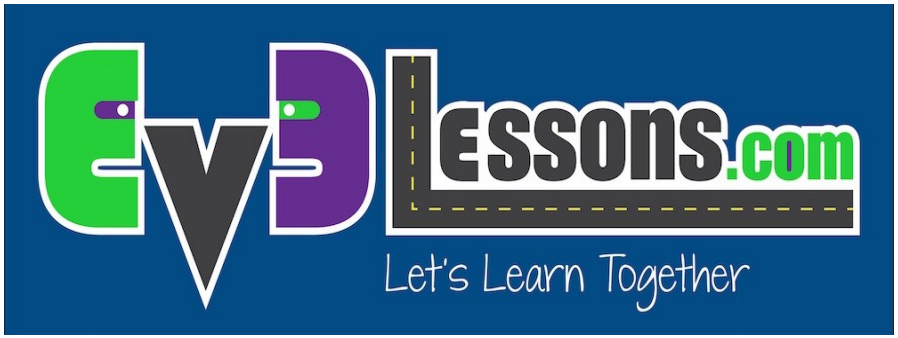
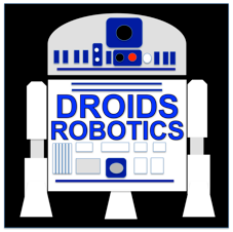
INTERMEDIATE PROGRAMMING LESSON



Color Line Follower My Blocks with Inputs: Move Until Black



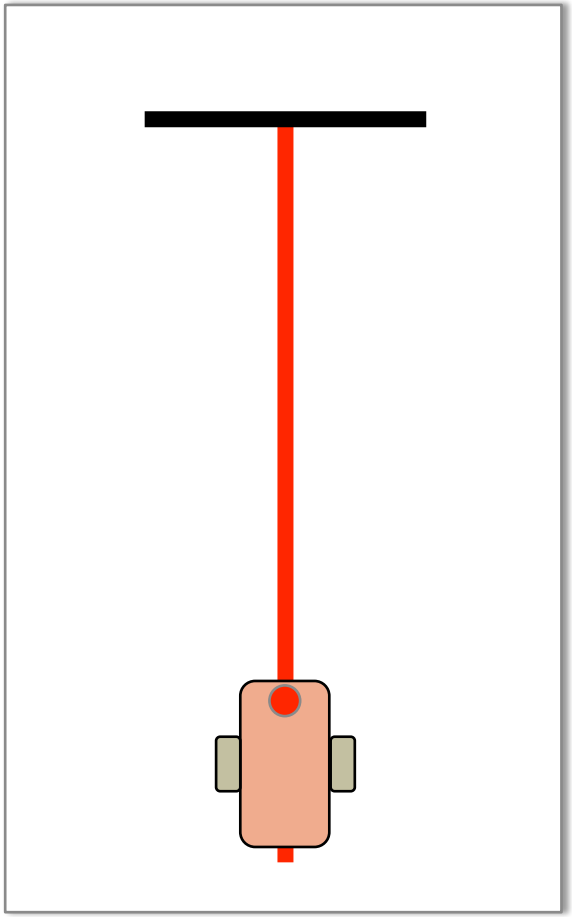
By: Droids Robotics

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

COLOR LINE FOLLOWER THAT ENDS ON A BLACK LINE

- You may want to follow one line until the robot sees another line
- In First Lego League, a common application is to line follow until a “T” junction.
- Follow along in the EV3 Code
- Start at Step 1. By Step 2 you will have your code. Proceed to Steps 3 and 4 to make this code into a My Block with Inputs.

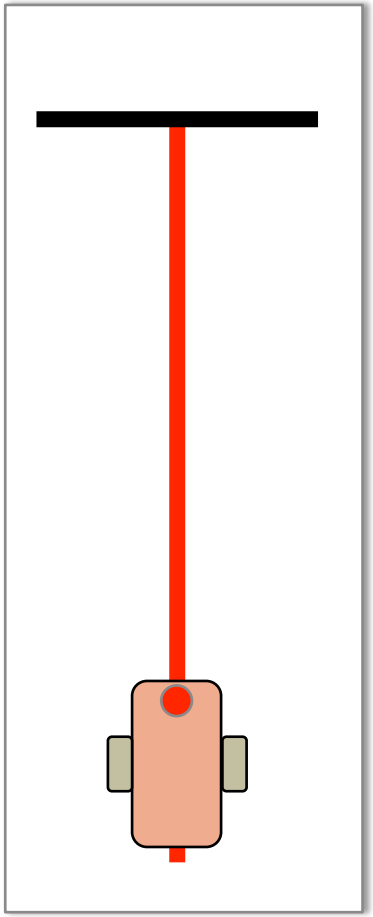


TIPS TO SUCCEED

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 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.
6) Follow along in the companion EV3 File. Always start at Stage 1

CHALLENGE WITH TIPS

Challenge: Create a line follower My Block that stops when it sees black and takes 3 inputs (color to follow, color to stop at, and power)



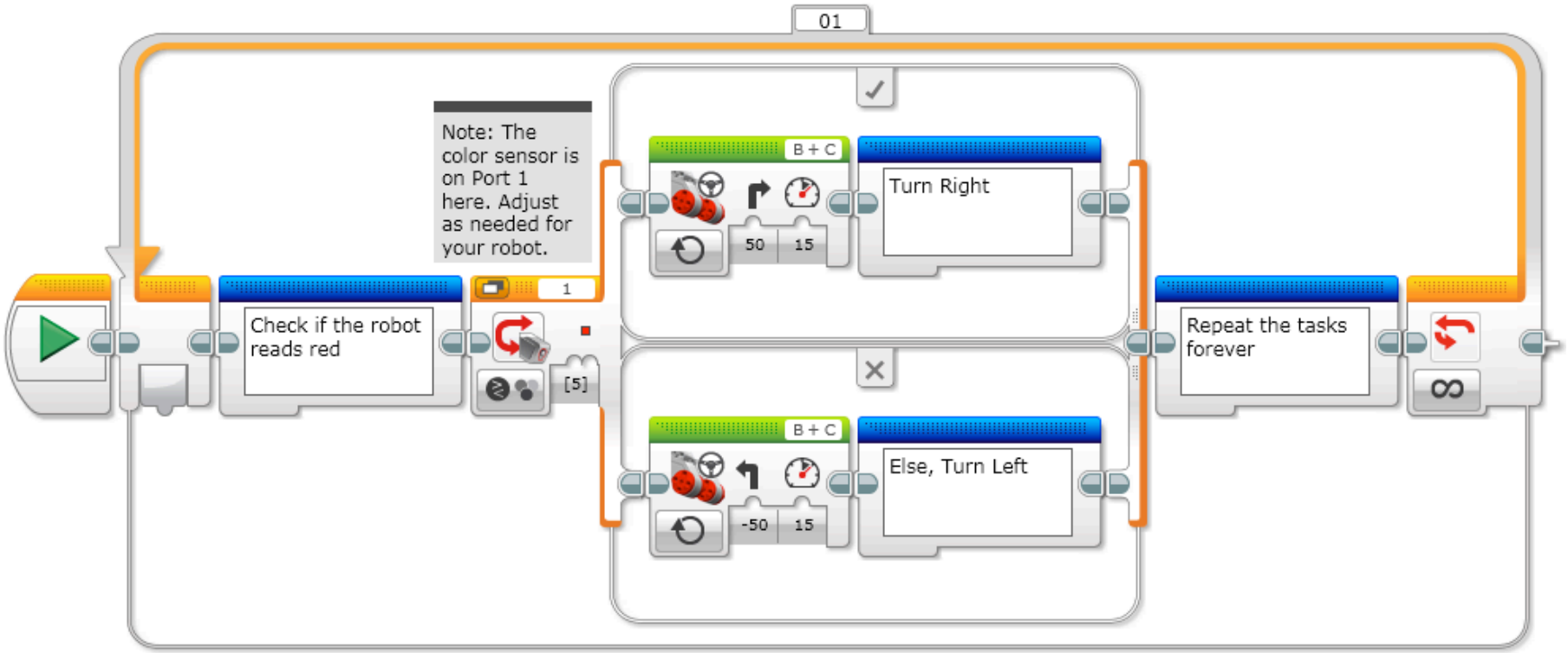
1) Start with a simple line follower
2) Change the loop exit condition to “until black”
3) Set up inputs using constants (color to follow, color to stop at, power)
4) Use data wires to connect these constants to the right block
5) Make this line follower into a My Block

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



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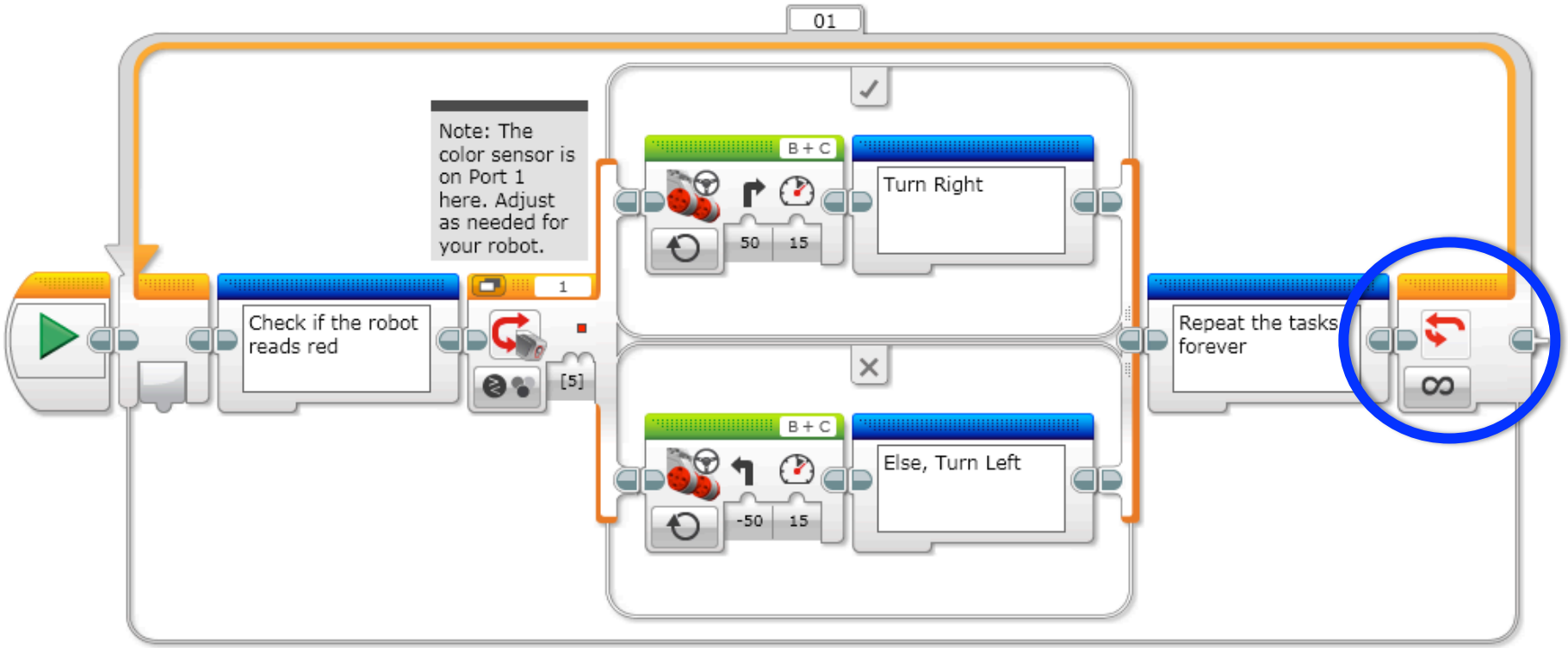
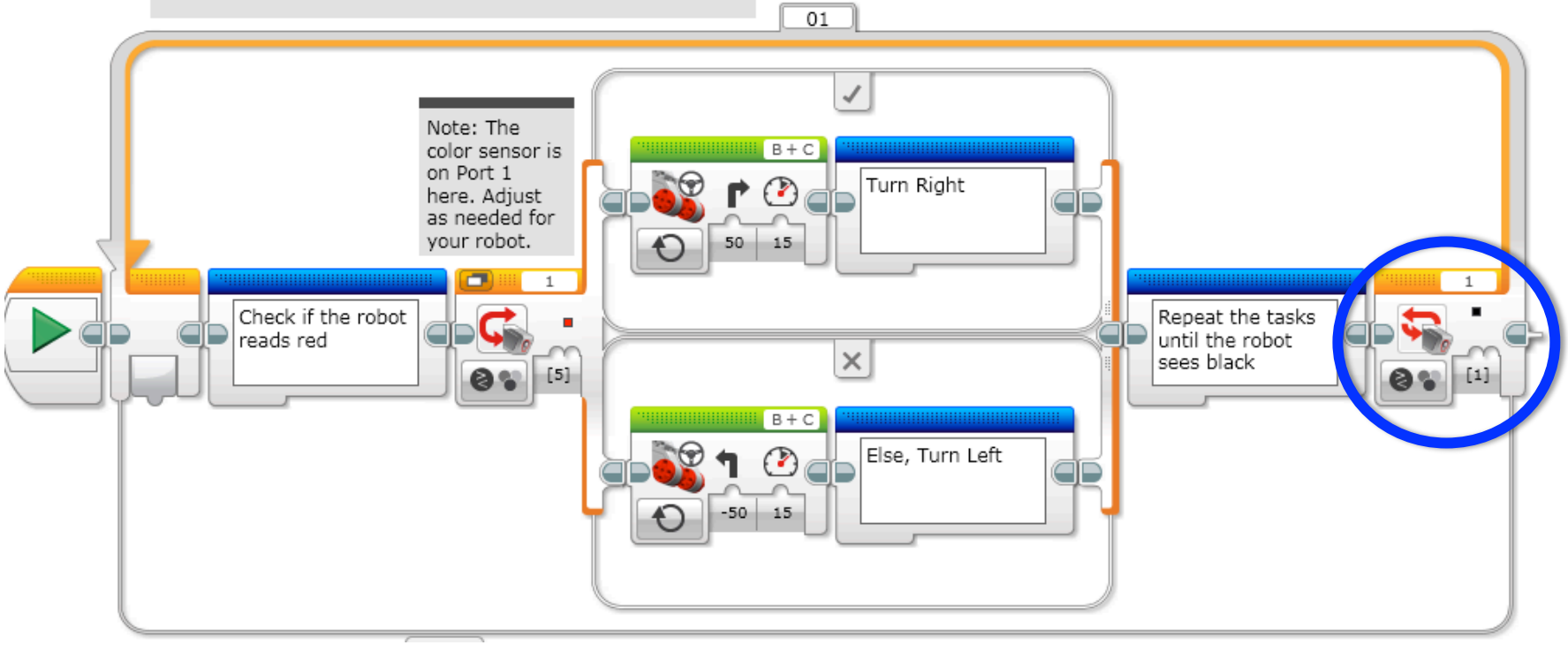


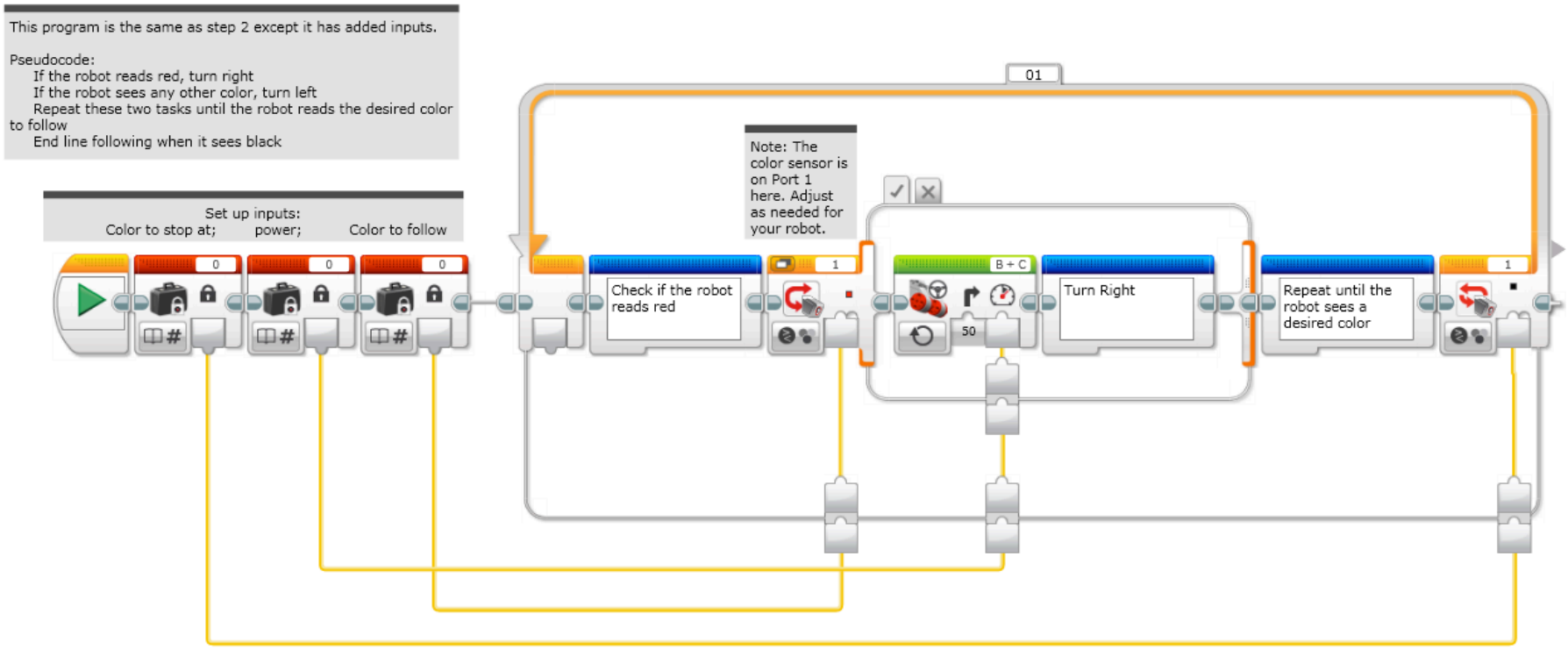
STEP 2: STOPS ON BLACK

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 3: ADDING INPUTS



STEP 4: THE MYBLOCK

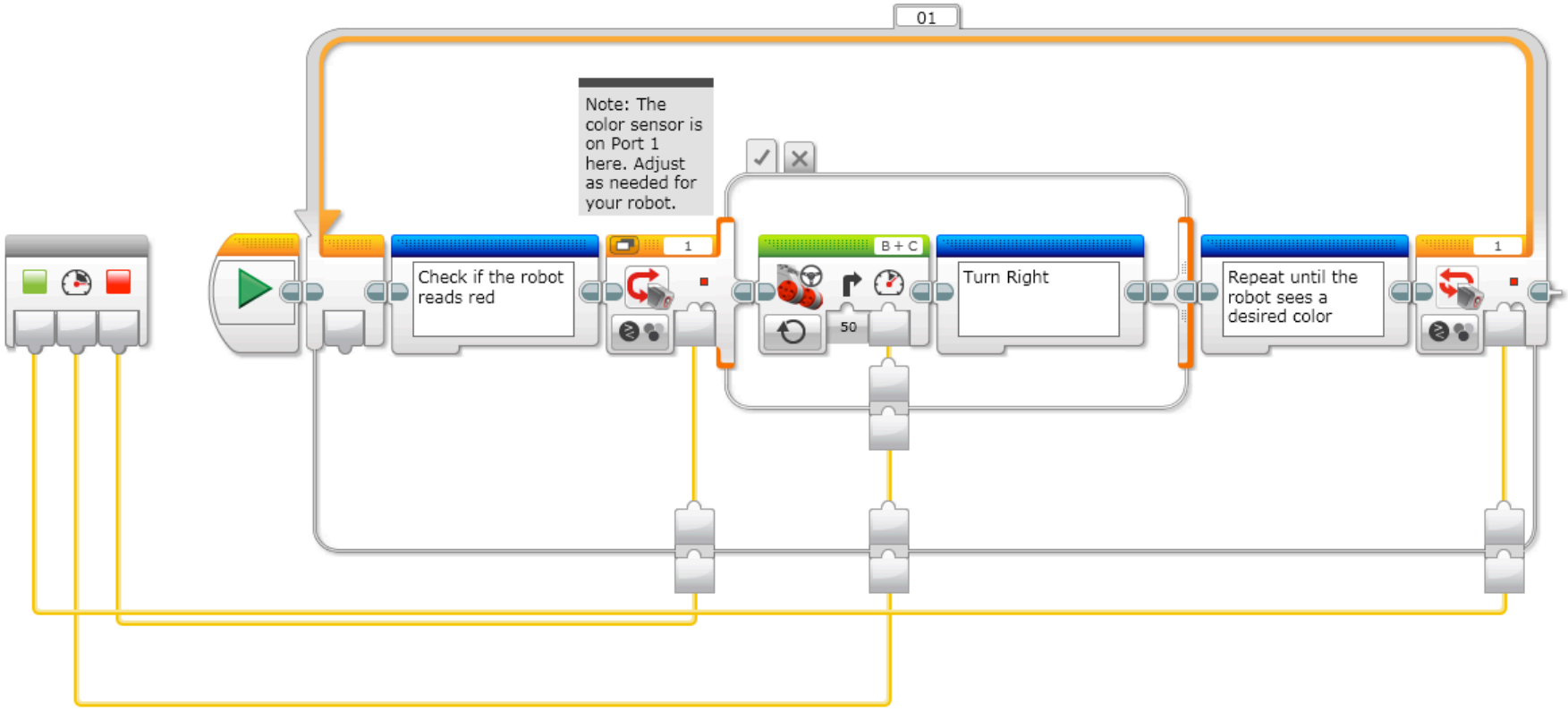
This program is the same as step 3, but is converted into a my block.
Process:
1. Highlight all the blocks execpt for the constants and start block
2. Click Tools-->My Block Buider
3. This menu will allow you to customize your My Block
4. Click on the last block tab (the torquoise one) to find your newly made block!

inputs:
color to stop at; power; desired color to follow

Color Key
0 - No Color
1 - Black
2 - Blue
3 - Green
4 - Yellow
5 - Red
6 - White
7 - Brown

Note: I picked 1 = black, 15 power and 5 = Red. Notice that in the My Block, the green and red color icon in the first and third tabs DO NOT adjust when you pick a new color. Pick the correct number from the key.

INSIDE THE MY BLOCK



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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