



BEGINNER PROGRAMMING LESSON

EV3 Classroom: Introduction to the EV3 Brick and EV3 Classroom Software

By Sanjay and Arvind Seshan



EV3 CLASSROOM LESSON
BY EV3LESSONS.COM

LESSON OBJECTIVES

1. Learn how the EV3 brick operates
2. Learn about the main components of the EV3 Classroom software
3. Connect to the EV3 brick

Note: This lesson uses the new Scratch-based Education software (EV3 Classroom). However, it is the same for the Retail version.

THE “BRICK” BUTTONS

1 = Back

Undo

Stop Program

Turn robot off

2 = Center Button

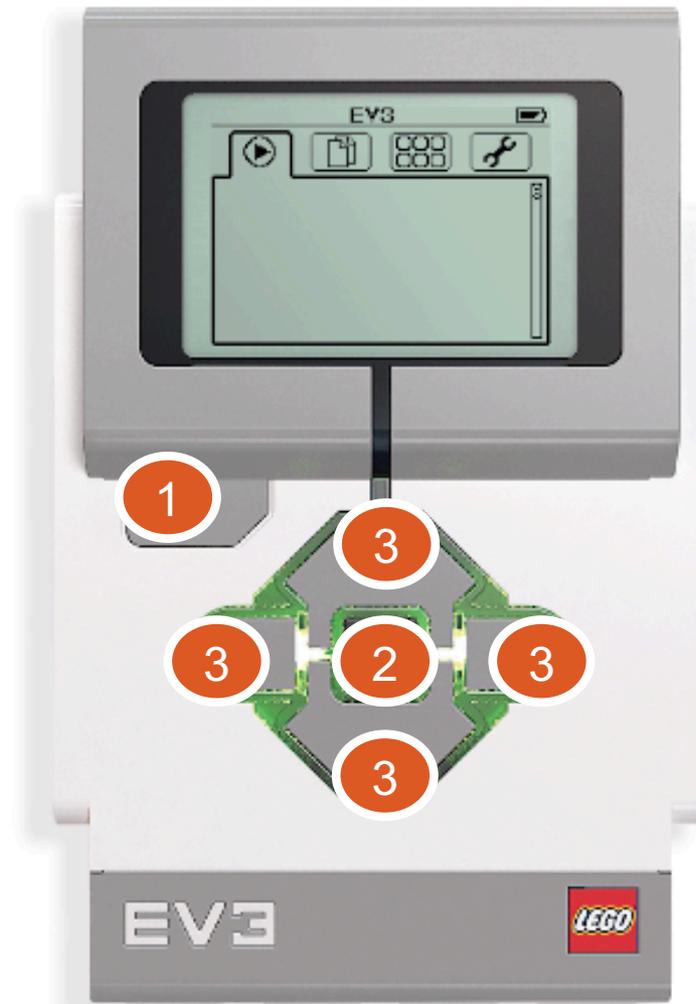
Select options

Run Program/Project

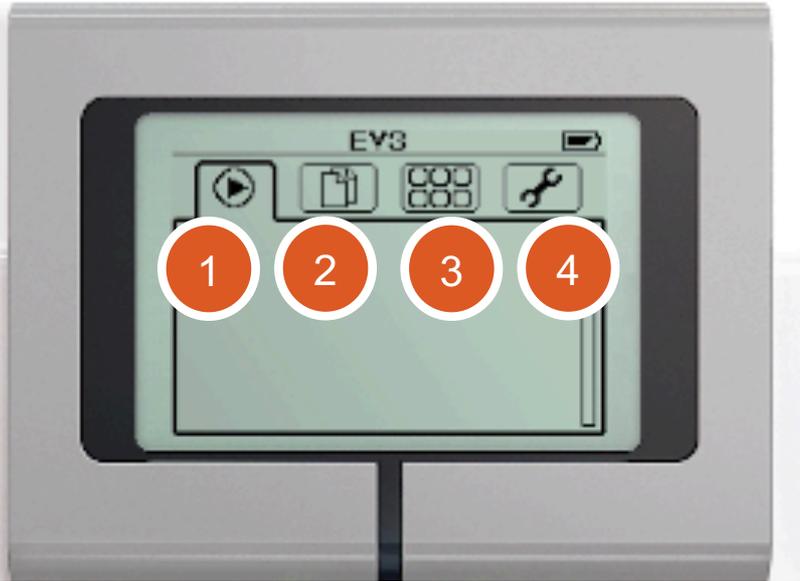
Turn robot on

3 = L, R, Up, Down

Navigate menus



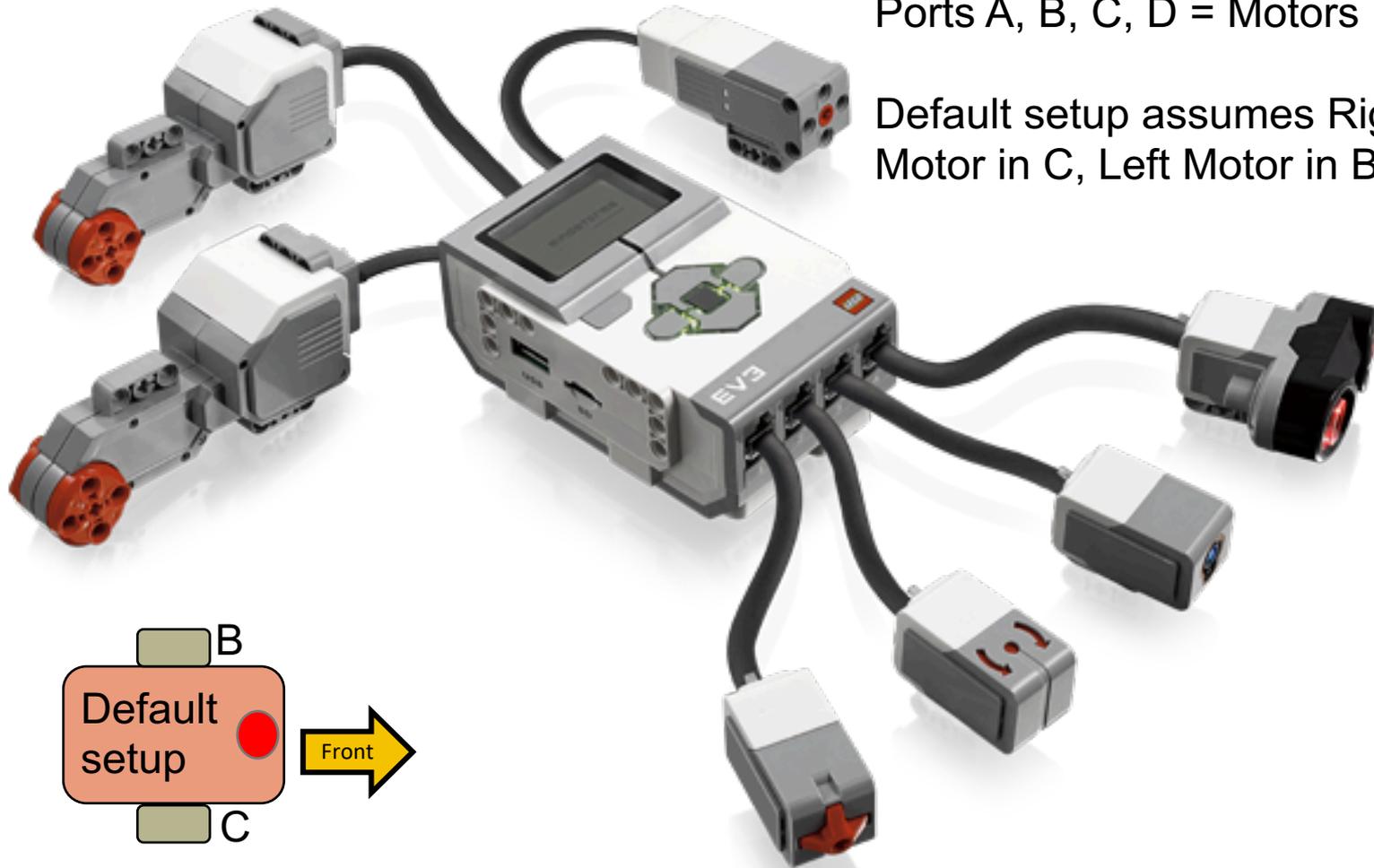
THE “BRICK” SCREEN



Tabs on Screen

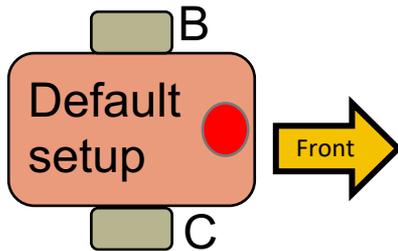
- 1. Run Recent**
Find programs/projects you ran recently
- 2. File Navigation**
Find all programs by project
- 3. Brick Apps**
Port views
- 4. Settings**
Bluetooth, Wifi, Volume

PORTS, SENSORS, MOTORS



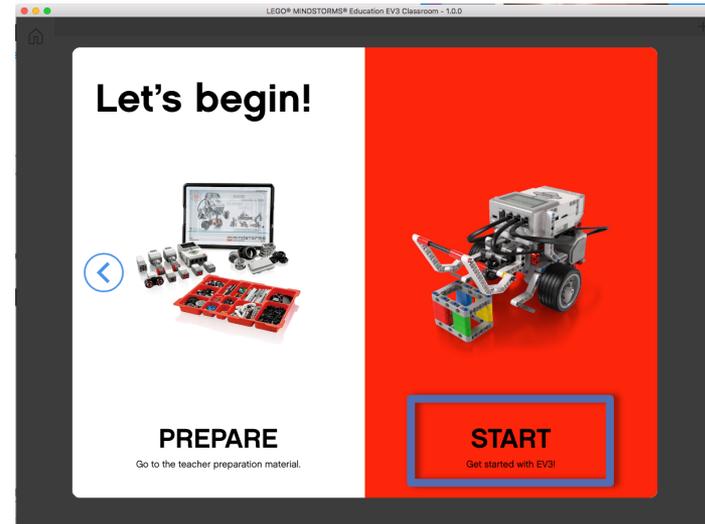
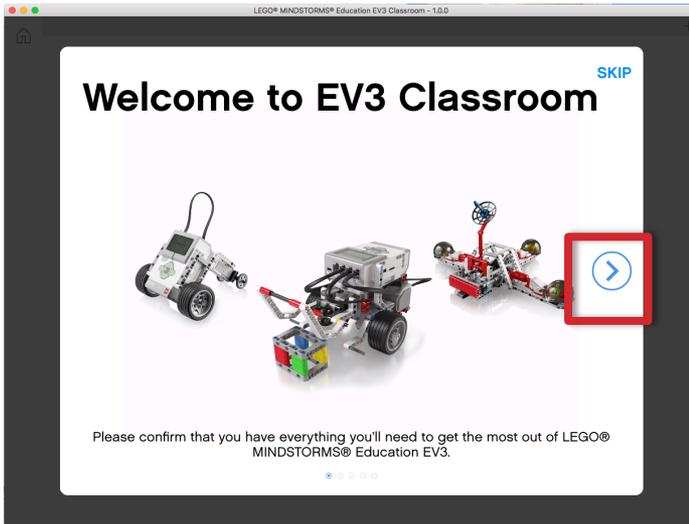
Ports A, B, C, D = Motors

Default setup assumes Right Motor in C, Left Motor in B



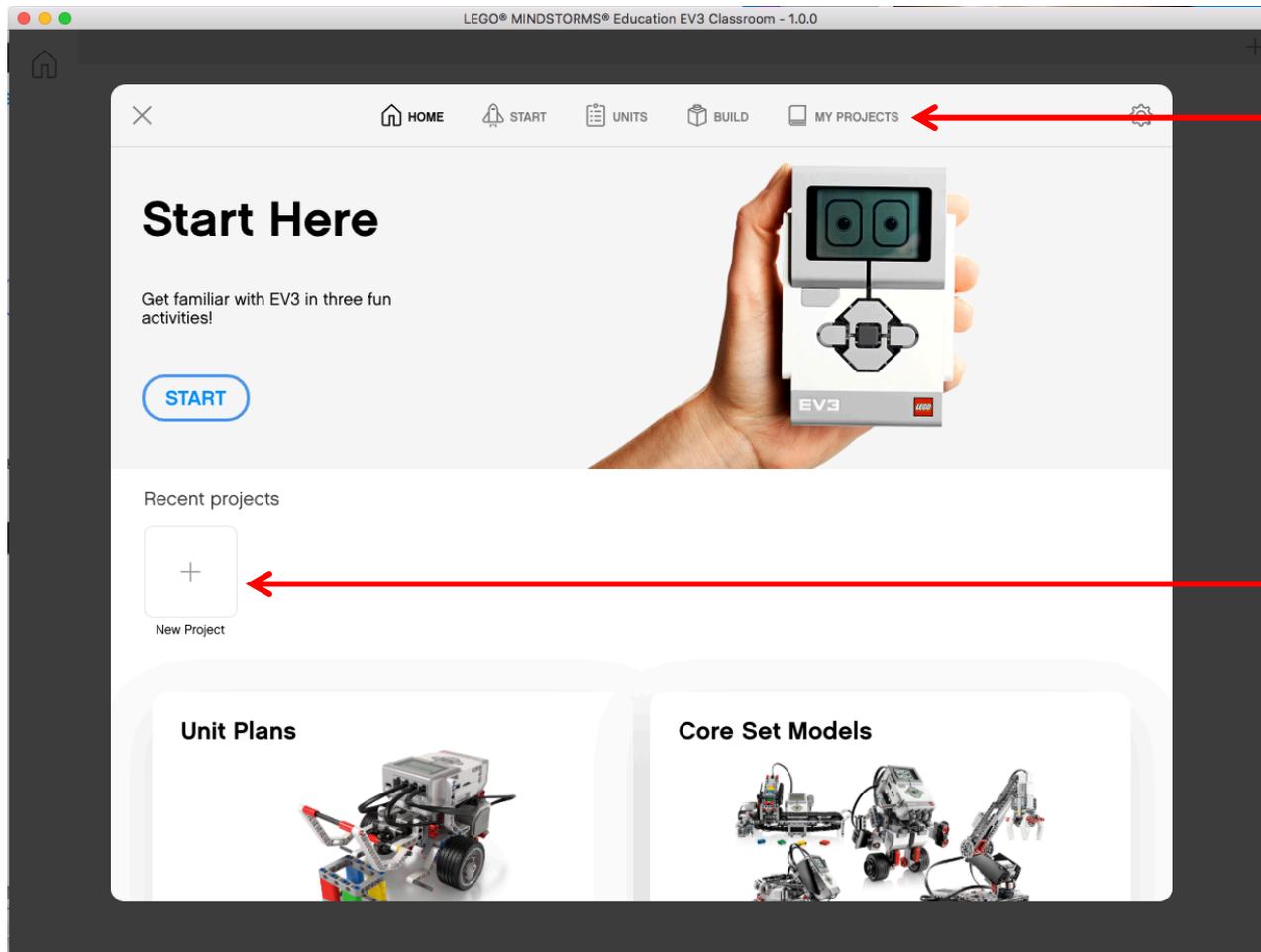
Ports 1, 2, 3, 4 = Sensors

EV3 CLASSROOM: GETTING STARTED



Follow the onscreen steps and then click “START” to access the programming environment

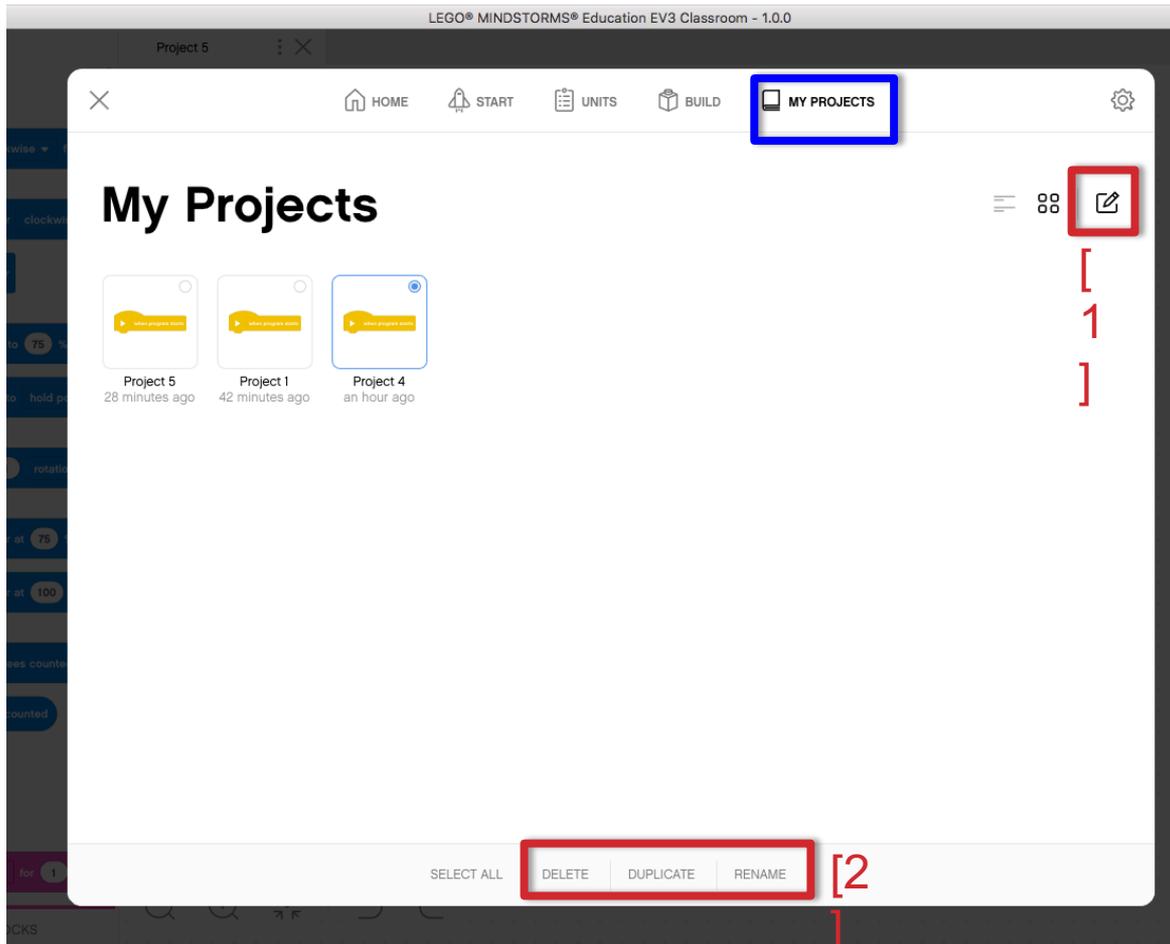
EV3 CLASSROOM: HOME



Open Saved Project

Start New Project

MY PROJECTS



My Projects shows a list of the projects you have made.

To edit an existing project click on the edit icon [1] and then select the project you want to modify. Select the desired action (delete/duplicate/rename) [2].

NEW PROJECT

Back to Home

The screenshot shows the LEGO MINDSTORMS Education EV3 Classroom software interface. The title bar reads "LEGO® MINDSTORMS® Education EV3 Classroom - 1.0.0". The interface is divided into several sections:

- Left Panel:** A sidebar with a "Home" icon and a "Motors" section containing various motor-related blocks (run, start, stop, set speed, hold position, run for, start at speed, start at power). Below this is a "Movement" section with "move" blocks. At the bottom of the sidebar, a yellow box highlights a dropdown menu labeled "ALL CODEBLOCKS".
- Top Panel:** A "Project 1" header with a "connect" button and a menu icon. A yellow box labeled "Opened Projects" points to the "Project 1" header. To the right, a yellow box labeled "Project Properties" points to the menu icon and contains the text: "Rename Project or Move File to new location (i.e. Save as)".
- Right Panel:** A yellow box labeled "New Project" points to a "+" icon in the top right corner of the workspace.
- Workspace:** A large grid area containing a "when program starts" block.
- Bottom Panel:** A toolbar with zoom, pan, and execution buttons. A yellow box labeled "Toggle between showing all/fewer code blocks" points to the "ALL CODEBLOCKS" dropdown and contains the text: "We highly recommend you click this so that it will show all the blocks – our lessons require this."

NOTE ABOUT PROJECTS FOR EV3-G USERS

- For those familiar with the LABVIEW based EV3-G software, there is no differentiation between projects and programs in this software.
- Each project is a separate program
- My Blocks cannot be used between Projects

PROGRAMMING CANVAS

LEGO® MINDSTORMS® Education EV3 Classroom - 1.0.0

Project 4 Project 3 Project 2 Project 1

Block Palette

MOTORS

- run clockwise for 1

MOVEMENT

- start motor clockwise
- stop motor

DISPLAY

- stop motor

SOUND

- set speed to 75 %

EVENTS

- set motor to hold position

CONTROL

- run for 1 rotations

SENSORS

- start motor at 75 % speed
- start motor at 100 % power

OPERATORS

- reset degrees counted

VARIABLES

- degrees counted

MY BLOCKS

- speed

Movement

- move forward for 1 rotation
- move straight: 0 for 1 rotation

FEWER CODEBLOCKS

Brick Dashboard

Programming Area

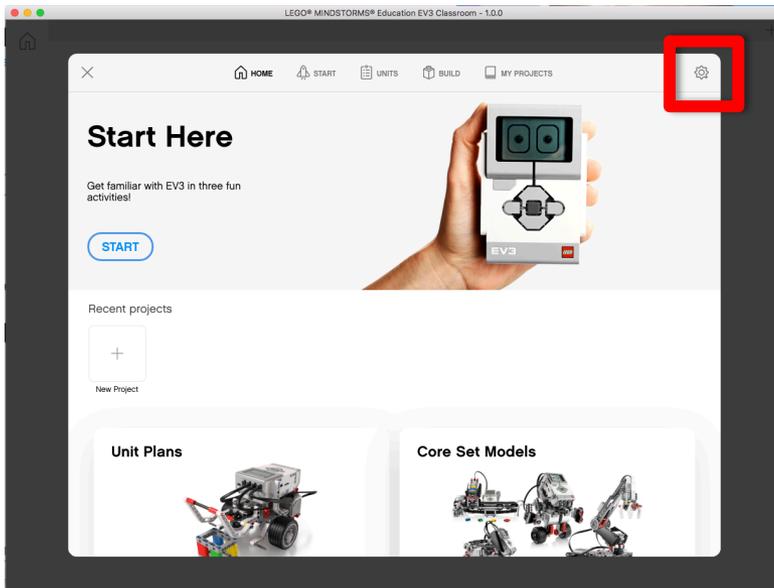
when program starts

To add a comment or delete a block, right click on the programming area.

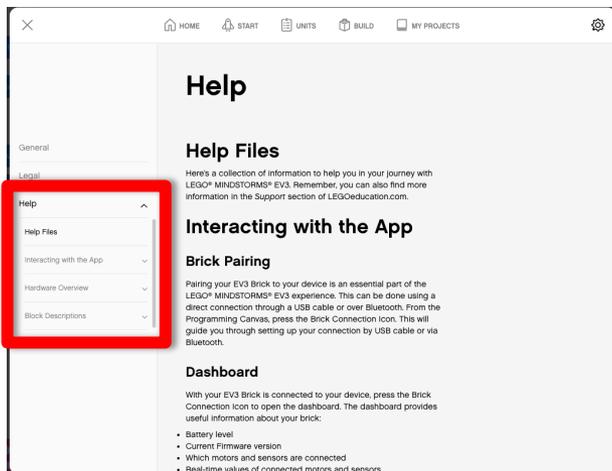
- Undo
- Redo
- Clean up Blocks
- Add Comment
- Delete 4 Blocks

Download/Run

HELP MENU



1. Click the Settings icon in the Home screen
2. Navigate to Help on the left hand column



BLOCK PALETTE



Motors – Control an individual motor

Movement – Control 2 motors at a time with synchronization

Display – Write to screen

Sound – Play a sound

Events – Run actions based on events (e.g. sensor or timer)

Control – Loops, if/else statements, etc.

Sensors – Read a sensor value

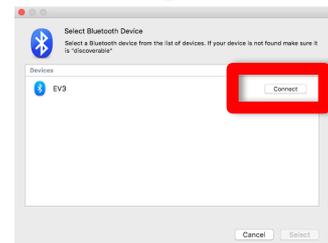
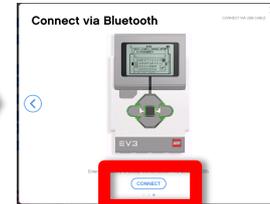
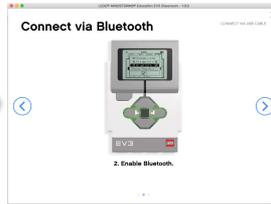
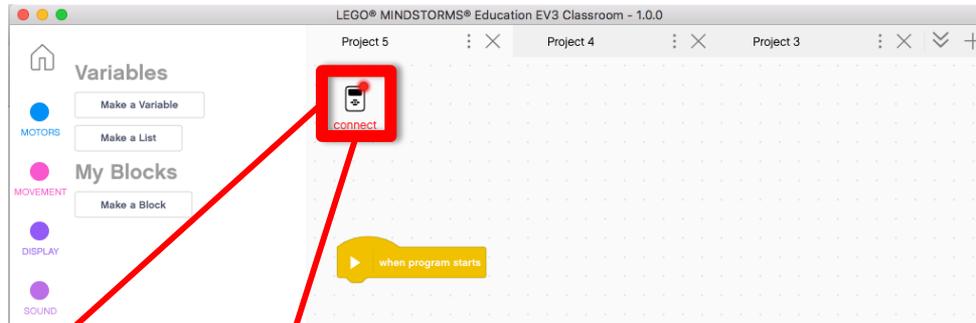
Operators – Mathematics and logic

Variables – Store data in a variable or list

My Blocks – Custom defined blocks

A close-up screenshot of the 'Variables' section in the block palette. The section is titled 'Variables' and is under the 'OPERATORS' category. It contains three buttons: 'Make a Variable', 'Make a List', and 'Make a Block'. Below these buttons is a red-bordered box containing a dropdown arrow and the text 'ALL CODEBLOCKS'. To the right of this section, there is a note: 'Note: To see certain blocks, you may have to click on "ALL CODEBLOCKS"'. The entire screenshot is framed with a red border.

CONNECTING TO BRICK



The software will auto-connect to the brick if you are using USB

To connect over Bluetooth, click the connect button. Enable Bluetooth as shown, and click connect. In the connect dialogue, select your EV3 brick's name.

You might have to change to EV3 passcode to 0000 when asked if the connection fails.

Wi-Fi is unsupported in this version of the software

CREDITS

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More lessons are available at www.ev3lessons.com



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