FIRST LEGO LEAGUE CHALLENGE

Programming Skills Quick Guide
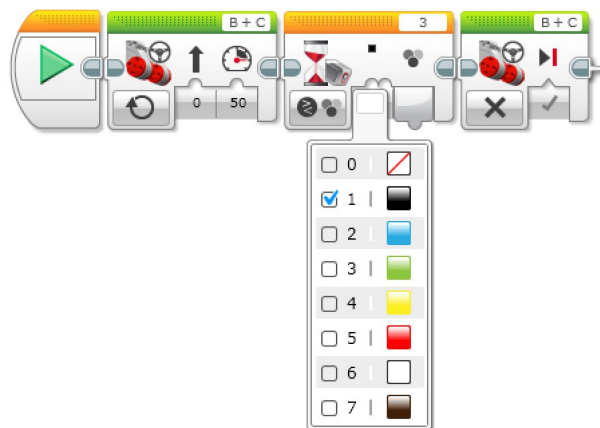
FIRST LEGO LEAGUE TUTORIALS

Move Until Black

- ● ***Objective:*** *Program your robot to move straight until the color sensor sees black*
- ● Make sure you check the height of your color sensor before you begin
- ● Use a line on the *FIRST* LEGO League challenge mat or create one using black electrical tape on a white paper.
- ● Line up your robot as far away from the black line as you want and see if you can make it stop on the line.

4-12mm
0.5-1.5 LEGO
Modules

16mm
2M LEGO
Modules
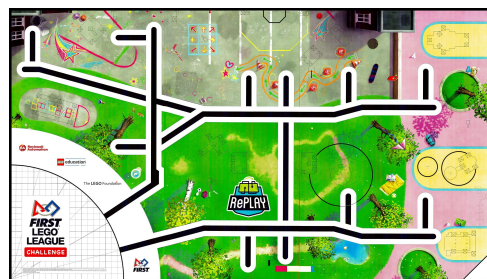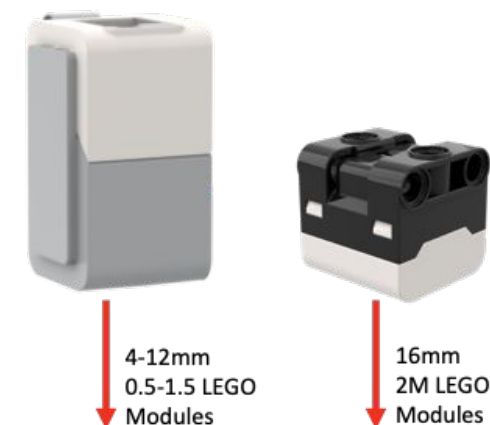
EV3-Lab

- ● Start motors
- ● Use the Wait For block in color mode to detect when the color sensor sees black
- ● Stop Motors

SPIKE Prime

- ● Set the movement motors for your robot
- ● Start moving straight at % speed
- ● Use the wait until block to detect when the color sensor sees black
- ● Stop moving

Learn more: FLLTutorials.com, PrimeLessons.com, EV3Lessons.com
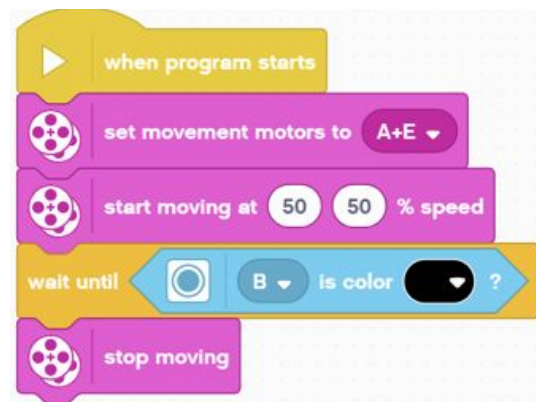
Line Follow for Distance

- ***Objective:** Program your robot to follow a line for a specified distance (500 degrees).*
- Note that robot line followers follow the edge of the line (not the middle).
- Make sure you check the height of your color sensor before you begin
- Use a line on the *FIRST* LEGO League challenge mat or create one using black electrical tape on a white paper.
- Make sure your color sensor starts on the correct side of the line to match your code (the examples below follow the right side).

```
4-12mm              16mm
0.5-1.5 LEGO        2M LEGO
Modules             Modules
```
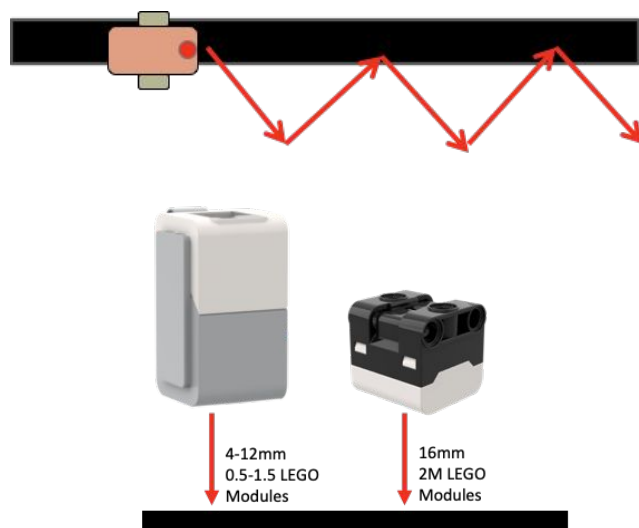
EV3-Lab

- Reset movement motor (B)
- Turn Right if color sensor sees black
- Turn Left if it does not see Black
- Repeat until motor (B) is greater than 500 degrees
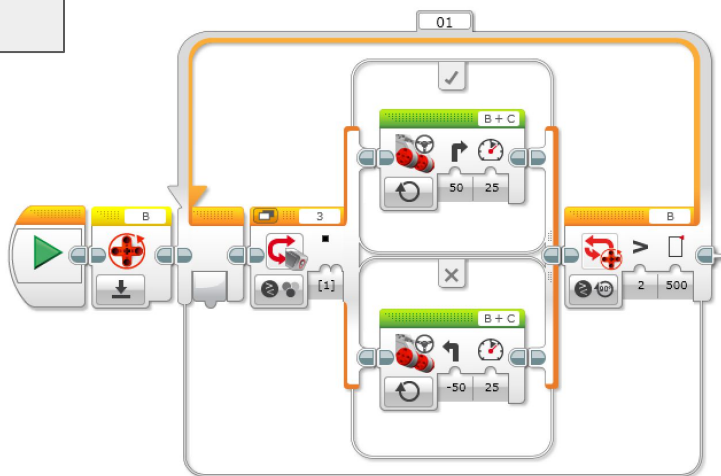
SPIKE Prime

- Reset movement motor to "0" (A)
- Set movement motors (A+E)
- Turn Right if color sensor sees Black
- Turn Left if it does not see Black
- Repeat until relative position of the motor (A) is greater than 500

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BY DROIDS ROBOTICS
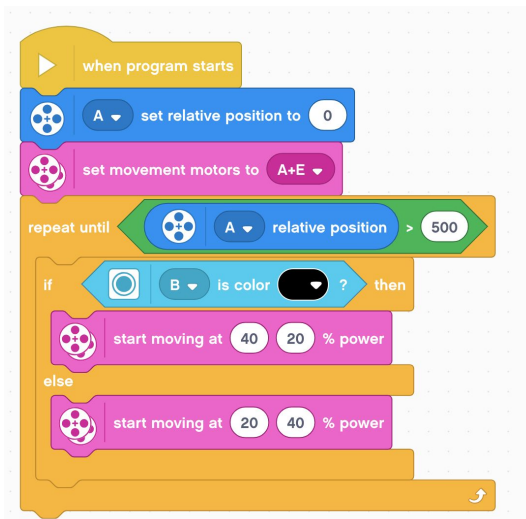
- *Objective: Program your robot to straighten out on a line*
- Use some black electrical tape or a line on the Challenge Mat.
- Make sure your color sensors are at the correct height and as far apart as possible on your robot
- The code below is a simple program. The robot may not be perfectly straight at the end. Brainstorm how you can improve.
- Visit EV3Lessons.com or PrimeLessons.org to learn more

EV3-Lab

- Use parallel beams
- Start both motors
- Stop both motors when the sensor on the corresponding side sees the line (black)

SPIKE Prime

- Use events - the second event should be initiated when message1 is broadcasted
- Start both motors
- Stop the motors when the sensor on the corresponding side sees black