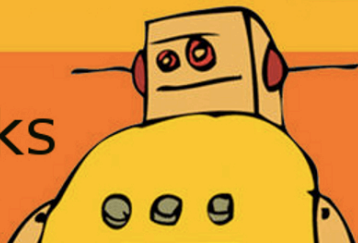


ADVANCED PROGRAMMING LESSON:

HOW TO USE YOUR NXT LIGHT SENSOR WITH YOUR EV3

Lego Works
Robotics Team



BY LEGO WORKS

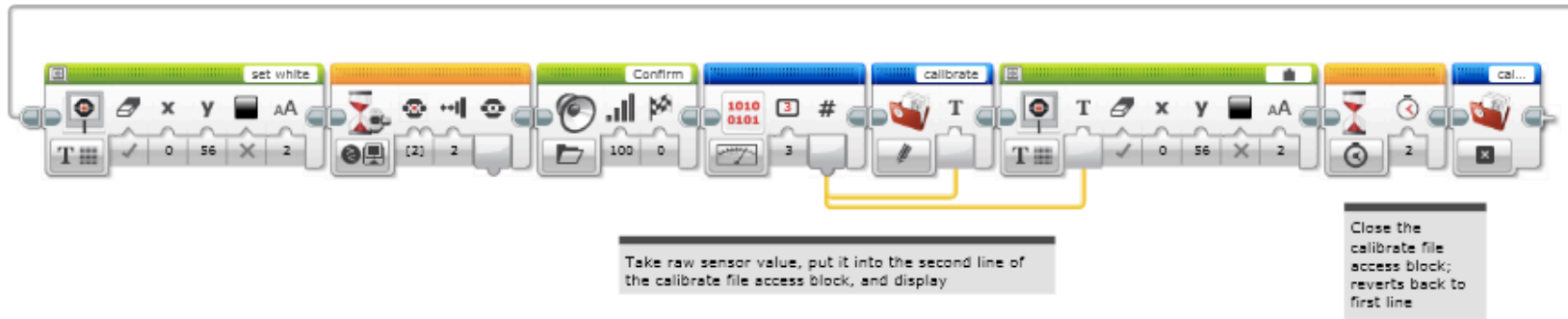
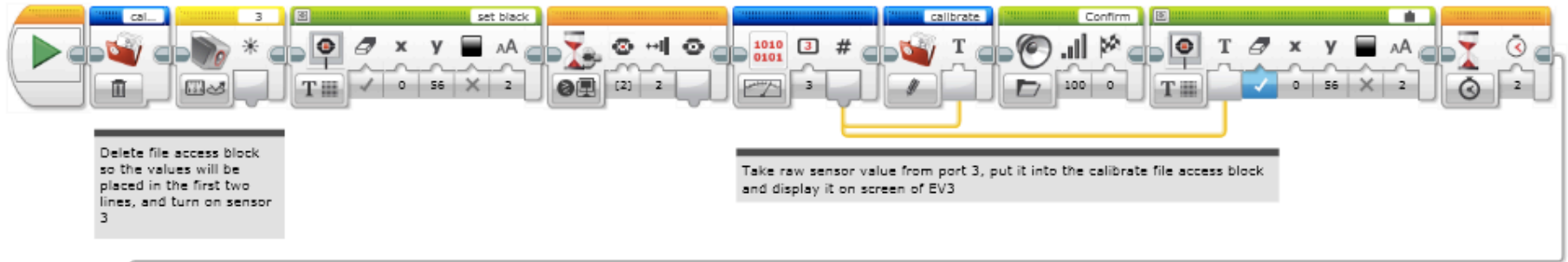
GOAL

- The goal of this lesson is to help you use your NXT Light Sensors with your EV3
- The main purpose of the code is to calibrate your NXT sensors
- Thank you to FLL Team Lego Works from PA for sharing this lesson with us
- Please note that you will need to understand FILES to use this code. We will add a lesson on this topic soon.

STEP 1: CALIBRATE_LS: STORE BLACK/WHITE READINGS TO FILES

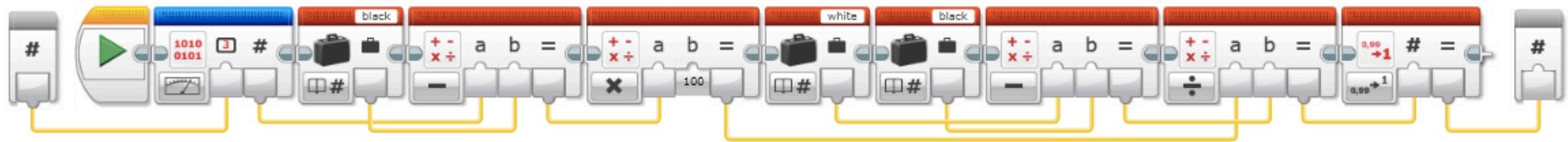
Code by: Lego Works

This myblock sets the raw values of black and white into a file access block for later use



STEP 3: LIGHT_SENSOR: NORMALIZE THE LIGHT SENSOR READINGS TO 0-100

This myblock converts the raw value to a value between 0 and 100



Allows you to choose what port you will be using

Takes the raw value of the designated port, and using the following equation, converts it to a number between 0 and 100
 $(\text{Raw value} - \text{Black}) * 100 / (\text{white} - \text{black})$

The final value is then accessed through the myblock outbound parameter

STEP 4: TEST LOOP: CALIBRATING AND READING

The goal of this program is to use the NXT Light Sensor on the EV3. Team Lego Works shows you how to calibrate the NXT Sensors (Comment added by Droids Robotics)

This part of the program keeps updating the light reading value to the screen. So when you move the sensor over different areas, you will see the values update. It will stop the program when you hit the center button.

The program flowchart consists of the following blocks:

- Start** (Green triangle)
- Calibr...** (Calibrate My Block)
- Varia...** (Variable Set My Block)
- Light_Sensor** (Light Sensor block with port 3 selected)
- Display** (Display block with 'T' icon)
- Loop** (Loop block with '0' and '4' in the 'times' field)
- Stop** (Stop block with '2' in the 'times' field)

Click to view Calibrate My Block

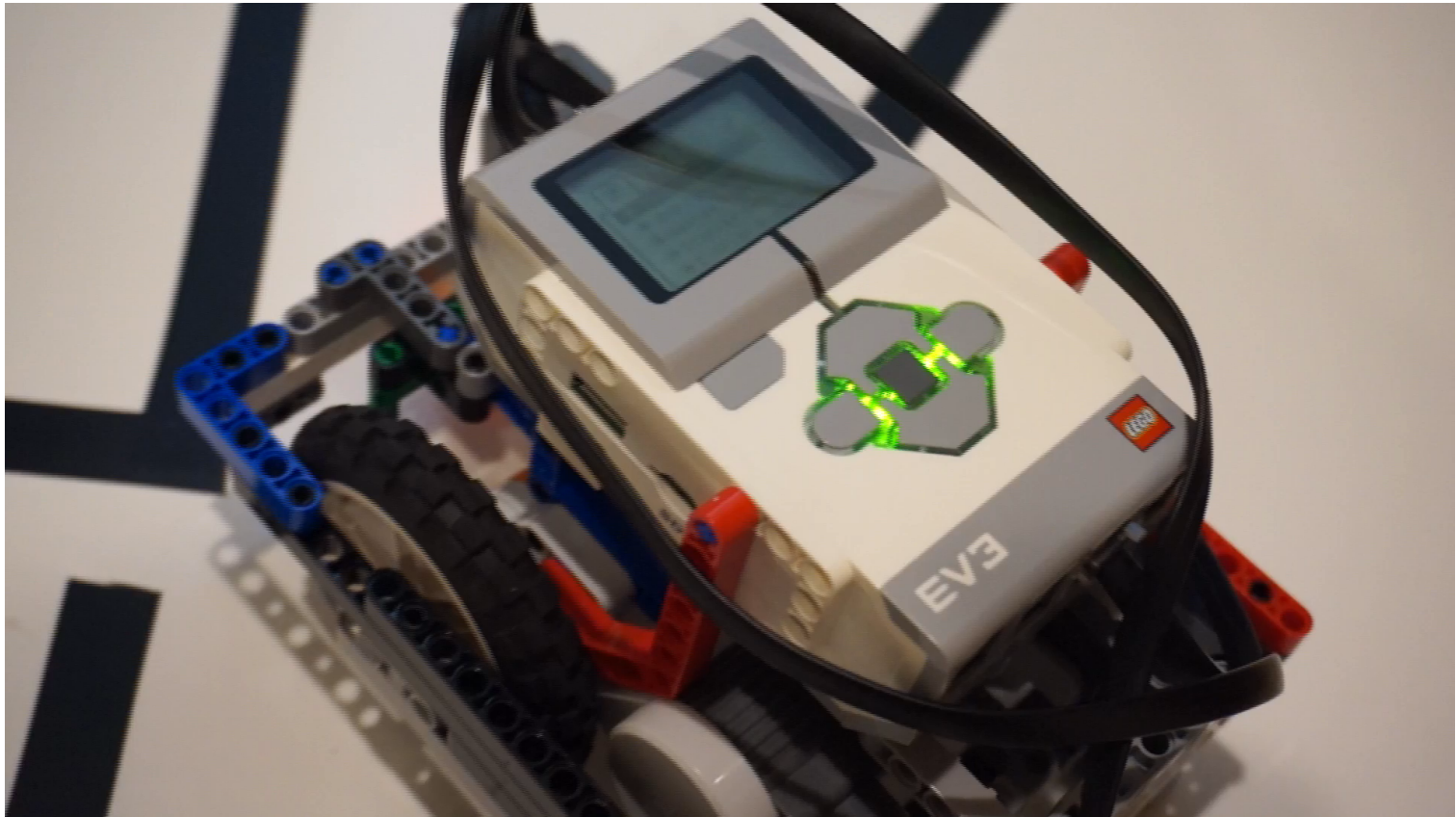
Click to view Variable Set My Block

Comments added by Droids Robotics

Code by: Lego Works

VIDEO OF RUNNING THE PROGRAM

- Watch this video to see how this code works.

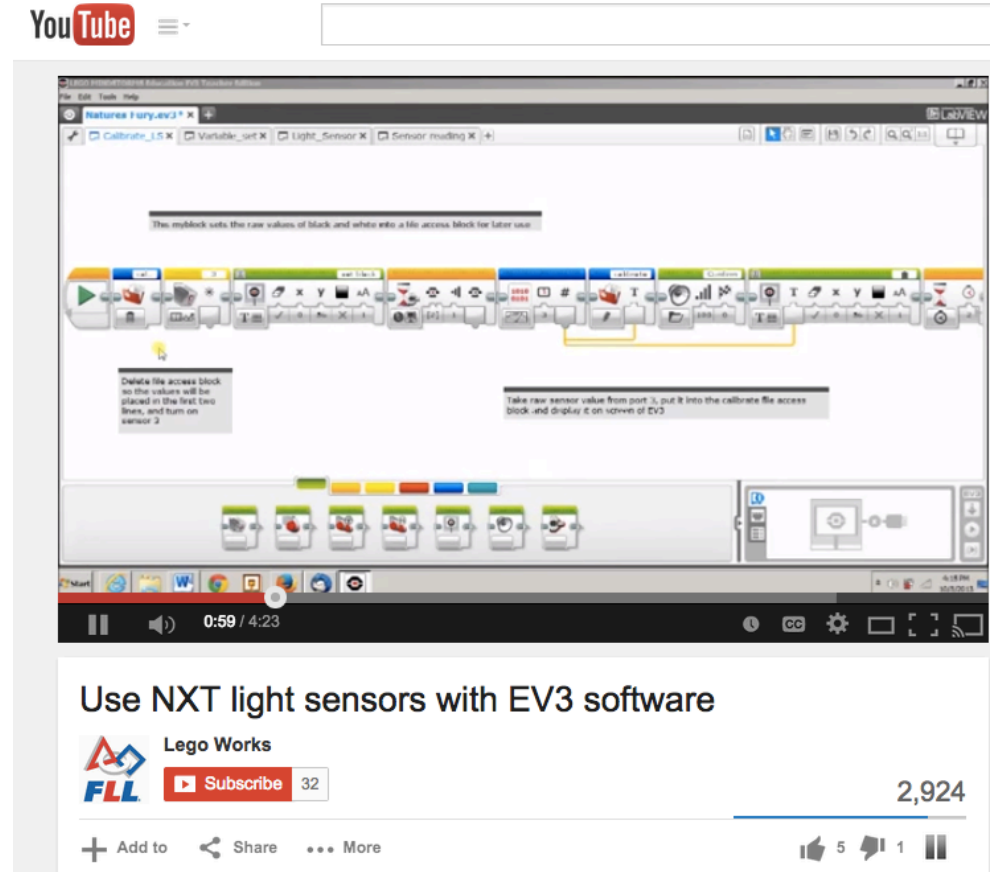


YOUTUBE VERSION OF THE SAME TUTORIAL

For this lesson, we have an added bonus: a YouTube companion lesson...

Visit

<https://www.youtube.com/watch?v=I7Bqvk-uMLk>



The screenshot shows a YouTube video player. The video content is a tutorial for using NXT light sensors with EV3 software. The interface displays several blocks in a sequence, including a 'File Access' block and a 'Sensor' block. Text overlays provide instructions: 'The mblock sets the raw values of black and white into a file access block for later use.' and 'Delete file access block so the values will be placed in the first two lines, and turn on sensor 2'. Another overlay says 'Take raw sensor value from port 3, put it into the calibrate file access block and display it on screen of EV3'. The video player shows a progress bar at 0:59 / 4:23. The video title is 'Use NXT light sensors with EV3 software' by 'Lego Works' (FLL). The channel has 32 subscribers and 2,924 views. The video has 5 likes and 1 comment.

CREDITS

- This lesson was compiled by FLL Team Not the Droids You Are Looking For
- The lesson has been graciously shared by FLL Team Lego Works
 - <http://www.legoworks.org/>
 - legoworks2013@gmail.com
- This material is free to use and distribute
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