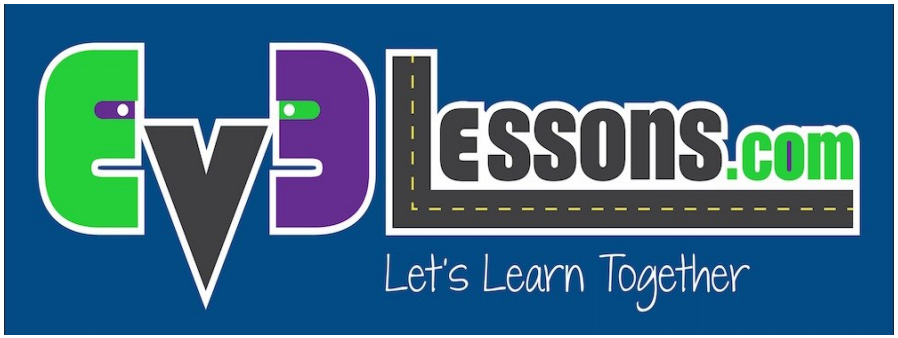
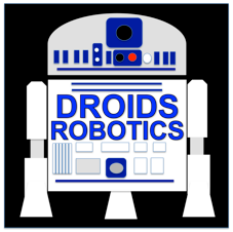
INTERMEDIATE PROGRAMMING LESSON



Color Line Follower My Blocks with Inputs: Move for Distance



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 after a certain number of degrees
3) Practice making a useful My Block

WHY A MY BLOCK LINE FOLLOWER WITH INPUTS?

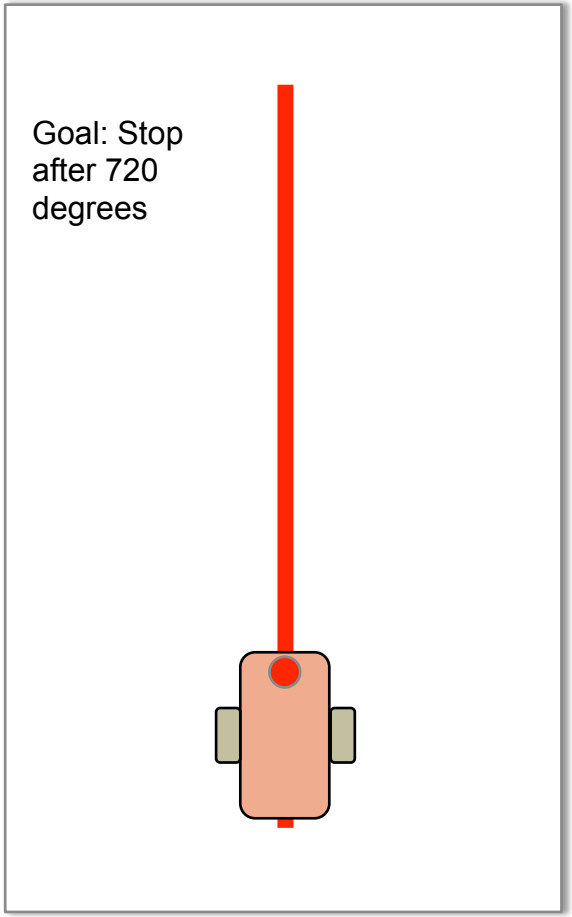
- Making a My Block out of your line follower reduces the length of your code and makes it reusable
- Learning to write a line follower that takes multiple inputs (power, degrees and color) can be very useful
  - Every time you want a line follower that goes a different distance, you just need to change the input!

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: Write a line follower My Block that follows a colored line and stops after moving a certain number of degrees. The line follower should take three inputs (degrees, power and color to follow)



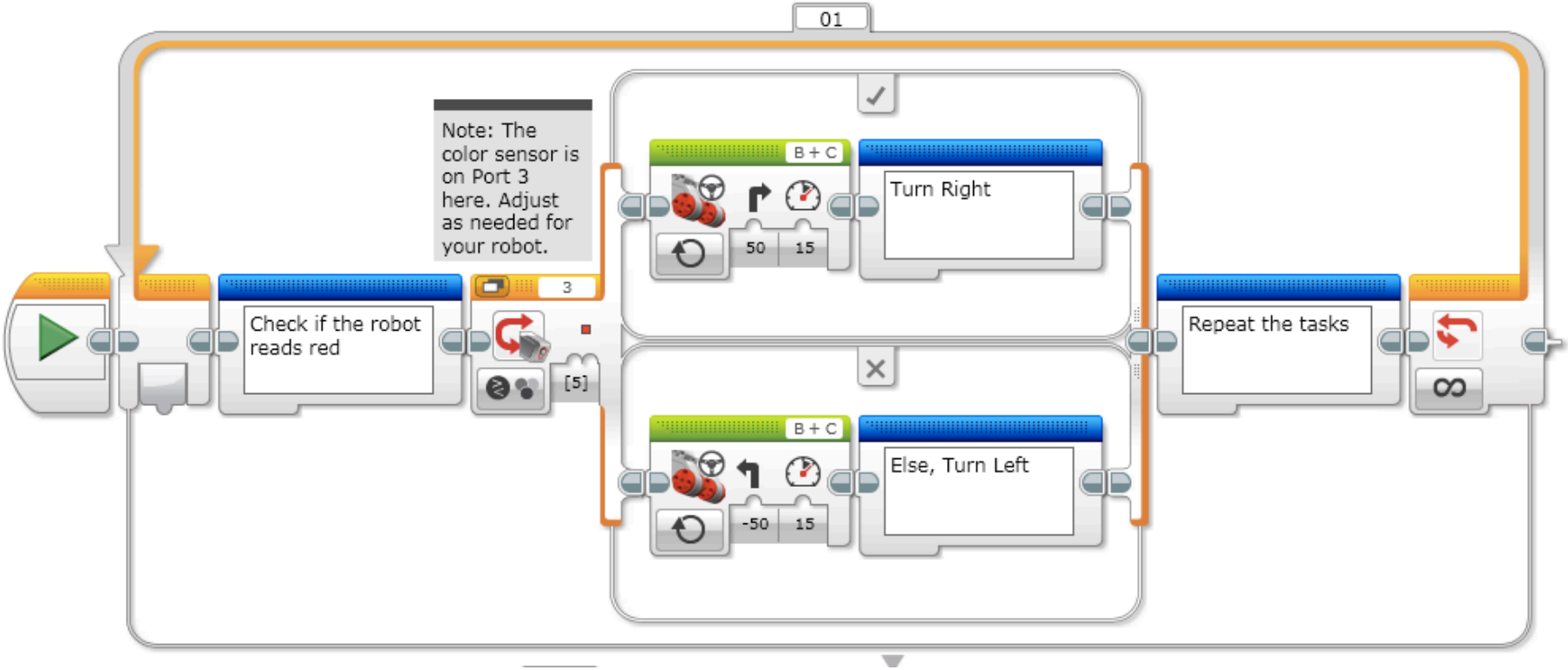
1) Create a simple color line follower program
2) Include a “reset the rotation” sensor block to delete any prior readings
3) Exit the line follower loop when the robot has moved certain degrees
4) Set up the the following inputs before the loop: degrees, power and color using constants.
5) Using data wires, connect the degrees to the exit condition for the loop. Connect the power to the move block. Connect the color to the color sensor block.
6) Make this line follower into a My Block

STAGE 1: SIMPLE COLOR LINE FOLLOWER

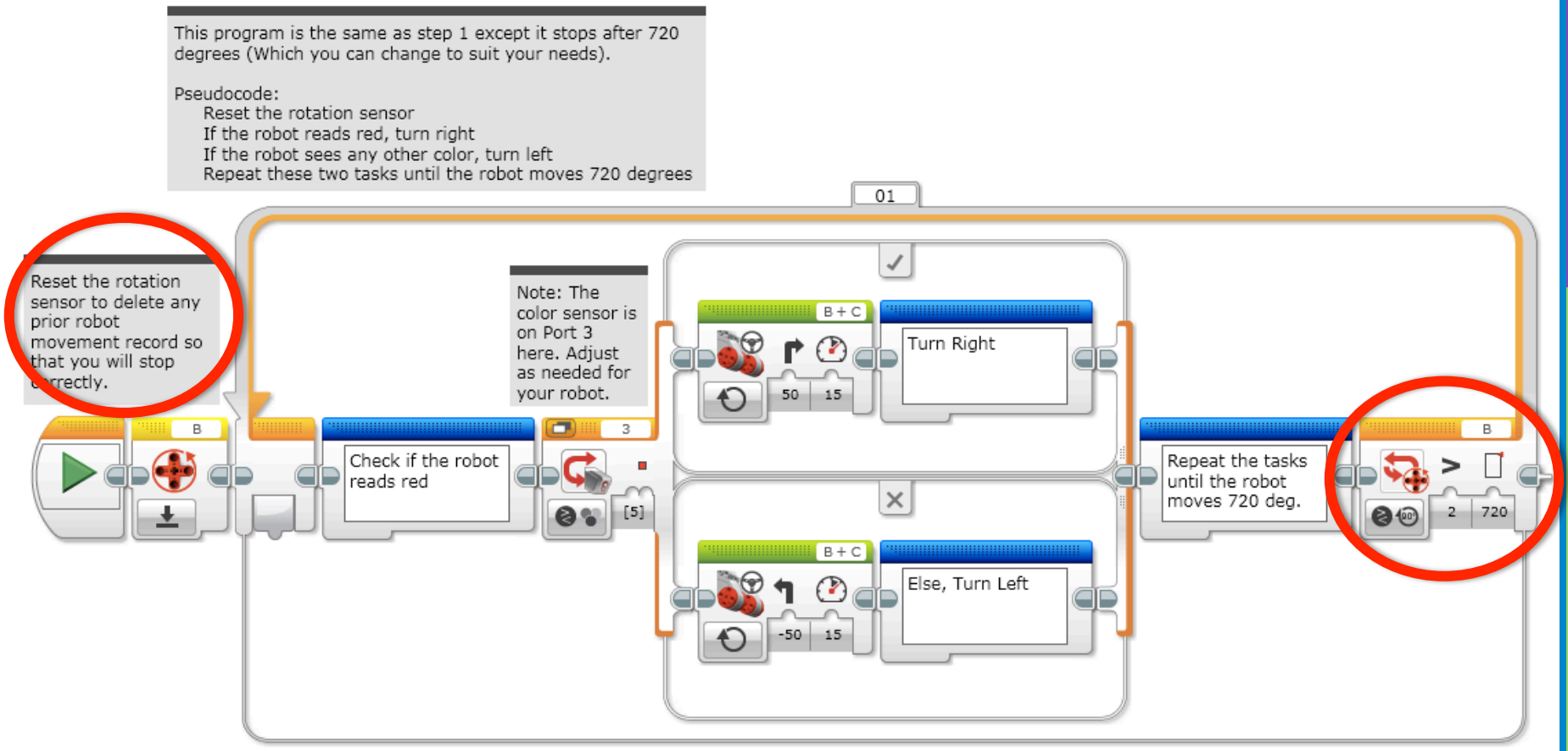
Goal: To create a Line Follower with Color as the input.

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

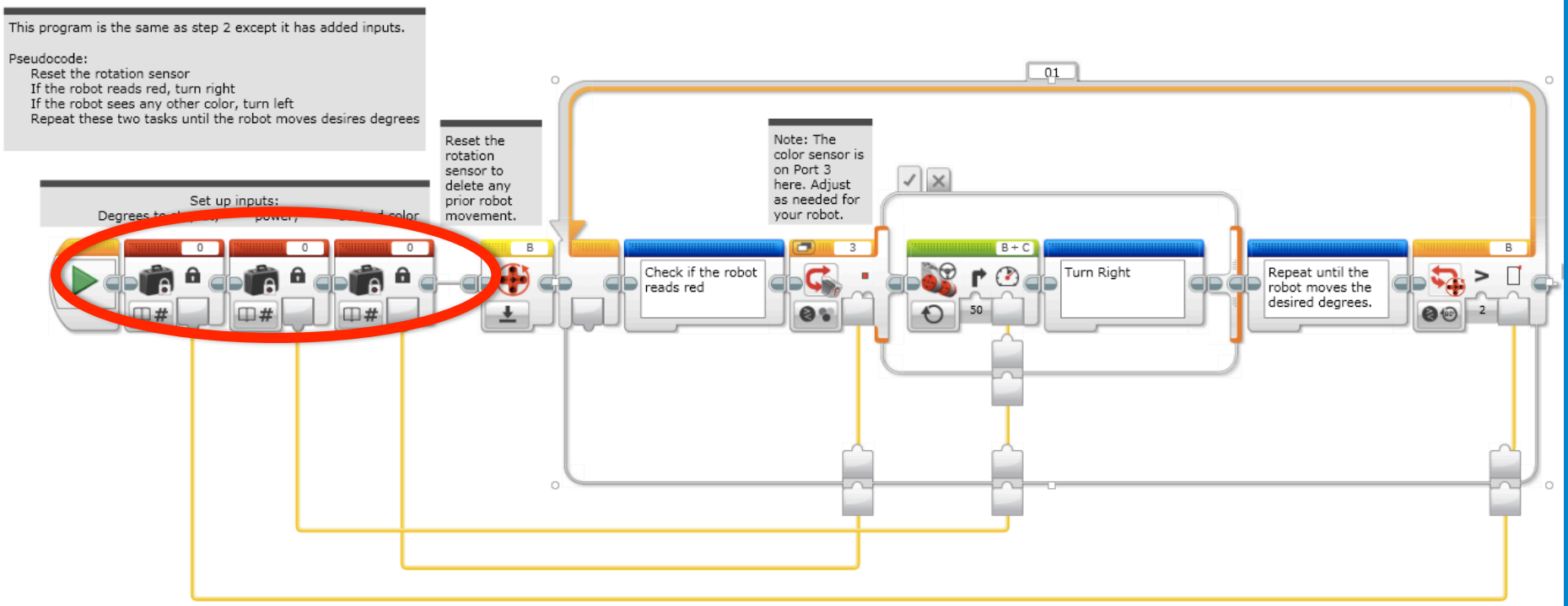
Pseudocode:
If the robot reads red, turn right
If the robot sees any other color, turn left
Repeat these two tasks



STAGE 2: RESET & DEGREES



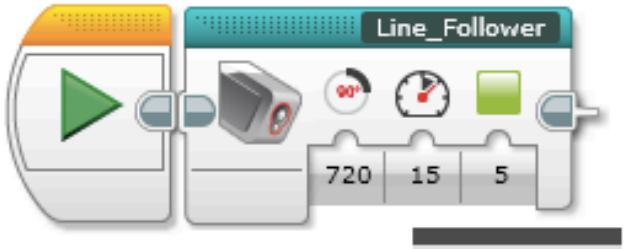
STAGE 3: ADDING INPUTS



STAGE 4: MY BLOCK

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:
Degrees to stop at; power; desired color



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

Note: I picked 720 degrees, 15 power and 5 = Red. Notice that in the My Block, the green color icon in the third tab DOES NOT adjust when you pick a new color. Pick the correct number from the key.

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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