

EVE LESSONS



Color Sensor

By Sanjay and Arvind Seshan

BEGINNER PROGRAMMING LESSON

LESSON OBJECTIVES

1. **Learn how to use the Color Sensor**
2. **Learn about Coast and Brake**

WHAT IS A SENSOR?

- A sensor lets an EV3 program measure and collect data about its surroundings
- The EV3 sensors include:
 - Color – measures color and darkness
 - Gyro – measures rotation of robot
 - Ultrasonic – measures distance to nearby surfaces
 - Touch – measures contact with surface
 - Infrared – measures IR remote's signals



Image from: http://www.ucalgary.ca/IOSTEM/files/IOSTEM/media_crop/44/public/sensors.jpg

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WHAT IS THE COLOR SENSOR?

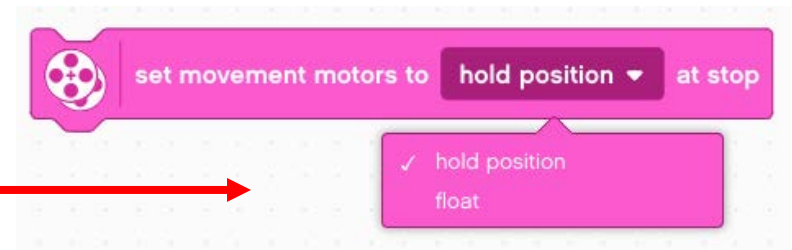
- What are they? Sensors that detect the intensity of light that enters it
- Three modes: Color, Reflected Light Intensity and Ambient Light Intensity
 - **Color Mode:** Recognizes 7 colors (black, brown, blue, green, yellow, red, white) and No Color
 - **Reflected Light:** Measures the intensity of the light reflected back from a lamp that emits a red light. (0=very dark and 100=very light)
 - **Ambient Light:** Measures the strength of the light that enters the sensor from the environment. (0=very dark and 100=very light)
- USES:
 - Move until a line, Follow a line, Find a color
 - Play a game using the color sensor



We will use COLOR MODE in this Lesson

ANOTHER MOVE STEERING TIP: HOLD POSITION OR FLOAT?

- Something more about the Move Steering Block
- You will notice you have an option to HOLD POSITION or FLOAT. This is the same as BRAKE and COAST in EV3-G.
- Float will make the motors keep moving. Hold Position makes the motors stop immediately.
- Which do you use to stop EXACTLY on a colored line?



COLOR SENSOR CHALLENGE

Make the robot move up to a green line using the color sensor.

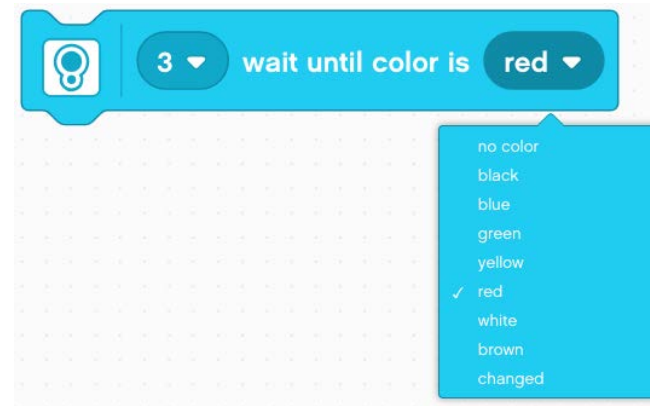
Step 1: Set up motors (e.g. hold position or float)

Step 2: Start Driving

Step 3: Wait for the color sensor to detect green using the Wait Until Color Is block

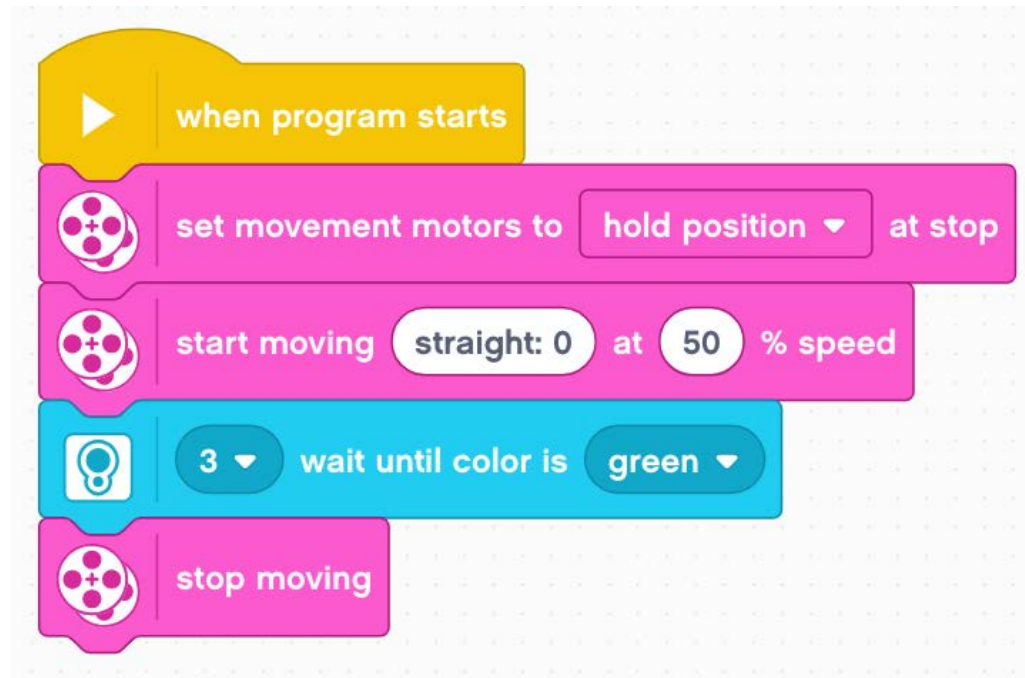
Step 4: Stop motors

Hint: You will use Move Steering (think about motor on and off) and Wait for “Color”



COLOR SENSOR CHALLENGE SOLUTION

1. Sets motors to hold position
2. Start Moving With Steering At Speed
block starts moving the robot and moves on to the next block
3. Waits until Color is Green
4. Stops moving

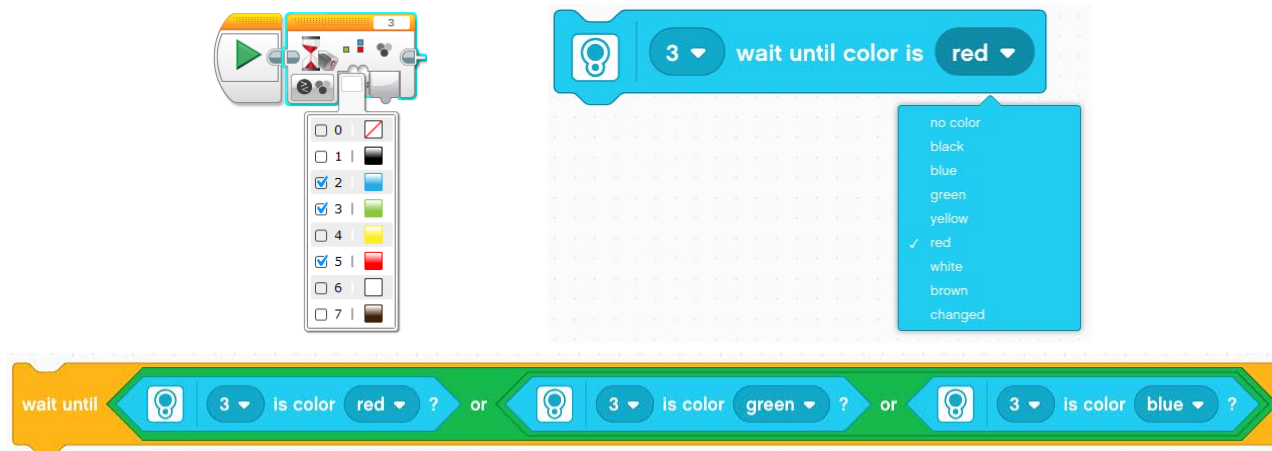


FINISH

START

NOTES FOR EV3-G USERS

- You can not look for more than one color with just the color sensor blocks
- However, other code can be written that will have the same effect.



CREDITS

- This tutorial was created by Sanjay Seshan and Arvind Seshan
- More lessons are available at www.ev3lessons.com



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