

INTERMEDIATE PROGRAMMING LESSON



Color Line Follower My Blocks with Inputs:
Move Until Black



By: Droids Robotics

LESSON OBJECTIVES

- 1) Learn how to write a line follower that takes multiple inputs
- 2) Learn how to write a line follower that stops when it sees a another line
- 3) Practice making useful My Blocks

Prerequisites: My Blocks with Inputs & Outputs, Data Wires

The code uses Blue Comment Blocks. Make sure you are running the most recent version of the EV3 Software. EV3Lessons has Quick Guides to help you.

TIPS TO SUCCEED

- 1) You will need to know how to make a Simple Color Line Follower program and how to make a My Block with inputs
- 2) Since you will use your EV3 Color Sensor in Color Mode, you will not have to Calibrate your color sensor for this lesson
- 3) Check which ports you have your color sensor connected to the EV3 and adjust the code as needed
- 4) You may have to adjust the speed or direction to work for your robot. Make sure that the the color sensor is in front of the wheels in the direction of travel.
- 5) Make sure you place the robot on the side of the line that you are following. The most common mistake is placing the robot on the wrong side of the line to begin with.

COLOR FOLLOWER UNTIL COLOR IN 3 EASY STEPS

STEP 1:

- Create a simple line follower

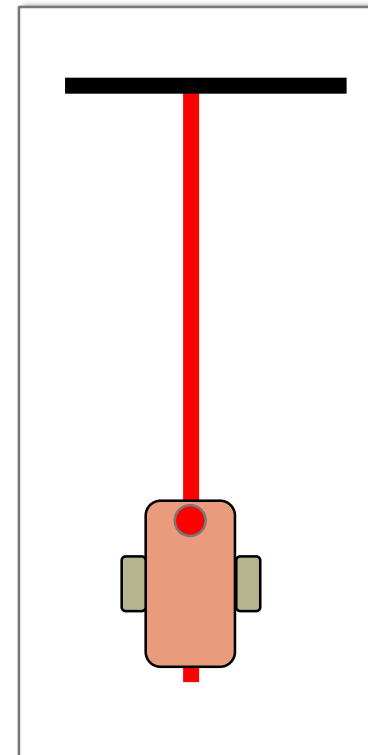
STEP 2:

- Change the loop exit condition to “until black”

STEP 3:

- A. Make a My Block with 3 inputs: Power, Color to line follow on, and Color to stop at
- B. Wire the My Block

Challenge: Create a line follower My Block that stops when it sees black



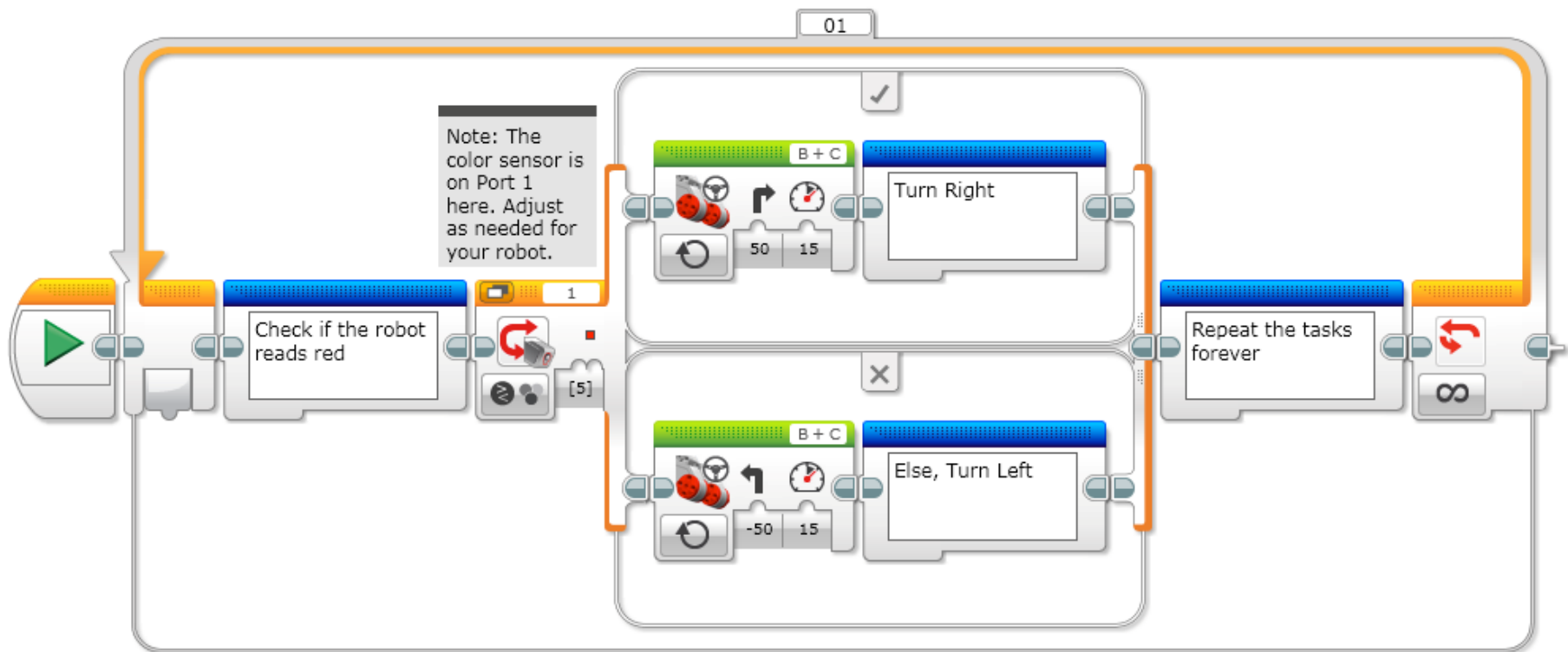
STEP 1: MAKE A SIMPLE LINE FOLLOWER

Final Goal: To create a Line Follower with Color as the input and stops on a black line.

Step 1: Create a simple color line follower that follows the right side of the line.

Pseudocode:

If the robot reads red, turn right
If the robot sees any other color, turn left
Repeat these two tasks

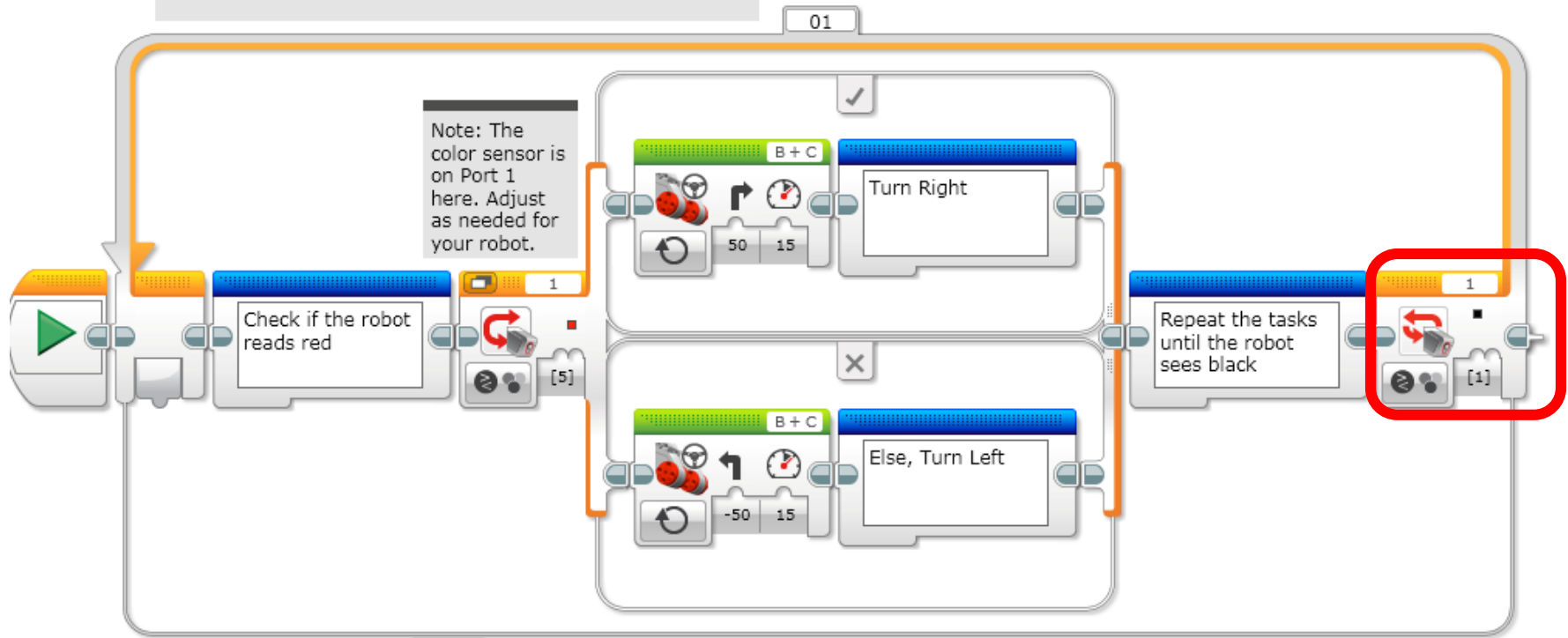


STEP 2: CHANGE LOOP EXIT CONDITION

This program is the same as step 1 except it stops after when the robot sees black (Which you can change to suit your needs).

Pseudocode:

- If the robot reads red, turn right
- If the robot sees any other color, turn left
- Repeat these two tasks until the robot sees black

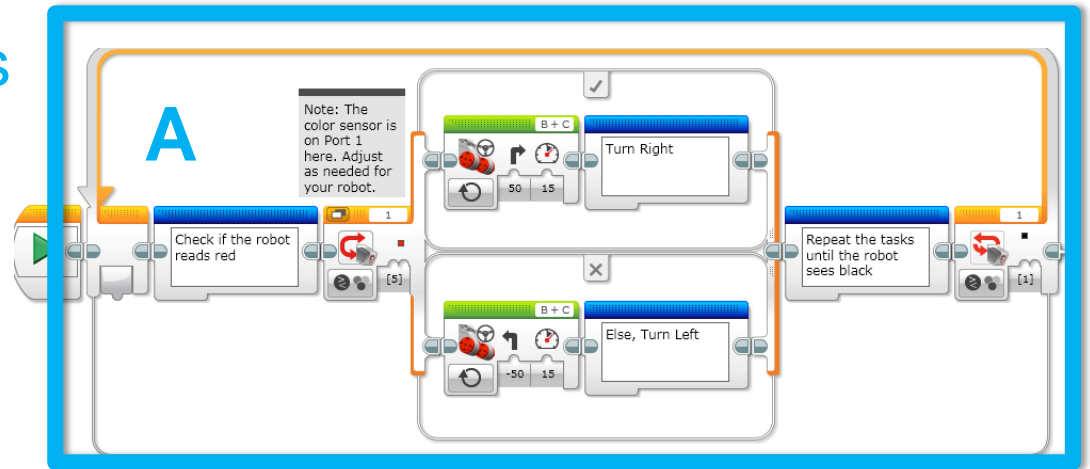


STEP 3A: CREATE A MY BLOCK

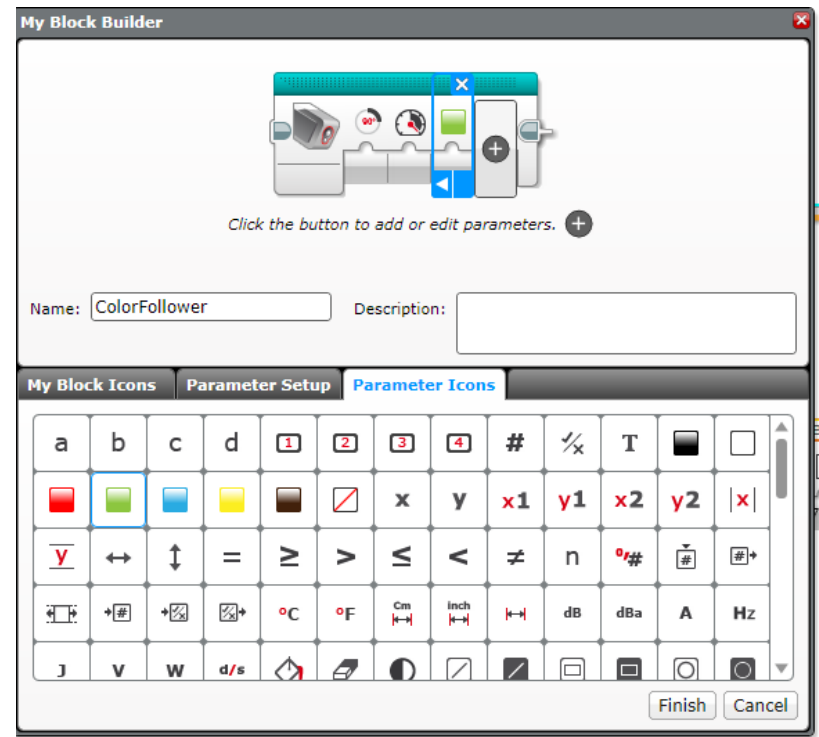
A. Highlight all the blocks then go to My Block Builder

B. Add 3 inputs: one for power and one for color, and one for degrees

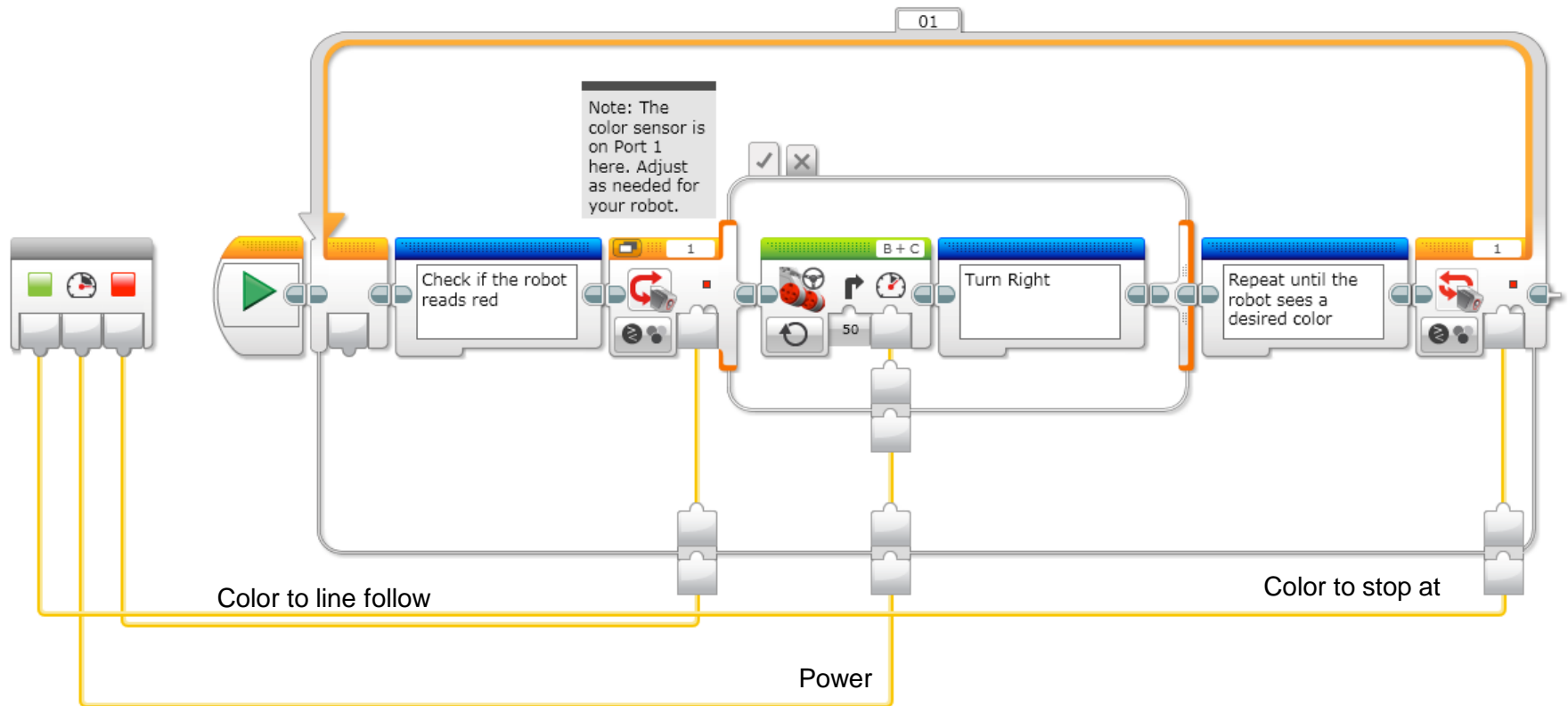
- Refer to the My Blocks with Inputs & Outputs lesson if you need help setting up the My Block



B



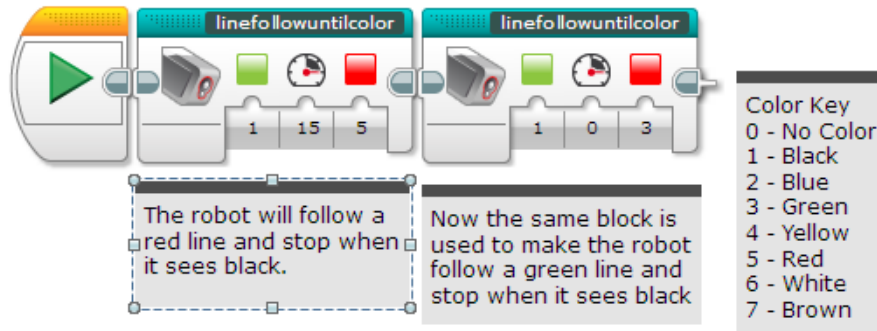
STEP 3B: WIRE THE MY BLOCK



C

- The color to stop at goes into loop exit condition
- The power input goes into power input on the steering block
- The color input goes into color input for the switch

STEP 3B: THE MYBLOCK



- Now the My Block appears in the turquoise tab and the same My Block can be used again and again with new inputs (see left)
- The first block solves the challenge and follows a red line until it sees the robot sees black
- The second block in this code is to show that the same block can be used with different inputs
- If you want to learn smoother line followers, proceed to the proportional control lesson in Advanced.

NEXT STEPS

- We use a simple line follower in this lesson. You can combine these techniques with any line follower.
- Learn how to create a proportional line follower for light or a smooth line follower for color → check out our Advanced: Proportional Line Follower lesson.

CREDITS

This tutorial was created by Sanjay Seshan and Arvind Seshan from Droids Robotics.

More lessons are available at www.ev3lessons.com

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