Build the Mouse Bot

You finally get to build and program robots! First up is the Mouse Bot, whose superpower is navigating any maze that you put it in by using its top IR sensors to detect obstacles.

Ultrasonic Sensor
Variables

This lesson uses:
Rokit Smart with Arduino

CSTA
CCSS

arduino build Mouse Mouse Bot programming robotics Rokit Smart

Grade level:
3 - 12+

Approx. time required:
60 - 75 mins

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Step 1

Prepare the motors

Bolt the short L-frames onto the motor casing. Pay attention to the orientation of the left and right motors and how the short L-frames are attached — they should look like mirror images of each other when you're finished.

1

X 8 X 8

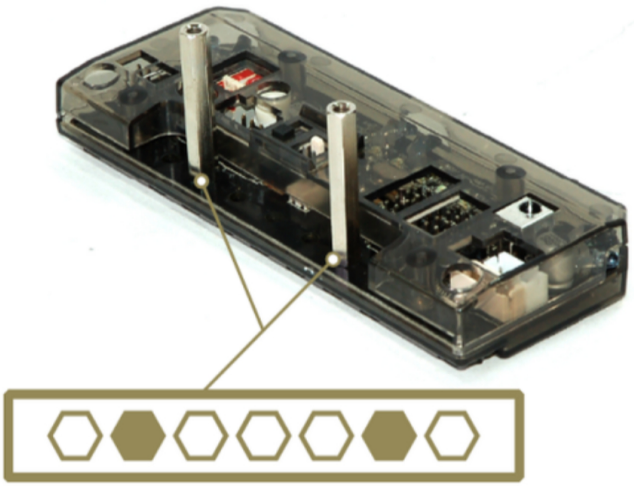
Step 2

Prepare the Smart Inventor Board

Attach two long standoffs to the Smart Inventor Board. Make sure the nuts fit snugly into the bottom of the Smart Inventor Board before screwing the standoffs in.

2

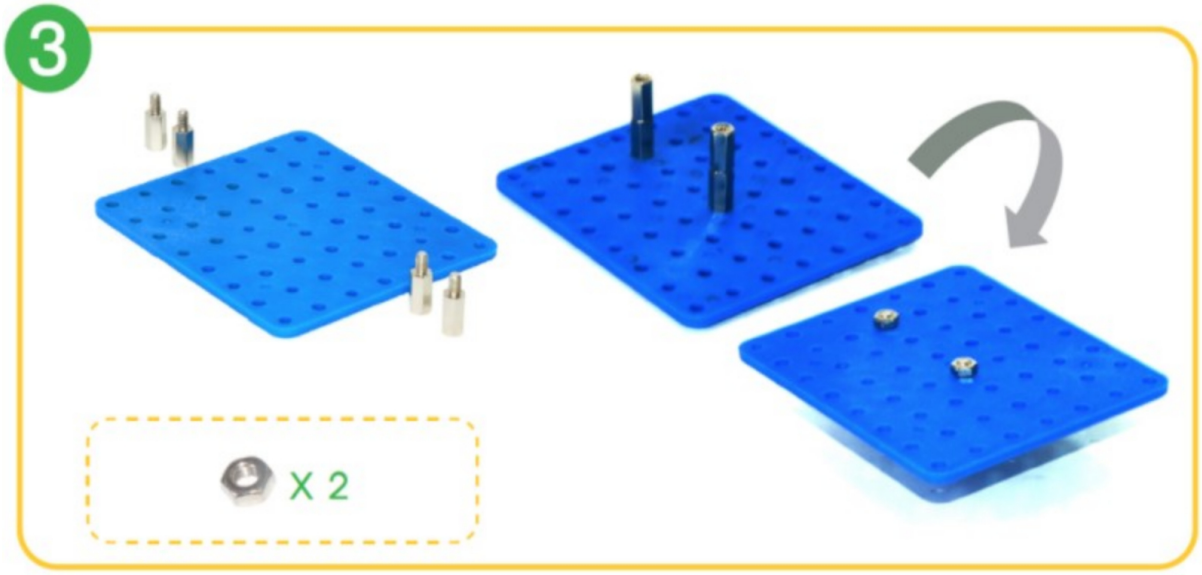
X 2



Step 3

The body (bottom)

1. Stack two short standoffs on top of each other to make a longer one, and then attach it to a blueboard. Do this twice!
2. Make four more stacked standoffs. Position the motors under the blueboard and the four standoffs you just made on top of the corresponding motor casing holes, and screw the standoffs AND motors in from the bottom.
3. Attach the wheels to the motors using the small black screws. The wheels will also stay in without the screws.
4. Attach the battery pack to the bottom of the motors.



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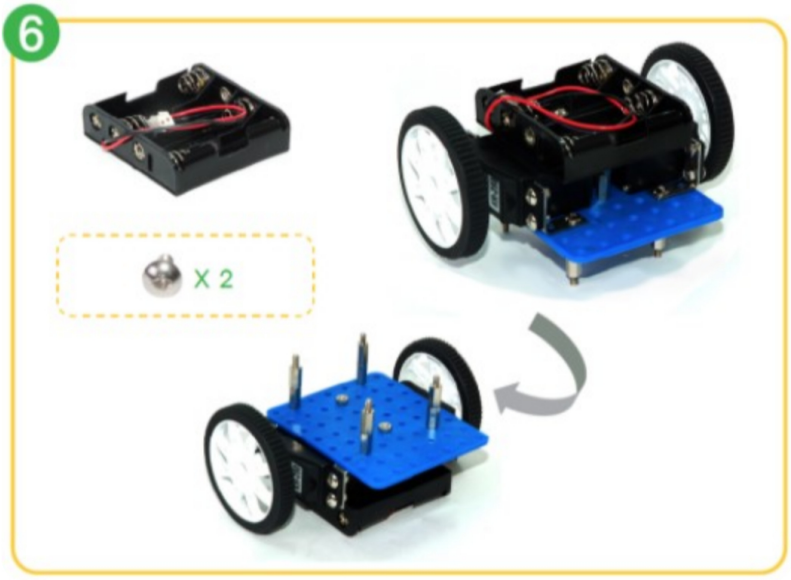
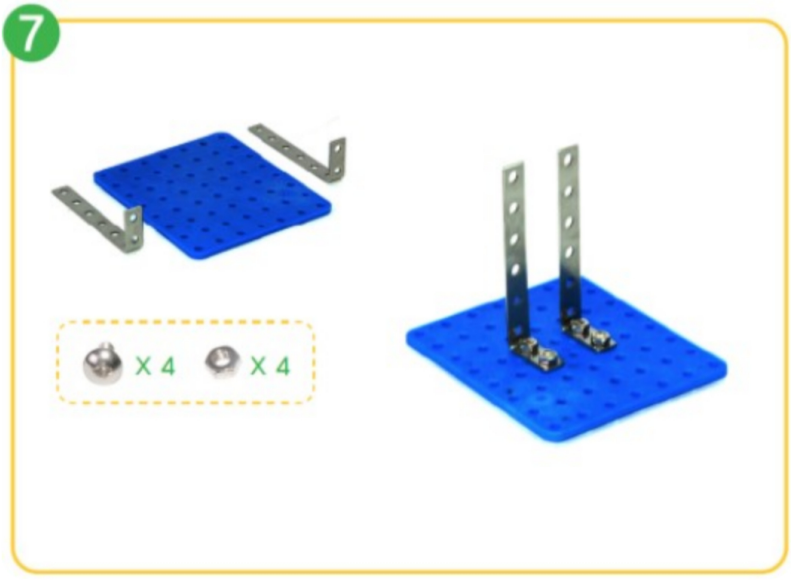


Step 4

The body (top)

1. Attach to long L-frames to a blueboard, with the shortest part bolted onto the blueboard.
2. Add two more blueboards to those L-frames.
3. Attach two horn brackets to the outer corners of each blueboard using nylon nuts and long bolts.

7



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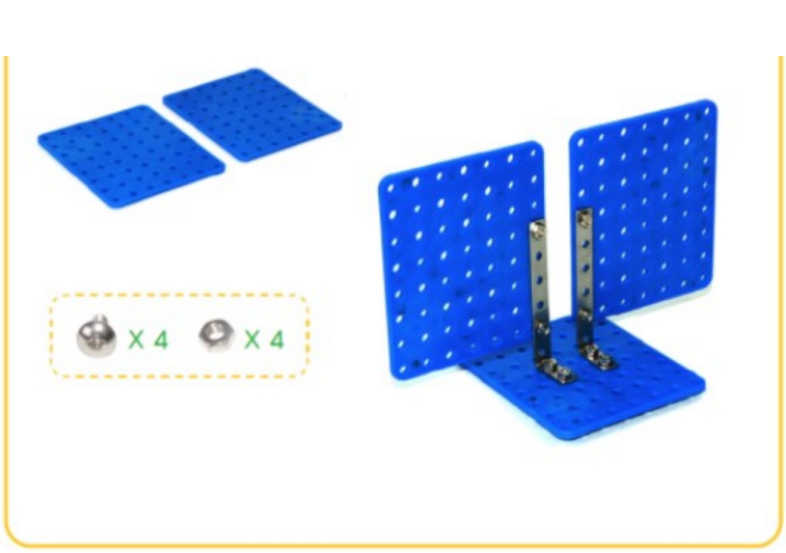
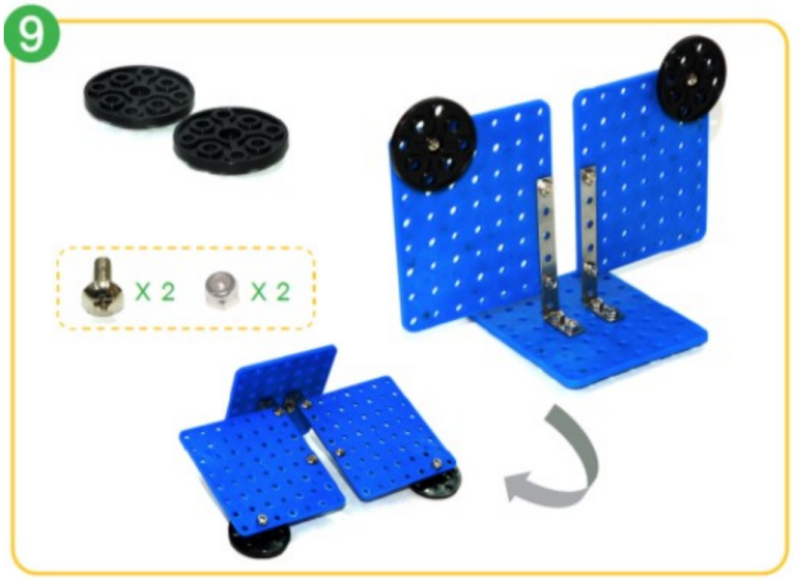
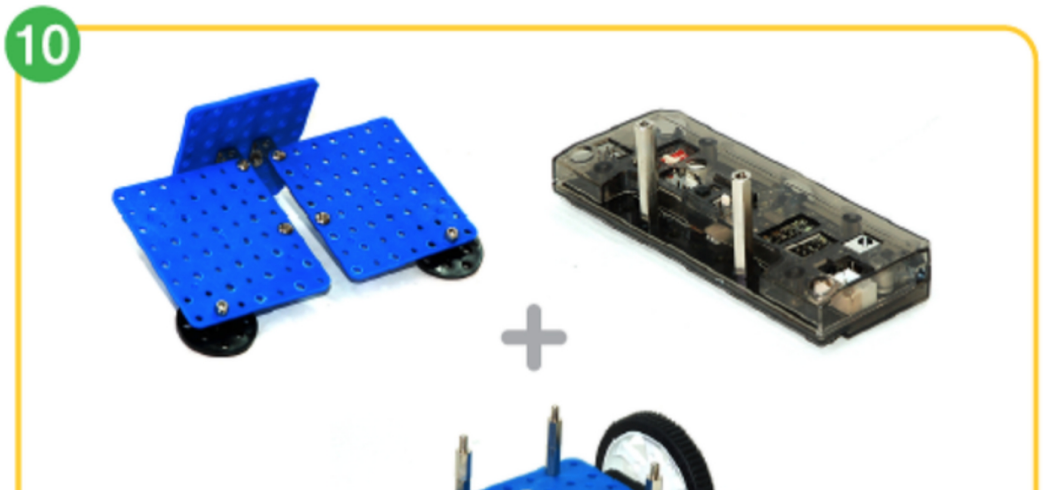


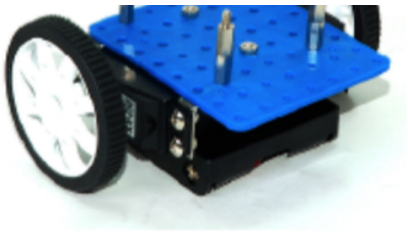


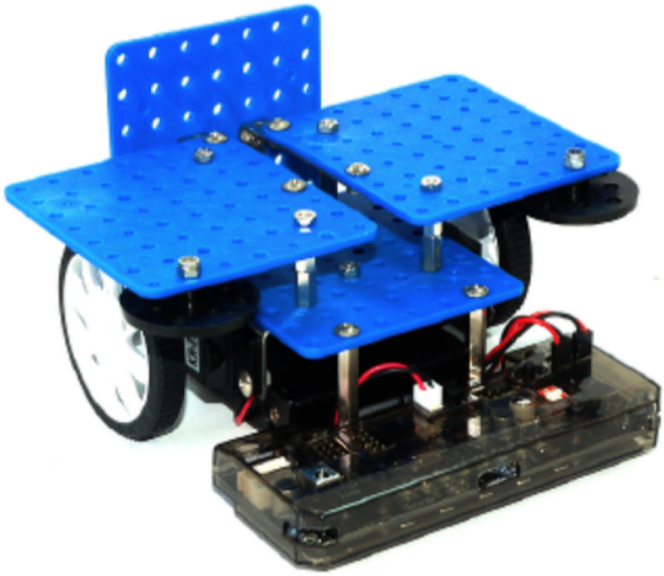
Step 5

Put everything together

Attach the Smart Inventor Board to the body of the robot using two short bolts, and attach the top body to the bottom body using four nuts.







Step 6

Wire the Mouse Bot

Position the Mouse Bot so that the Smart Inventor Board is facing you:

- The motor on your right is M1.
- The motor on your left is M2.
- Attach the motors to their respective spots on the Smart Inventor Board (M1, M2, M3, and M4 are all marked).
- Make sure that the red wires are the in the negative position (facing the inside) and that the black wires are in the positive position (facing the outside)!

completion

Step 7

How the Mouse Bot works

The Mouse Bot uses its bottom three IR sensors (left, center, and right) to sense objects, and it decides which way to move based on that data.

Step 8

How to operate the Mouse Bot

If you can't handle the suspense and want to see the Mouse Bot in action, watch the video to see how it works!

Complete Lesson