

Lecture 8: COLOR LINE FOLLOWER MY BLOCK WITH INPUTS: MOVE FOR DISTANCE

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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

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

You will need to know how to make a Simple Color Line Follower program and how to make a My Block with inputs

Since you will use your EV3 Color Sensor in Color Mode, you will not have to Calibrate your color sensor for this lesson

Check which ports you have your color sensor connected to and adjust the code as needed

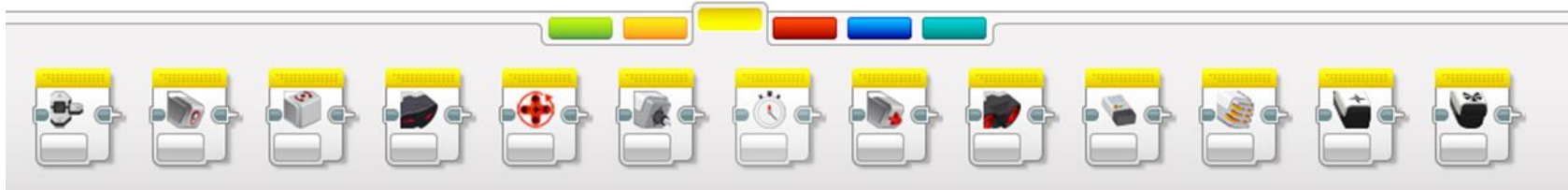
You may have to adjust the speed or direction to work for your robot. Make sure that the the color sensor is in front of the wheels in the direction of travel.

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.

Follow along in the companion EV3 File.

New Block

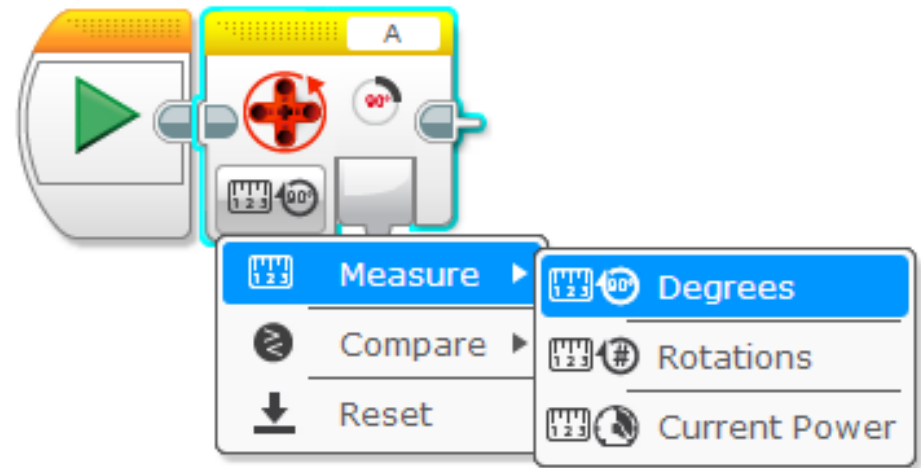
In this lesson, you will use the Sensor Block from the yellow tab for the first time.



We will use the Motor Rotation block.
This is the rotation sensor.

The block has many useful modes.

In this lesson, we learn to use it in reset mode so that the value in the sensor will be set to 0.

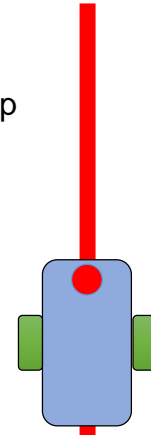


Color Follower for Distance

- STEP 1: Create a simple color line follower program
- STEP 2:
 - A. Include a “reset the rotation” sensor block to delete any prior readings
 - B. Exit the line follower loop when the robot has moved certain degrees
- STEP 3:
 - A. Create a My Block with the code in Step 2 with inputs for degrees, power and color.
 - B. Wire the inputs in the My Block

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).

Goal: Stop
after 720
degrees



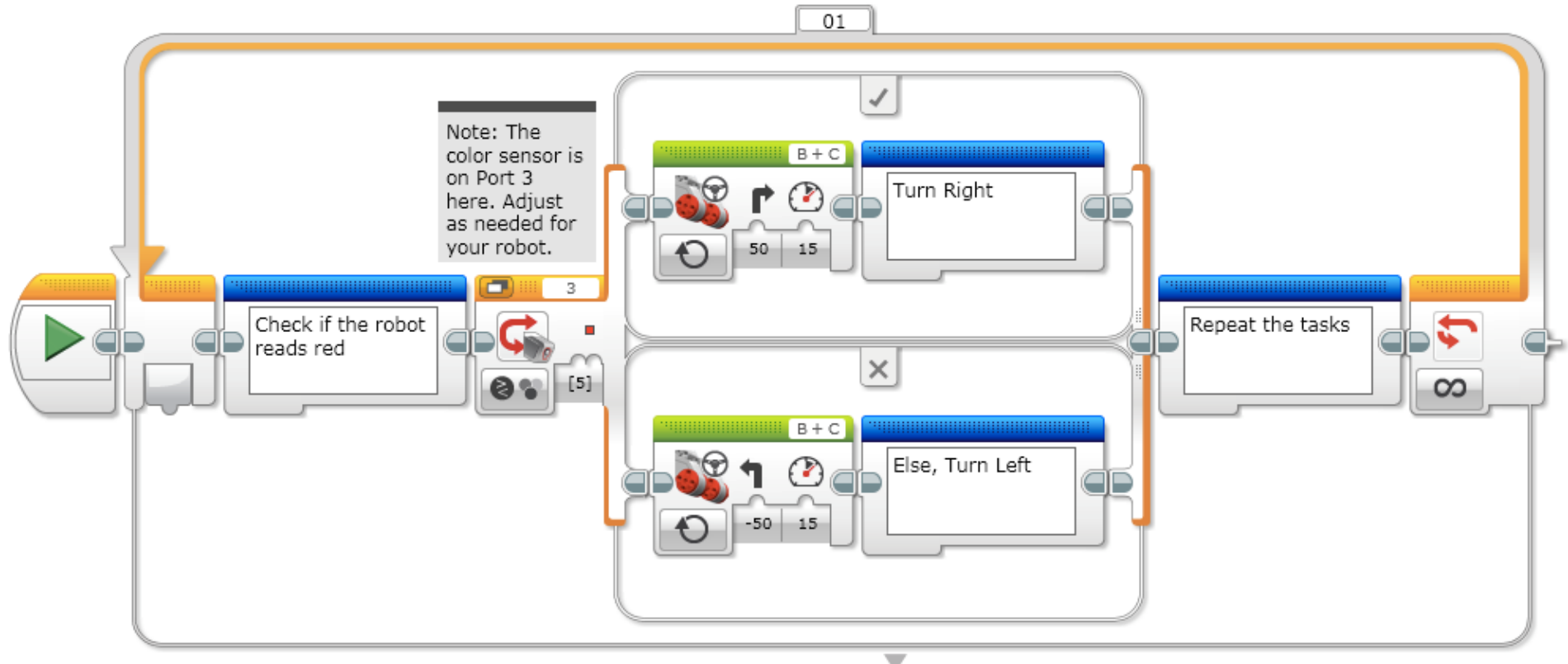
Step 1: Simple Color Line Follower

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



Step 2: Add Reset & Loop Exit

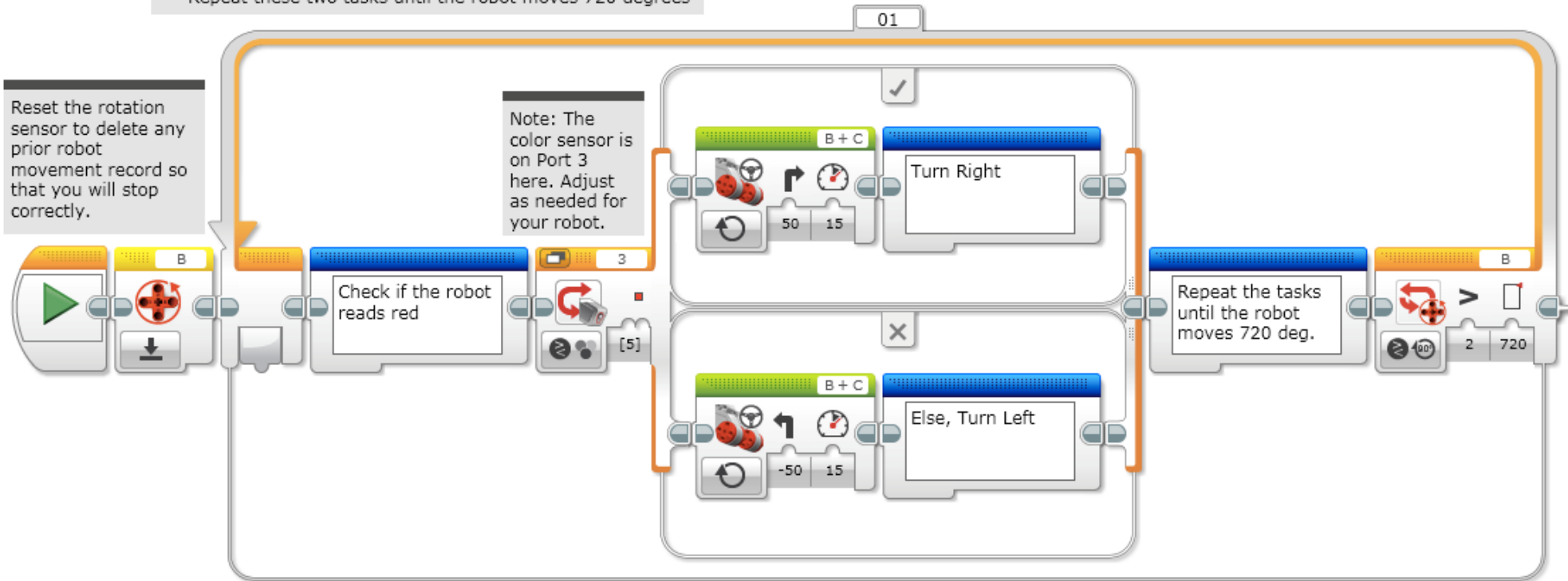
This program is the same as step 1 except it stops after 720 degrees (Which you can change to suit your needs).

Pseudocode:

Reset the rotation sensor
If the robot reads red, turn right
If the robot sees any other color, turn left
Repeat these two tasks until the robot moves 720 degrees

Reset the rotation sensor to delete any prior robot movement record so that you will stop correctly.

Note: The color sensor is on Port 3 here. Adjust as needed for your robot.



References

- Benedettelli, D. (2014), *THE LEGO® MINDSTORMS® EV3 LABORATORY build, program, and experiment with wicked cool robots*. William Pollock, USA.
- Griffin, T. (2014), *THE ART OF LEGO® MINDSTORMS® EV3 PROGRAMMING*. No Starch Press, USA.
- Valk, L. (2014), *THE LEGO® MINDSTORMS® EV3 DISCOVERY BOOK*. William Pollock, USA.
- Filipov, S.A. (2013), *Robotics for children and parents*, Fradkova, A.L., St. Petersburg.