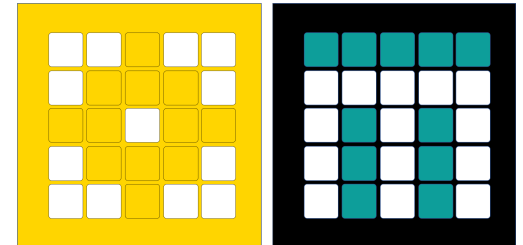


# PRIME LESSONS

By the Makers of EV3Lessons



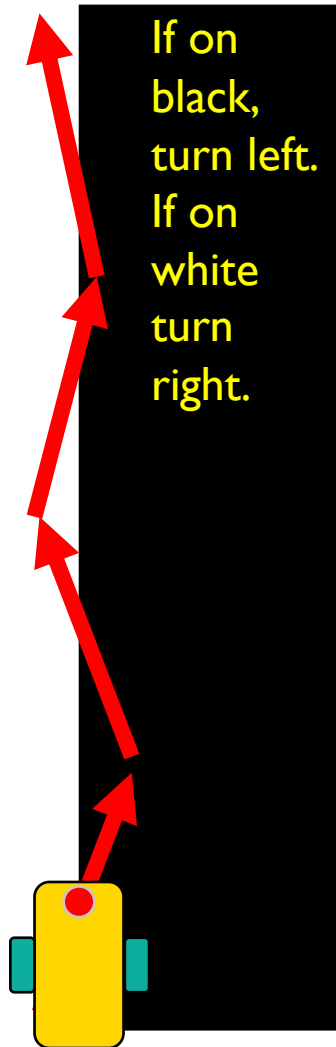
## LINE FOLLOWER

BY SANJAY AND ARVIND SESHAN

# LESSON OBJECTIVES

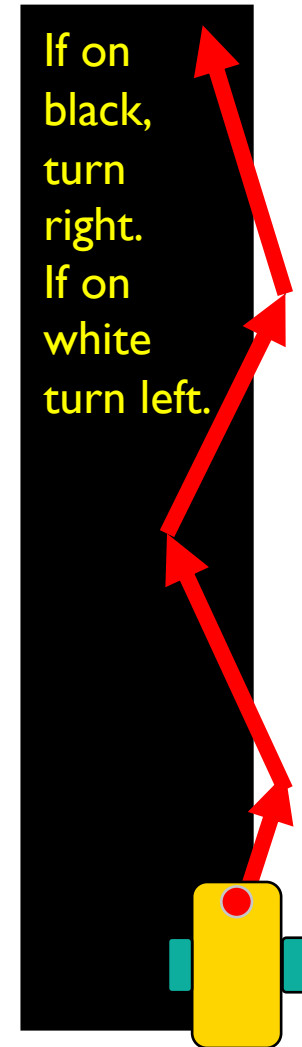
- Learn how to get a robot to follow a line using Color Mode on the Color Sensor
- Learn how to follow a line until a sensor is activated
- Learn how to follow a line for a particular distance
- Learn how to combine sensors, loops and switches

# ROBOTS FOLLOW THE EDGE OF THE LINE

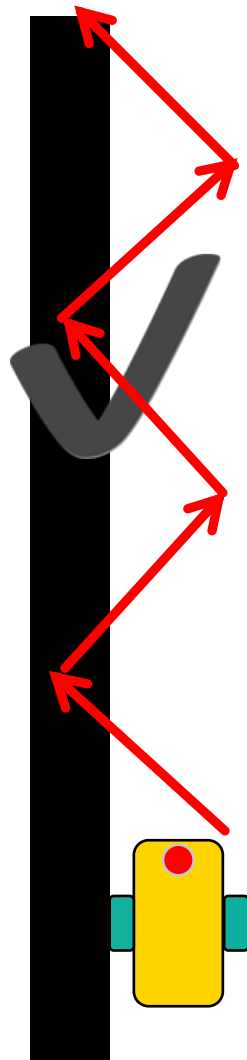
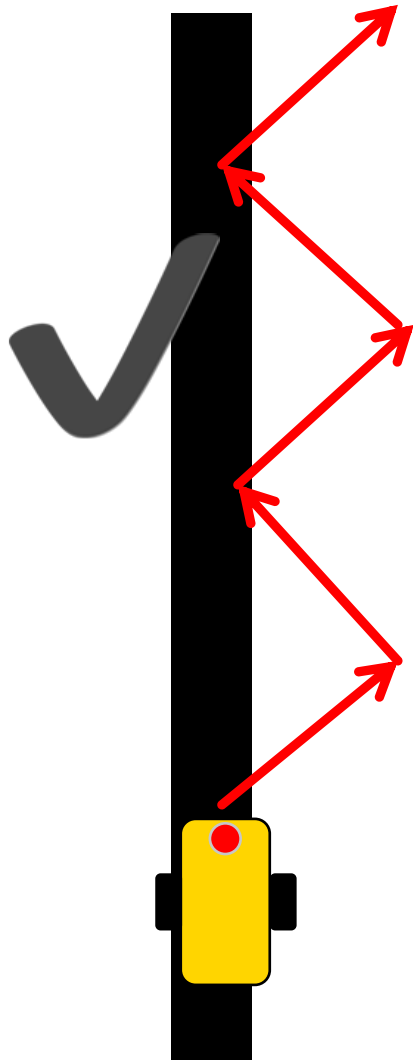


The robot has to choose which way to turn when the color sensor sees a different color.

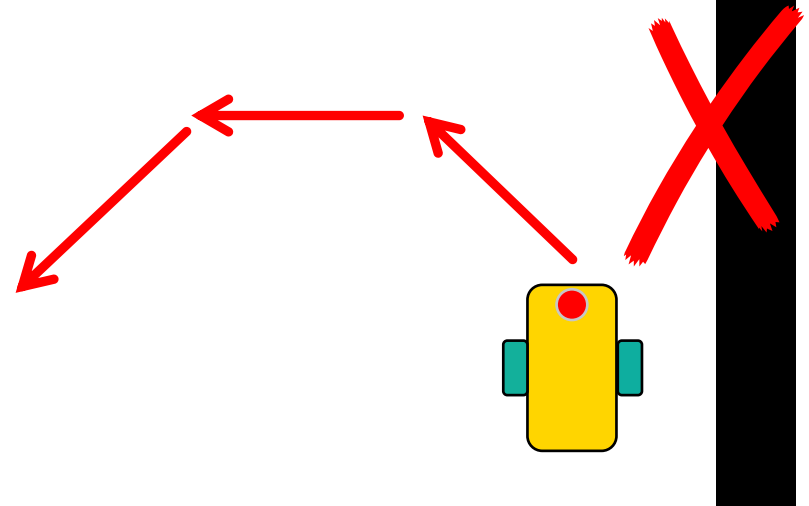
The answer depends on what side of the line you are following!



# WHICH SIDE OF THE LINE SHOULD YOU START ON



If you write a line follower to follow the right side of the line, you have to start the robot on the right of the line



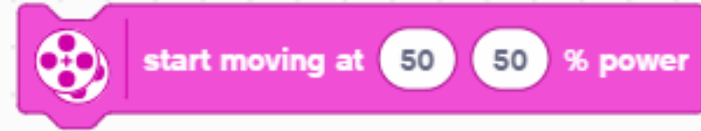
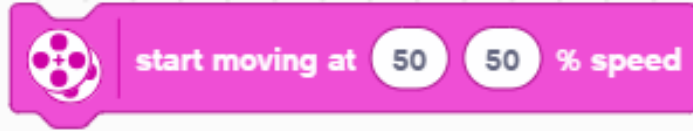
# CHALLENGE: FOLLOW A LINE

- Write a program that follows the right edge of the line
- If your sensor sees black, turn right
- If your sensor sees white, turn left
- Use an If-Else block to make that decision
- Repeat the line follower forever
- Use Color Mode or Reflected Light Mode

Note: To line follow with the Advanced Driving Base (ADB) in Color Mode you will have to make a modification to the design because the color sensor does not recognize black at the height in the original build instructions. See our Color Sensor lesson.



# PERCENT SPEED VS. PERCENT POWER



- **Motor Synchronization:** The block will try to keep the number of motor rotations of each wheel proportional to each other.
  - **Acceleration/Deceleration:** The block will increase to the desired speed over a short time.
  - **Speed Control:** The robot will adjust the power going to the motor to maintain the same speed.
- Does not have the features on the left
  - While speed blocks have more features, when you use movement blocks in a loop (Repeat Block), where it goes through the loop very quickly, you should use a “power” block.
  - For this lesson, you will use a “power block”

# LINE FOLLOWER – COLOR & REFLECTED MODE

*This program follows a right side of a black line using the Color Mode*

```
when program starts
  set movement motors to A+E
  forever
    if B is color black? then
      B reflection 50%
    else
      B start moving at 20 40 % power
```

To use reflected light mode substitute the condition

turns left  
turns

# EXTENSION

## ■ CHANGING EXIT CONDITIONS

- What if you did not want to line follow forever? What it would wanted to line follow until a Force sensor was pressed?
- Combine this lesson with the Repeat block lesson to solve this problem.



# CREDITS

- This lesson was created by Sanjay Seshan and Arvind Seshan for Prime Lessons
- More lessons are available at [www.primelessons.org](http://www.primelessons.org)



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