

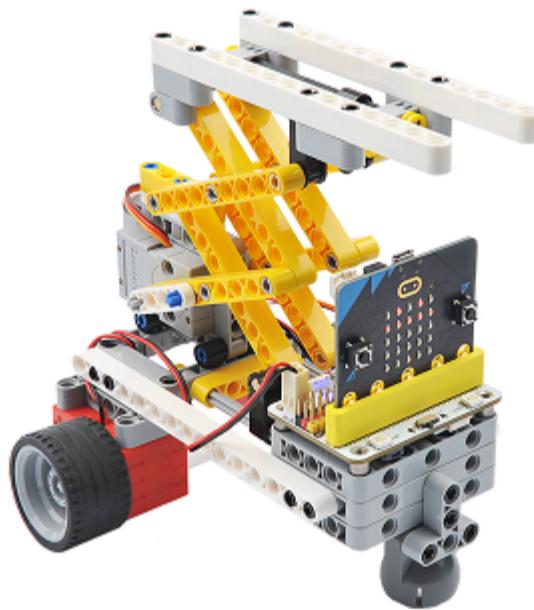
Case 18: The Aerial Ladder Truck

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20.1. Purpose

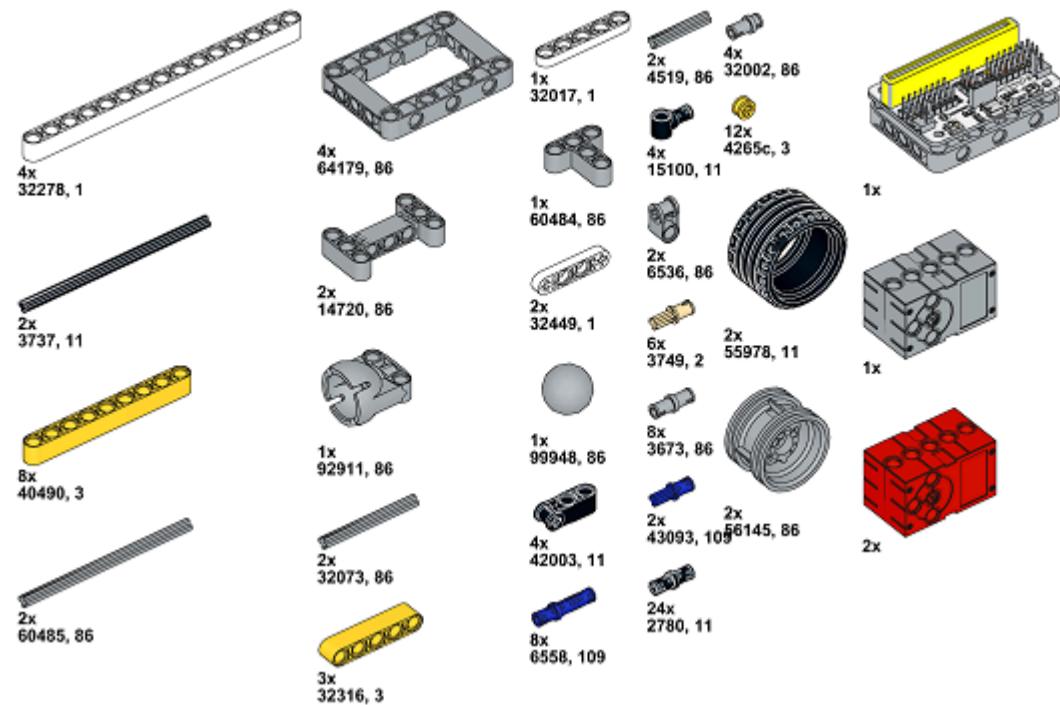
To make an aerial ladder truck.



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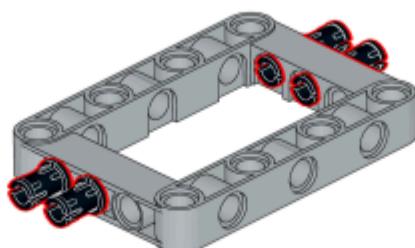
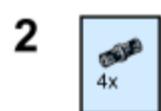
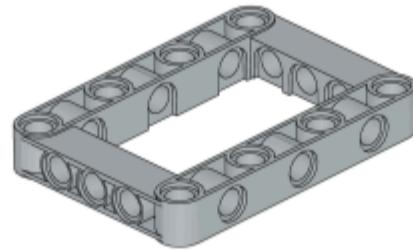
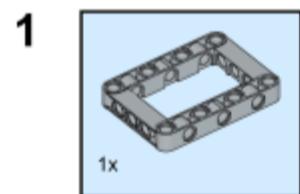
[micro:bit Wonder Building Kit Joystick bit](#)

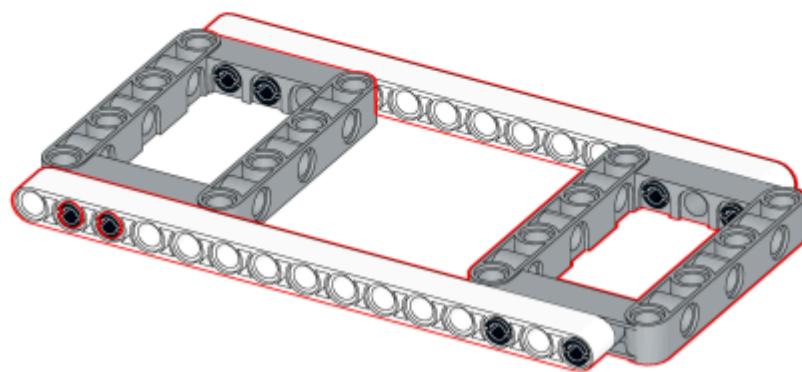
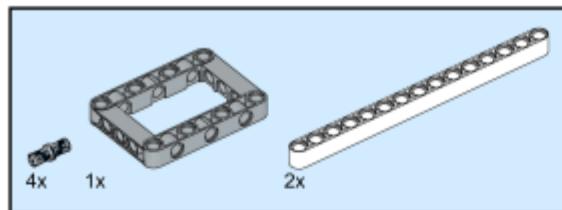
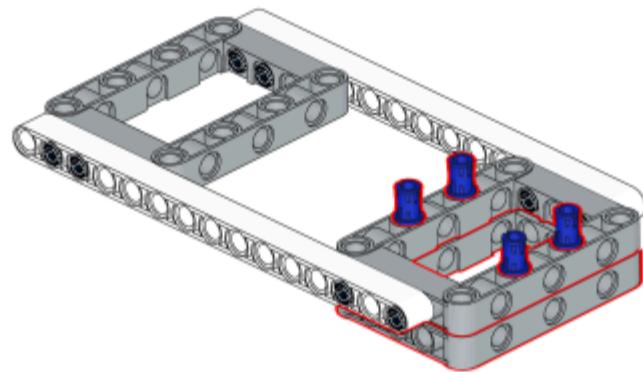
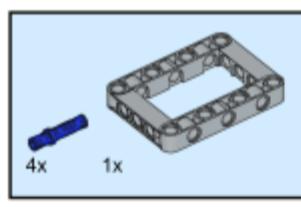
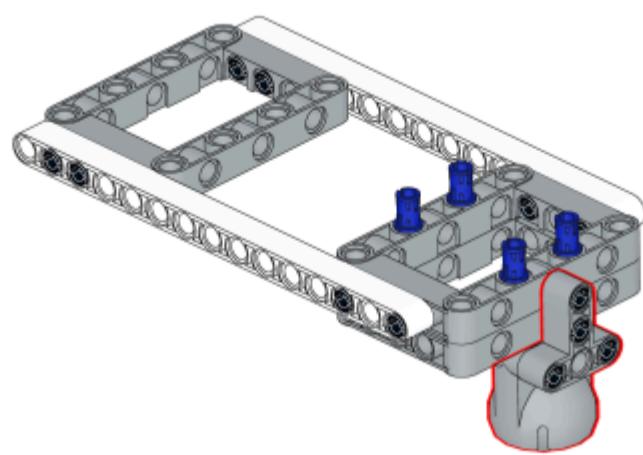
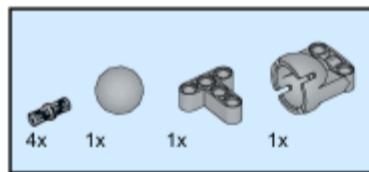
20.3. Materials Required

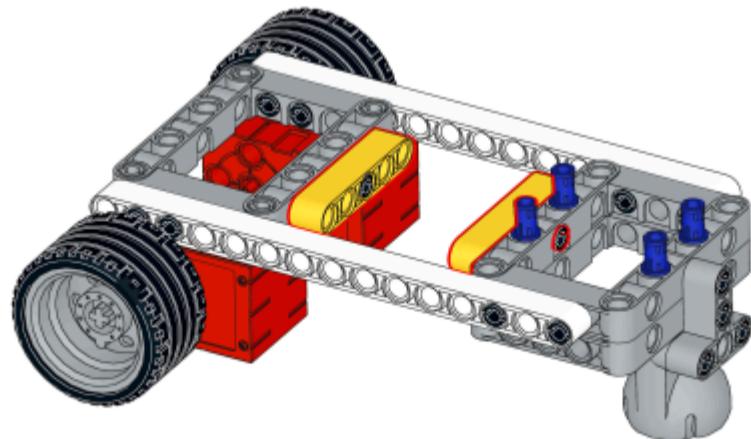
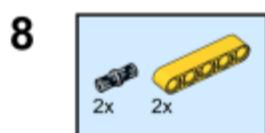
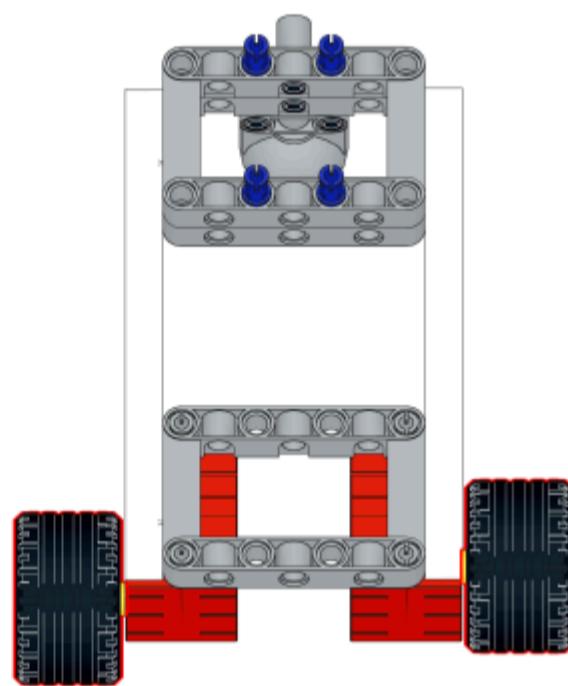
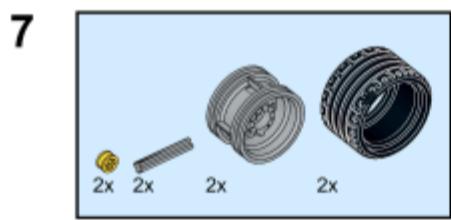
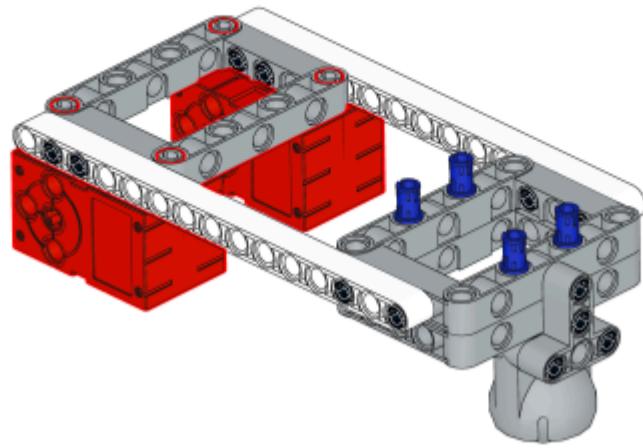
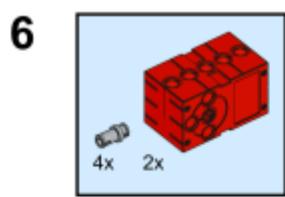


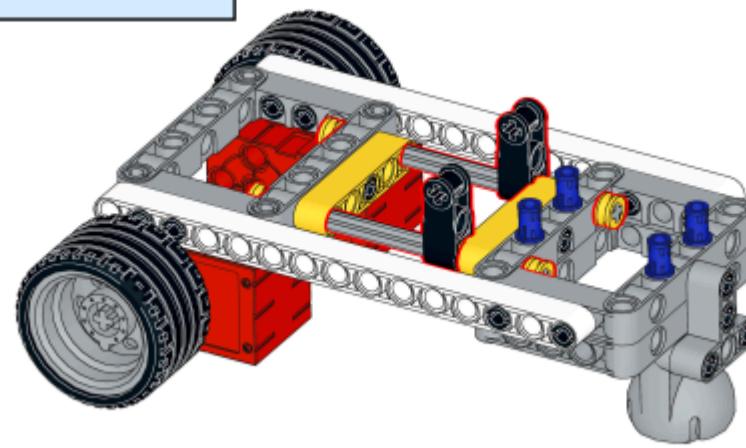
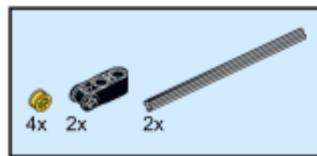
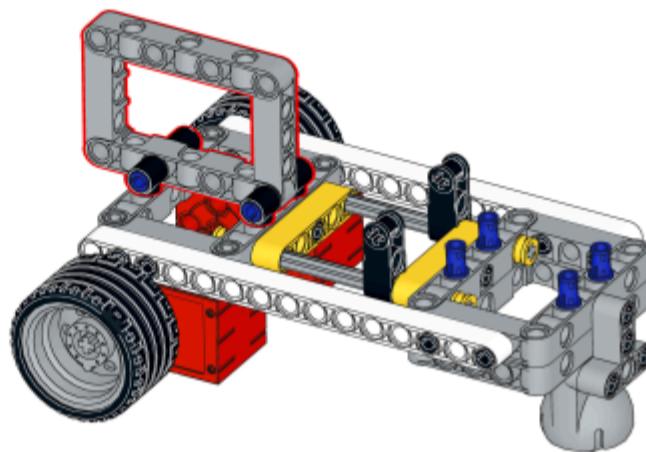
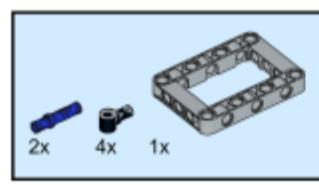
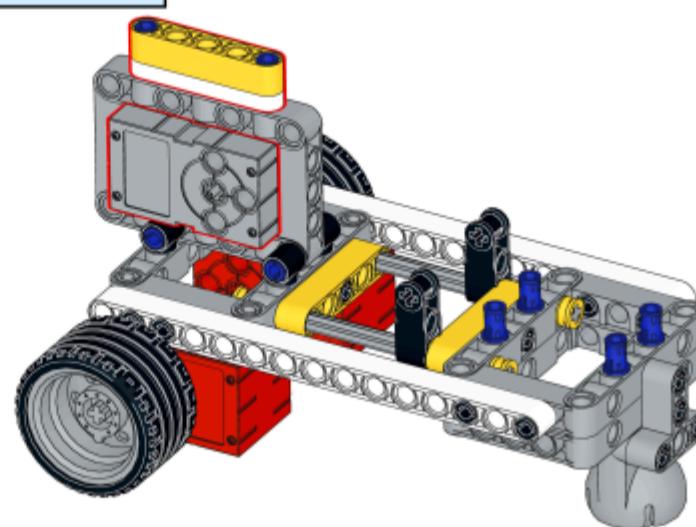
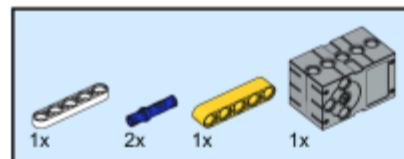
Video link: <https://youtu.be/hWmRBTFc3cs>

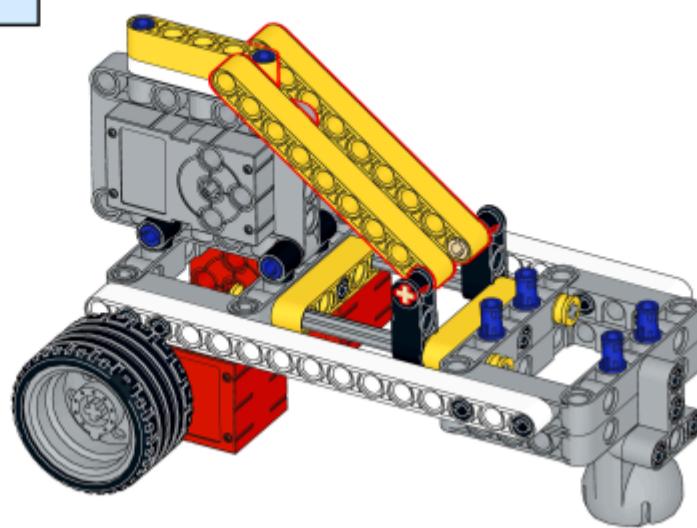
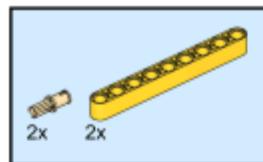
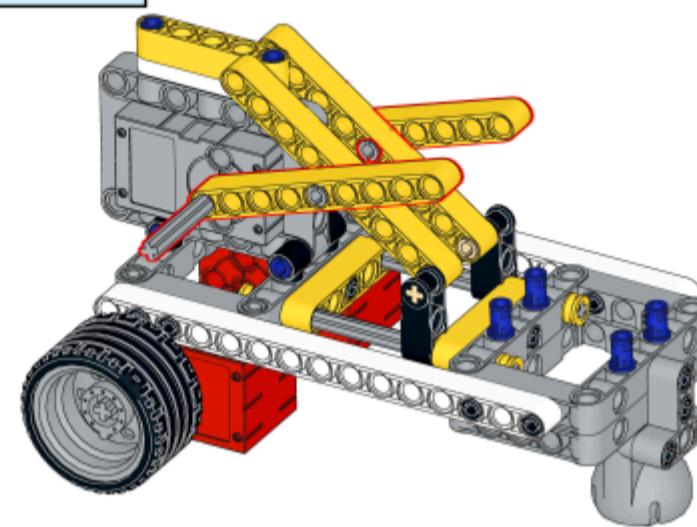
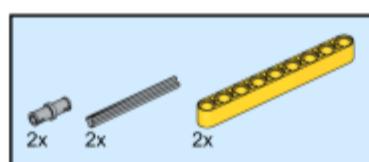
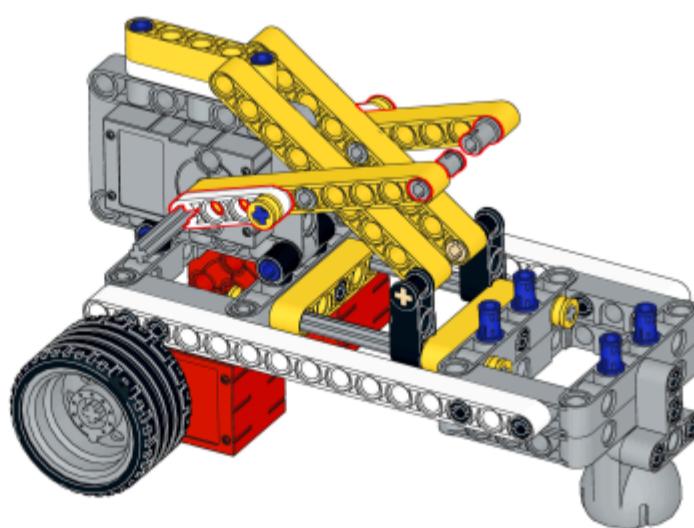
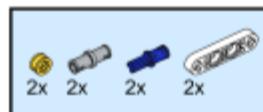
20.4. Bricks build-up

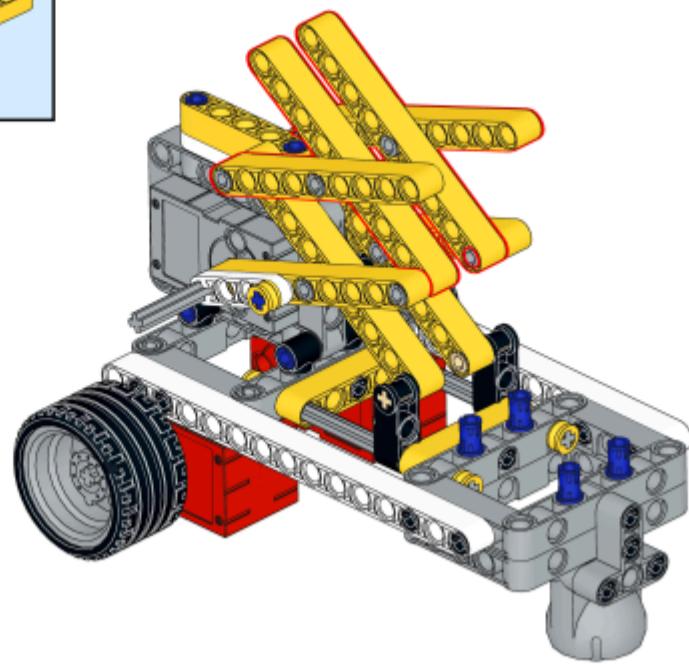
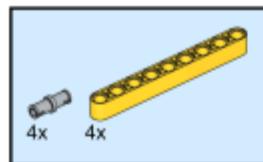
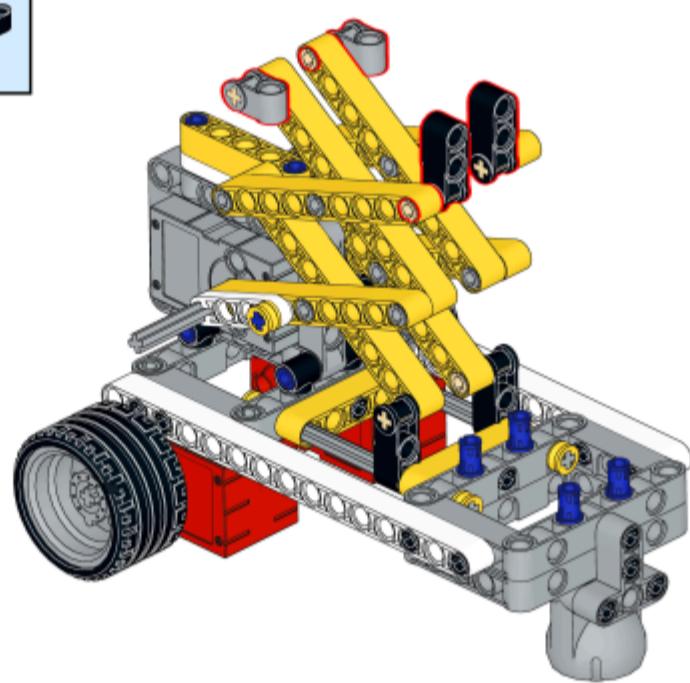
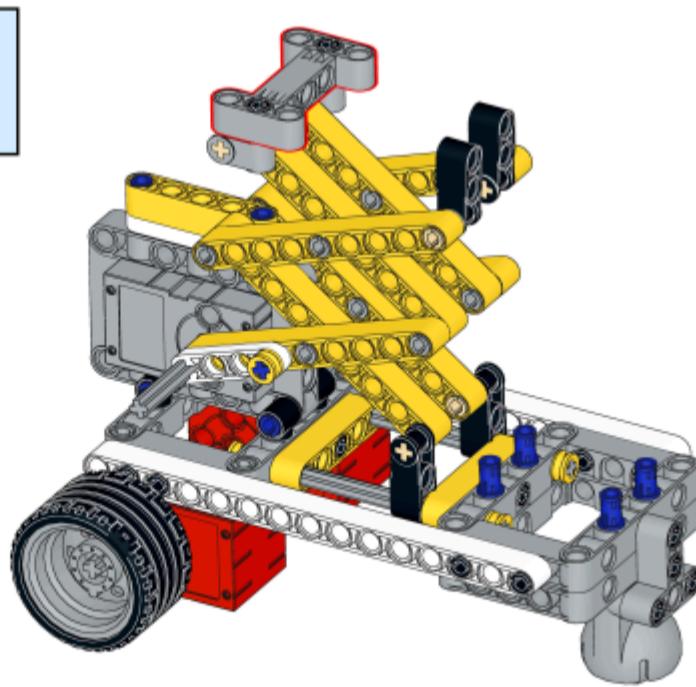
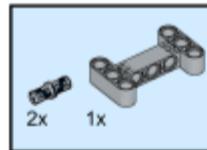


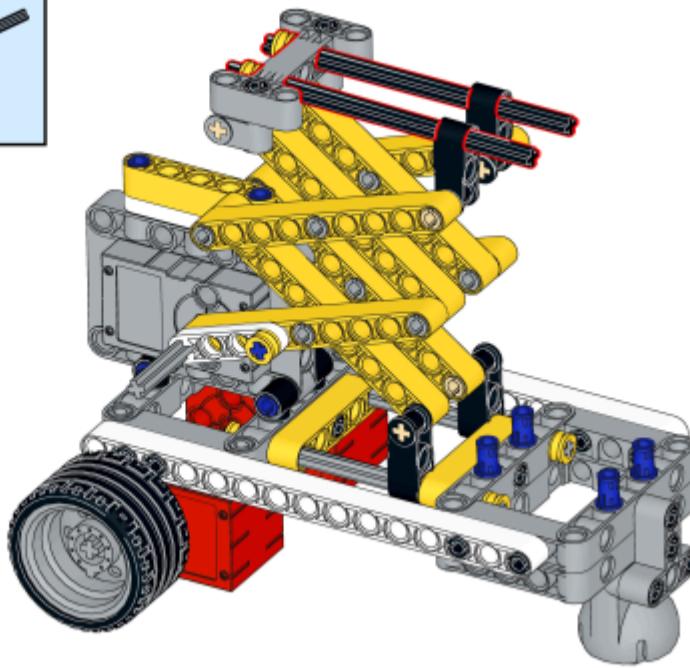
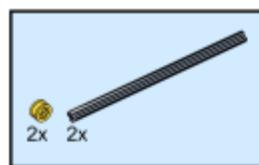
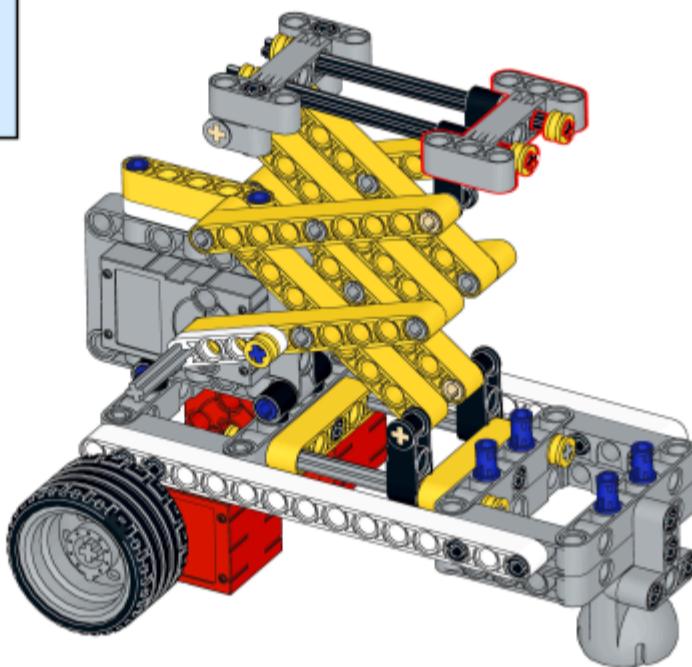
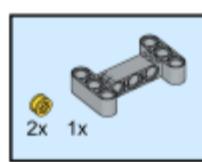
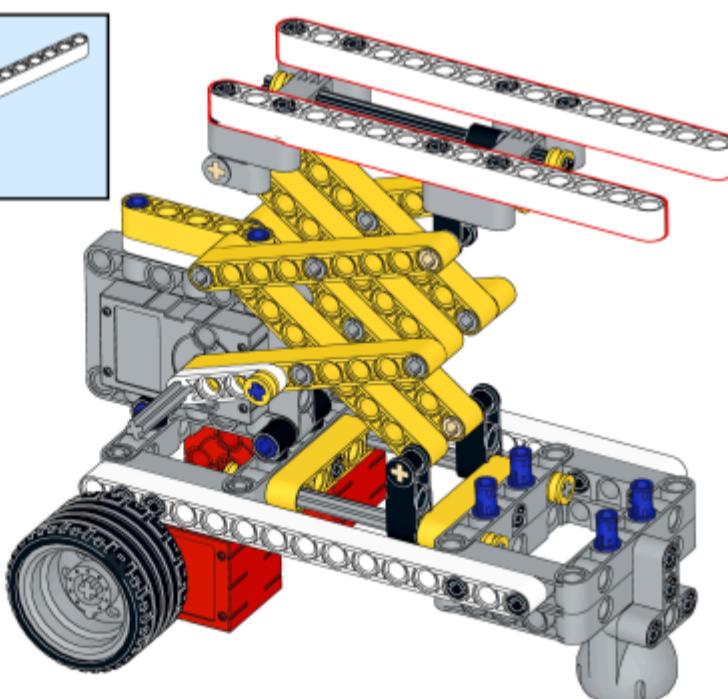
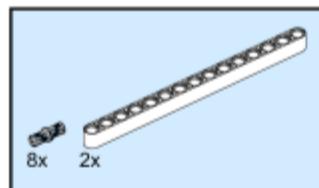
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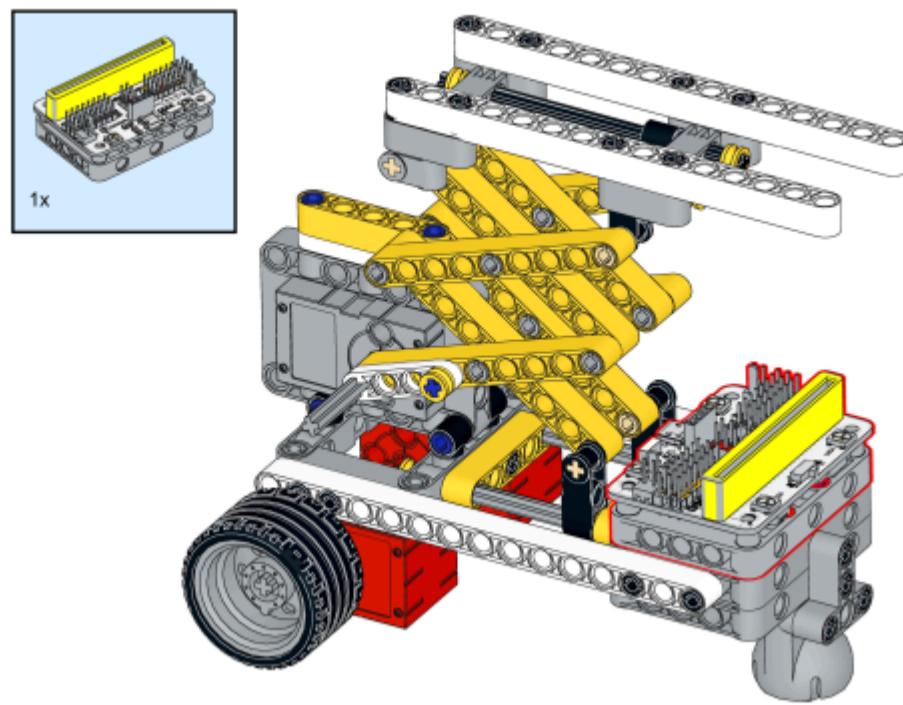


9**10****11**

12**13****14**

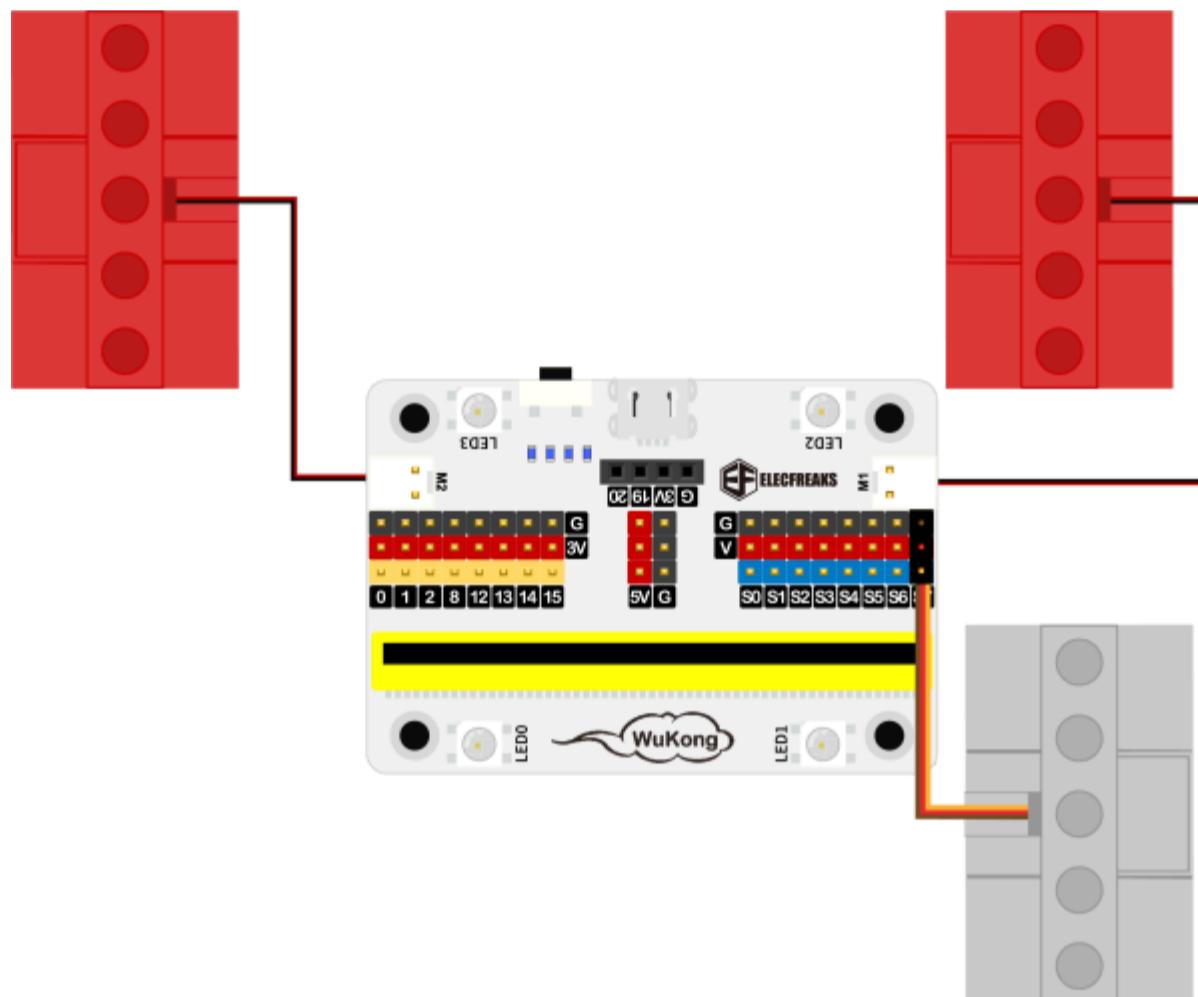
15**16****17**

18**19****20**

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20.5. Hardware Connection

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



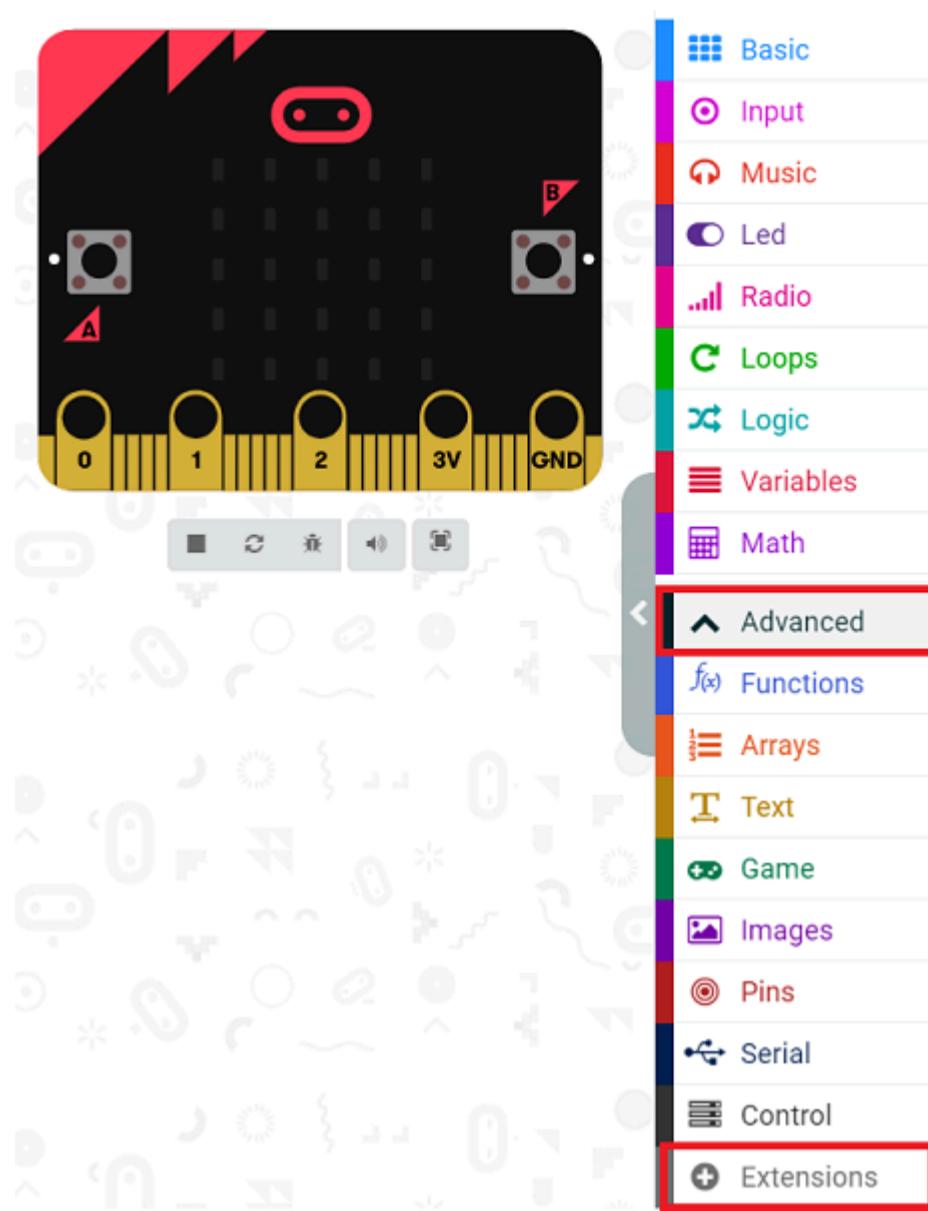
20.6. Software Platform

[MakeCode](#)

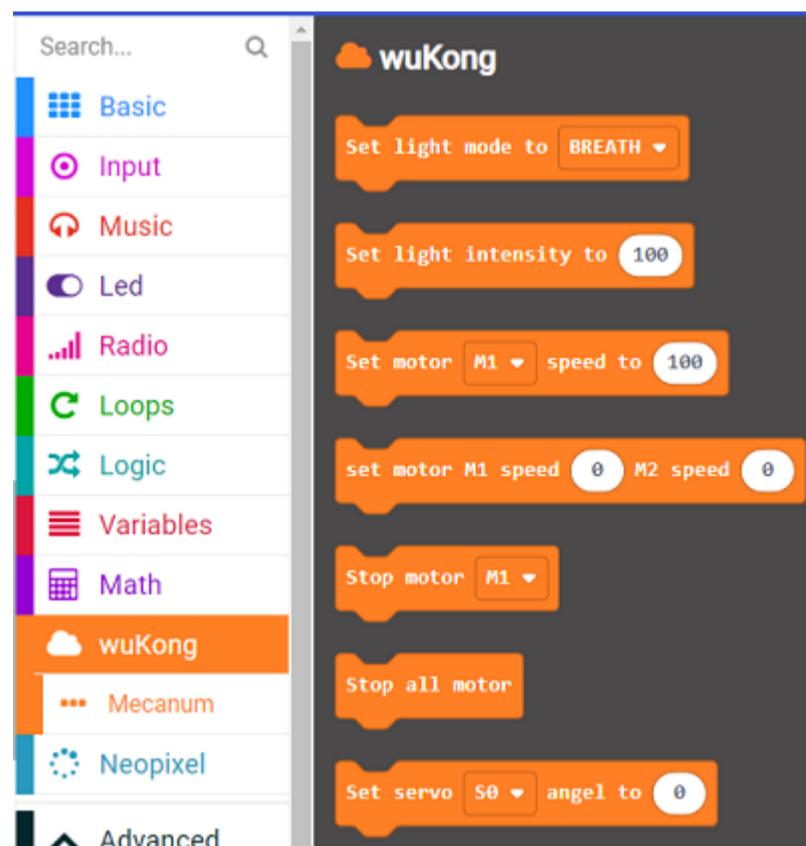
20.7. Coding

Add extensions

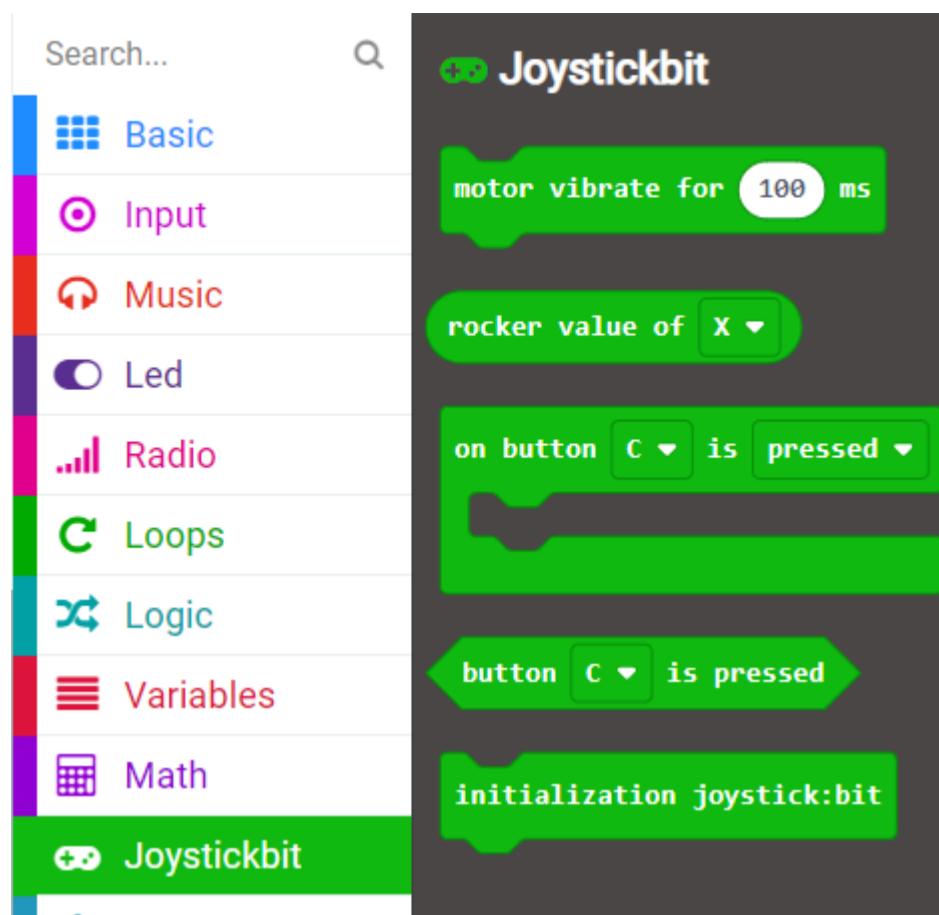
Click “Advanced” in the MakeCode to see more choices.



Search with Wukong in the dialogue box to download it.



Search with joystickbit in the dialogue box to download it.



Program

For Joystick:bit:

```

on start
    initialization joystick:bit
    radio set group 1
forever
    if <rocker value of X> < 200 then
        radio send number 4
    else if <rocker value of X> > 800 then
        radio send number 3
    else if <rocker value of Y> < 200 then
        radio send number 2
    else if <rocker value of Y> > 800 then
        radio send number 1
    else if button C is pressed then
        radio send number 5
    else if button D is pressed then
        radio send number 6
    else if not button D is pressed then
        radio send number 0
    else if not button C is pressed then
        radio send number 0
    else
        radio send number 0
    end
end

```

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 has an "on radio received" event that sets a variable *v* to the received number. The main loop ("forever") contains an "if" block for each value from 1 to 6. For values 1, 2, 3, and 4, it sets the speeds of two motors (M1 and M2) to specific values. For value 0, it stops all motors. For values 5 and 6, it sets the angle of a servo (S7) to 20 or 72 degrees respectively.

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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