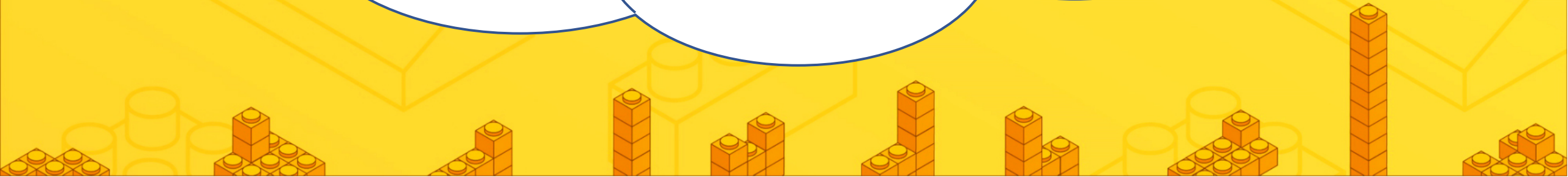


Give The Robot Vision

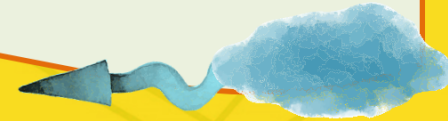


Target

- **Complete the robot design and assembly according to the competition requirements.**
- **Learn how to install the grayscale sensor.**
- **Learn to use the grayscale sensor to detect obstacles.**
- **Learn to use the grayscale sensor to detect objects.**

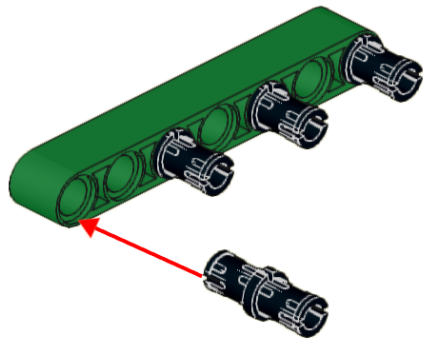
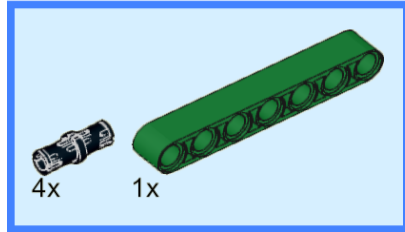


01 Assembly



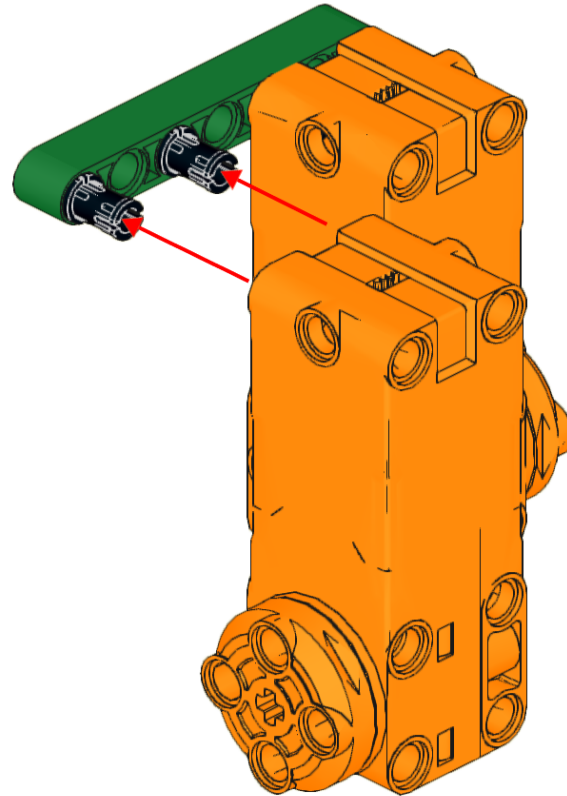
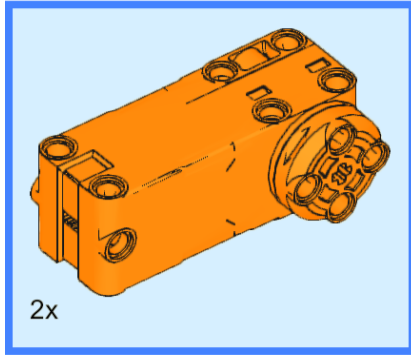
Assembly

1



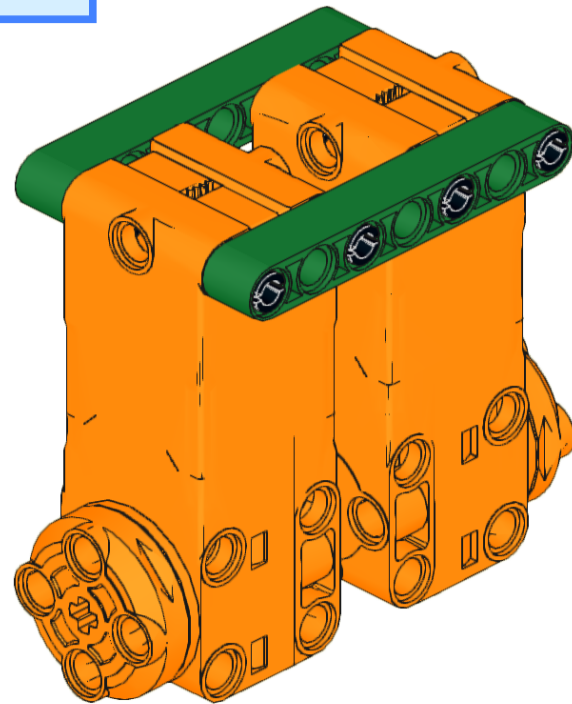
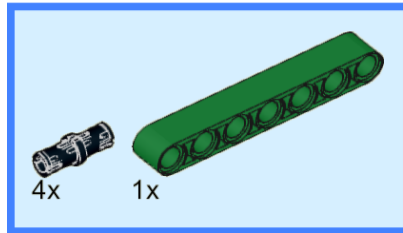
Assembly

2



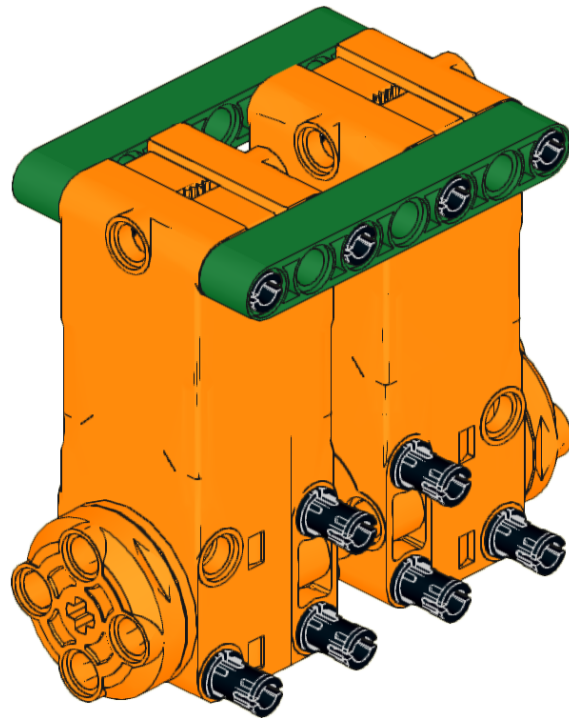
Assembly

3



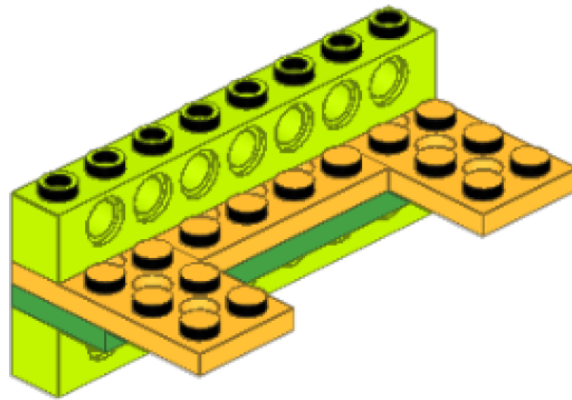
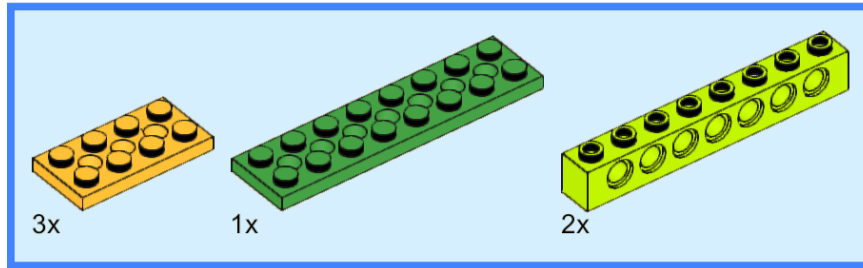
Assembly

4



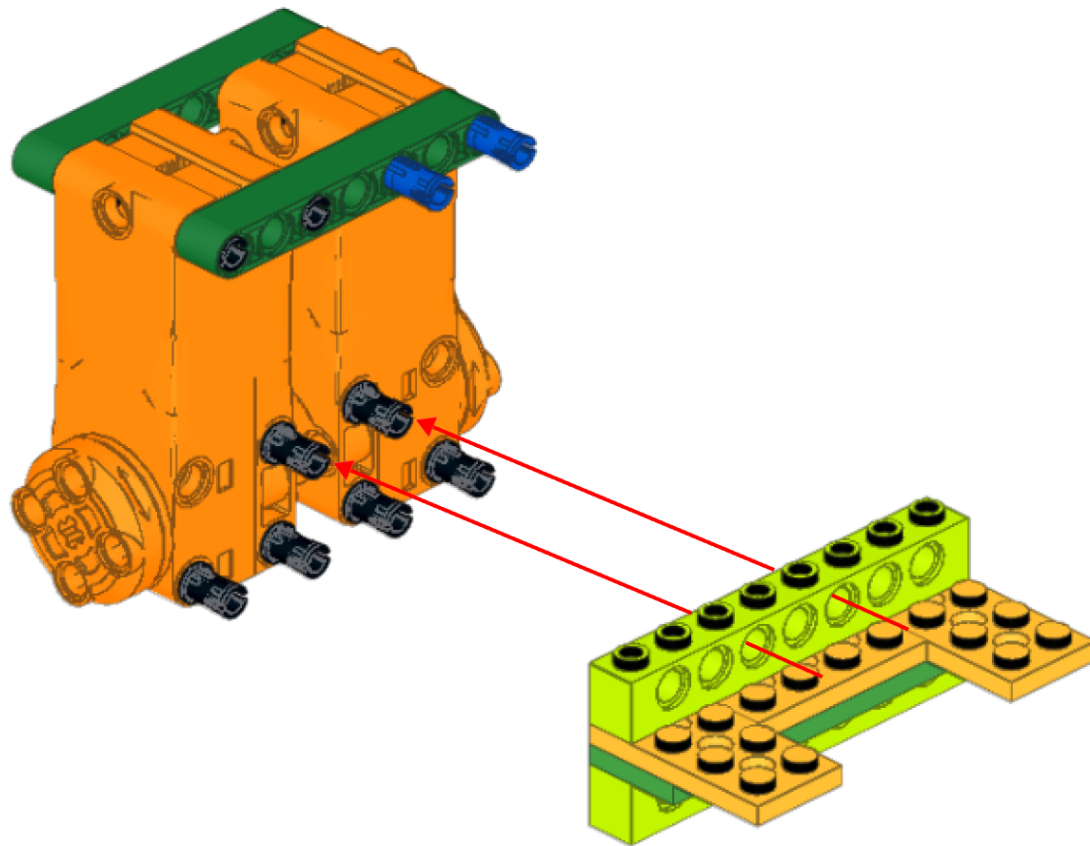
Assembly

5



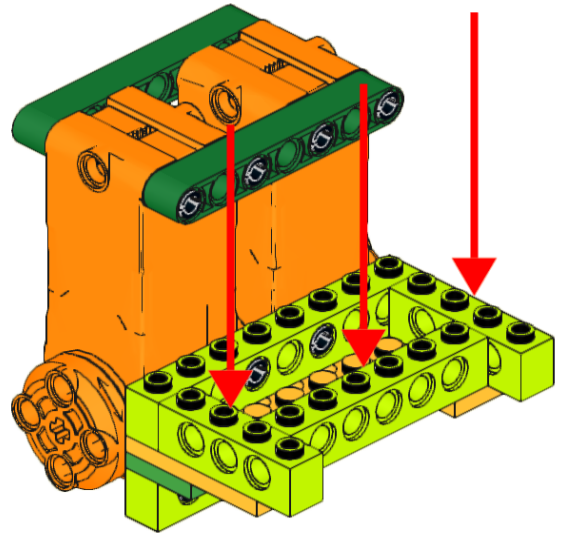
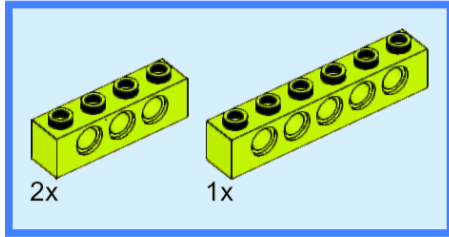
Assembly

6



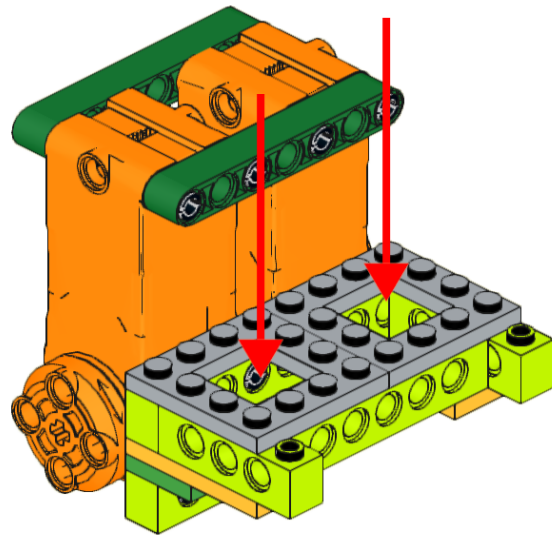
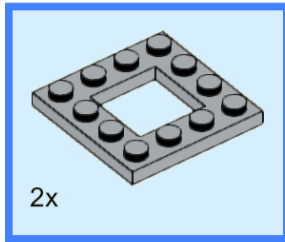
Assembly

7



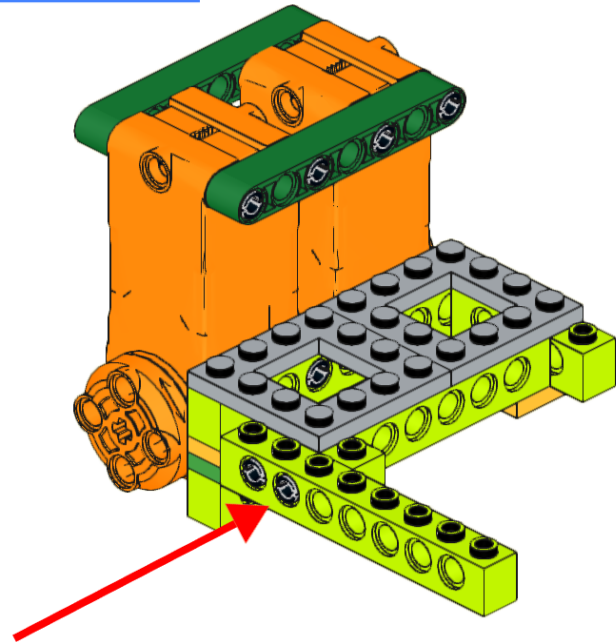
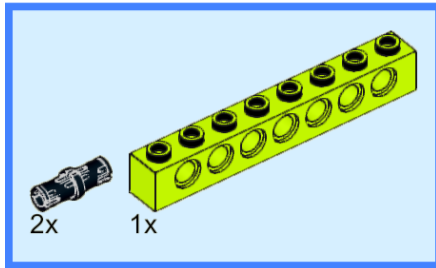
Assembly

8



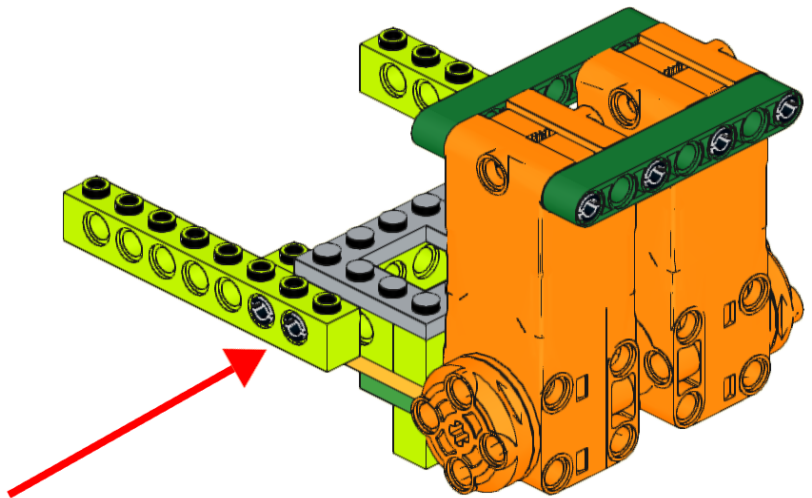
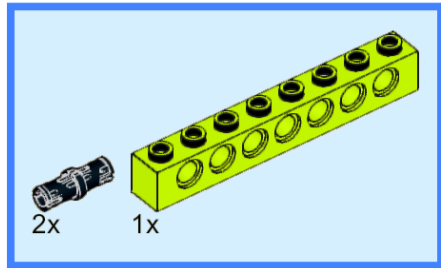
Assembly

9



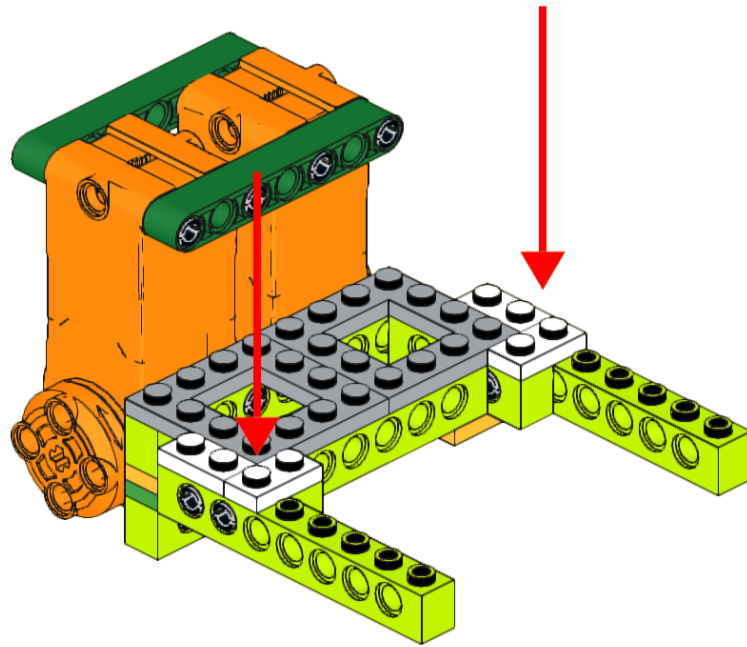
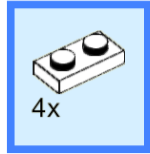
Assembly

10



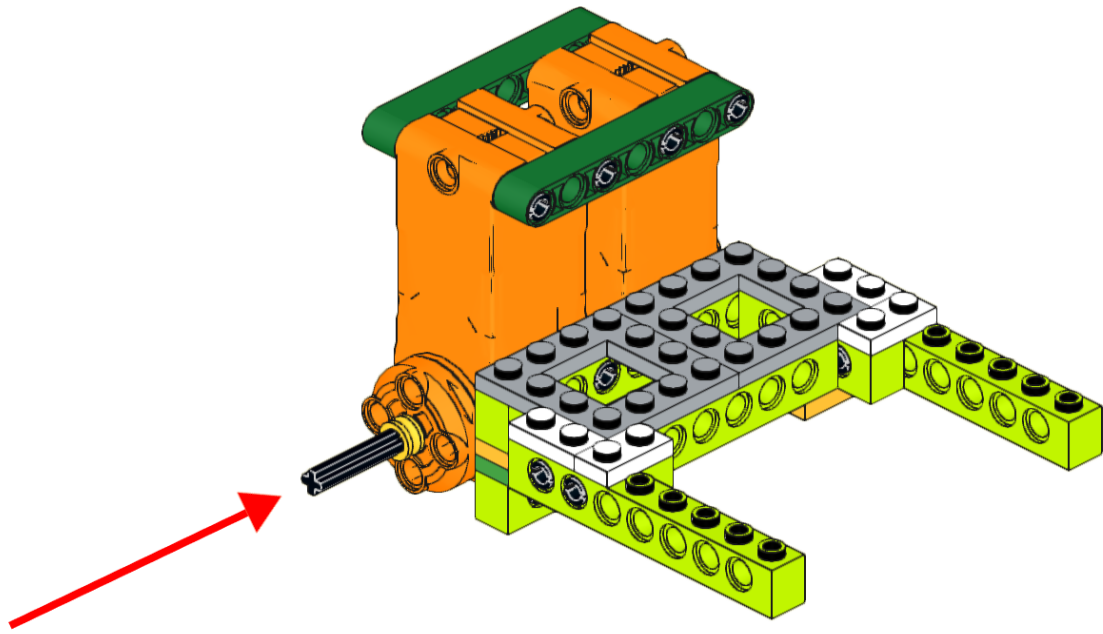
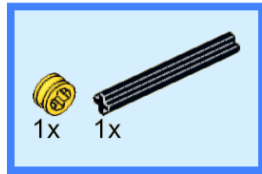
Assembly

11



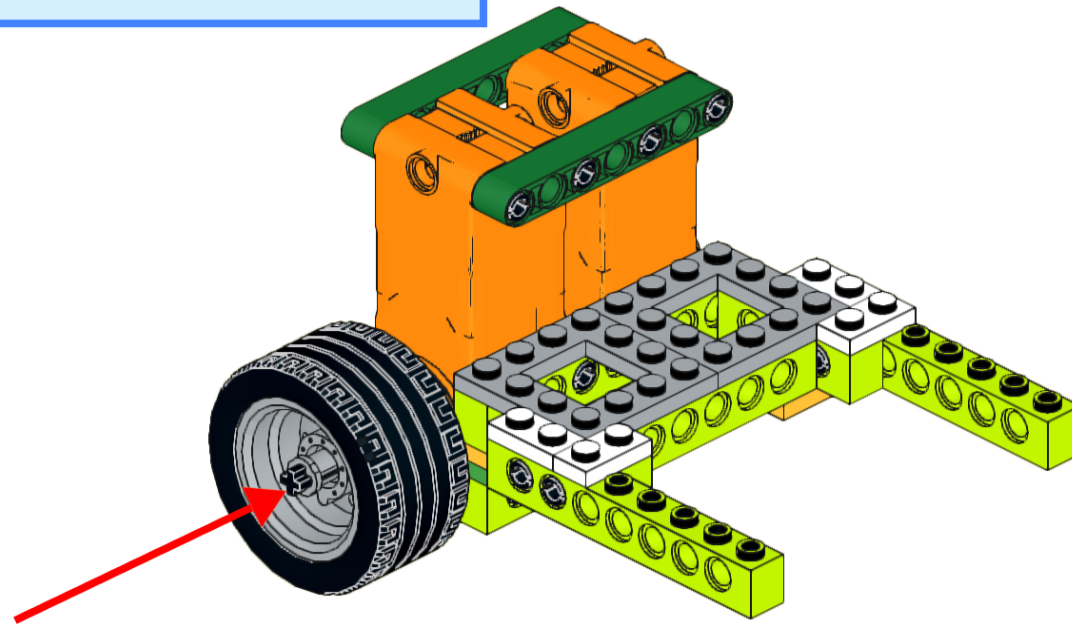
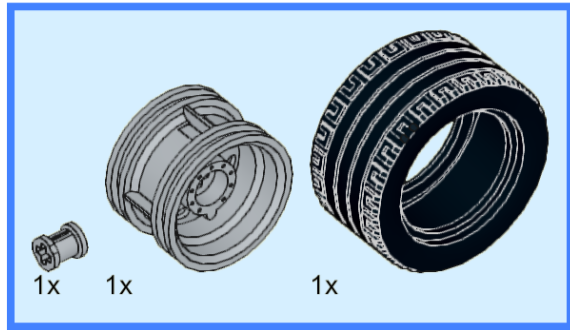
Assembly

12



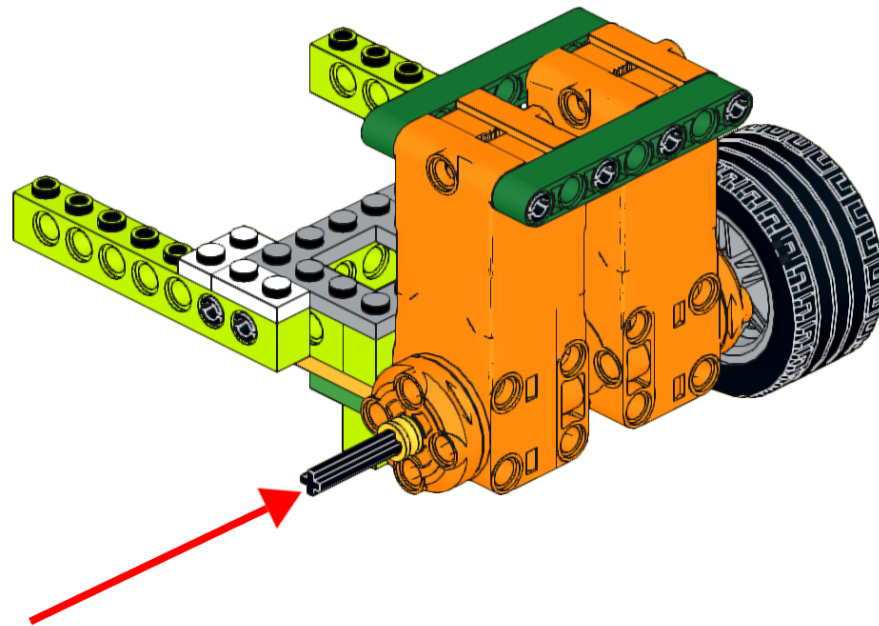
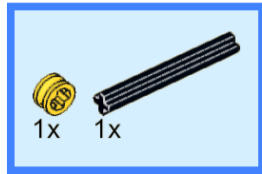
Assembly

13



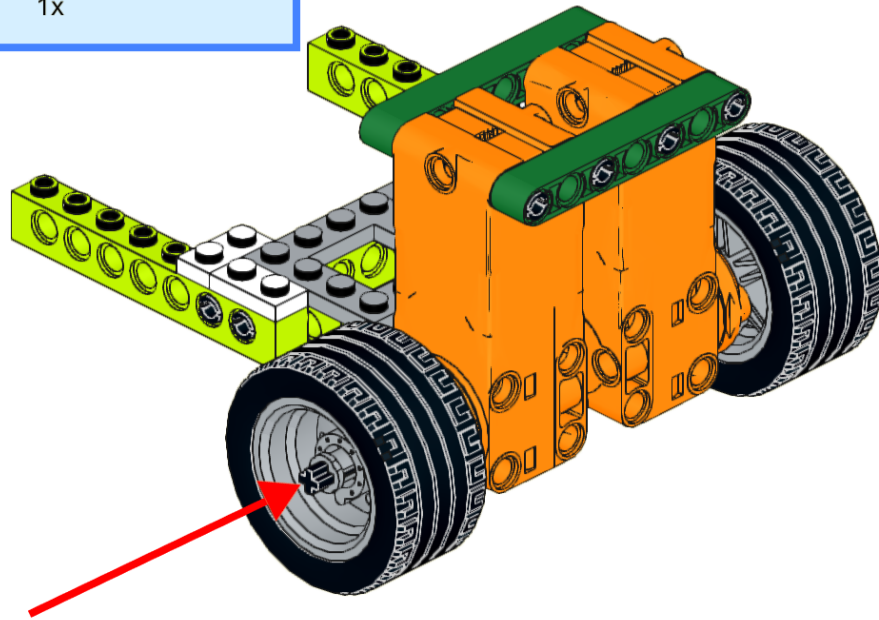
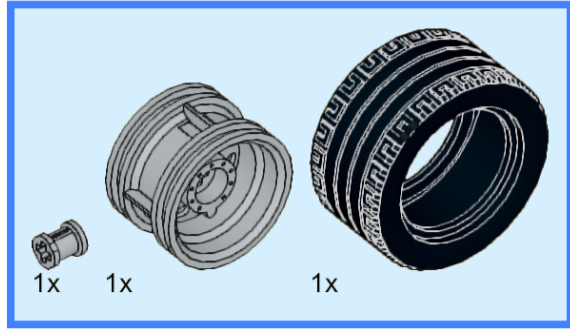
Assembly

14



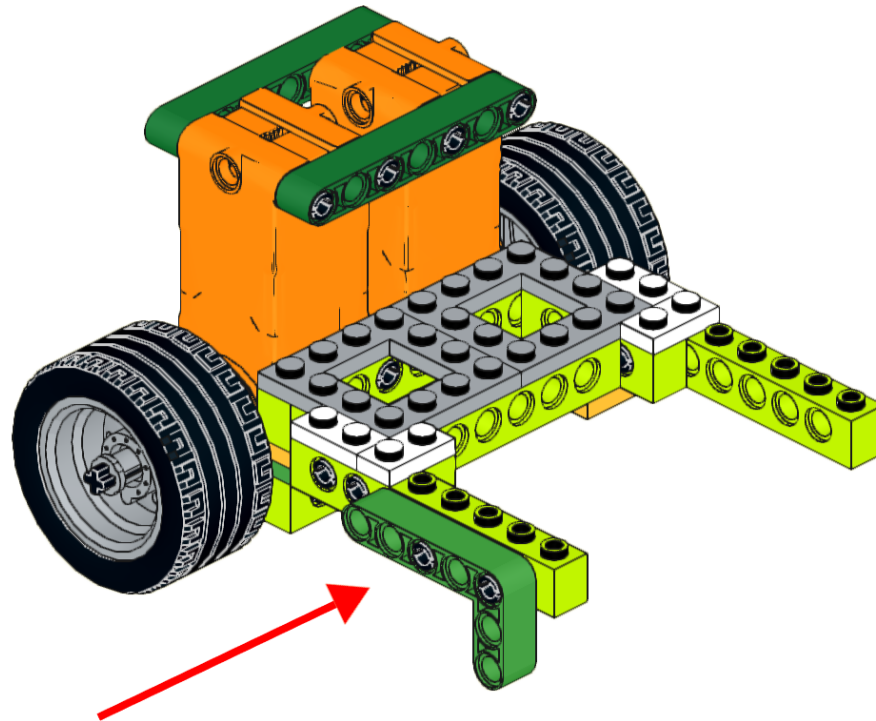
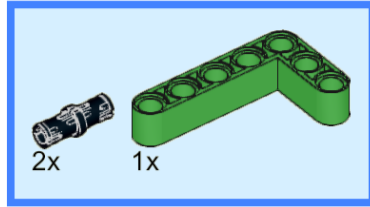
Assembly

15



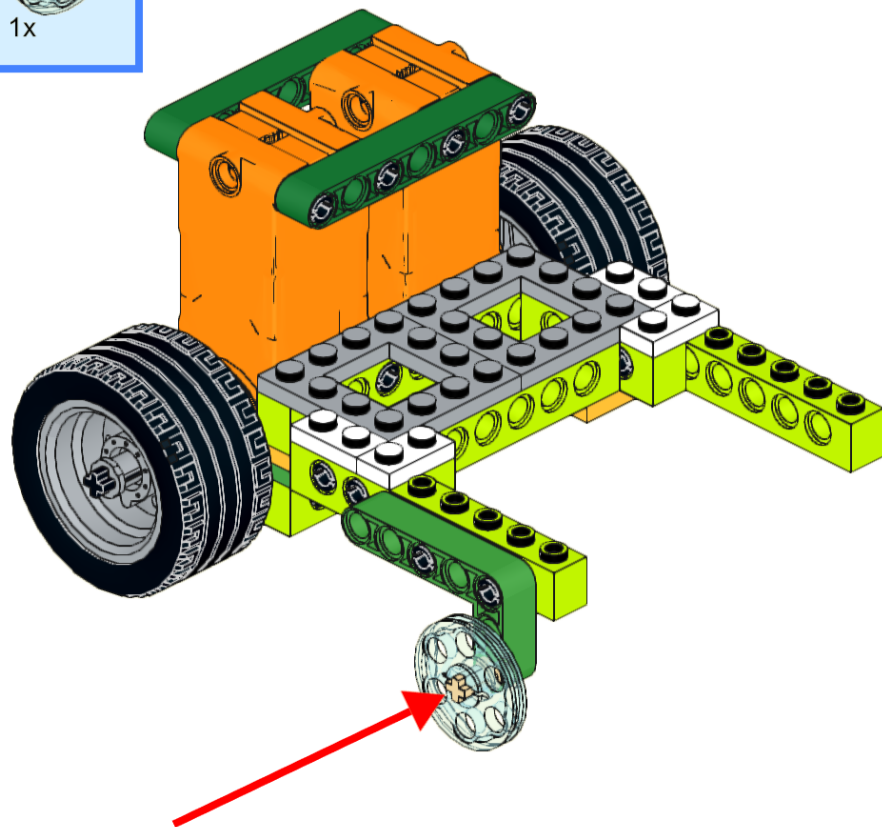
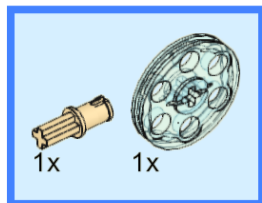
Assembly

16



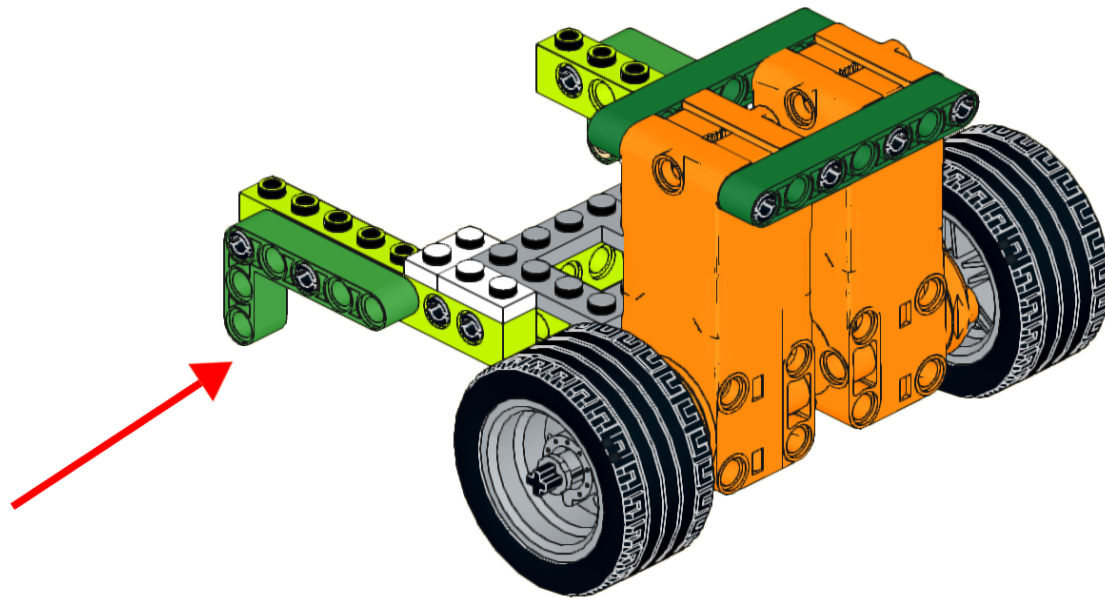
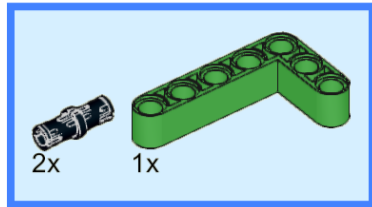
Assembly

17



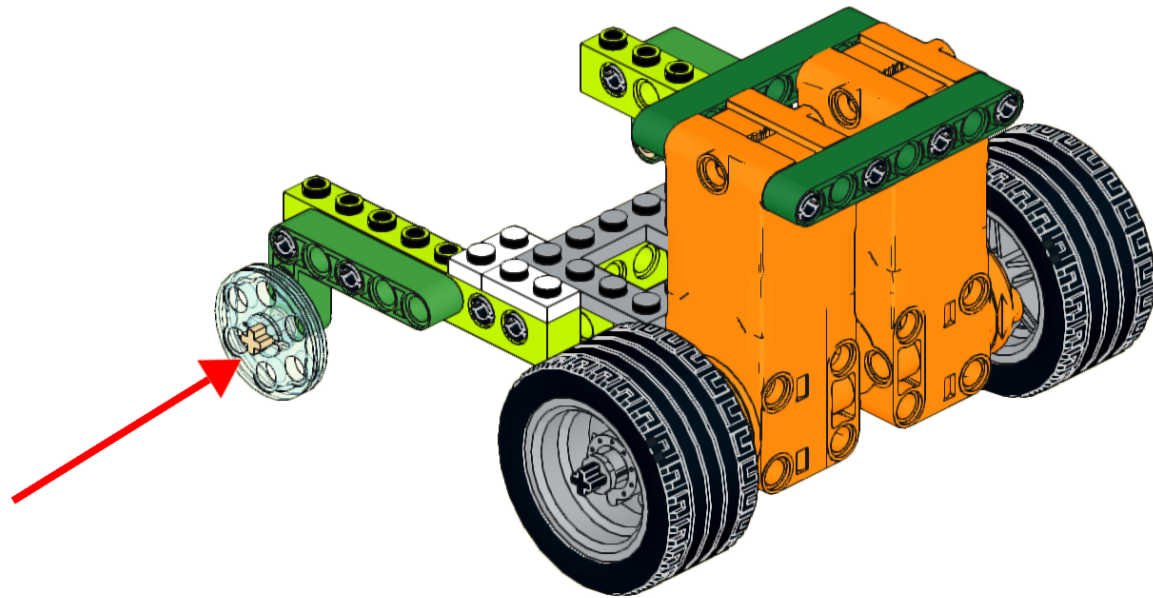
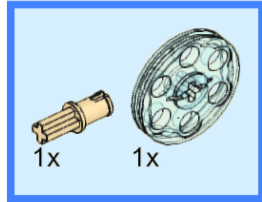
Assembly

18



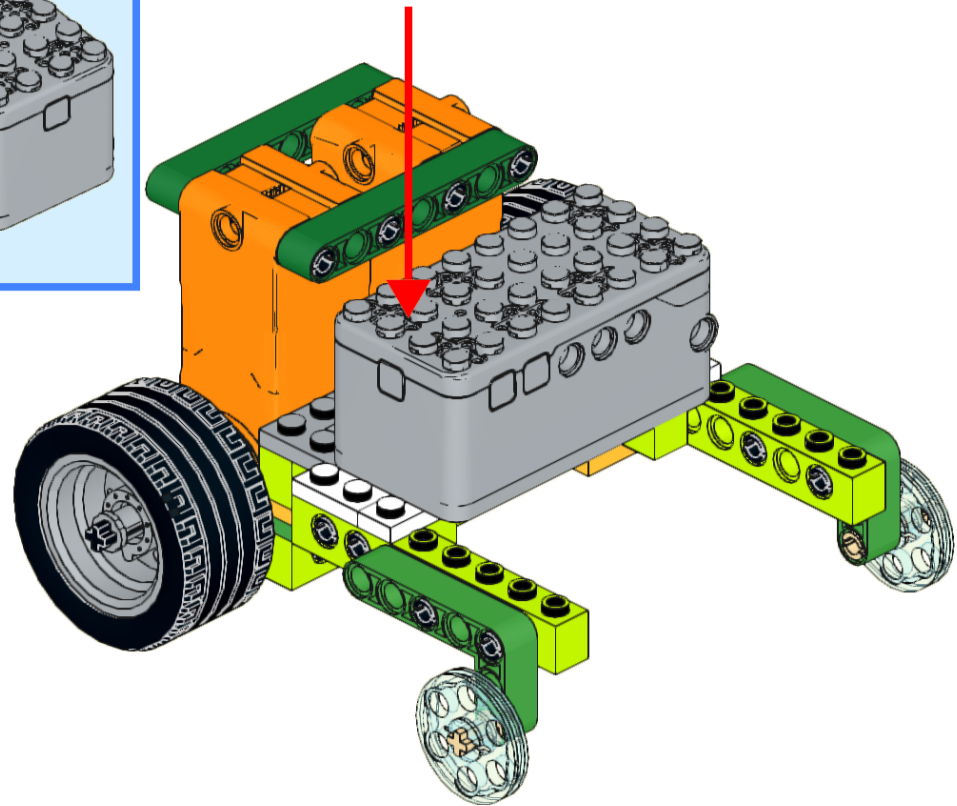
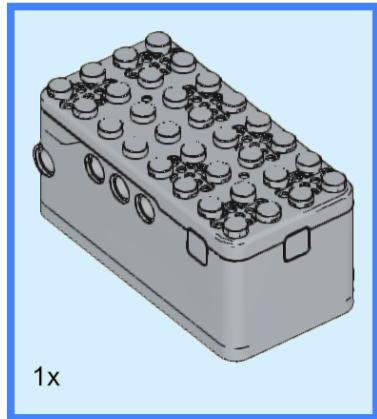
Assembly

19



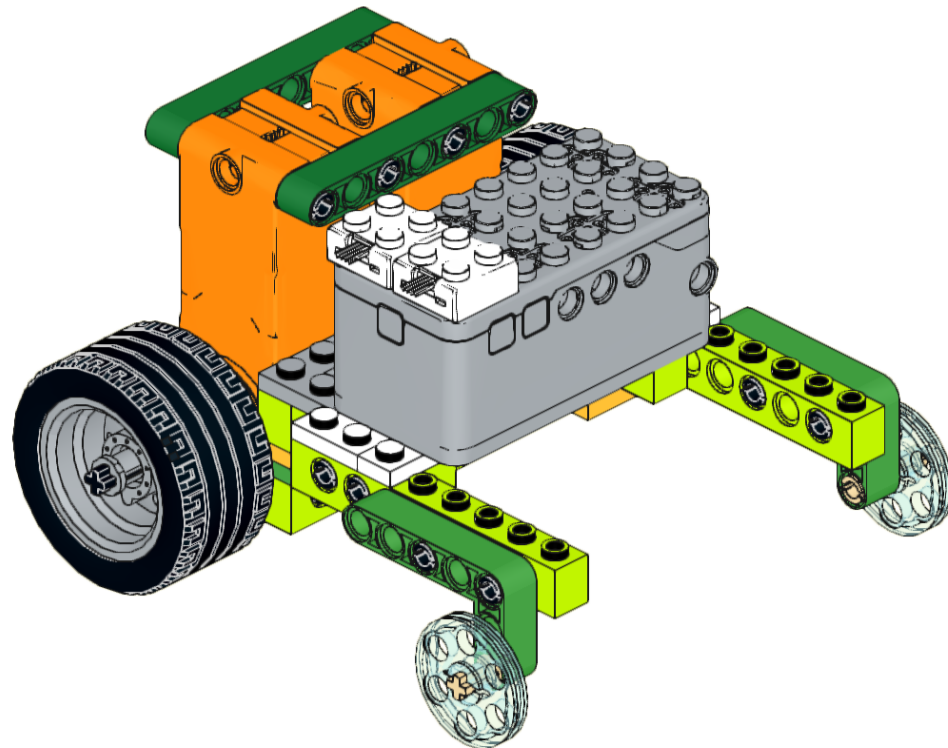
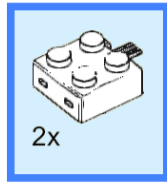
Assembly

20



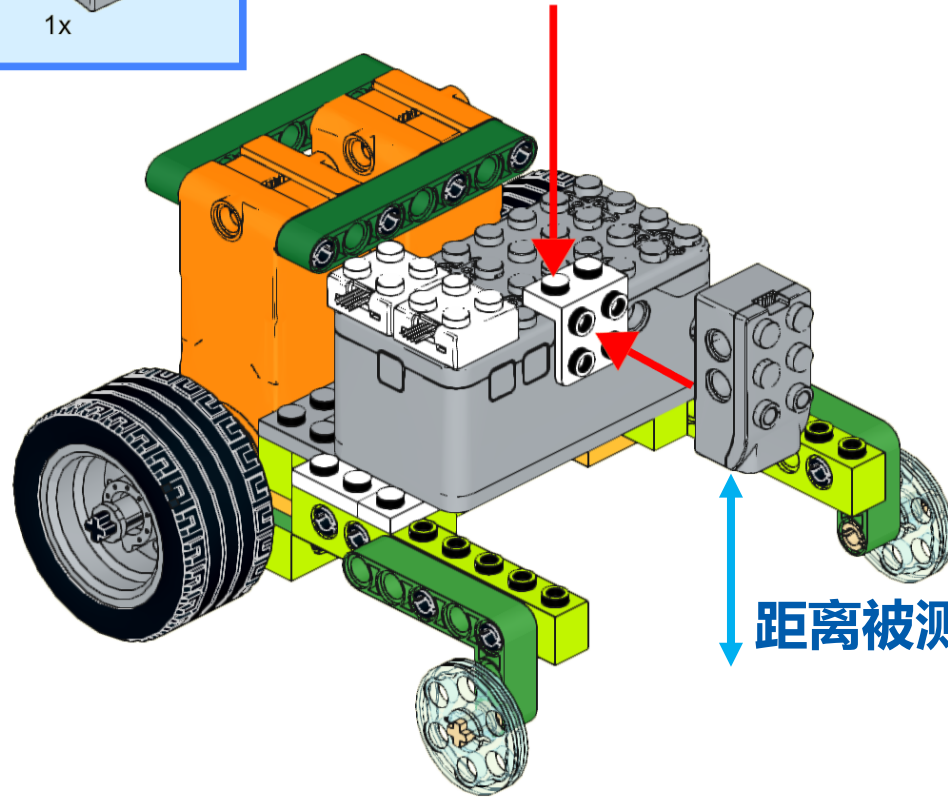
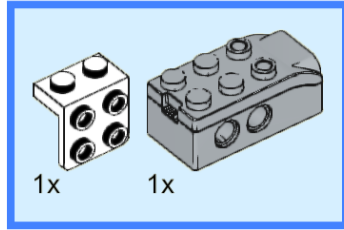
Assembly

21



Assembly

22

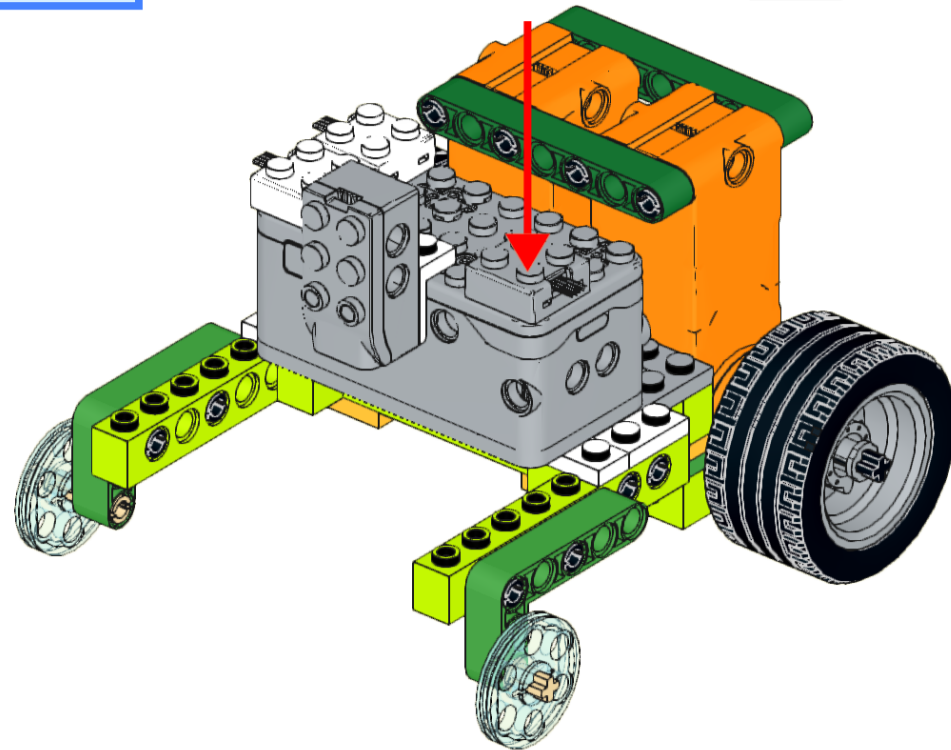
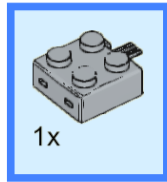


距离被测物体 4~5cm

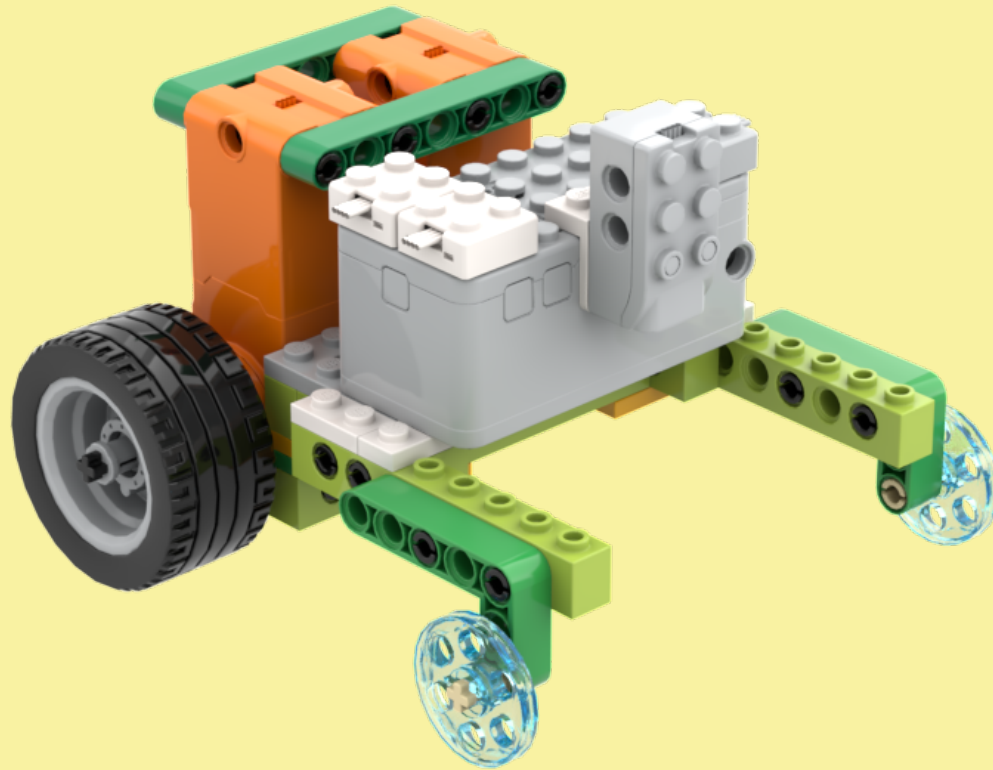


Assembly

23

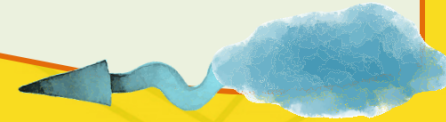


Assembly





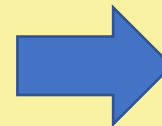
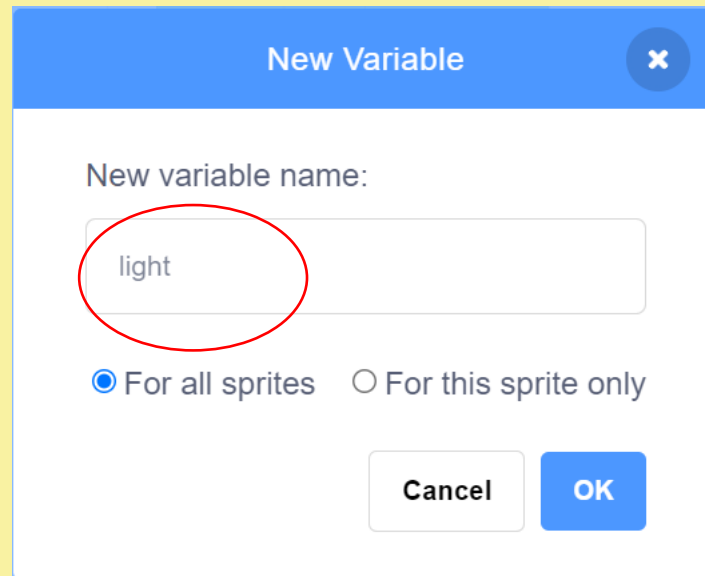
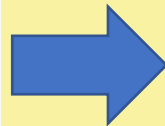
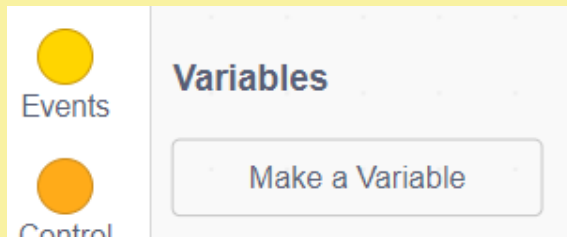
02 Task



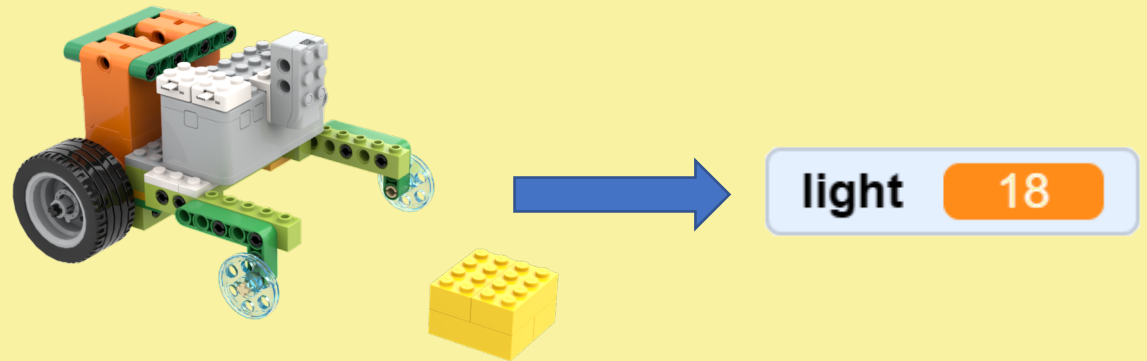
Coding Technique 1

Using Variables and Viewing Sensor Values

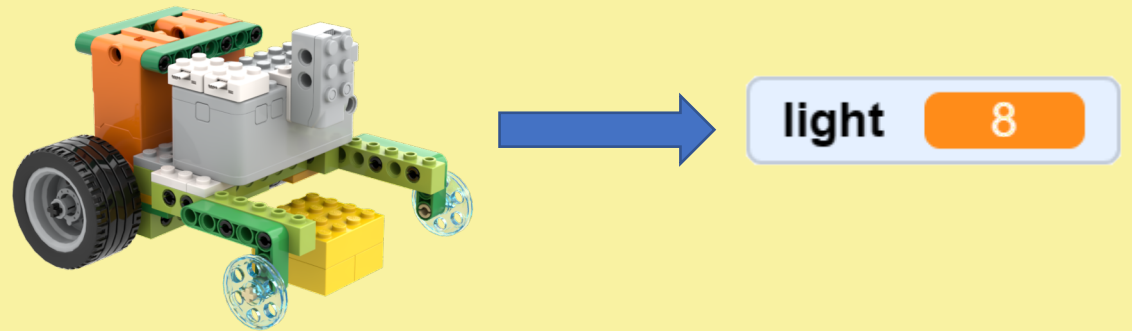
Note: Variable names should use only English letters.



Coding Technique 1



Pay close attention to the difference between detecting an item and not detecting an item.

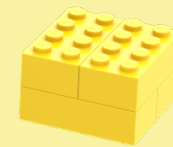
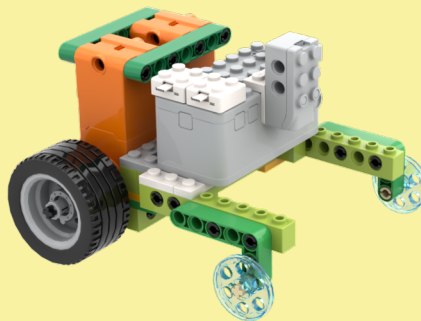


```
when clicked
  forever
    set light to 1# single channel line tracker's value
```



Task

Task 1 : Stop after retrieving the item.





Task

Referrable Program

Using the "repeat until" control block is to synchronize the display of the sensor values.

A simpler approach is to use the "wait until" control block directly.

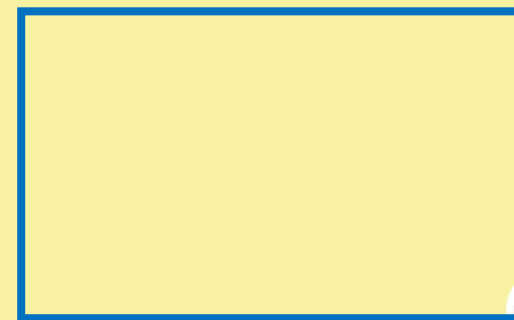
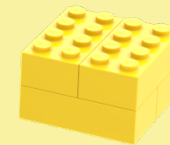
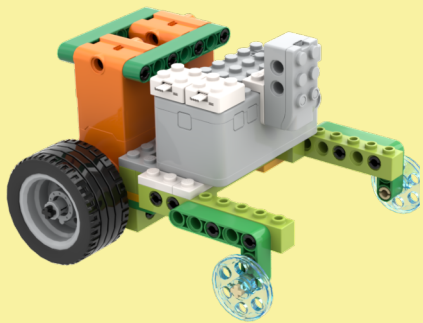
```
when clicked
  set 1# ext servo's origin
  set 2# ext servo's origin
  repeat until 2# single channel line tracker's value < 15
    set 1# ext servo to keep running at 30 (-100~100)% speed on anticlockwise
    set 2# ext servo to keep running at 30 (-100~100)% speed on clockwise
  set light to 2# single channel line tracker's value
  stop all ext motor(s)
```





Task

Task 2 : After retrieving the item, carry it to the designated location.





Task

Try to complete the subsequent actions using my module from the Lesson 4.

Referrable Program

```
define motor a b
set 1# ext servo's origin
set 2# ext servo's origin
wait 0.1 seconds
set 1# ext servo to rotate relative angle a degrees at 30 (0~100)% speed
set 2# ext servo to rotate relative angle b degrees at 30 (0~100)% speed
wait until is 1# ext servo done
wait until is 2# ext servo done
```

```
when clicked
set 1# ext servo's origin
set 2# ext servo's origin
repeat until 2# single channel line tracker's value < 15
set 1# ext servo to keep running at 30 (-100~100)% speed on anticlockwise
set 2# ext servo to keep running at 30 (-100~100)% speed on clockwise
set light to 2# single channel line tracker's value
stop all ext motor(s)
wait 0.3 seconds
motor 210 210
motor -500 500
```



Additional Task

Adjust the sensor to face directly forward, detect obstacles, and try to stop or maneuver around them.

