Building a line-following robot

The robot will look like this:

Figure 16.2

Follow the given instructions to build the line-following robot:

1. Take your BOOST Hub. Ensure that the batteries are fully charged:

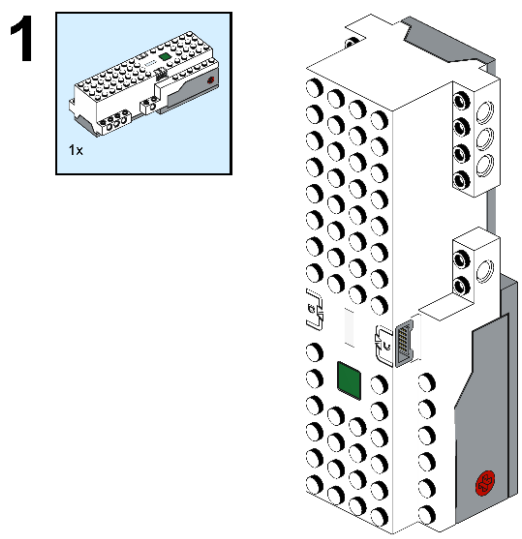

Figure 16.3

2. Take a 3M stop axle:

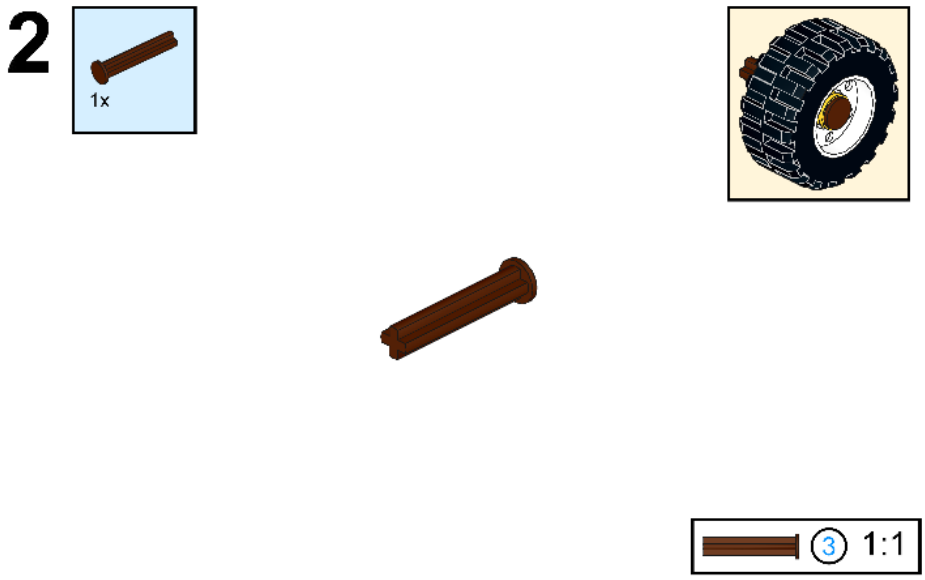

Figure 16.4

3. Take a ½ bush and connect it to the axle:

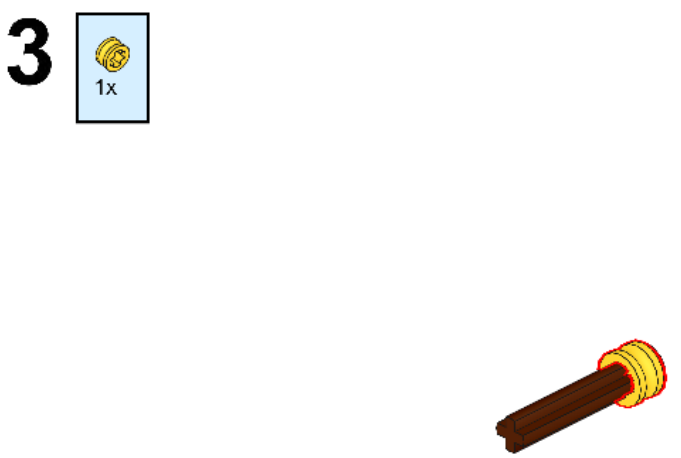

Figure 16.5

4. Take an 18x14 wide rim with a cross. Attach the wheel grip with this cross. Now, connect this wheel with an axle that you just took. Then, connect one more half bush with an axle:

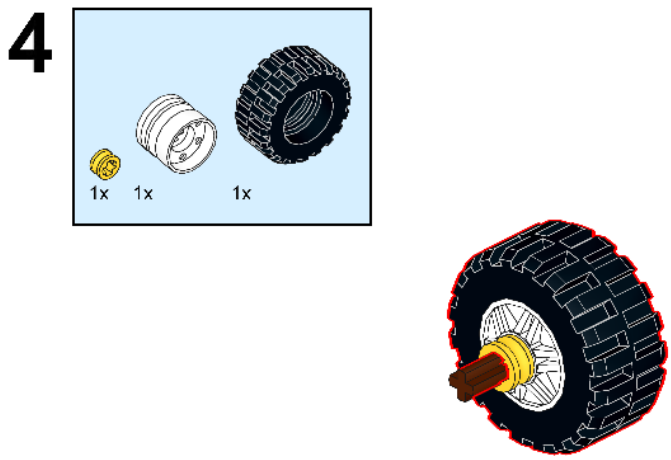

Figure 16.6

5. Then, connect the axle to motor A of the BOOST Hub:

Figure 16.7

6. Take a 3M stop axle:

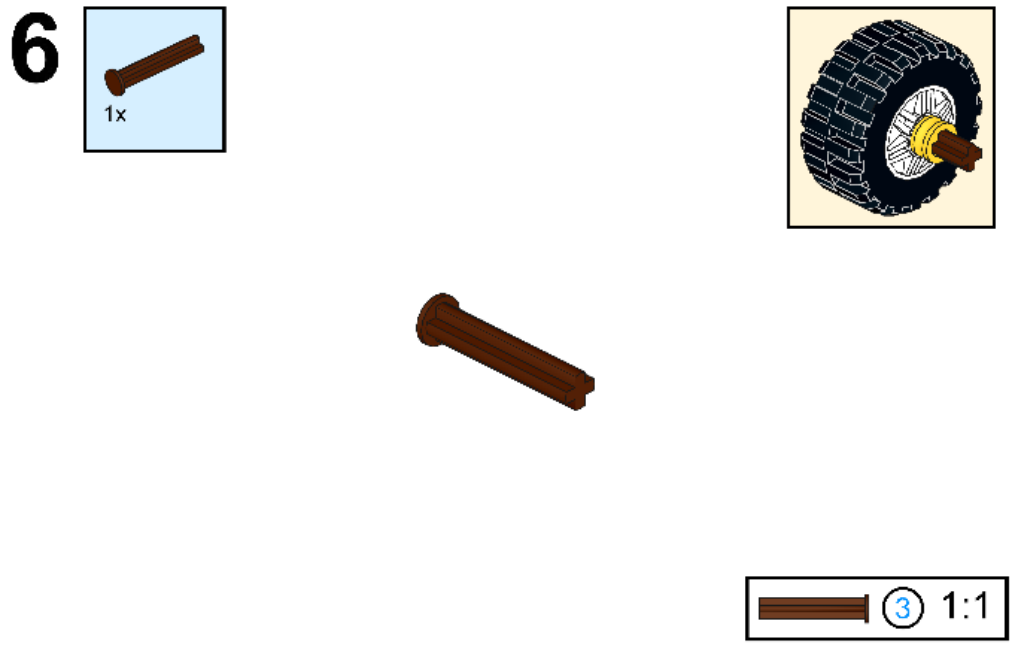

Figure 16.8

7. Take a ½ bush and connect it to the axle:

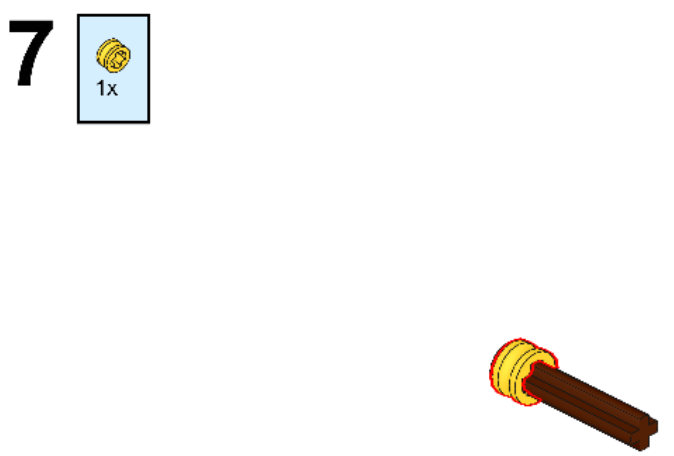

Figure 16.9

8. Just as in *step 4*, again take the rim with a cross and attach the wheel grip on it. Now, connect this wheel with an axle and add one more half bushing, as shown in the following figure:

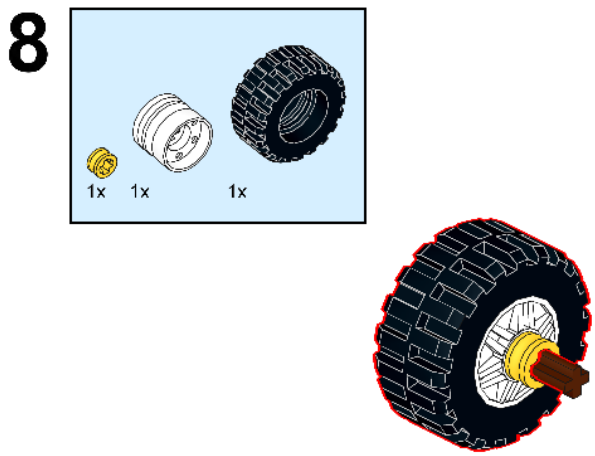

Figure 16.10

9. Then, connect the axle to motor B of the BOOST Hub:

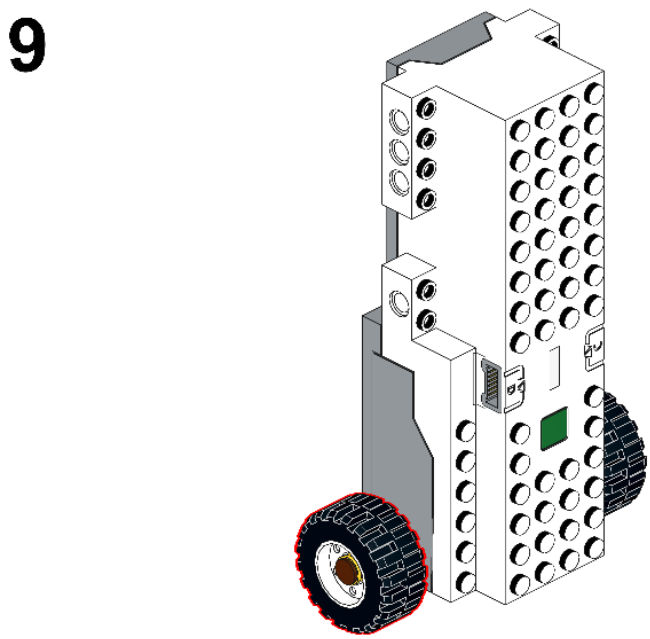

Figure 16.11

10. Then, take a 2x2 brick and a 2x2 brick with a snap and cross and connect them, as shown in the following diagram:

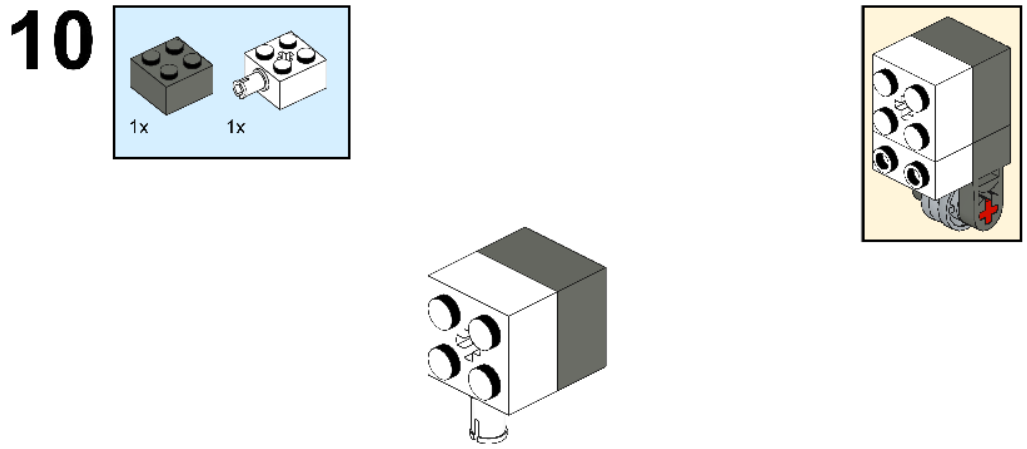

Figure 16.12

11. Now, take a 2x1 brick with a hole and half beam and a 1x2 brick and connect them:

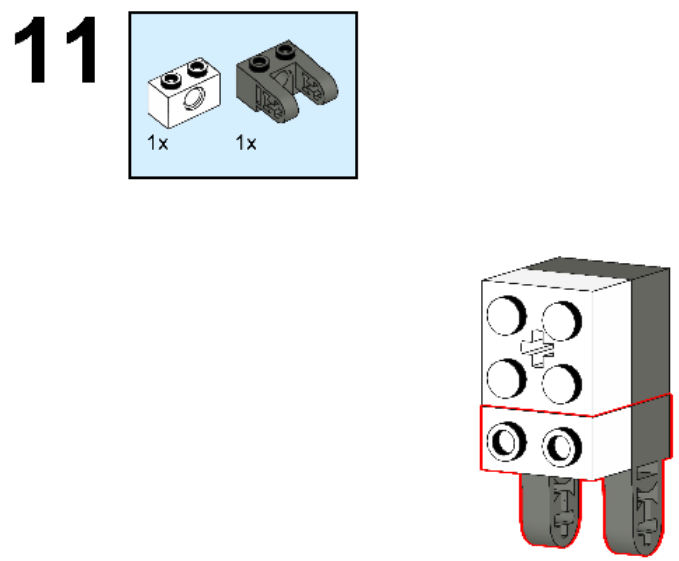

Figure 16.13

12. Take a 2M cross axle and a hub and connect them as shown in the following diagram:

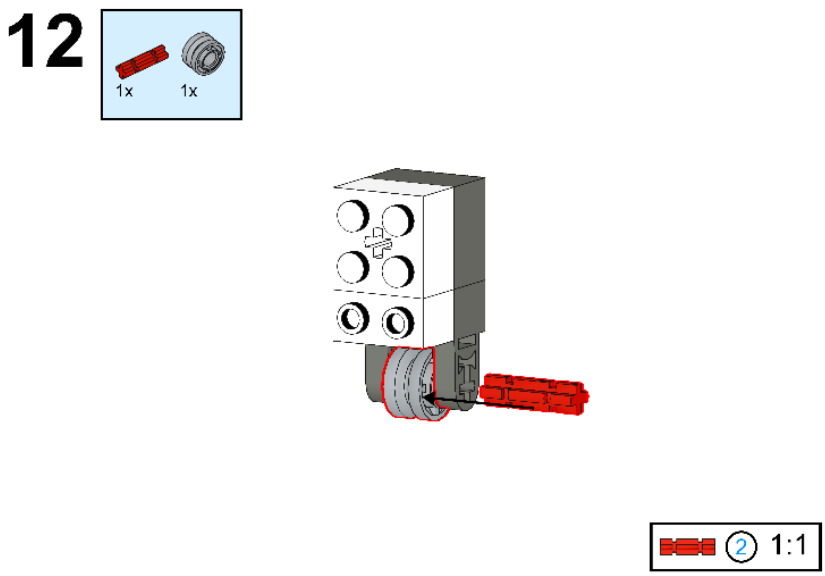

Figure 16.14

13. Then, connect both to the rear side of the hub, as shown in the following diagram:

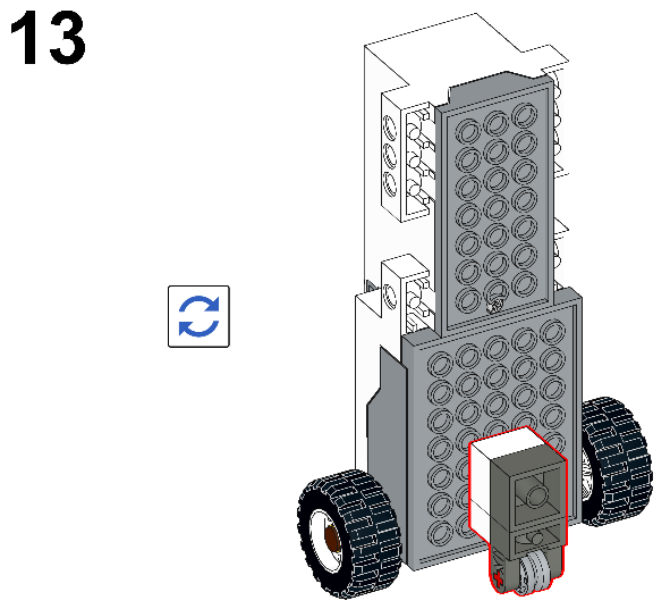

Figure 16.15

14. Take two 1x2 flat tiles and a 2x4 brick and attach them to the BOOST Hub, as shown in the following diagram:

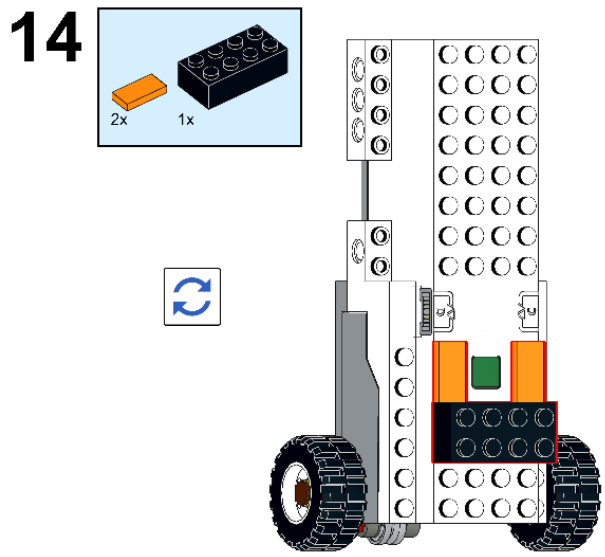

Figure 16.16

15. Take one 2x4 plate and one 2x4 brick and connect them to the 2x4 brick, as shown in the following diagram:

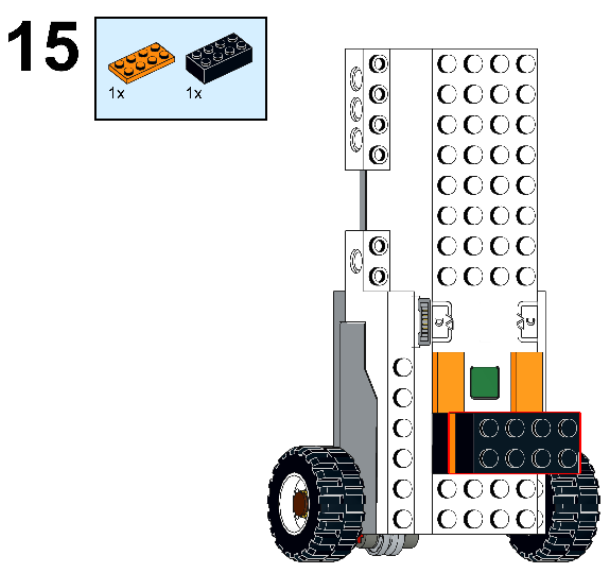

Figure 16.17

16. Now, take a 2x2 brick and connect it to the hub below the 2x4 brick. Then, take two 1x2 flat tiles and attach one on each side of the 2x2 brick:

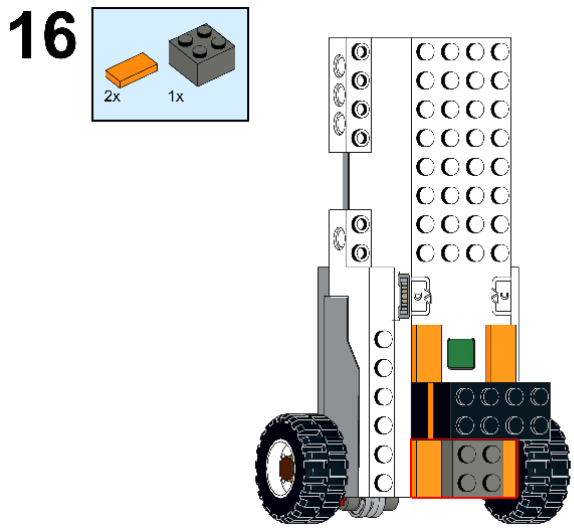

Figure 16.18

17. Take a 1x2 plate and a 1x2 plate with a ball in the middle and connect them to the 2x2 brick, as shown in the following diagram:

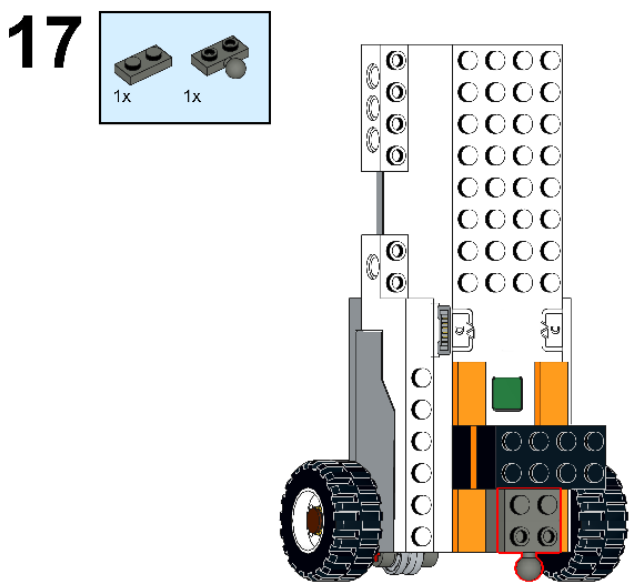

Figure 16.19

18. Now, take one color sensor from your BOOST kit and connect it to the brick and plates so that it faces the downside:

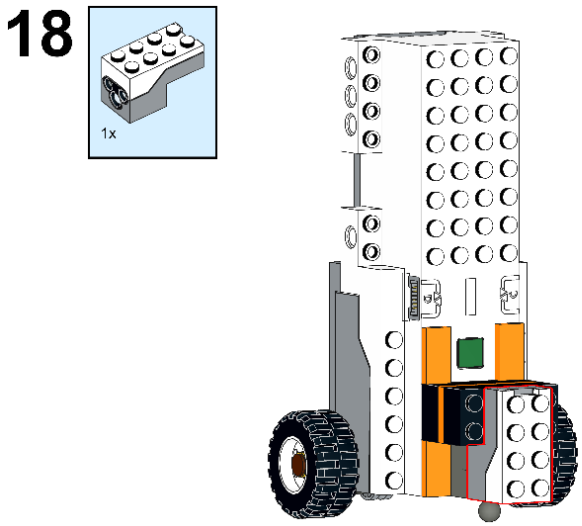

Figure 16.20

19. Take two 1x2 flat tiles and connect them to the 1x2 black LEGO bricks on both sides of the color sensor. Now, take a 2x4 flat tile and connect it on the top surface of the color sensor, as shown in the following diagram:

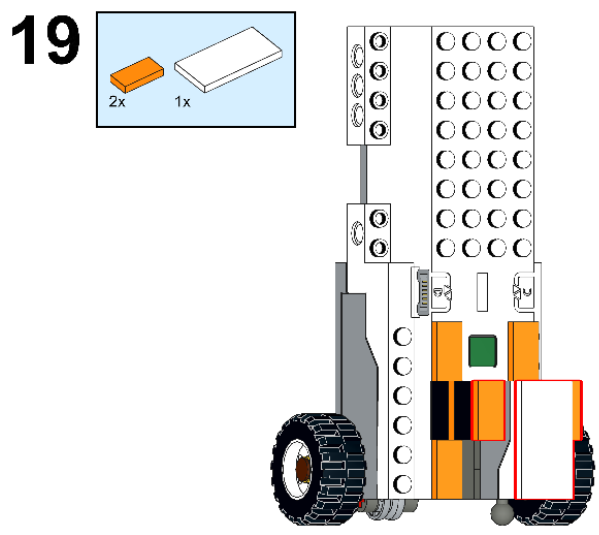

Figure 16.21

20. Now, take two 1x6 bricks with a bow and attach them to the BOOST Hub, as shown in the following diagram:

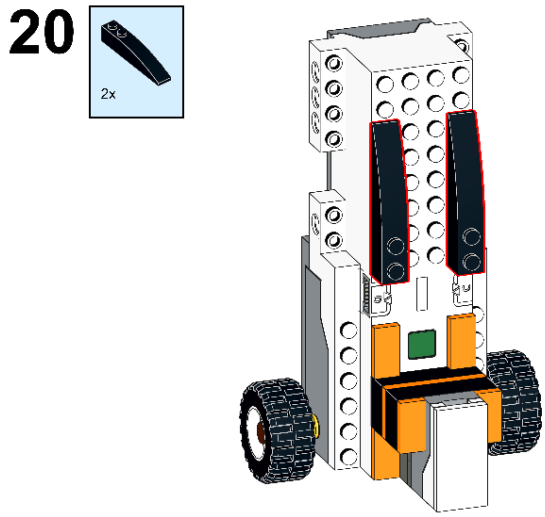

Figure 16.22

21. Take four 1x1 flat round tiles and connect them to the 1x6 bricks with a bow. Then, take a 2x6 brick with a bow and connect it to the hub, as shown in the following diagram:

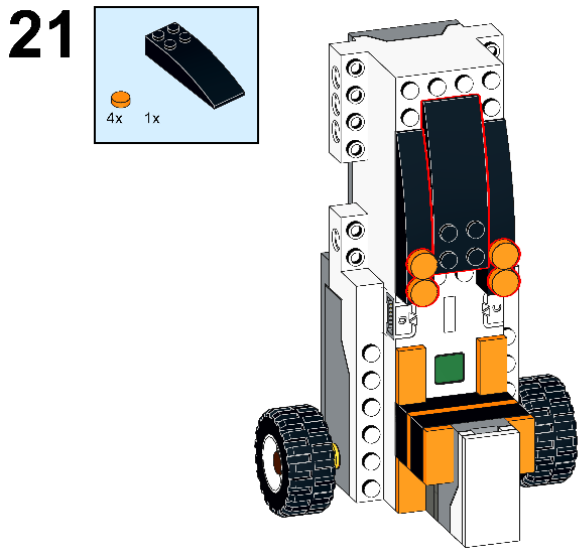

Figure 16.23

22. Take a 1x2 flat tile and connect it to the downside of the 2x6 brick with a bow. Then, take two 1x2 flat tiles and connect them to the 2x6 brick with a bow, as shown in the following diagram:

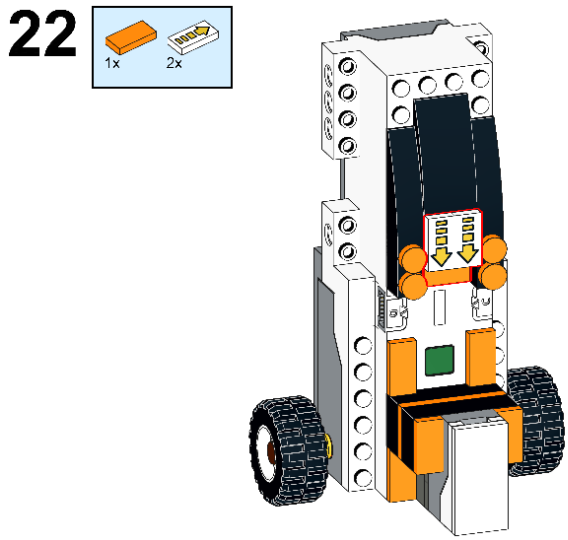

Figure 16.24

23. Take two 1x2/2x2 angular plates and connect them to one side of the BOOST Hub, as shown in the following diagram:

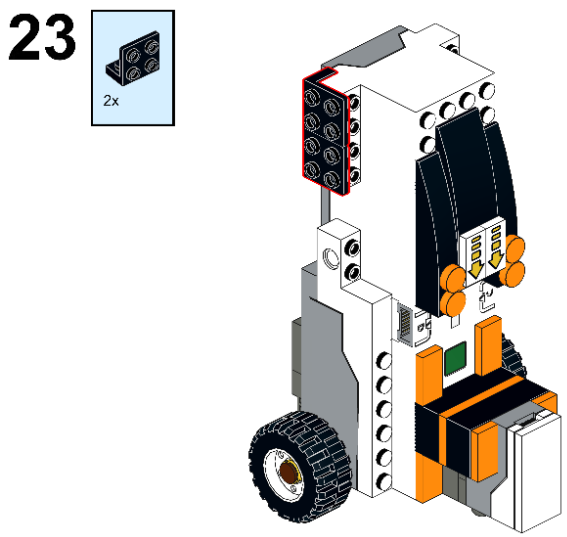

Figure 16.25

24. Then, take two 1x3 flat tiles and connect them on the angular plates. Then, take a 1x4x2/3 plate with a bow and connect it to the side of the BOOST Hub, next to the angular plates:

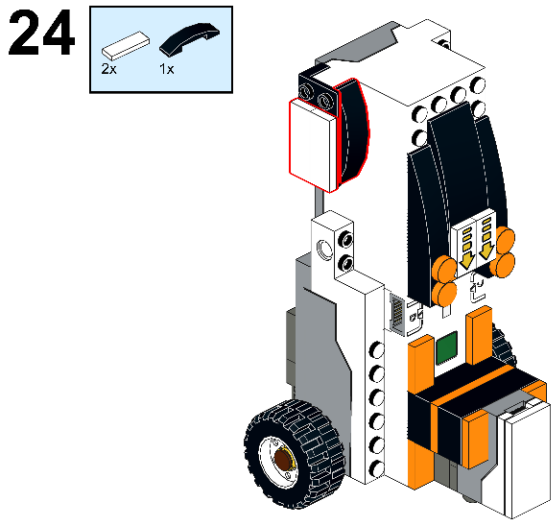

Figure 16.26

25. Take two 1x2x2/3 plates with a bow and connect them to the angular plates. Then, take two 1x2/2x2 angular plates and connect them to the top of the hub:

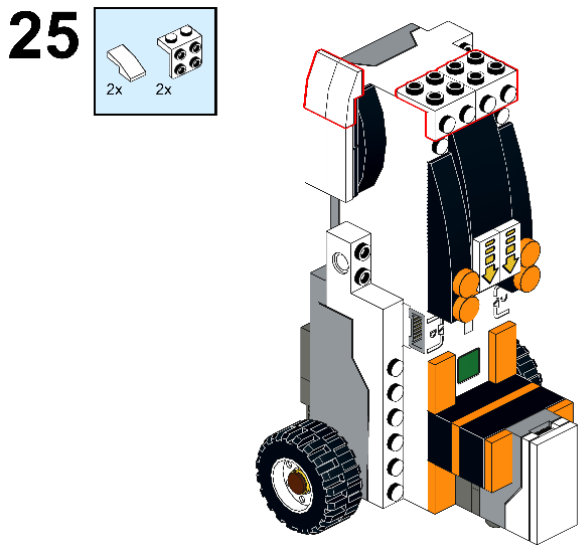

Figure 16.27

26. Now, once again, take two 1x2/2x2 angular plates and connect them to the other side of the BOOST Hub, as shown in the following diagram:

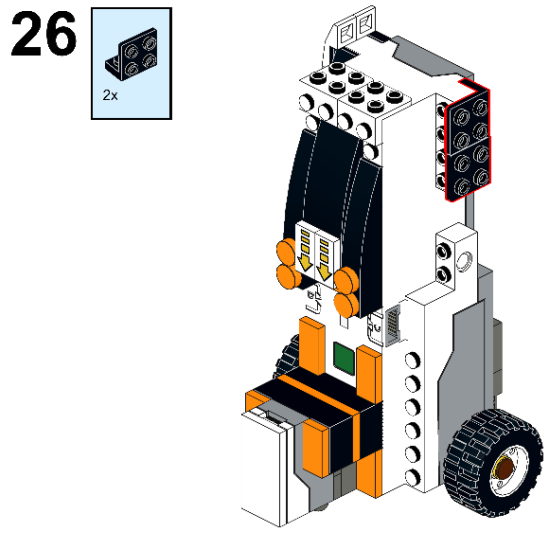

Figure 16.28

27. Take two 1x3 flat tiles and connect them on the angular plates. Then, take a 1x4x2/3 plate with a bow and connect it to the side of the BOOST Hub, next to the angular plates:

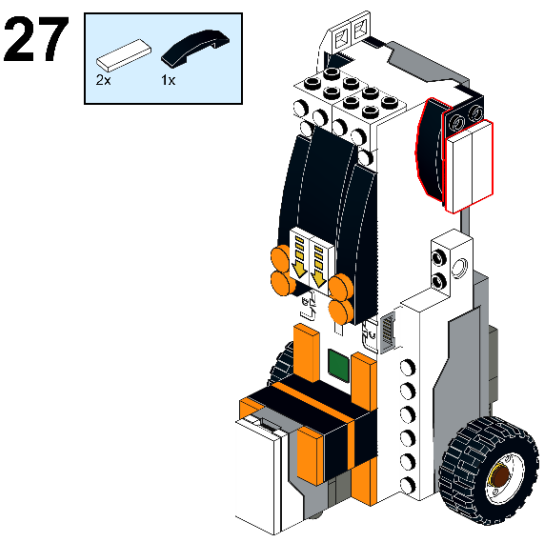

Figure 16.29

28. Take two 1x2x2/3 plates with a bow and connect them to the angular plates. Then, take one 2x2x2/3 plate with two horizontal knobs and connect it to the 1x2x2/3 plate with a bow on the upper side, as shown in the following diagram:

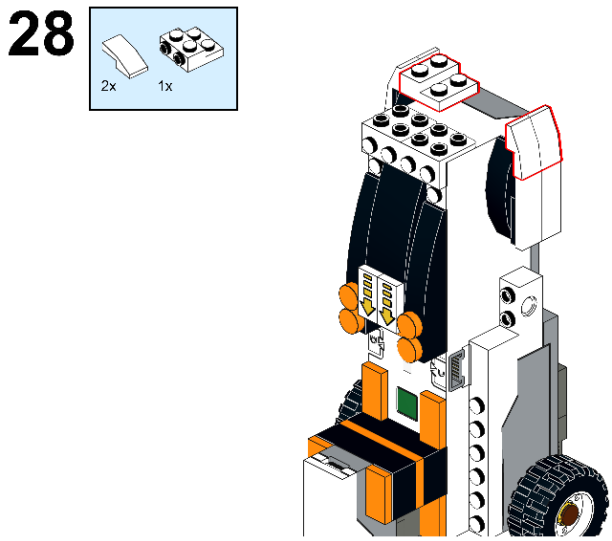

Figure 16.30

29. Take two 1x2x2/3 roof tiles and connect them to the plate with two horizontal knobs, as shown in the following diagram:

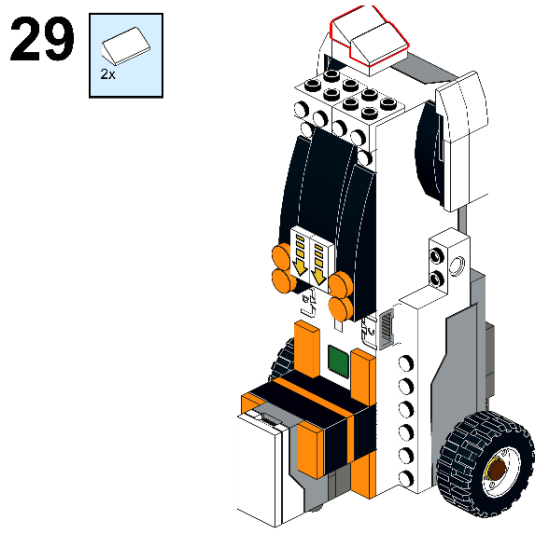

Figure 16.31

30. Again, take one 2x2x2/3 plate with two horizontal knobs and connect it to the right side of the BOOST Hub, as shown in the following diagram. Then, take a 1x4 brick and connect it to the angular plates:

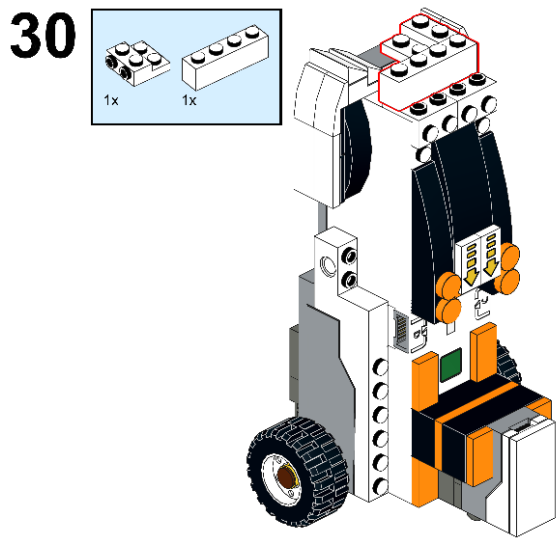

Figure 16.32

31. Again, take two 1x2x2/3 roof tiles and connect them to the plate with two horizontal knobs. Then, take one 1x2 brick and connect it to the angular plates, alongside the 1x4 brick, as shown in the following diagram:

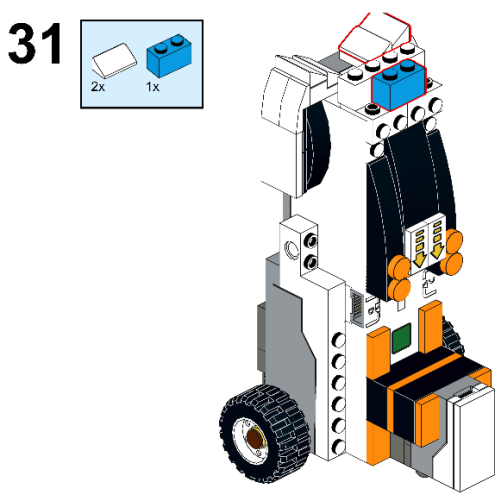

Figure 16.33

32. Now, take two 1x1 bricks and connect one on each side of the blue-colored brick:

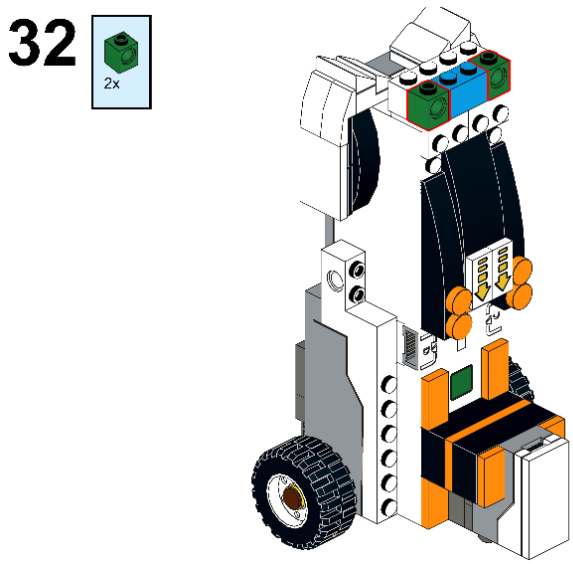

Figure 16.34

33. Now, let's decorate our robot by adding eyes and a head-like structure. To make a head, take a 2M cross axle and one design shape with a tube and cross-hole and connect them:

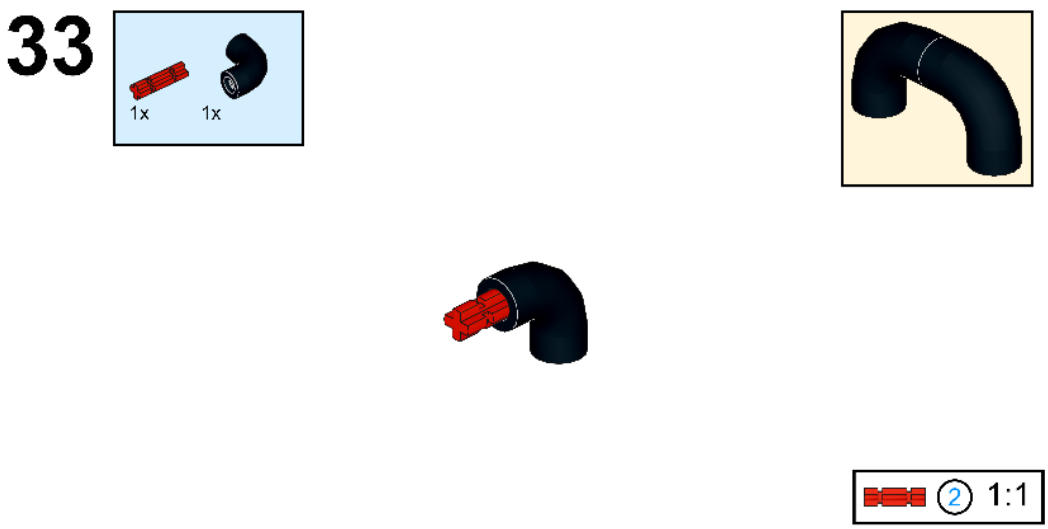

Figure 16.35

34. Again, take a design shape with a tube and cross-hole and connect it to the 2M cross axle:

Figure 16.36

35. Then, connect this structure to the two 1x1 green-colored bricks, as shown in the following diagram:

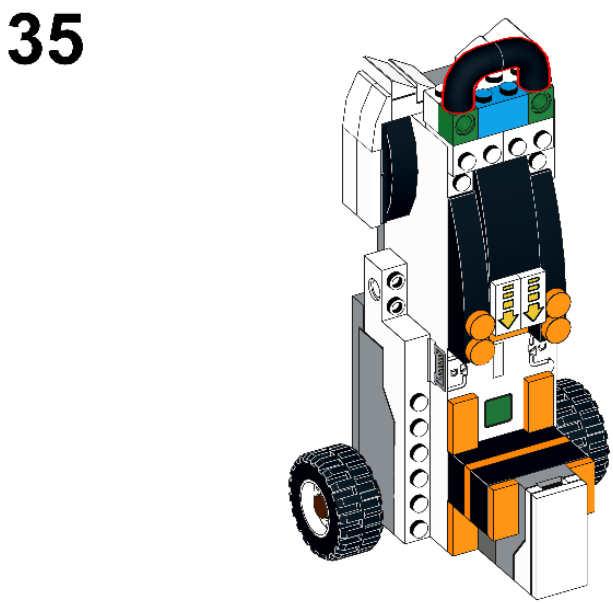

Figure 16.37

Now we are going to make the eyes.

36. Start by taking two parabolic reflectors:

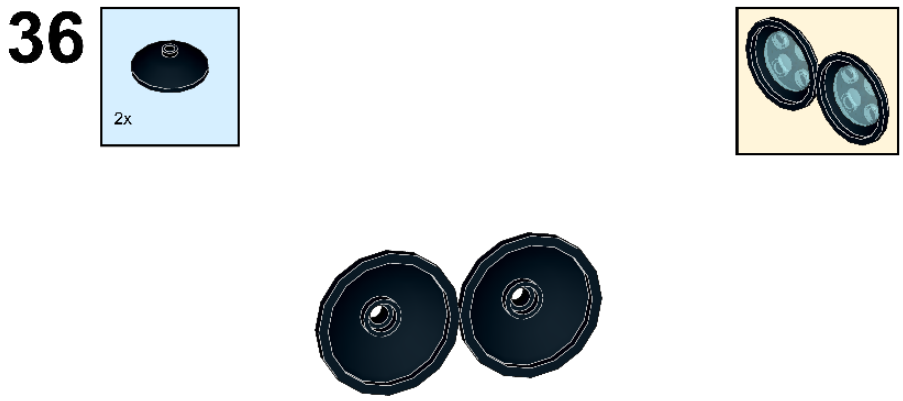

Figure 16.38

37. Then, take two 2x2 round slide shoes and connect them to the parabolic reflectors:

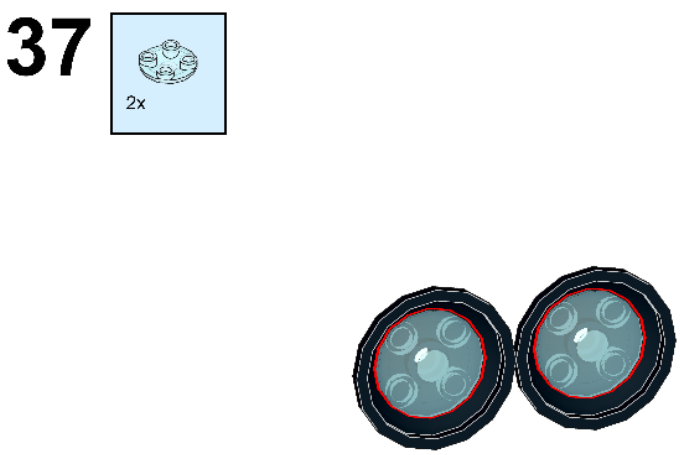

Figure 16.39

38. Connect those eyes to the holes of the 1x1 bricks:

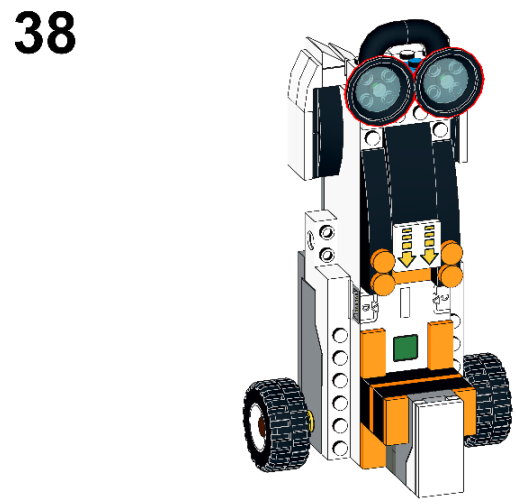

Figure 16.40

Great!

Your robot is now ready to follow the line. We just need to code it and run it.

But before that, compare your model with the one shown in the preceding figure:

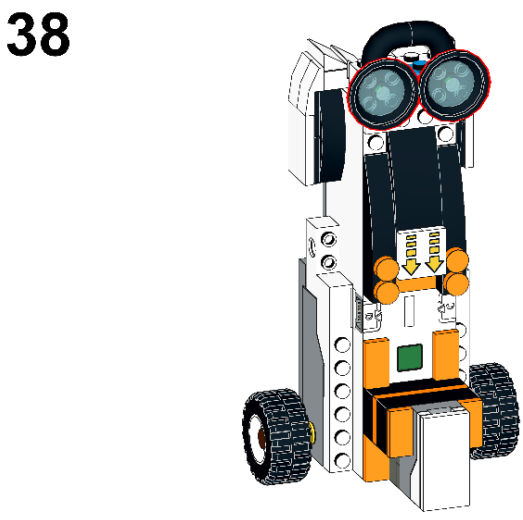

Figure 16.41

Let's now code this robot to follow a line.