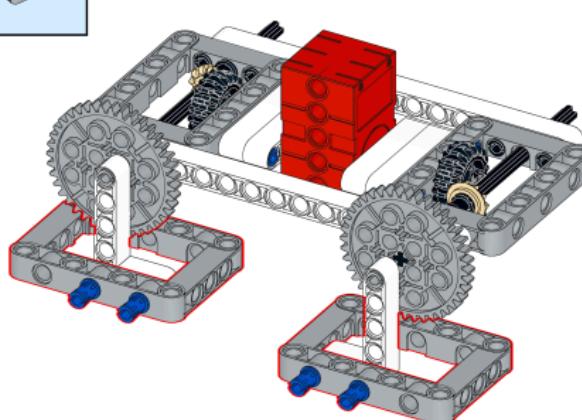
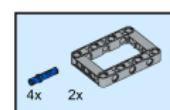
34.4. Bricks build-up



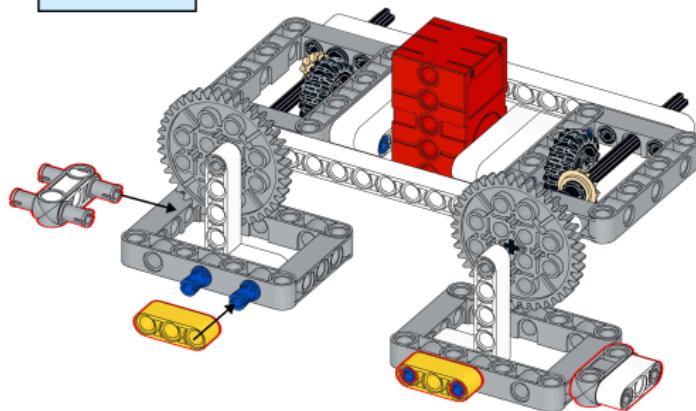
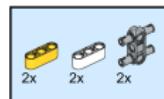


6**7****8**

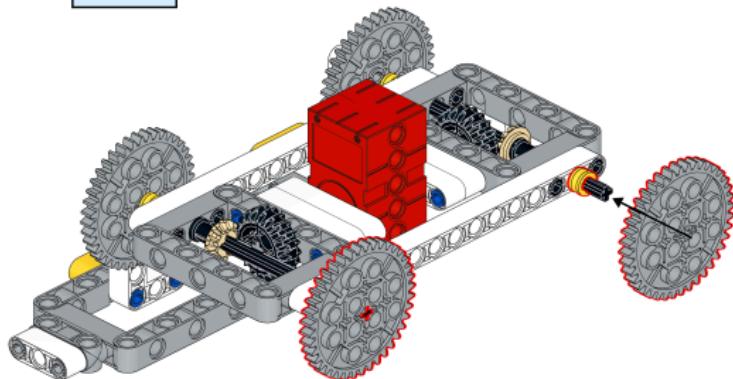
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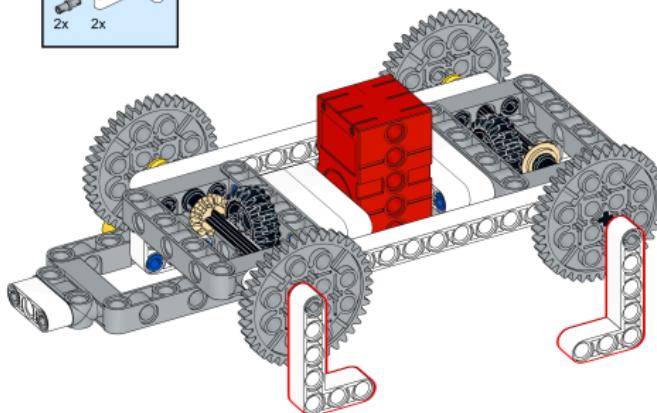
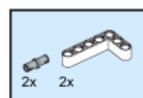
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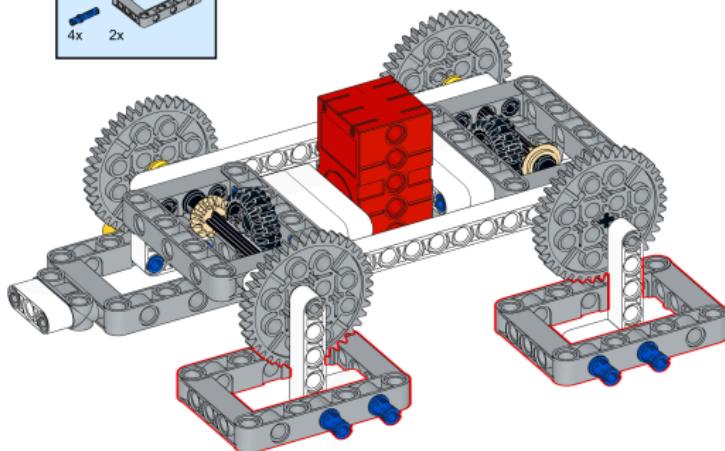
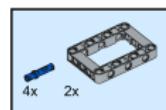
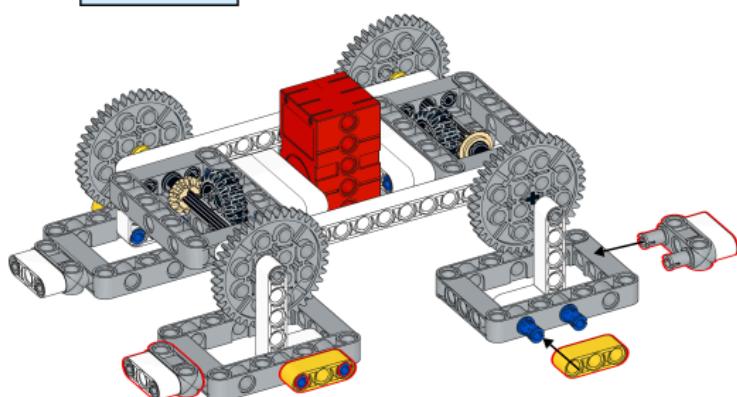
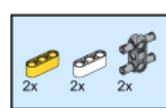
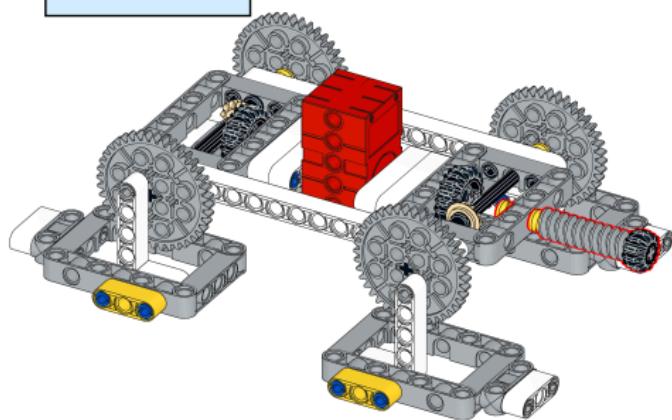
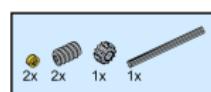


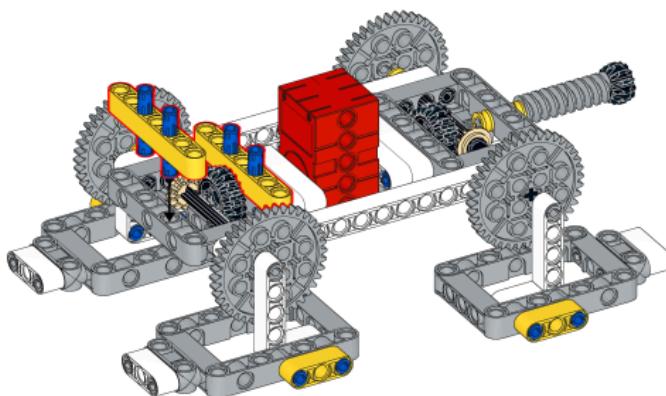
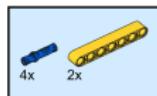
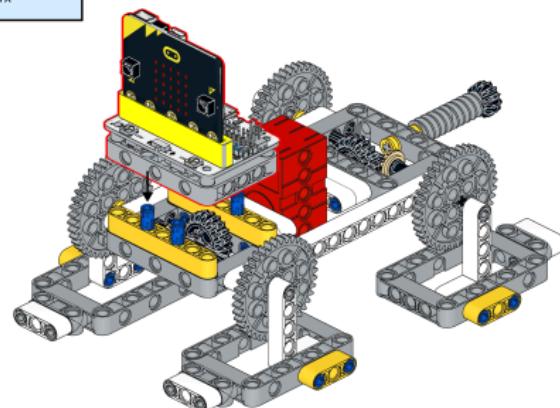
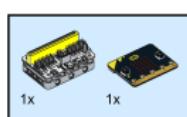
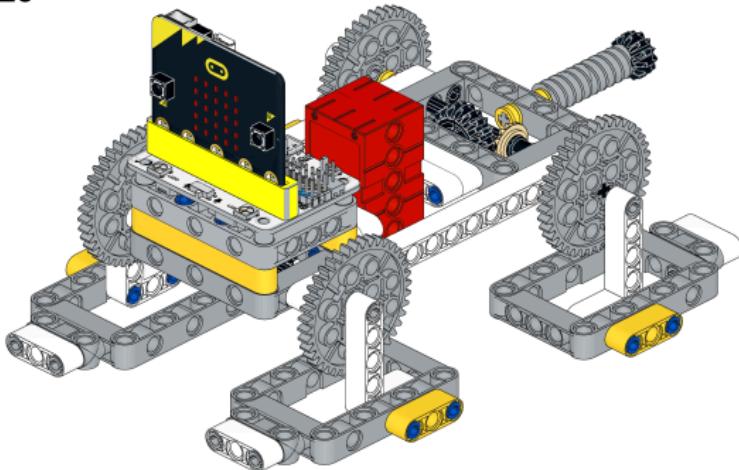
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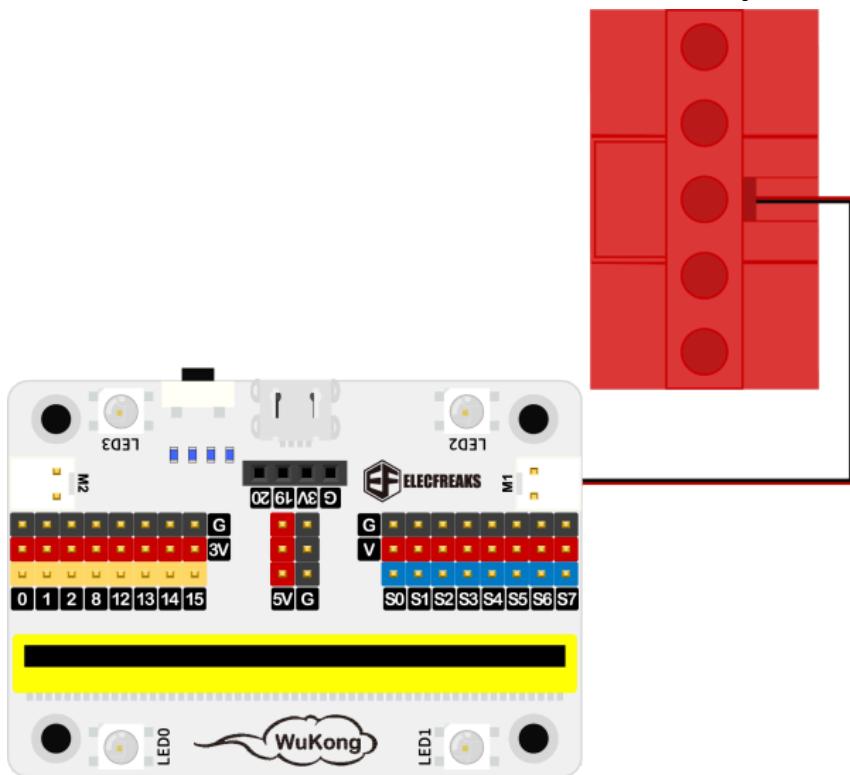


18**19****20**

21**22****23**

34.5. Hardware Connection

Connect a [motor](#) to M1 port on [Wukong breakout board](#).



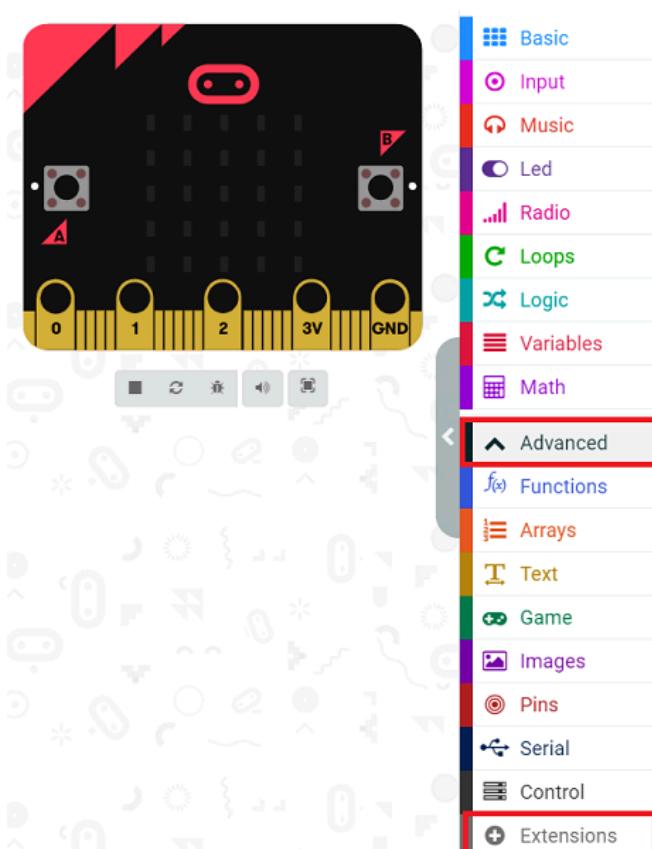
34.6. Software Platform

[MakeCode](#)

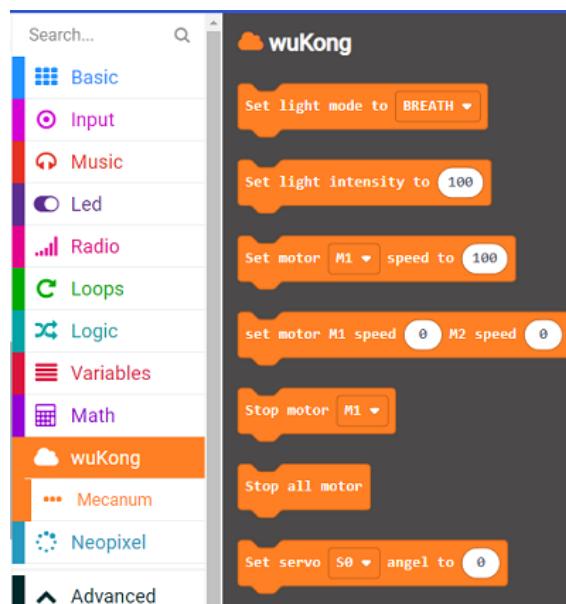
34.7. Coding

Add extensions

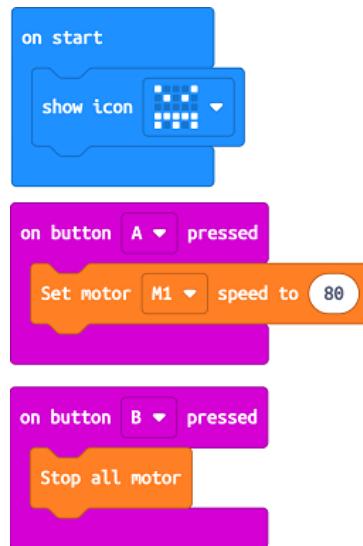
Click "Advanced" in the MakeCode to see more choices.



Search with Wukong in the dialogue box to download it.



Program



Link:https://makecode.microbit.org/_E5pWvtMr1CK1

Result

When button A is pressed, the robot dog moves forward; and when button B is pressed, the robot dog stops moving.

By ELECFREAKS Team

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