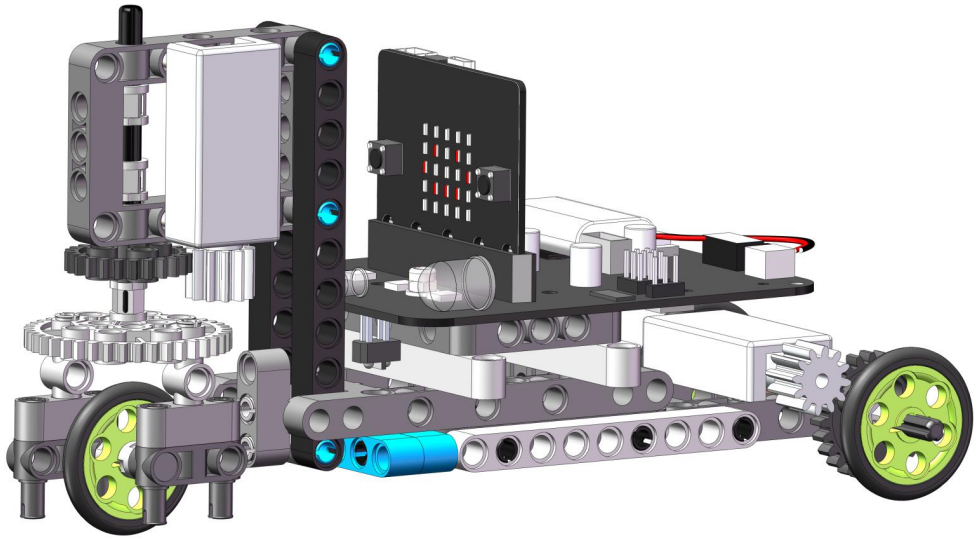
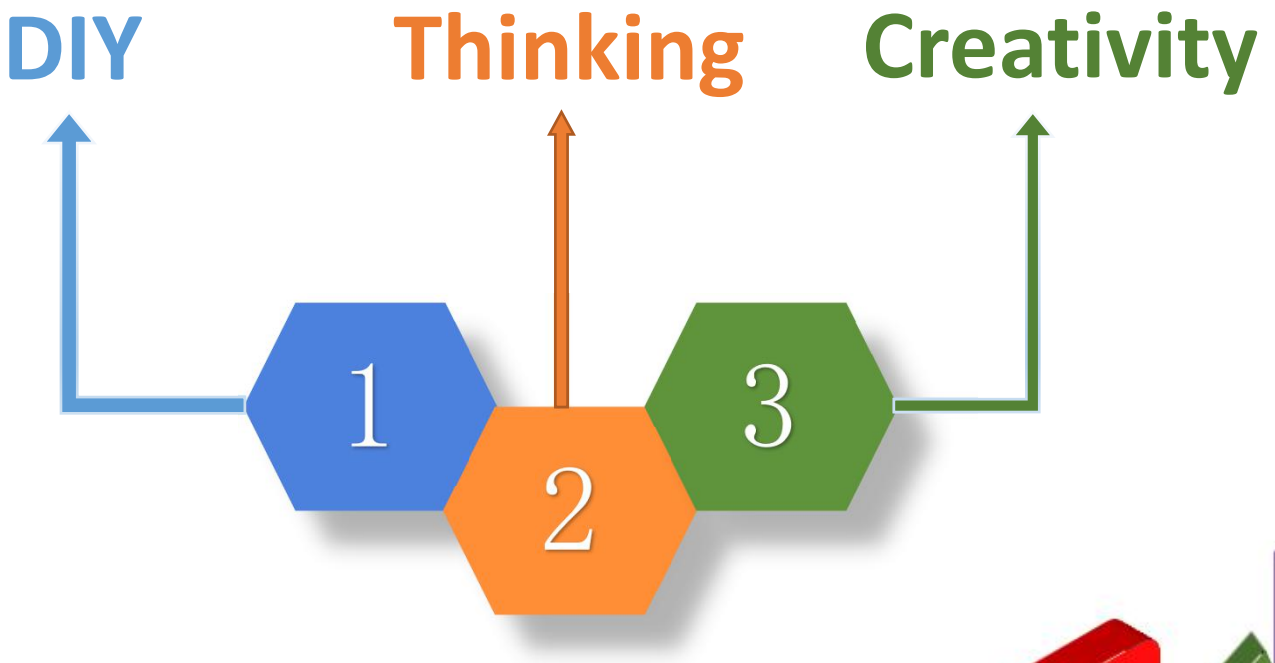
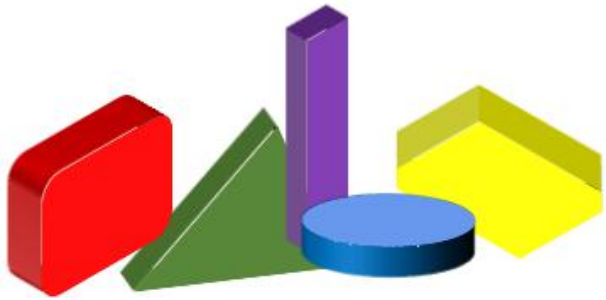
Yahboom Building:bit blocks

No.5 Independent steer car

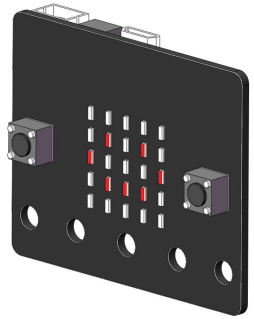
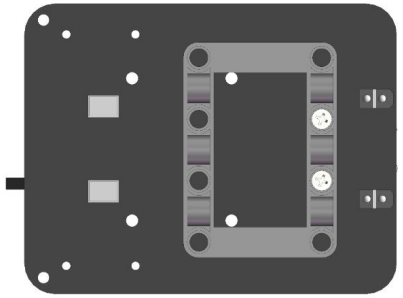
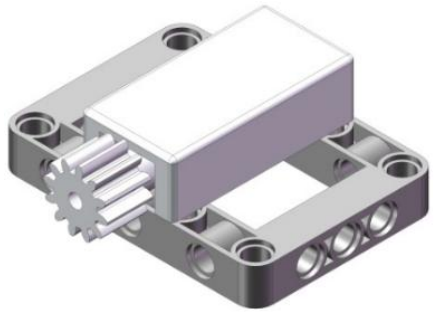
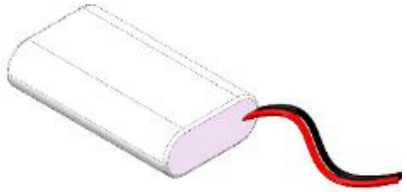
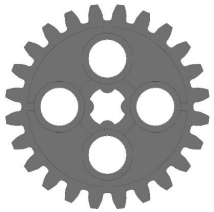
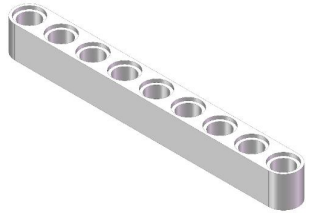
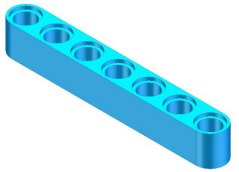


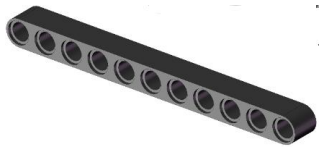
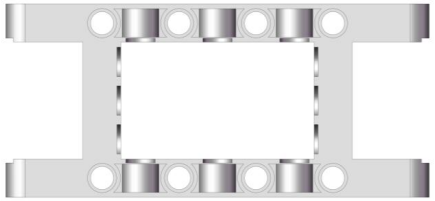

DIY
Thinking
Creativity
1
2
3



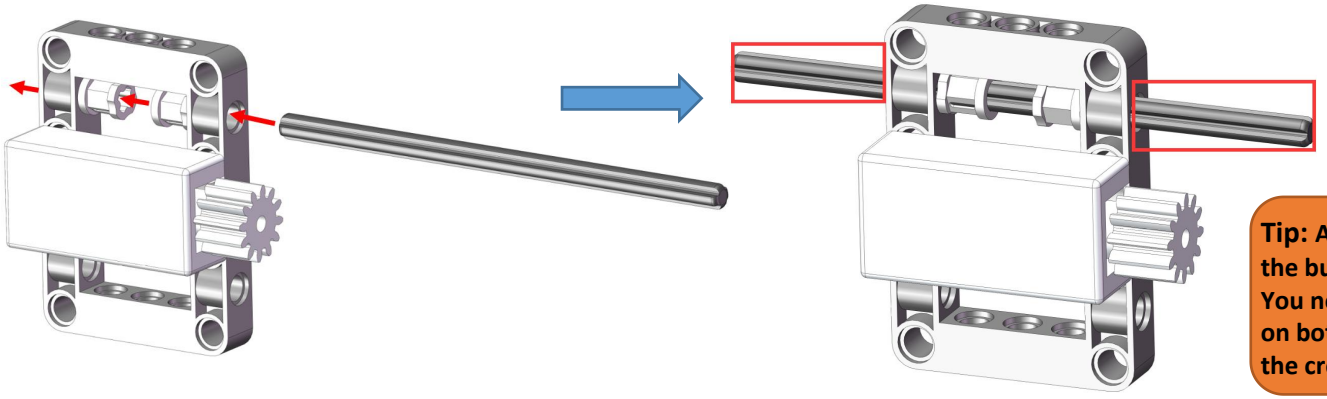
DIY: This part is mainly to teach you to assemble independent steer car with building blocks.

Prepare the following blocks and we will assemble a building block independent steer car.

 Micro:bit*1	 Micro:bit expansion board*1	 Motor module*2	 5x7 beam frame*3	 40 toothed wheel *1
 1x4 Shaft cutoff *1	 Battery*1	 24 toothed wheel*2	 1x9 hole arm*4	 1x3 hole arm*3
 Bushing*8	 1x3 Bolt connector *4	 1x2 Frictional pin*16	 3x3 Bolt connector*2	 1x7 hole arm*2

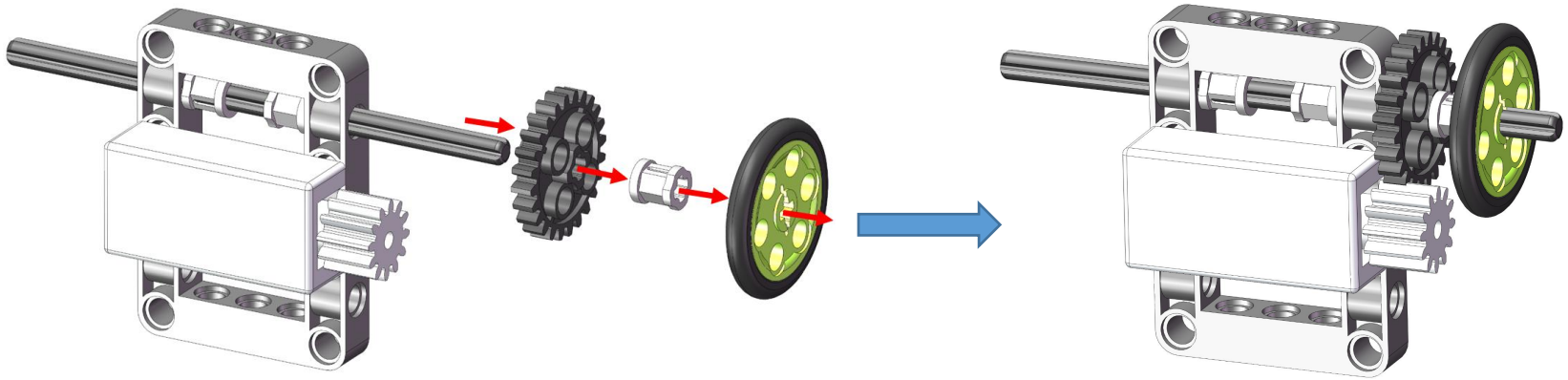
 1x11 hole arm*2	 1x3 Shaft*8	 5x11 beam frame*1	 1x12 Cross Axle*1	 Rubber ring+24 pulley *3
 1x8 Cross Axle*1	 1/2 Bushing *2			

Step 1: Find a motor module, two bushings and a 1x12 cross shaft to install it.

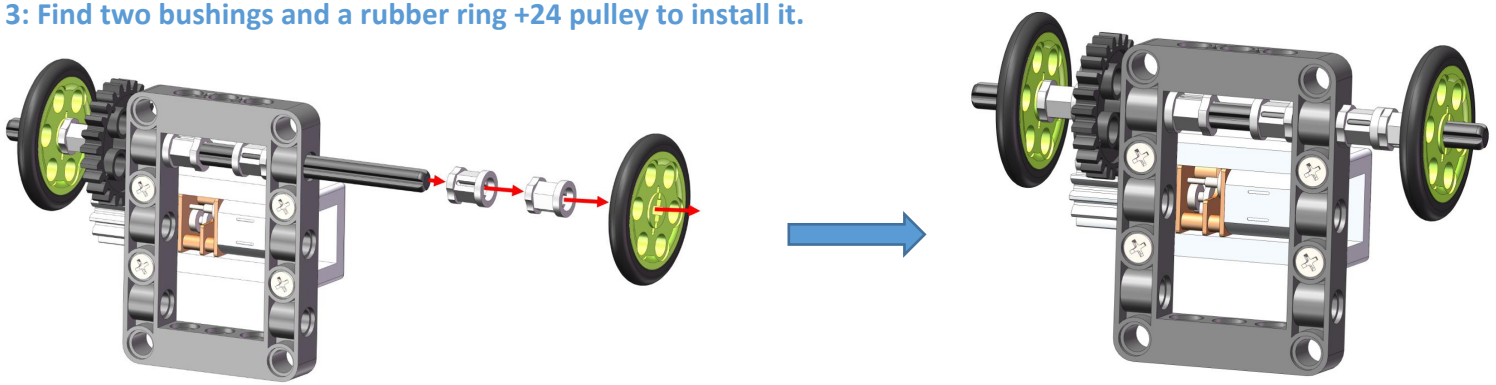


Tip: After 1 x12 cross shaft through the bushing and motor module, You need to leave the same length on both the left and right sides of the cross shaft.

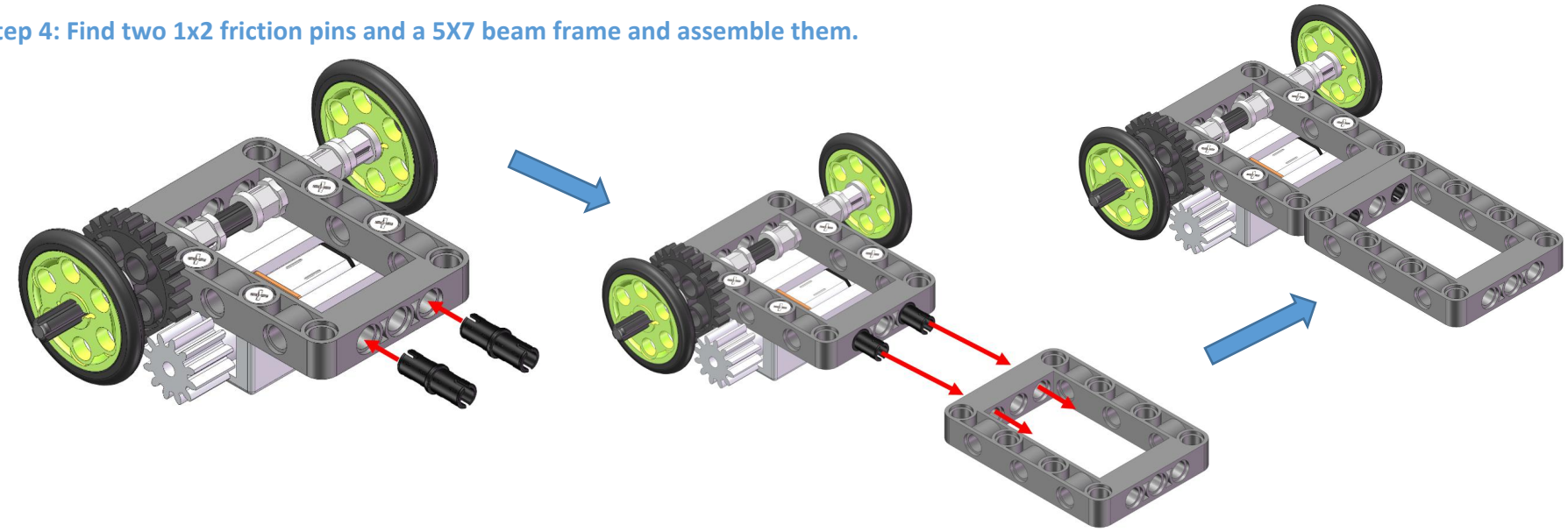
Step 2: Find a rubber ring +24 pulley, a bushing and a 24-toothed wheel to install them.



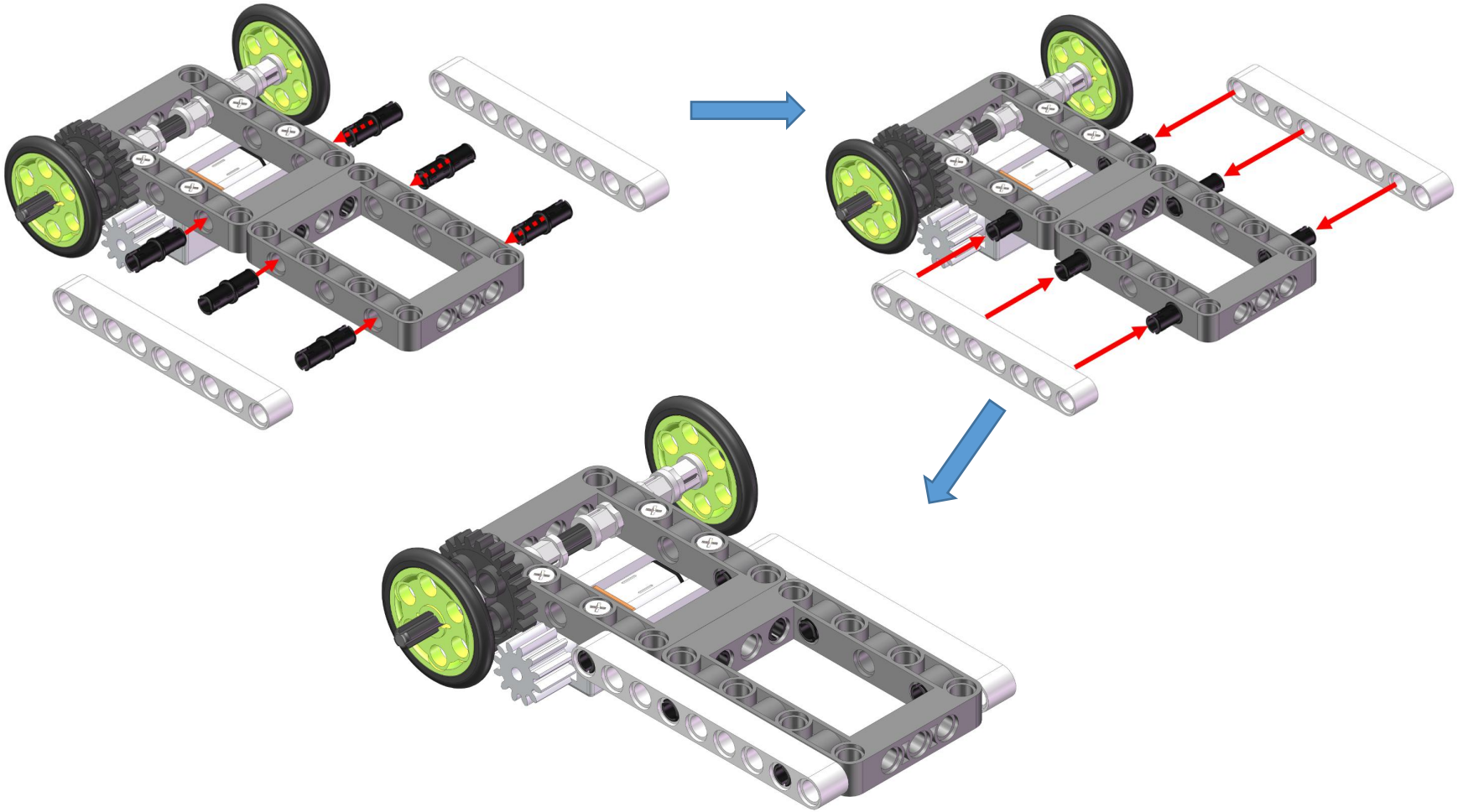
Step 3: Find two bushings and a rubber ring +24 pulley to install it.



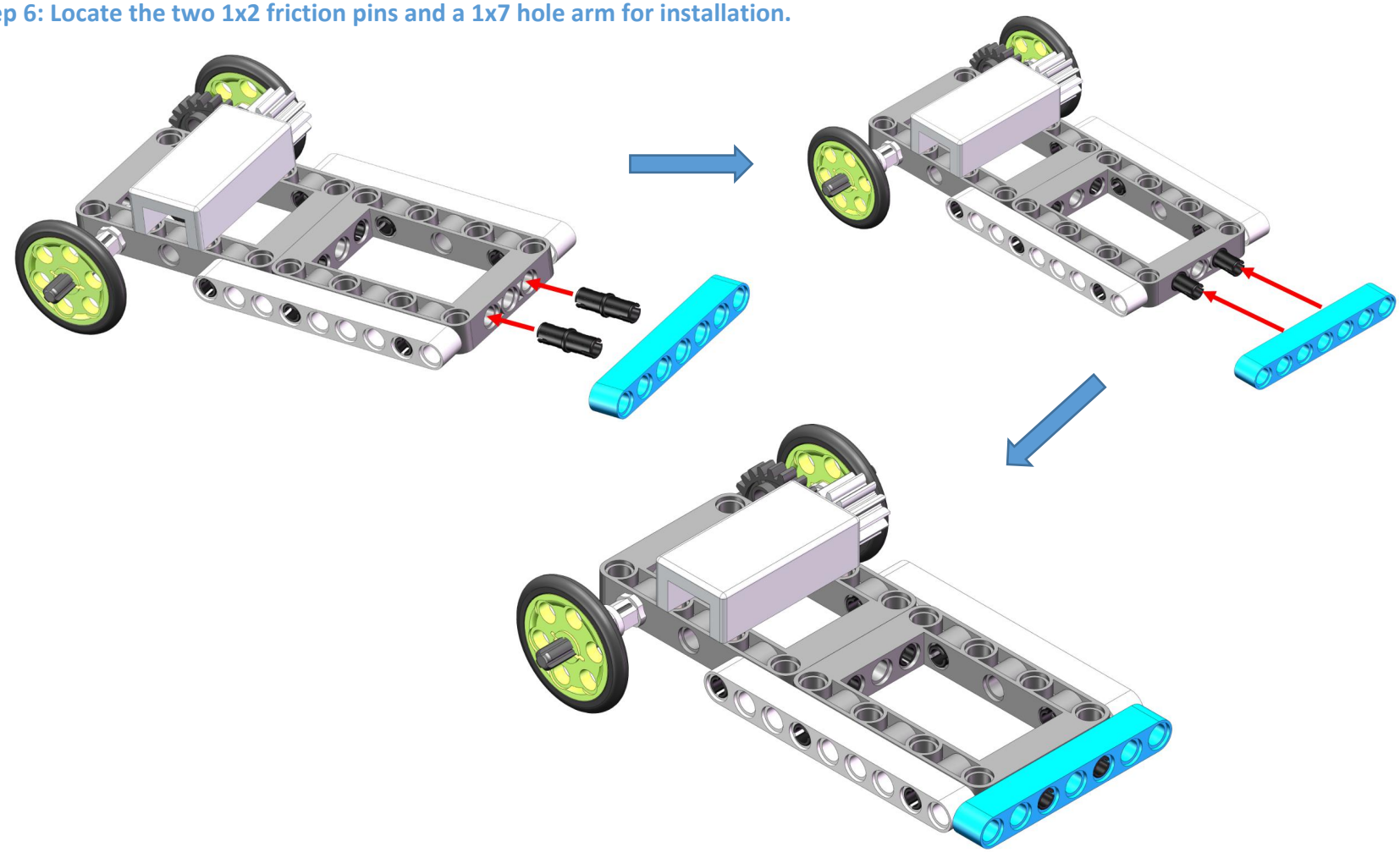
Step 4: Find two 1x2 friction pins and a 5X7 beam frame and assemble them.



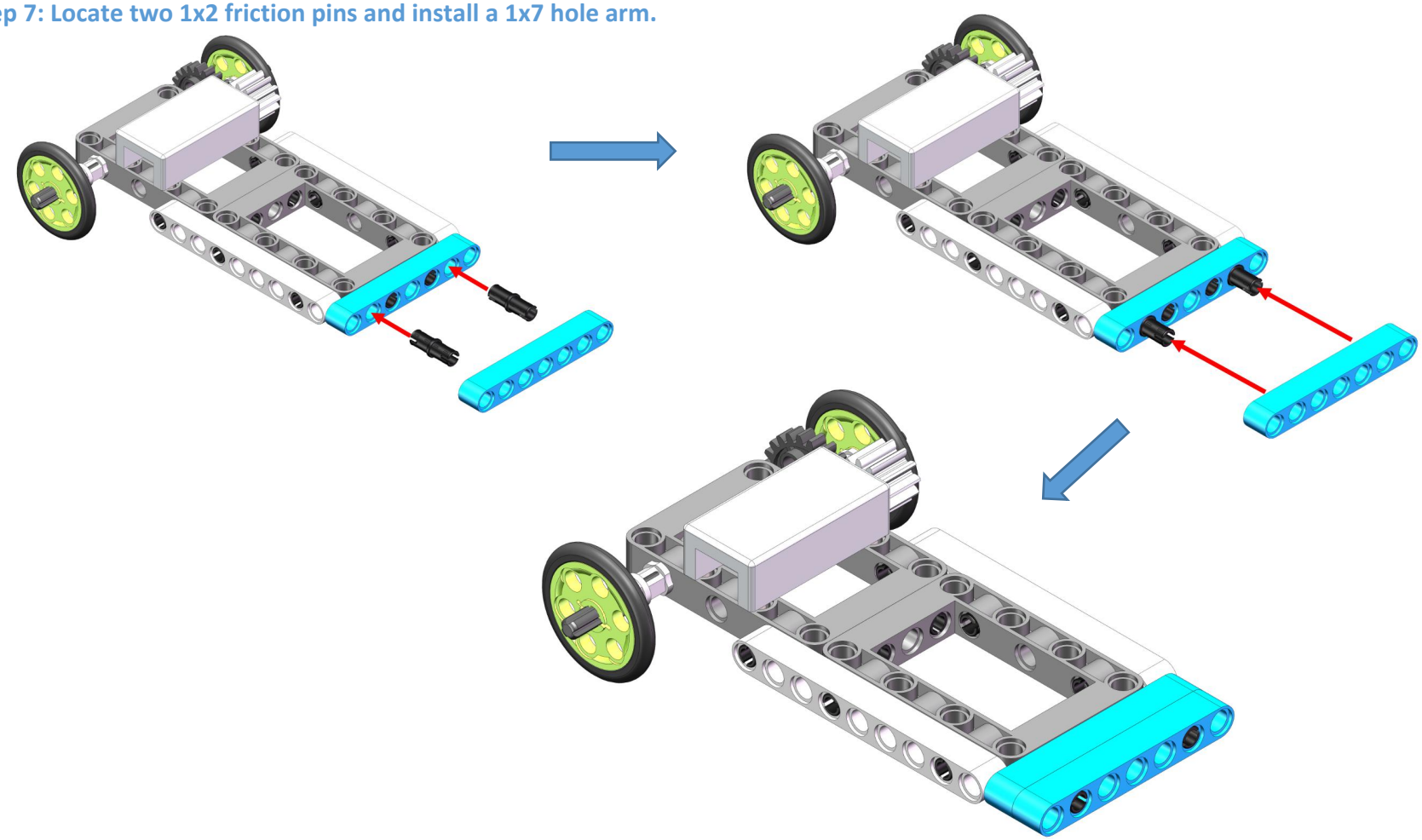
Step 5: Locate two 1x9 hole arms and six 1x2 friction pins for assembly.



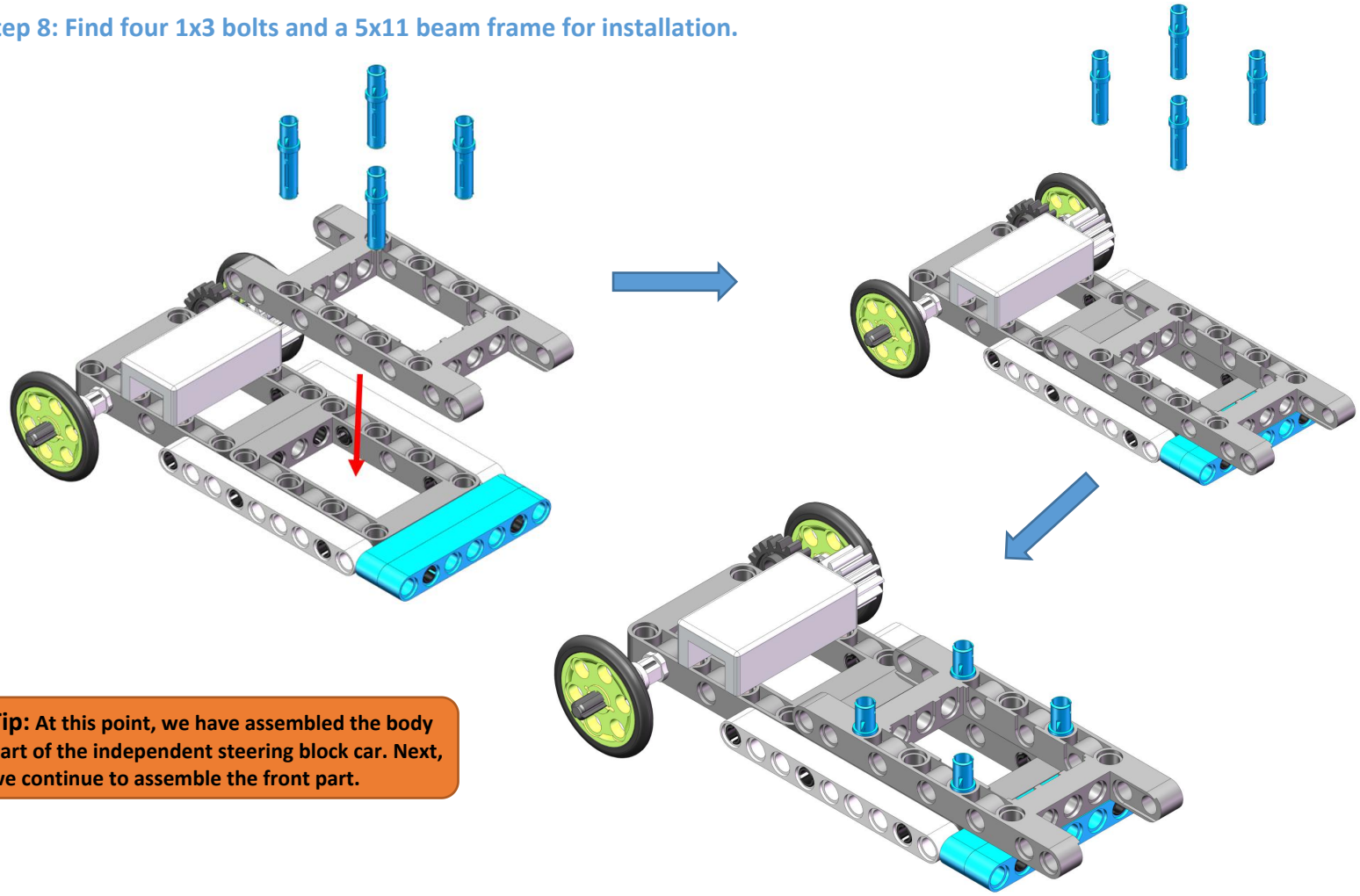
Step 6: Locate the two 1x2 friction pins and a 1x7 hole arm for installation.



Step 7: Locate two 1x2 friction pins and install a 1x7 hole arm.

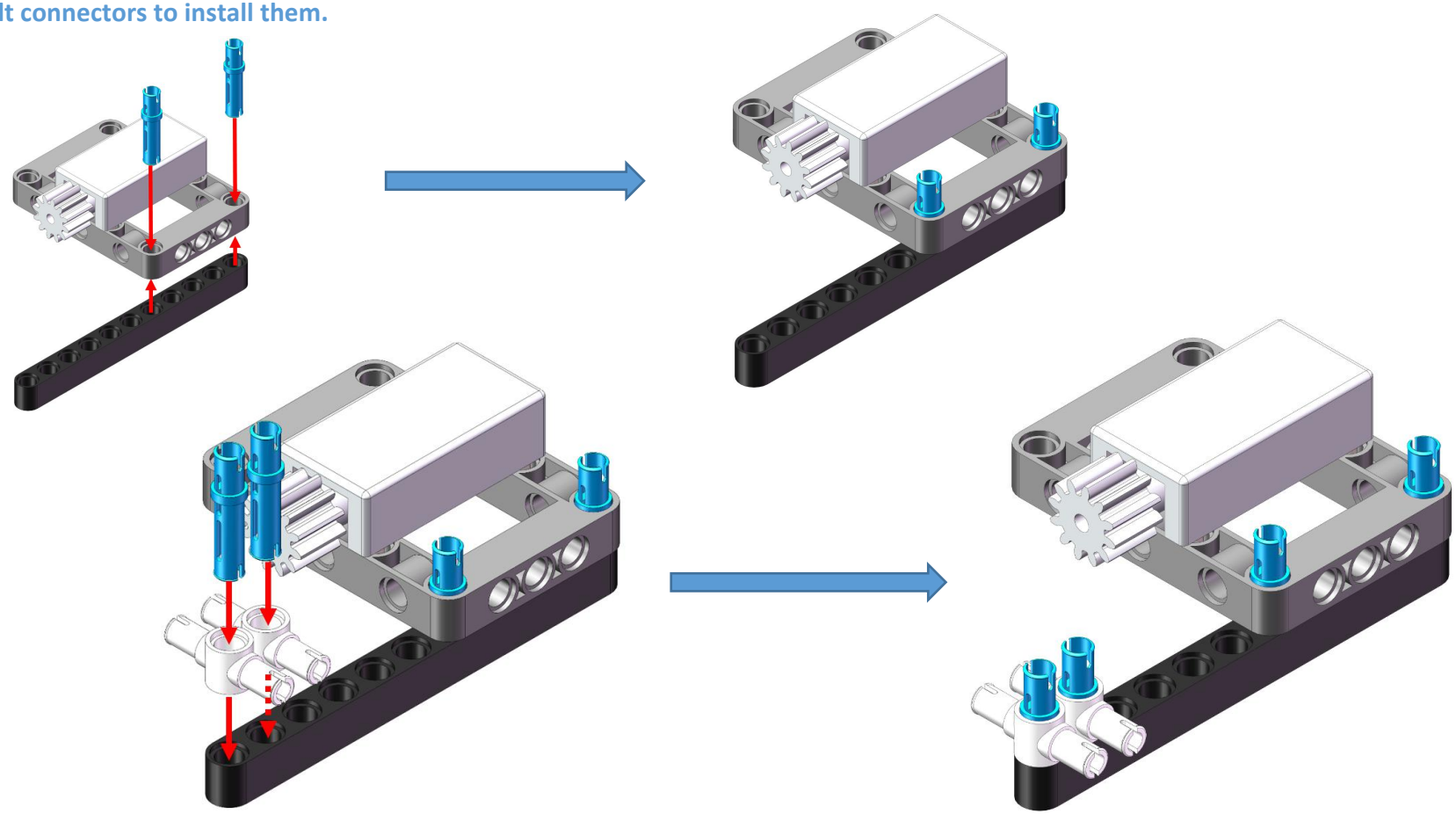


Step 8: Find four 1x3 bolts and a 5x11 beam frame for installation.

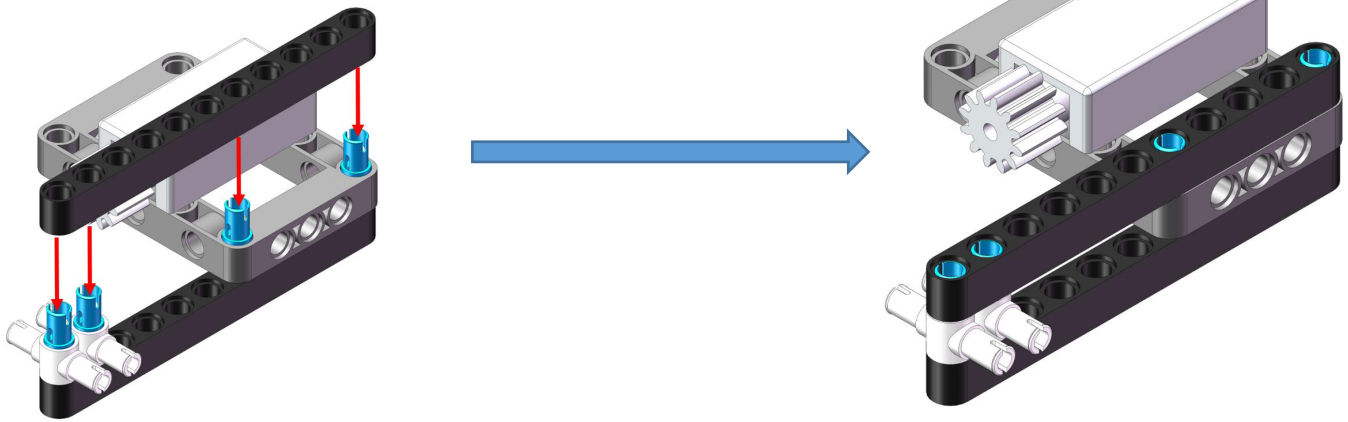


Tip: At this point, we have assembled the body part of the independent steering block car. Next, we continue to assemble the front part.

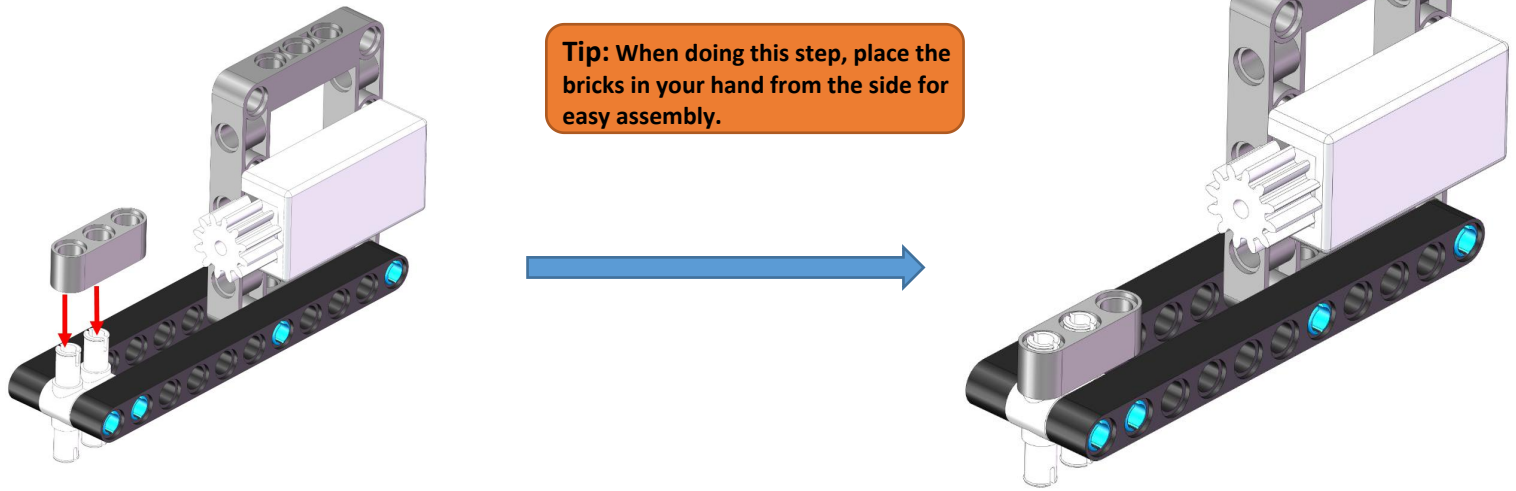
Step 9: We started assembling the front part of the car and found another motor module, four 1x3 bolts, one 1x11 hole arm, and two 1x3 bolt connectors to install them.



Step 10: Find a 1x11 hole arm to install it.

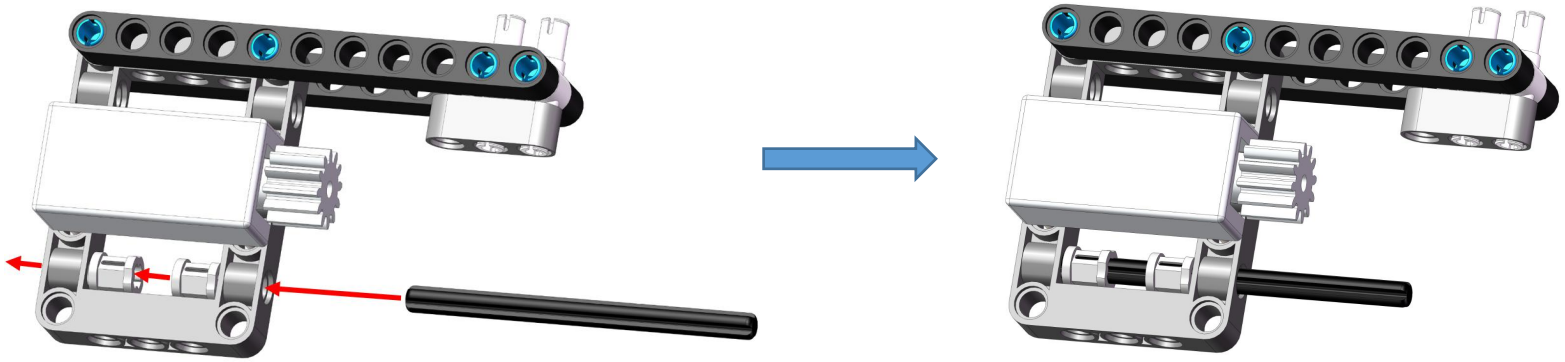


Step 11: Find a 1x3 hole arm to install it.

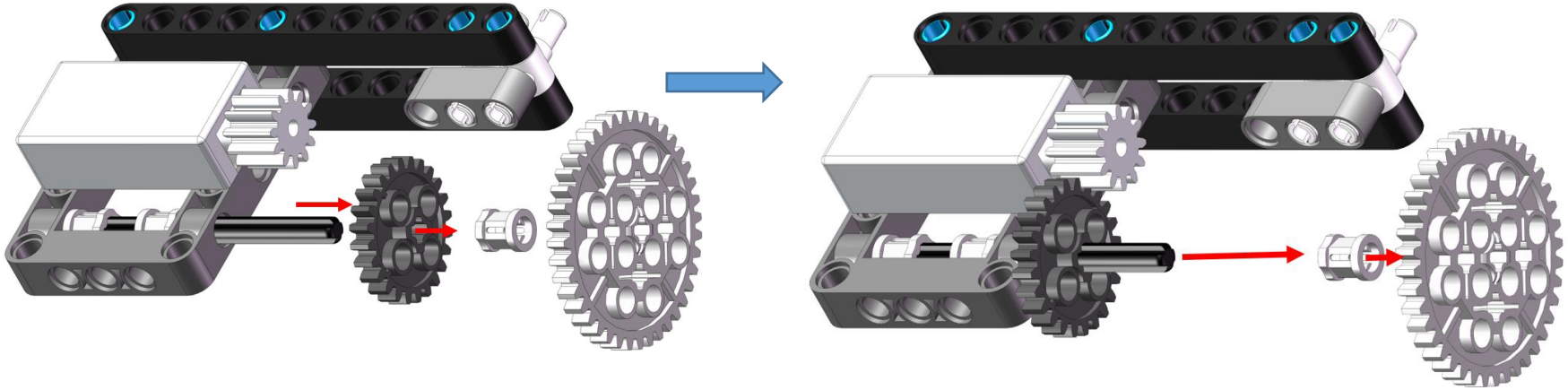


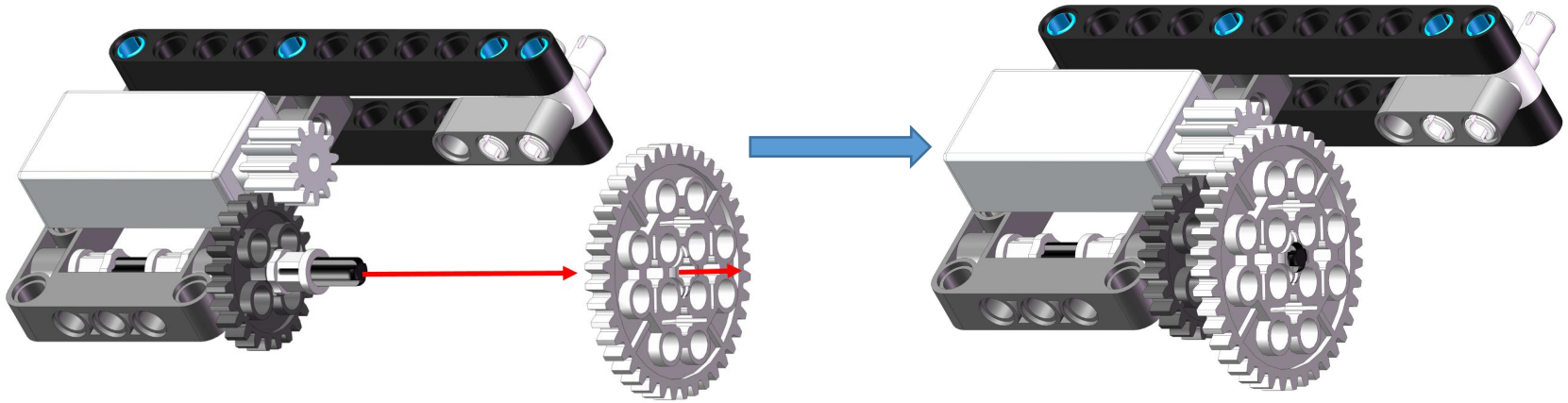
Tip: When doing this step, place the bricks in your hand from the side for easy assembly.

Step 12: Find a 1x8 cross and two bushings to install it.

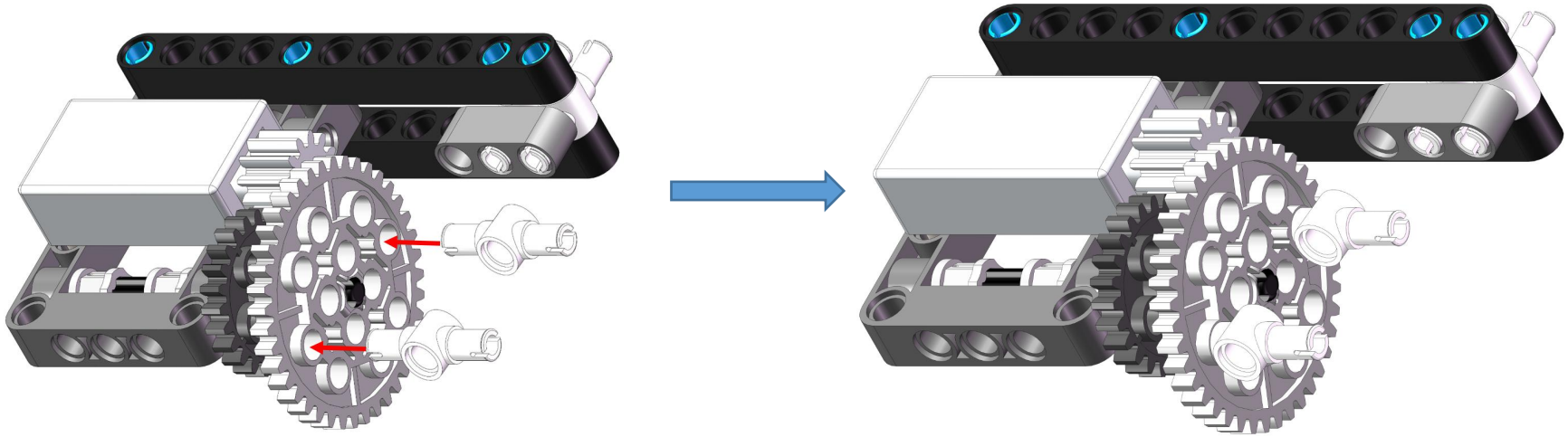


Step 13: Find a 24-toothed wheel, a bushing, a 40 toothed wheel, and insert the assembled 1x8 cross shaft into the 24 toothed wheel, the bushing and the center hole of the 40 toothed wheel.



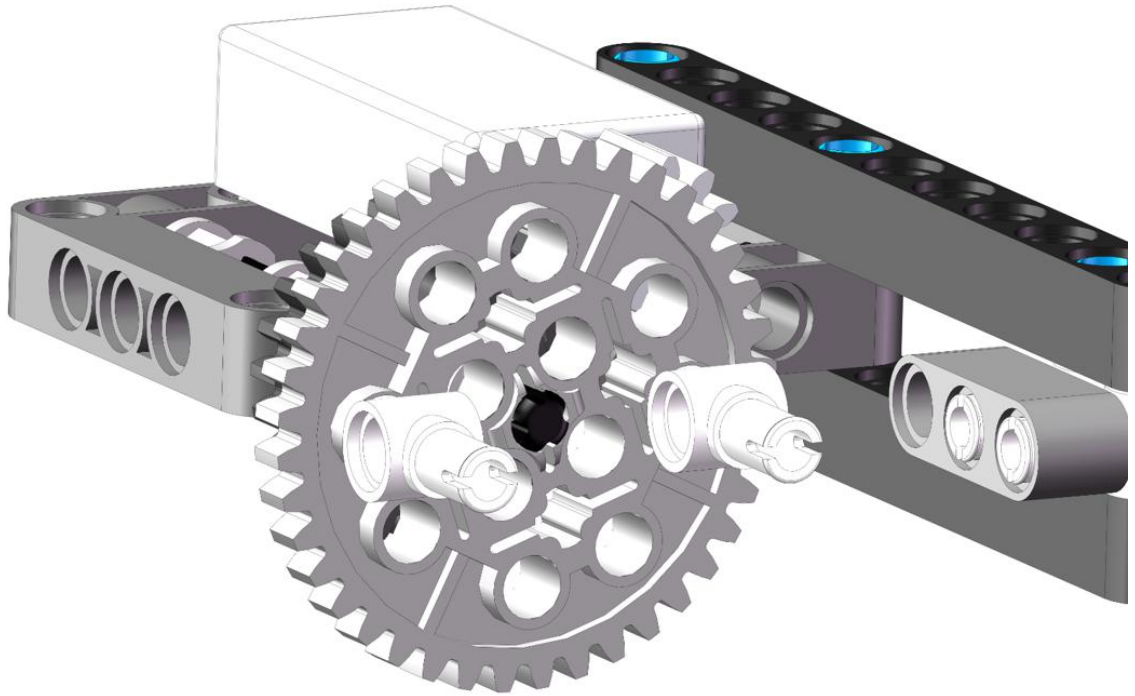


Step 14: Locate the two 1x3 bolt connectors and insert them into the corresponding holes of the 40 toothed wheel.

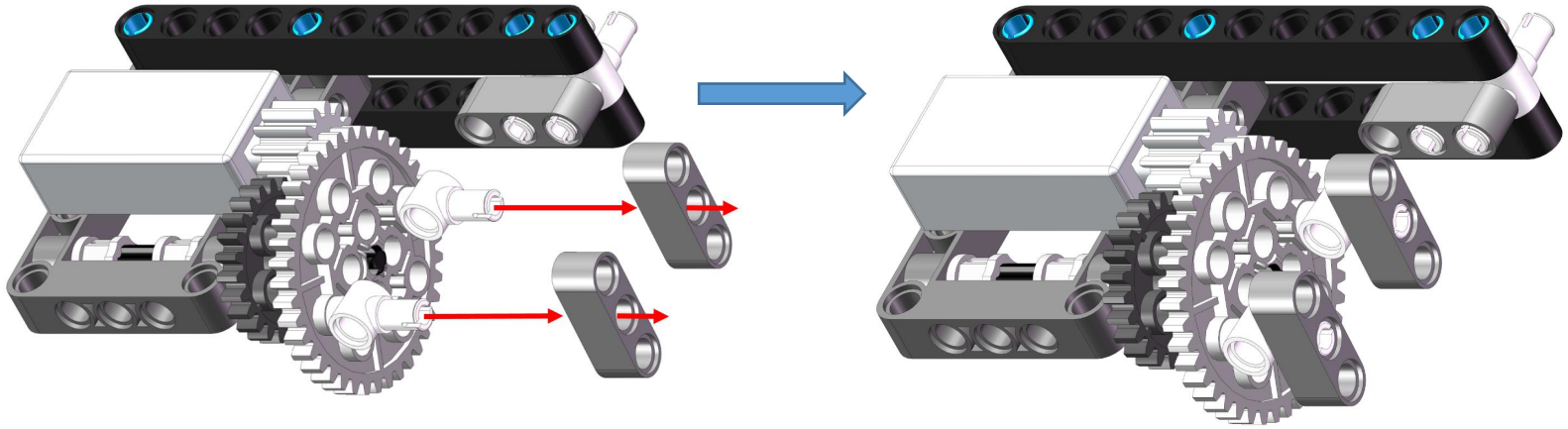


LOOK!

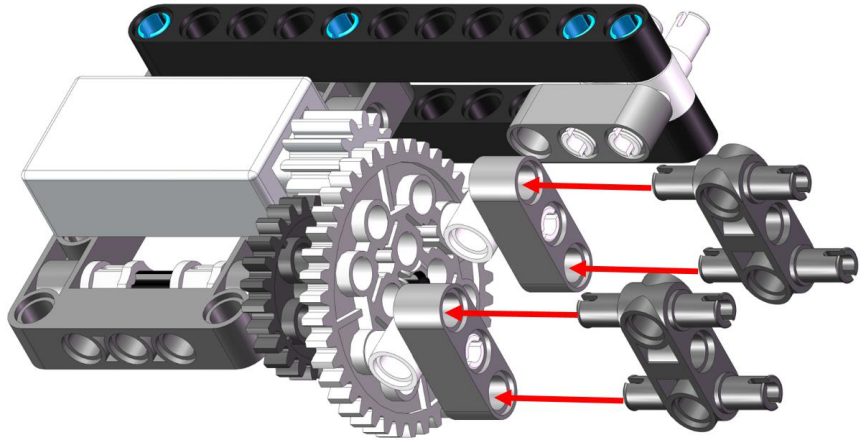
In order to ensure that the steering part of the car can be used normally after the gear is installed, we need to ensure that the two 1x3 bolt connectors are symmetrical when installing.
Please follow the picture below to install.



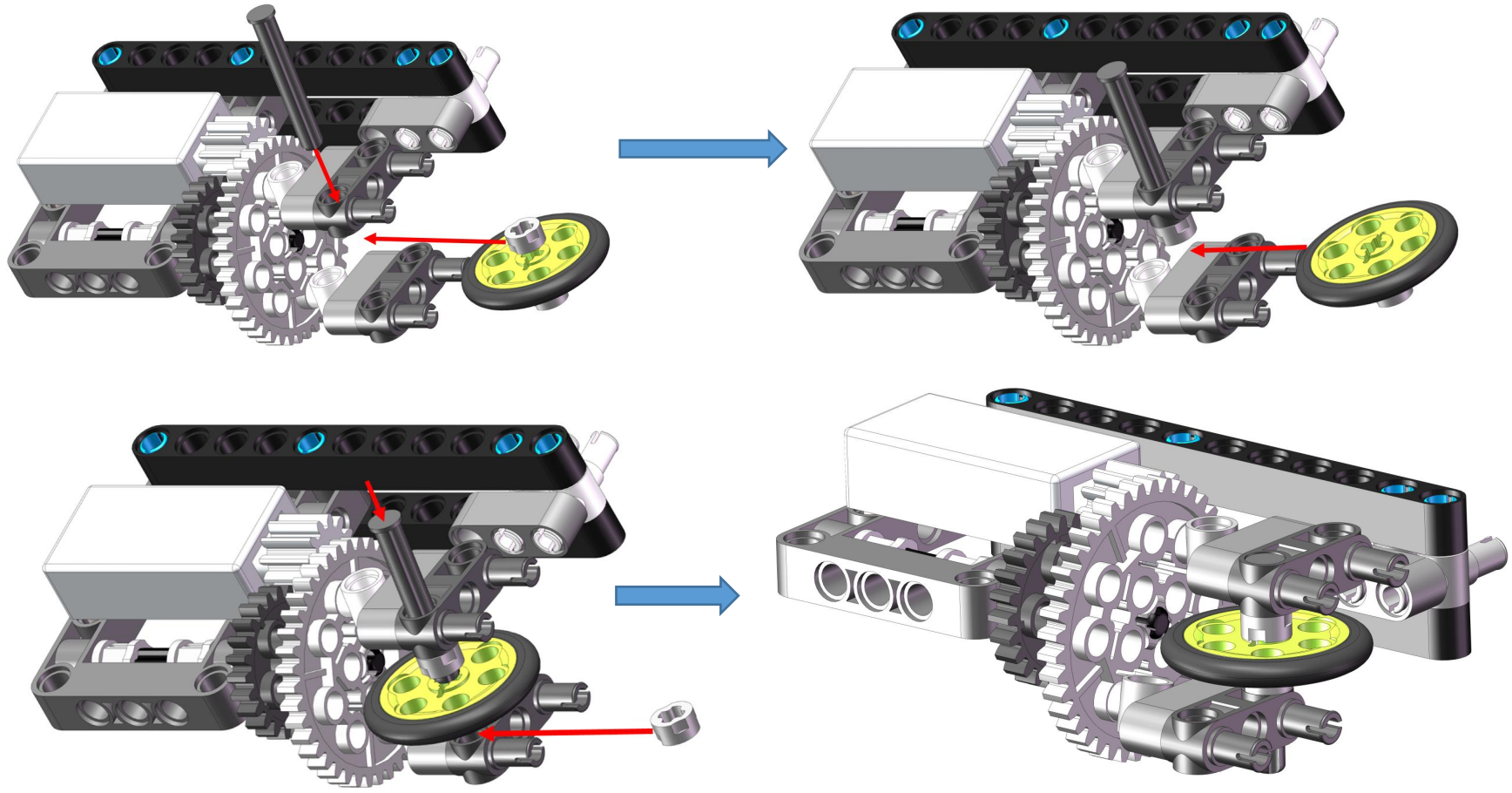
Step 15: Locate the two 1x3 hole arms and assemble them.



Step 16: Find the two 3x3 bolt connections and insert them into the two 1x3 hole arms.

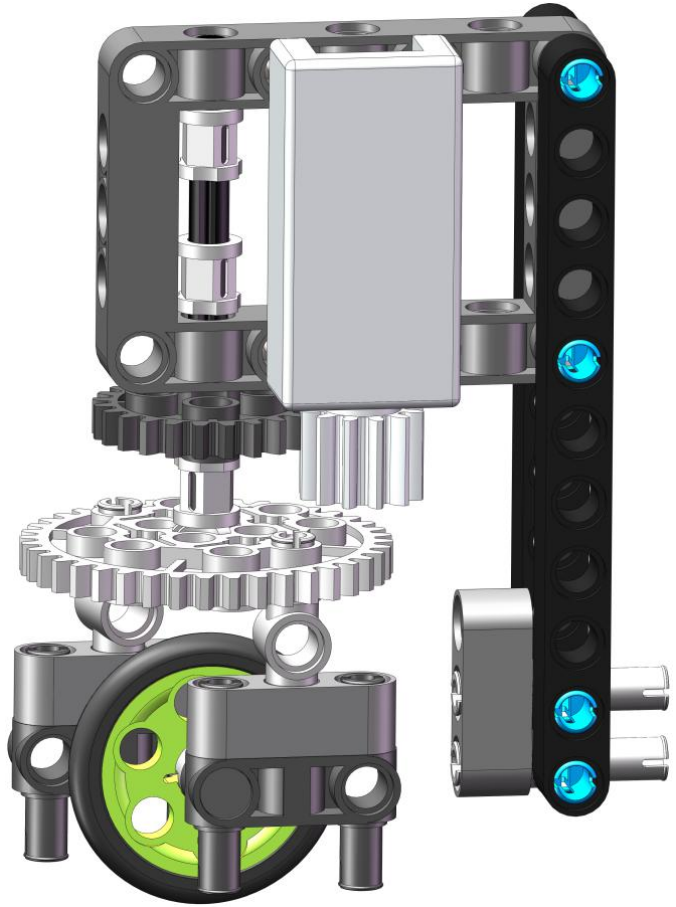


Step 17: Place the two 1/2 bushings on both sides of the rubber ring +24 pulley, then place them together between the two 3x3 bolt connections and insert the 1*4 shaft cutoff from the middle hole.



After the independent steering wheel of the car is installed, as shown in the figure below.

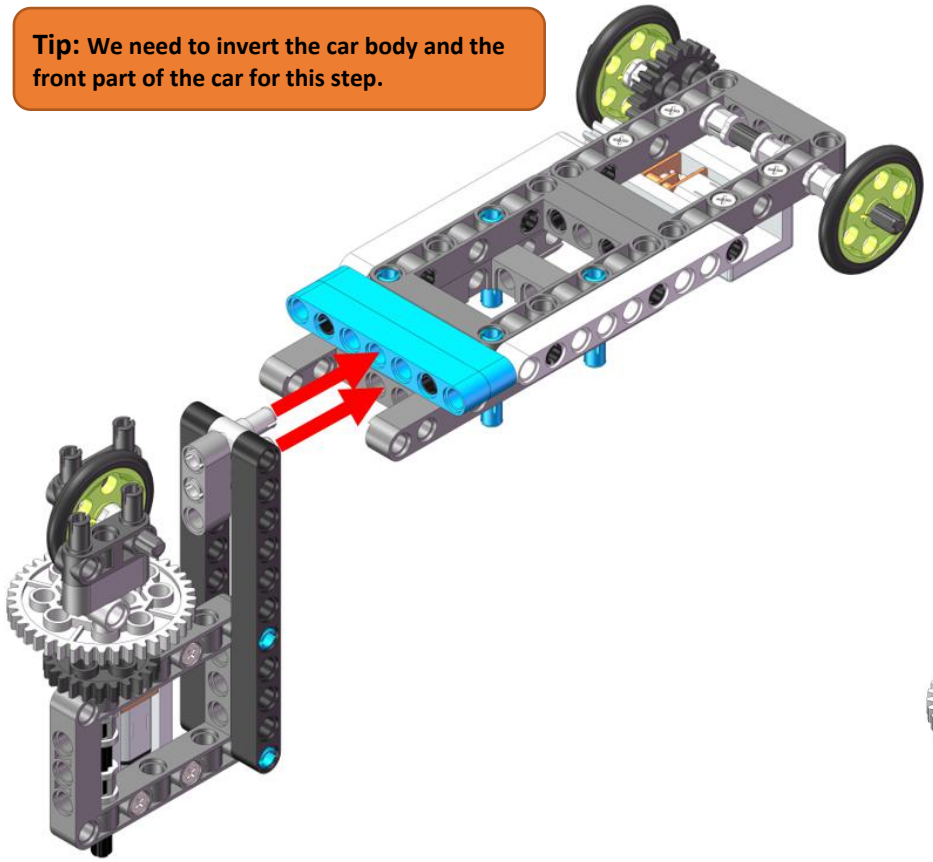
Tip: After the installation is complete, please take a closer look at whether your independent steering car is the same as the picture.

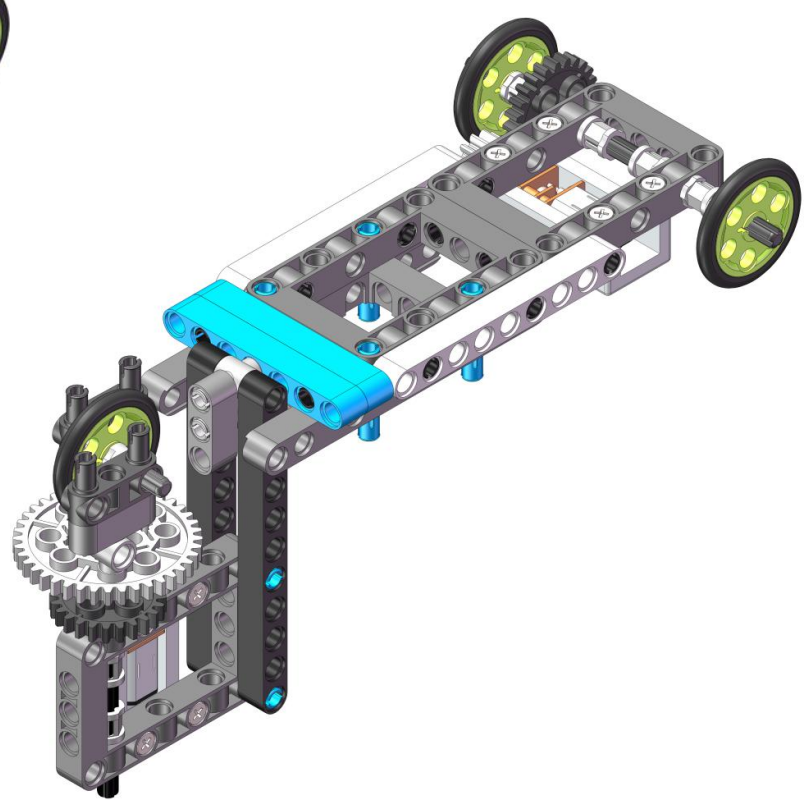


Tip: Note that the 1x4 shaft with the cut-off inserted on both sides of the two 3x3 bolts is asymmetrical.

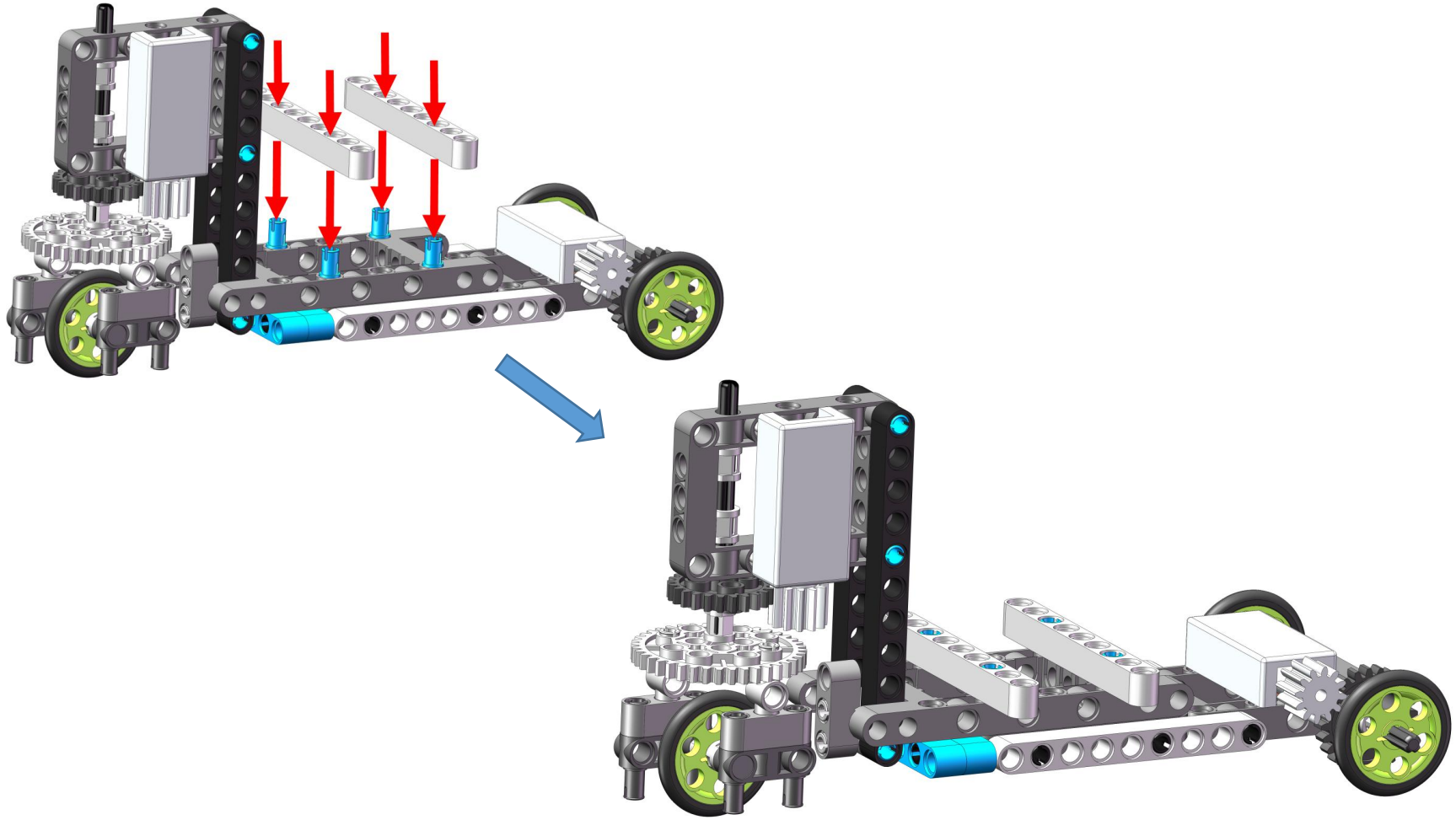
Step 18: Combine the part of the car that we assembled in step 18 with the part of the car that was assembled in step 17.

Tip: We need to invert the car body and the front part of the car for this step.

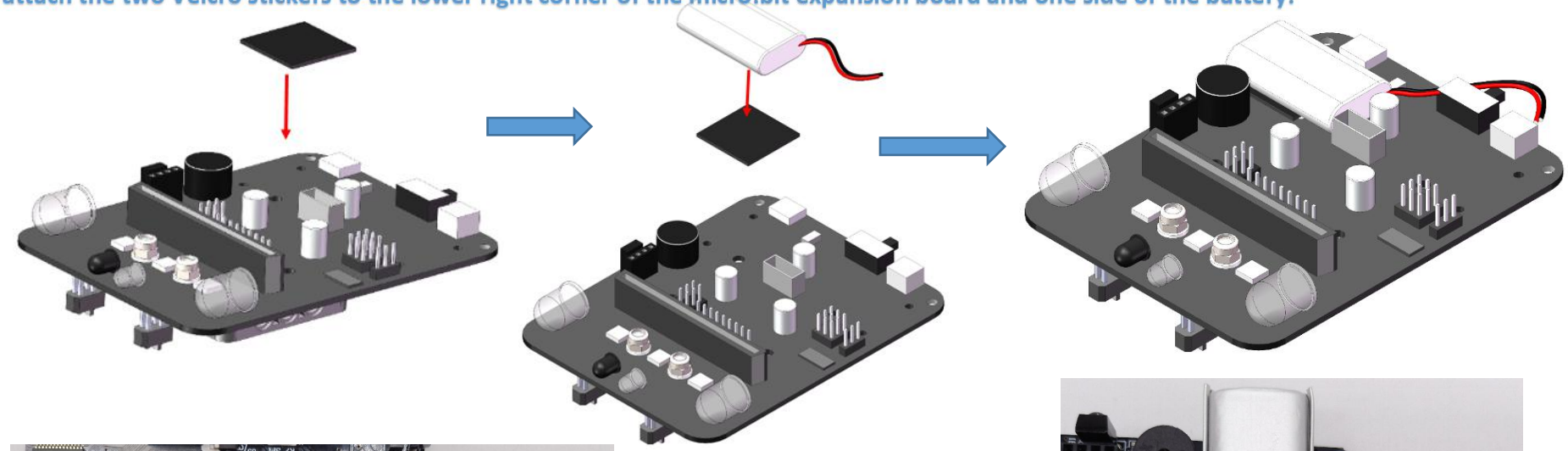


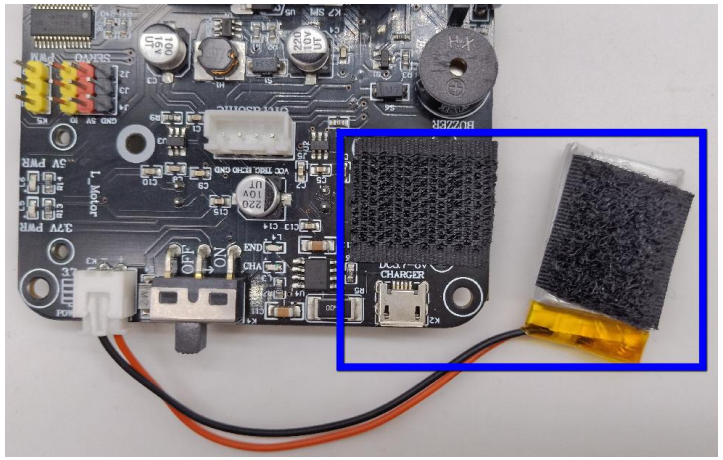


Step 19: We need to find two 1x9 hole arms and mount them on the four assembled 1x3 pins.

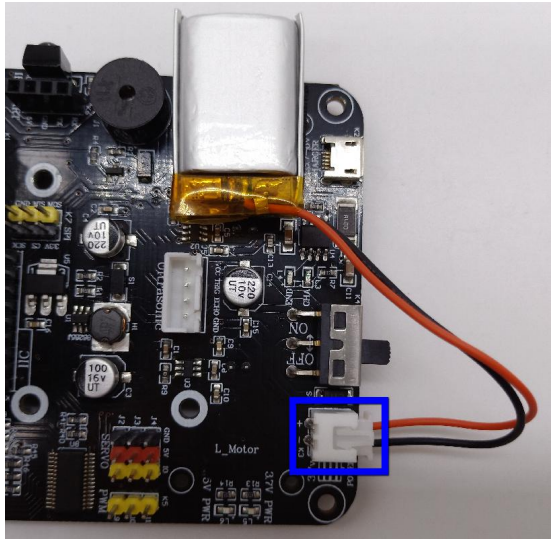


Step 20: Find the Velcro and micro:bit expansion board, remove the protective film on the back of the Velcro, and attach the two Velcro stickers to the lower right corner of the micro:bit expansion board and one side of the battery.

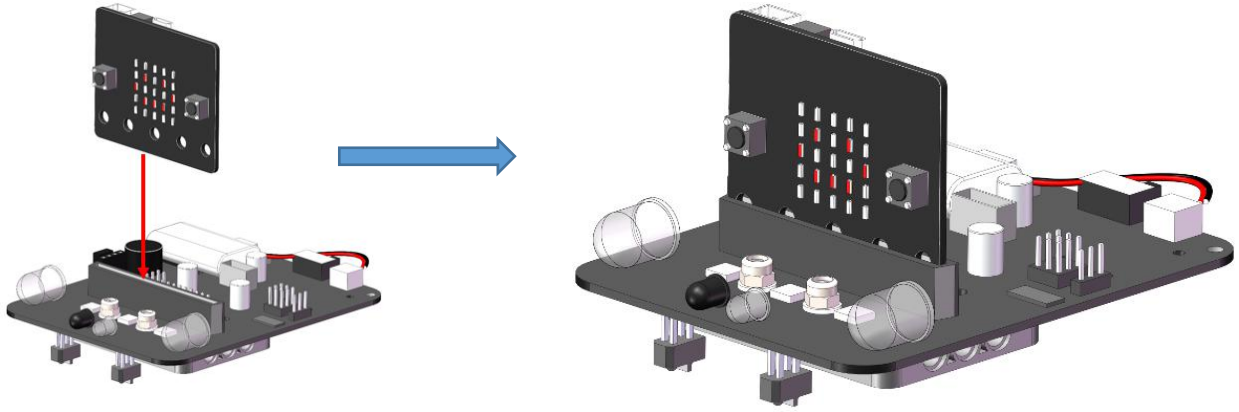




Tip: The socket for battery wiring, we use anti-reverse design. Just plug the battery cable into the socket.

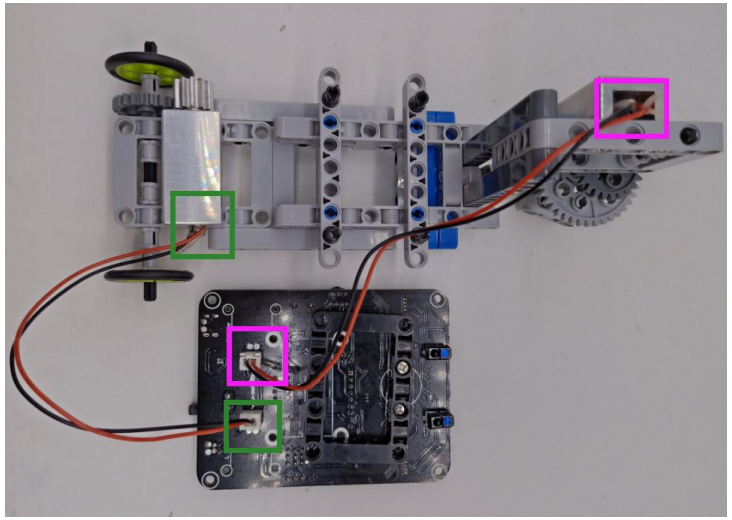


Step 21: Find the micro:bit and insert it correctly into the micro:bit expansion board.

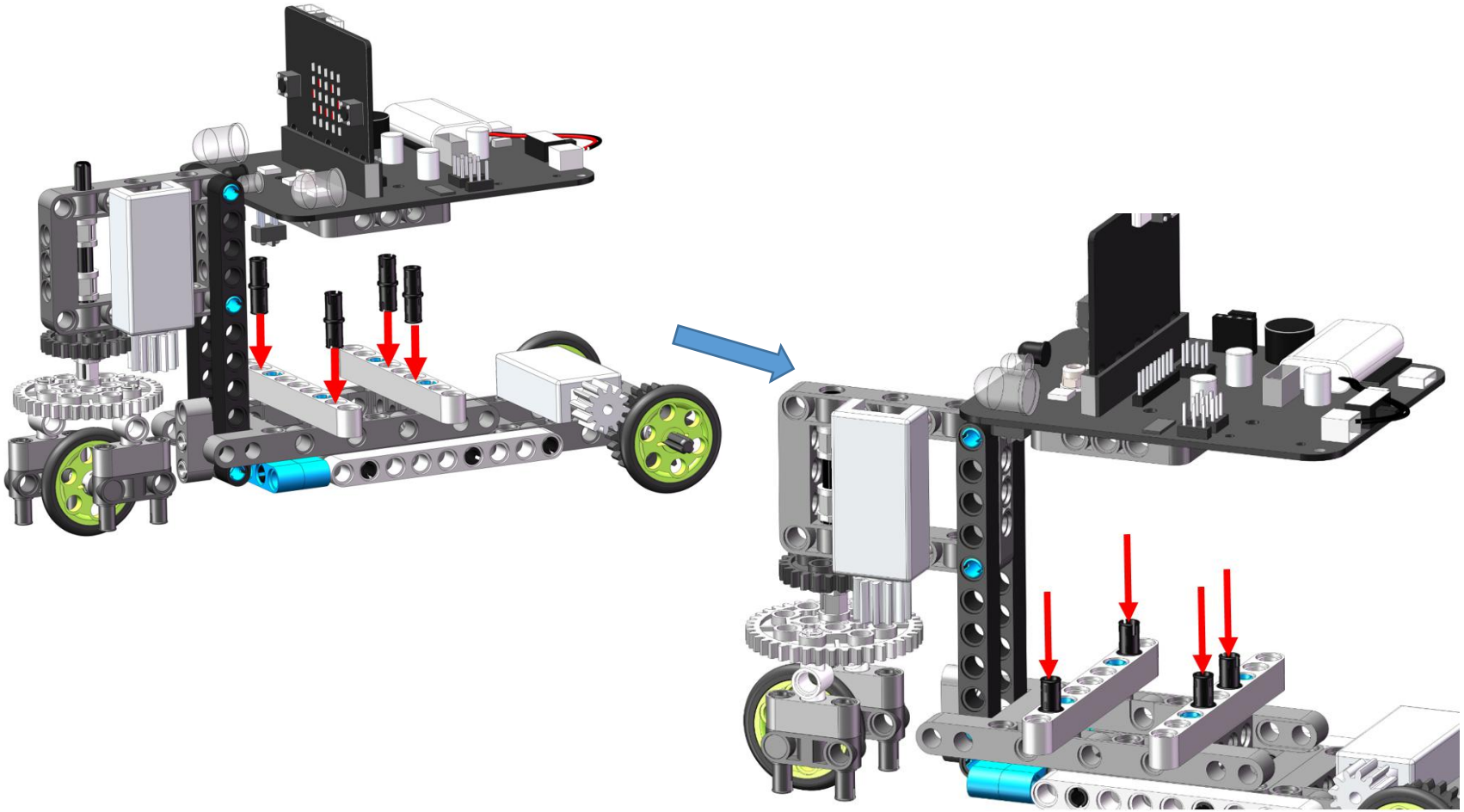


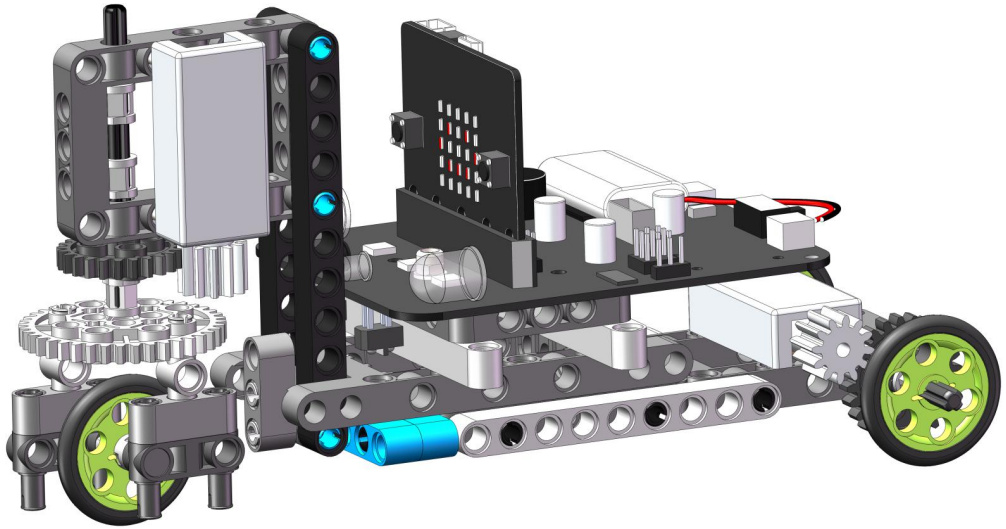
Tip: The micro:bit board is equivalent to the "brain" of the car, so be sure to remember to install it properly. In this case, the car can work normally.

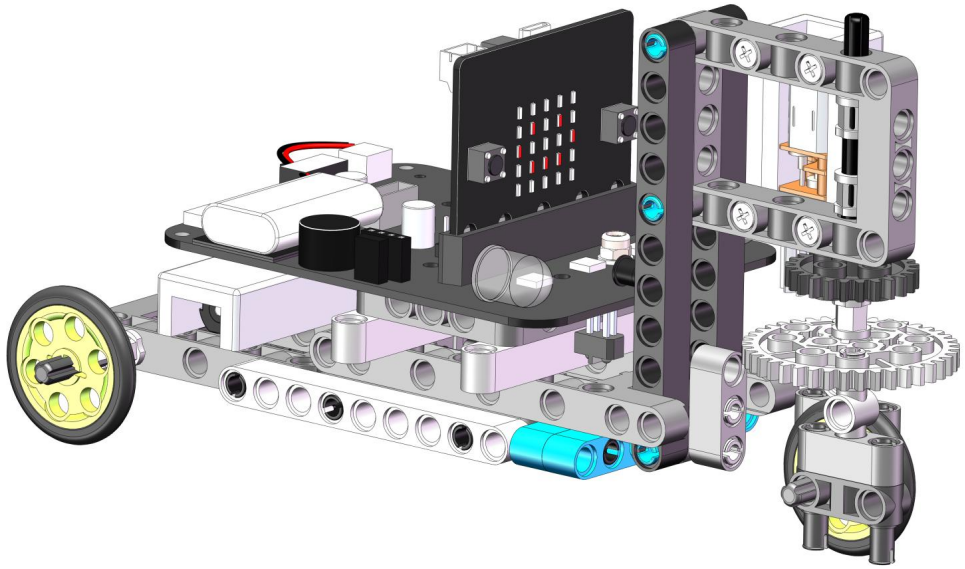
Step 22: Wire as shown.



Step 23: Combine the frame with the micro:bit expansion board with four 1x2 friction pins.







Tip: Our independent steering building blocks car is assembled.
Nex,t we will learn how to control it by programming.

Thinking

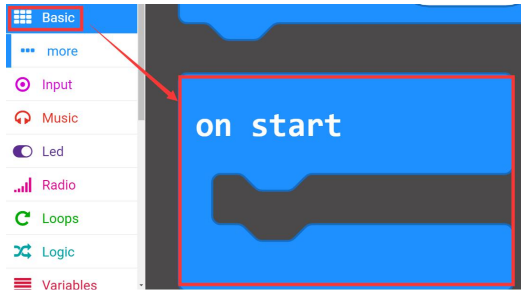
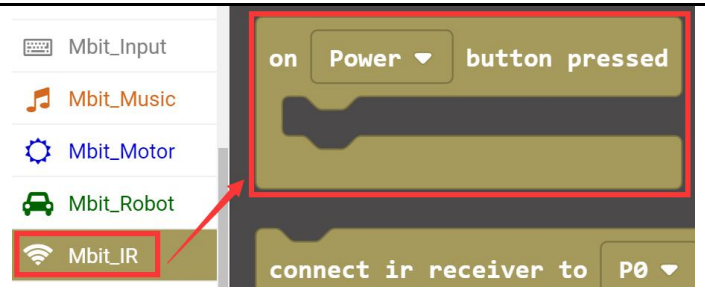
Thinking： This session is mainly to teach you how to use graphical programming to control the independent steering car.

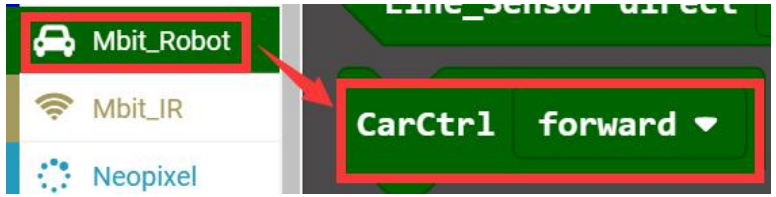
Preparation

- USB cable *1
- Independent steer car *1
- IR remote control*1

Blocks

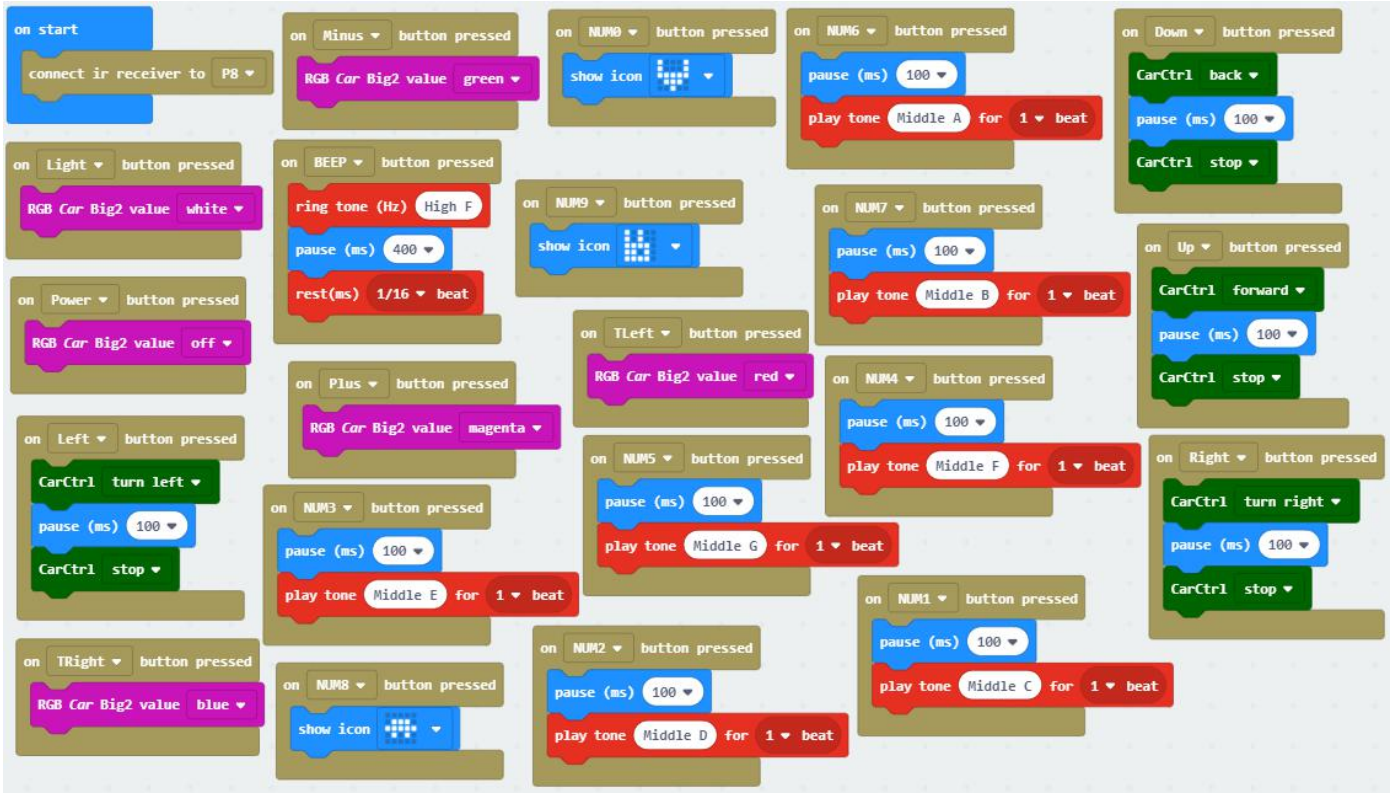
Block	Instruction
	Select the color that the lights are lit.
	Display the image on the micro:bit dot matrix screen.

Block	Instruction
	Executed at the moment of boot, the code is only executed once.
	Set the infrared remote control receiving pin. In this experiment, the receiving pin is P8, so you must select P8, otherwise you will not receive the signal.
	When the power on the remote control is pressed, the code inside will be executed, and the button can be customized.
	The car's motion state selection and the control of the two motor speeds.

Block	Instruction
	Control the pitch of the music.
	Control the beat of the sound played, which is the time the sound continues.
	Control the tone and the sound continus.
	The program pauses for 100 milliseconds and the time can be modified by itself.
	The Cartrl forward represents the forward rotation of the motor, and the Cartrl back represents the reverse rotation of the motor.

Programming

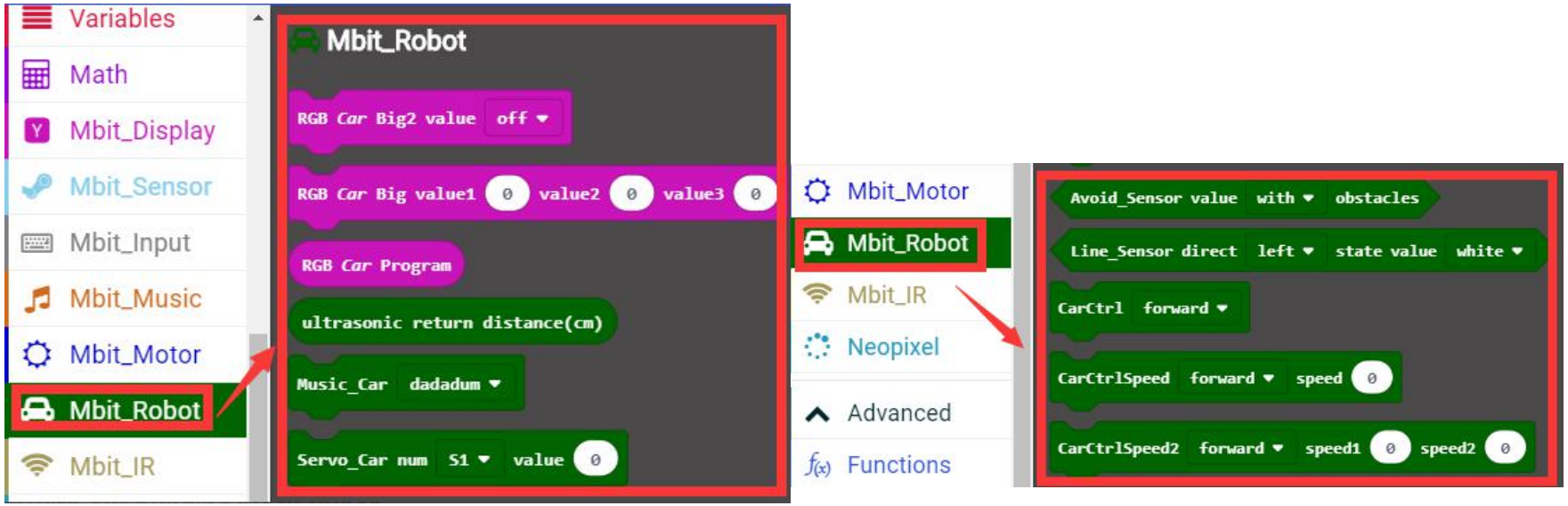
The program of this course is shown in the figure below. After downloading the program, turn on the power switch of the independent steering car, press the button of the infrared remote control, and the independent steering car will have corresponding action. The small light, plus, minus, rotate left , rotate right button of the infrared remote control is used to control the color of the colorful lights. The red power button is the close light button. 1~7 represents the music in the do, re, mi, fa, sol, la, si. The front, rear, left and right buttons are used to control the car. 0 and 8, 9 are used to control the image of the dot matrix screen.



This experimental program file has been provided, you can download and use it directly according to the steps in “Instruction”.

Programming path: Building bit starter kit\2. Experimental course\E.Independent steer car\2.Independent steer car Infrared remote control\Independent-steer-car-Infrared-remote-control.hex

We have packaged the blocks as shown in the two figures below for this independent steer car.



If you see these blocks, you can definitely think of more gameplay, so don't hesitate to try it bravely. Drag these blocks and play with our building block independent steer car.

On our official website, we also provides other tutorial: Independent steer car bit handle remote control.
Official website learning website: www.yahboom.net/study/Building_bit