

PROGRAMMING THE EV3 EDU SET

Loops and Switches
Display and Sound
Color Sensor

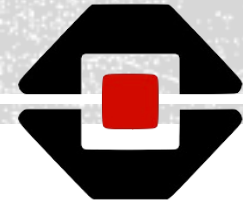


Photo Credit: Image of the base EV3 robot by LEGO



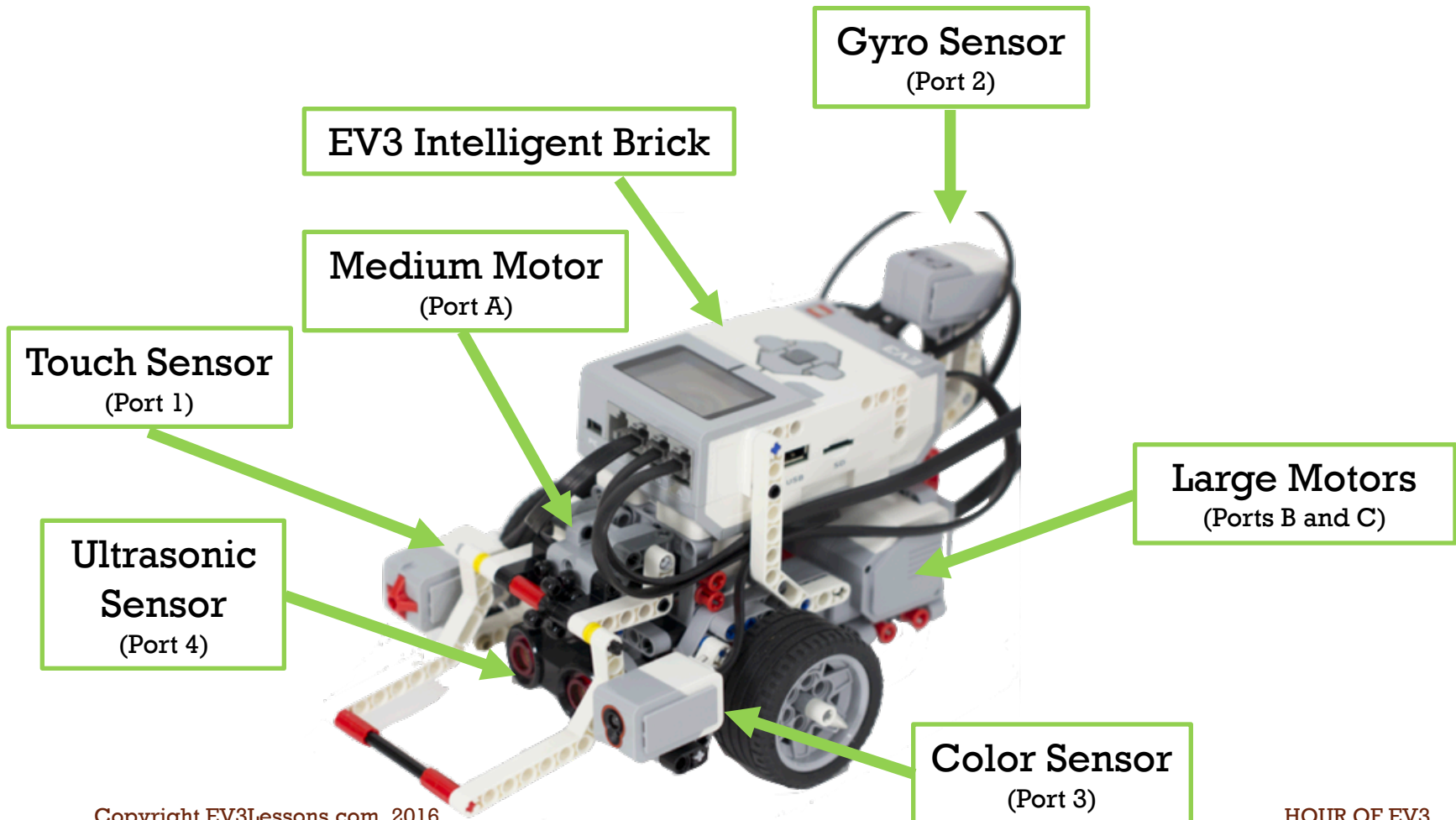
INTRODUCTION TO THE EV3 EDU SET

- Can you identify the following parts on the robot?
 - 1 EV3 Intelligent Brick
 - 1 Touch Sensor
 - 1 Color Sensor
 - 1 Ultrasonic Sensor
 - 1 Gyro Sensor
 - 2 Large Motors
 - 1 Medium Motor





INTRODUCTION TO THE EV3 EDU SET





INTRODUCTION TO THE PROGRAMMING APP



**START
HERE**



New Program



Program 1



Program



PROGRAMMING APP CANVAS

The screenshot shows the EV3 programming app interface. At the top, there are navigation icons (home, help, refresh) and the title "Program 5". On the left, a "Start Block" (a grey robot head with a green play button) is highlighted. Below it, a text box says "Drag programming blocks from the palettes below and attach them to the Start block". At the bottom, there are three palettes of programming blocks: a green palette with a motor, a yellow palette with a motor, and a purple palette with a motor. To the right of these palettes is a "Brick Status" panel for an "EV3M" brick, showing sensor data for ports A, B, C, and D. At the top right, there are "Download & Play" buttons. A note on the right says "Note: This appears only if your robot is connected. Press the Play button to test your code on the robot".

Start Block

Drag programming blocks from the palettes below and attach them to the Start block

Download & Play

Note: This appears only if your robot is connected. Press the Play button to test your code on the robot

Programming Blocks in 3 Colored Palettes

Brick Status



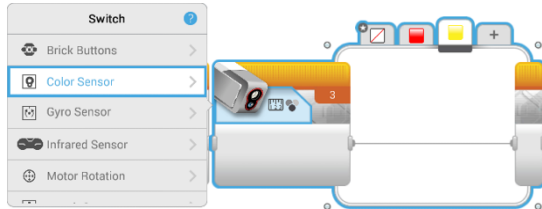
CHALLENGE 1: DETECT COLOR

- In this activity, you will program the EV3 to detect a random color of a LEGO object placed in front of the color sensor. You will then have the robot display a message identifying the color. For example, it will display the word “red” on the brick screen when the robot sees red.
- For this challenge, make sure to place the object $\frac{1}{2}$ to 1 inch away from the sensor.
- You can use the colored block in the Edu set or any extra pieces of LEGO you have available.





PROGRAMMING BLOCKS YOU NEED

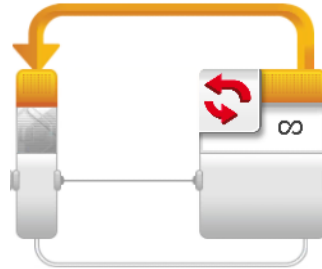


Switch Block

This block lets you select between two or more choices

Click on the "+" to add more choices

For this challenge, pick the Color Sensor in Measure → Color Mode



Loop Block

This block lets you repeat your code



Wait Block

This block controls how long the image or text you display will be seen.



Display Block

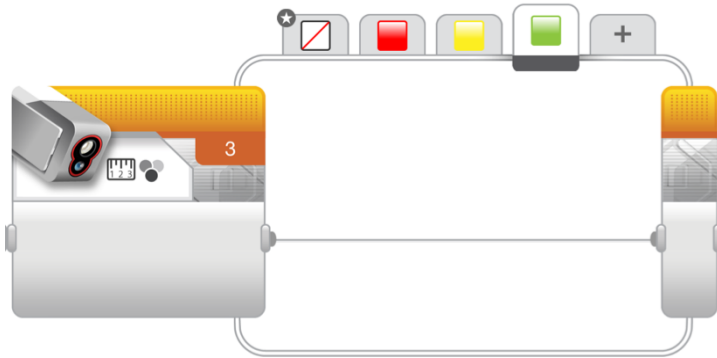
This block lets you display graphics or text.

Clicking on the word "MINDSTORMS" lets you change the text you want to display

For this challenge we will use the Display Text → Grid mode

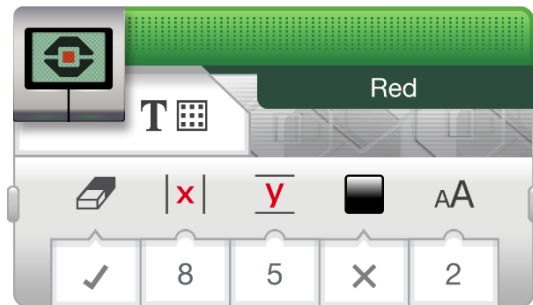


CHALLENGE SOLUTION IN 5 STEPS



STEP 1: Add Switch Block

- Start with a Switch block in Color Sensor → Measure → Color Mode. Click on the “+” and add tabs until you have 4 tabs: No color, Red, Yellow and Green.



STEP 2: Add Display Block

- Click on the Red tab and add a Display Block inside
- Click on the EV3 brick logo and select Text → Grid. Change the X value to 8 and Y value to 5 so your text is centered.
- Click on the word “MINDSTORMS” and change it to display “RED”.



CHALLENGE SOLUTION IN 5 STEPS



- **STEP 3:**

- Add a Wait Block and set the amount of seconds you want the text to be visible (in this case, for 5 seconds).



- **STEP 4:** Repeat STEPS 2 & 3 for the Yellow, Green and No color tabs.

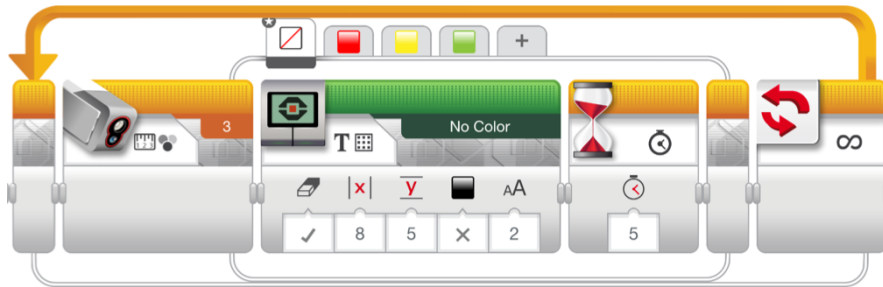


- **STEP 5:**

- Add a loop block and drag the previous switch block inside. You can let this loop run forever.



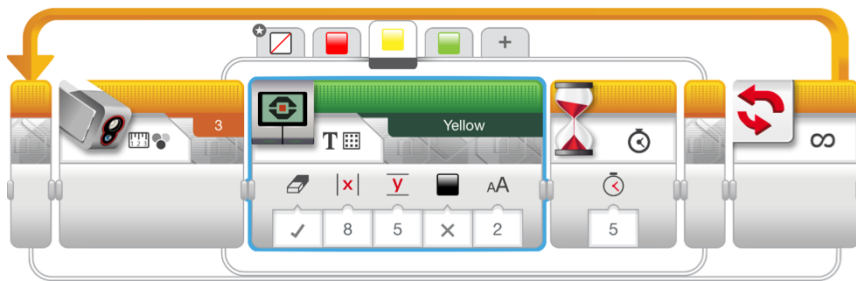
SOLUTION TO CHALLENGE



No Color



Red



Yellow



Green

NEXT STEPS: PROJECT IDEAS

- Using the Sound Block make the robot to say the color name instead of displaying text on the brick screen

