

INTERMEDIATE PROGRAMMING LESSON



COLOR LINE FOLLOWER MY BLOCK WITH INPUTS:
MOVE FOR DISTANCE

By Sanjay and Arvind Seshan



EV3 CLASSROOM LESSON
BY EV3LESSONS.COM

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

Prerequisites: My Blocks with Inputs & Outputs, Variables, Loops, Switches.

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.

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.

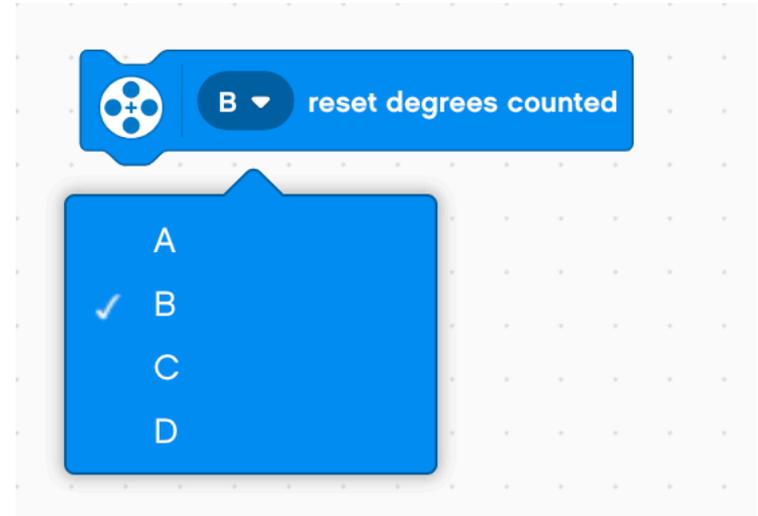
Make sure you place the robot on the side of the line that you are following. The most common mistake is placing the robot on the wrong side of the line to begin with.

New Block

In this lesson, you will need to reset your motor's rotation sensor

Since you want to line follow only for a certain distance, you have to first reset the value to 0.

Motors B or C are your drive motors so pick either of them.



Color Follower for Distance

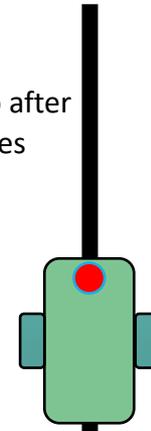
STEP 1: Create a My Block with three inputs

STEP 2: Define the My Block to line follow with the exit condition of the loop as degrees

STEP 3: Use the My Block to follow a Black Line for 500 degrees

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

Goal: Stop after 500 degrees



Step 1: Create the My Block

Add three Inputs and Labels



Add an input
number or text



Add an input
boolean



Add a label

Step 2: Define the My Block

Reset the rotation sensor

Repeat the loop until the rotation sensor reads a certain number of degrees

If the color sensor reads the color of the line you want to follow, turn right, else, turn left

Stop motors

Drag variables as indicated

define Line_Follower Color Color Degrees Distance Speed % Speed

reset degrees counted

repeat until degrees counted > Degrees

if 3 is color Color ? then

start moving right: 50 at Speed % speed

else

start moving left: -50 at Speed % speed

stop moving

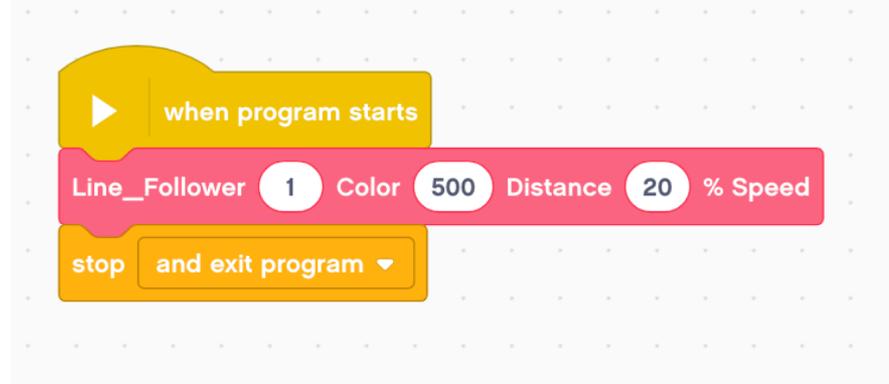
The image shows a Scratch script for a line follower robot. It starts with a 'define' block for a block named 'Line_Follower' with variables 'Color', 'Degrees', and 'Speed'. The script then includes a 'reset degrees counted' block, a 'repeat until' loop where the condition is 'degrees counted > Degrees', an 'if' block checking 'is color Color?' with a dropdown set to '3', and two 'start moving' blocks for 'right: 50' and 'left: -50' at 'Speed % speed'. The script ends with a 'stop moving' block. Yellow arrows point from the text 'Drag variables as indicated' to the variable boxes in the 'define' block and to the 'Color' and 'Speed' variables in the 'if' and 'start moving' blocks.

Step 3: Use and Reuse the My Block

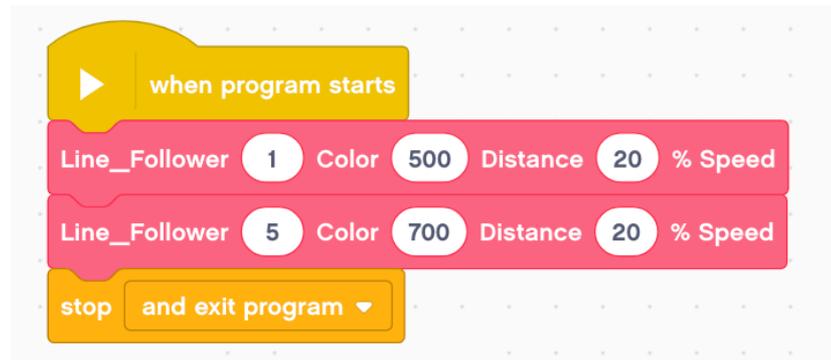
Note: You have to enter a number into the parameter for the color. You cannot just spell out the color. The numbers are not very clearly defined in EV3 Classroom.

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

Line follow a Black Line for 500 degrees



Line follow a Black Line for 500 degrees and then a Red Line for 700 Degrees



Credits

This tutorial was created by Sanjay Seshan and Arvind Seshan

More lessons are available at www.ev3lessons.com



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