

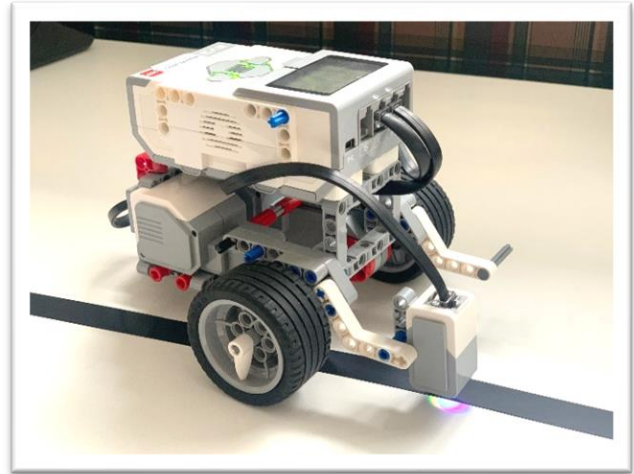
# Moving Along a Black Line

## Color Sensor

### Task Description

This task is great practice that shows how the color sensor can be used to guide the robot's movements when following a black line. With the color sensor, the robot can "see the line" and follows it in a Zig-Zag-motion.

The task introduces an application of the color sensor and teaches learners how to use IF-THEN-ELSE logic. Also, fine-tuning of the motors is required to keep the robot on track.



### Materials Needed

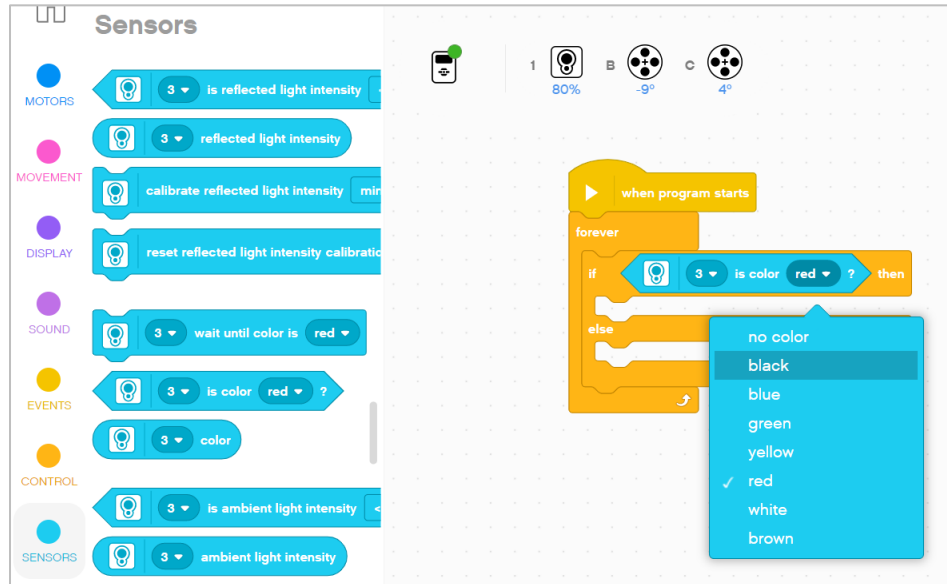
- EV 3 Robot
- Color Sensor
- Black tape or black marker

To get started, attach the Color Sensor to the robot in base configuration. The sensor should be facing downwards and should be positioned less than 1 cm above ground. Find a creative way to attach the sensor yourself, or refer to pp. 68-72 of the EV 3 Manual (Building Instructions).

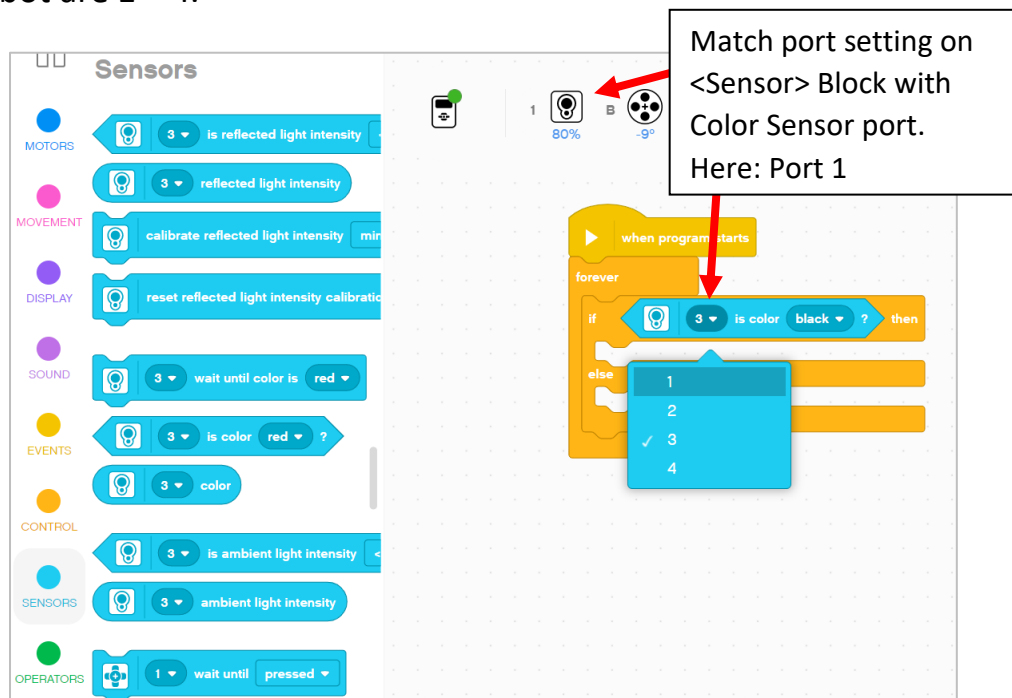
Then, put black tape on the floor to create a path or use marker to draw a wide black line: 2 cm width should do.

## Programming the Robot to Move Along a Black Line

- 1) First, put a <IF-THEN-ELSE> Block inside a Forever <Loop> Block.  
Set up the <IF-THEN-ELSE> Block for the Color Sensor and select “black”.

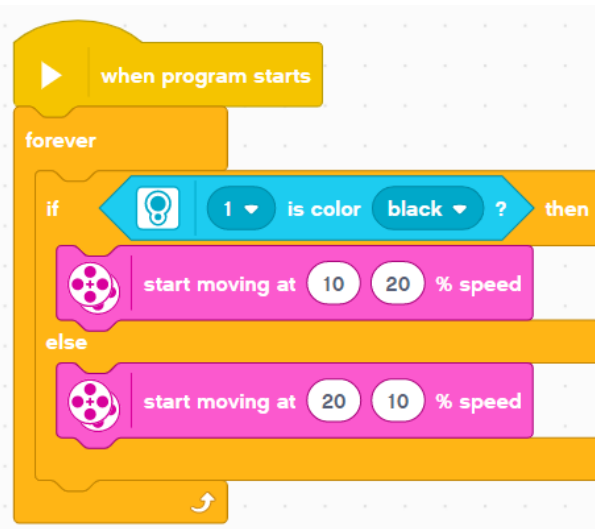


- 2) Next, make sure the correct port is selected. The sensor ports on the back of the robot are 1 – 4.



3) Then, add two <Move> Blocks. There are many options to have the robot follow the line and you have to fine-tune the <Move> Block settings (steering, rotations, power).

- In our first example, the robot follows the line smoothly, but curves and sharp turns can be a problem.



- In our second example, the robot follows the line precisely, but the forward movement is less smooth.

