



# 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

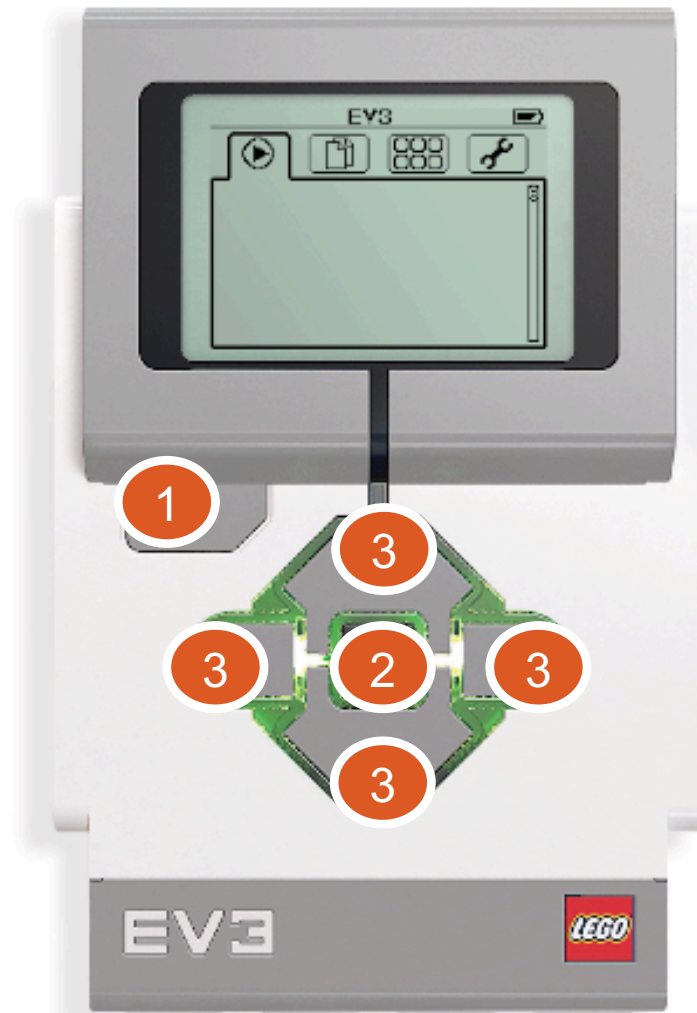
Select options

Run Program/Project

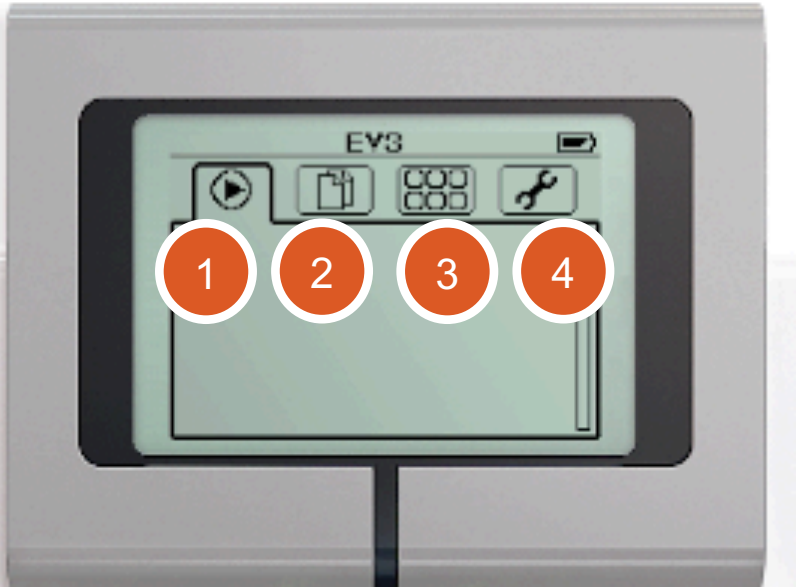
Turn robot on

## 3 = L, R, Up, Down

Navigate menus



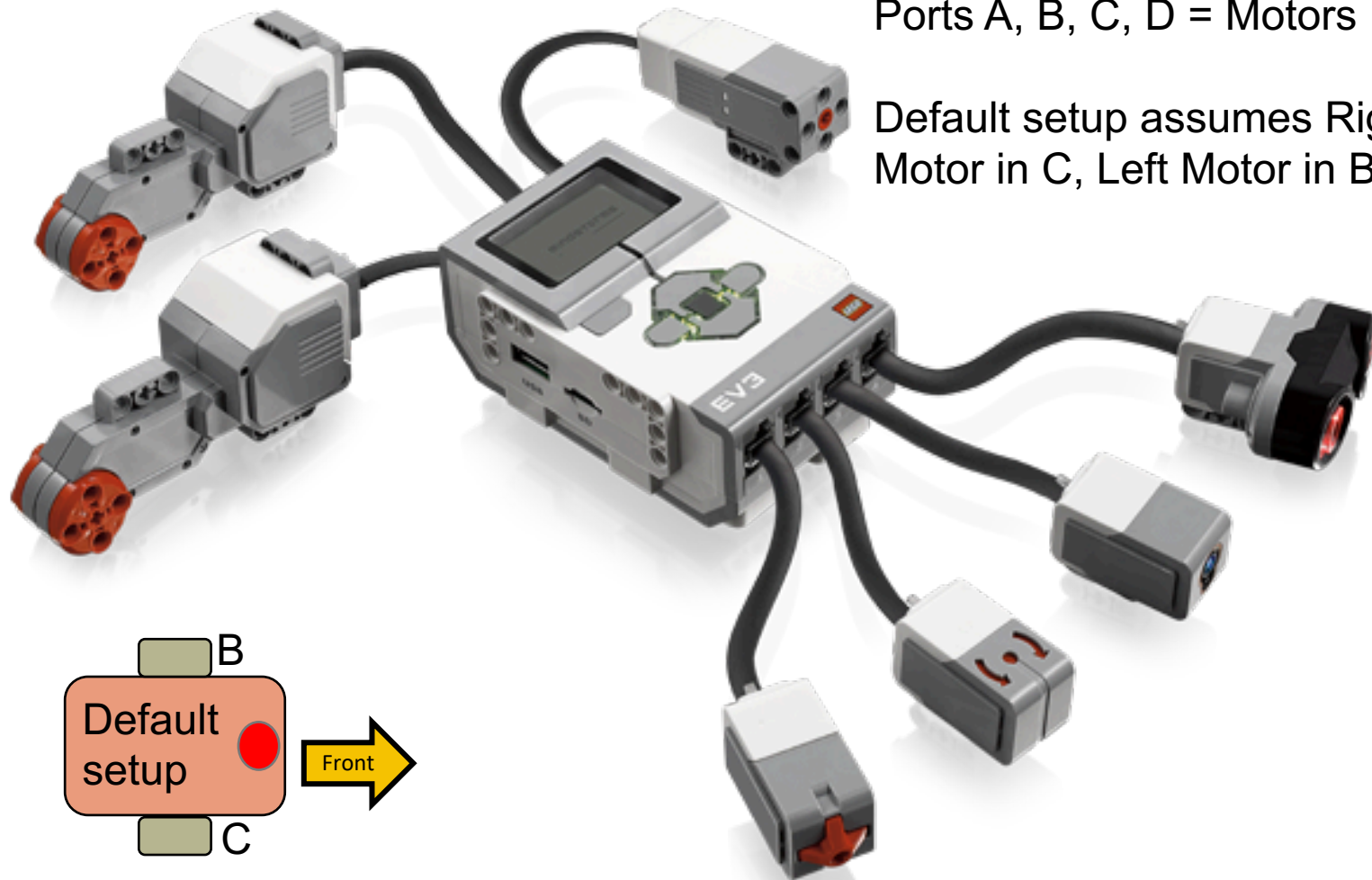
# THE “BRICK” SCREEN



## Tabs on Screen

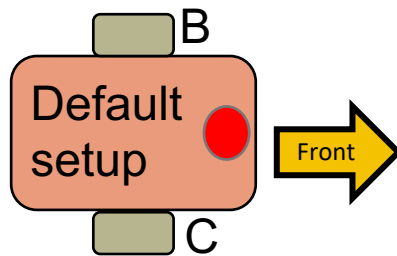
- 1. Run Recent**  
Find programs/projects you ran recently
- 2. File Navigation**  
Find all programs by project
- 3. Brick Apps**  
Port views
- 4. Settings**  
Bluetooth, Wifi, Volume

# PORTS, SENSORS, MOTORS



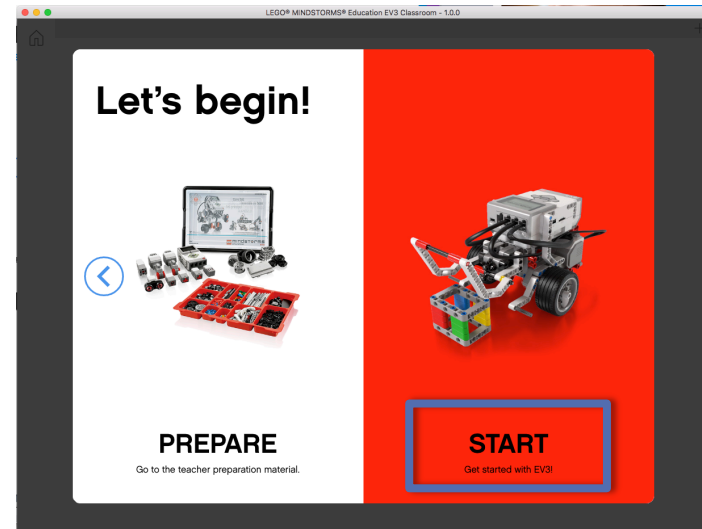
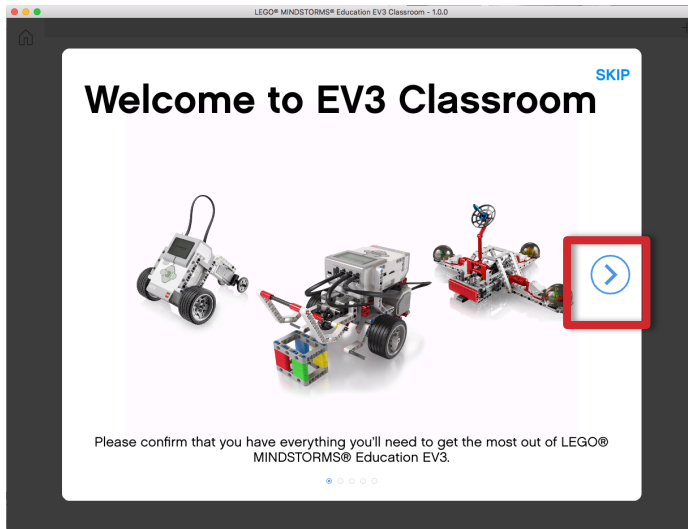
Ports A, B, C, D = Motors

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



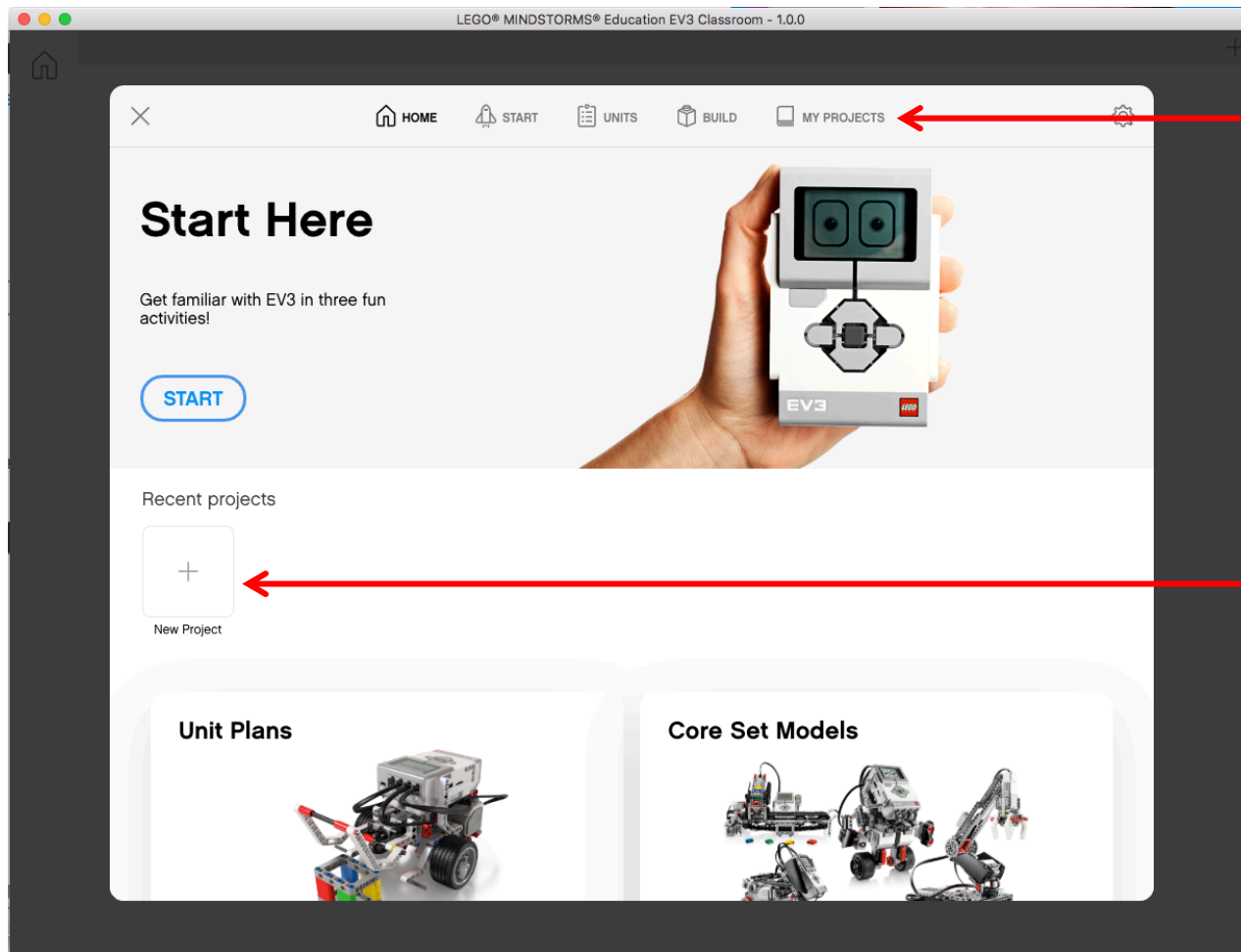
Ports 1, 2, 3, 4 = Sensors

# EV3 CLASSROOM: GETTING STARTED



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

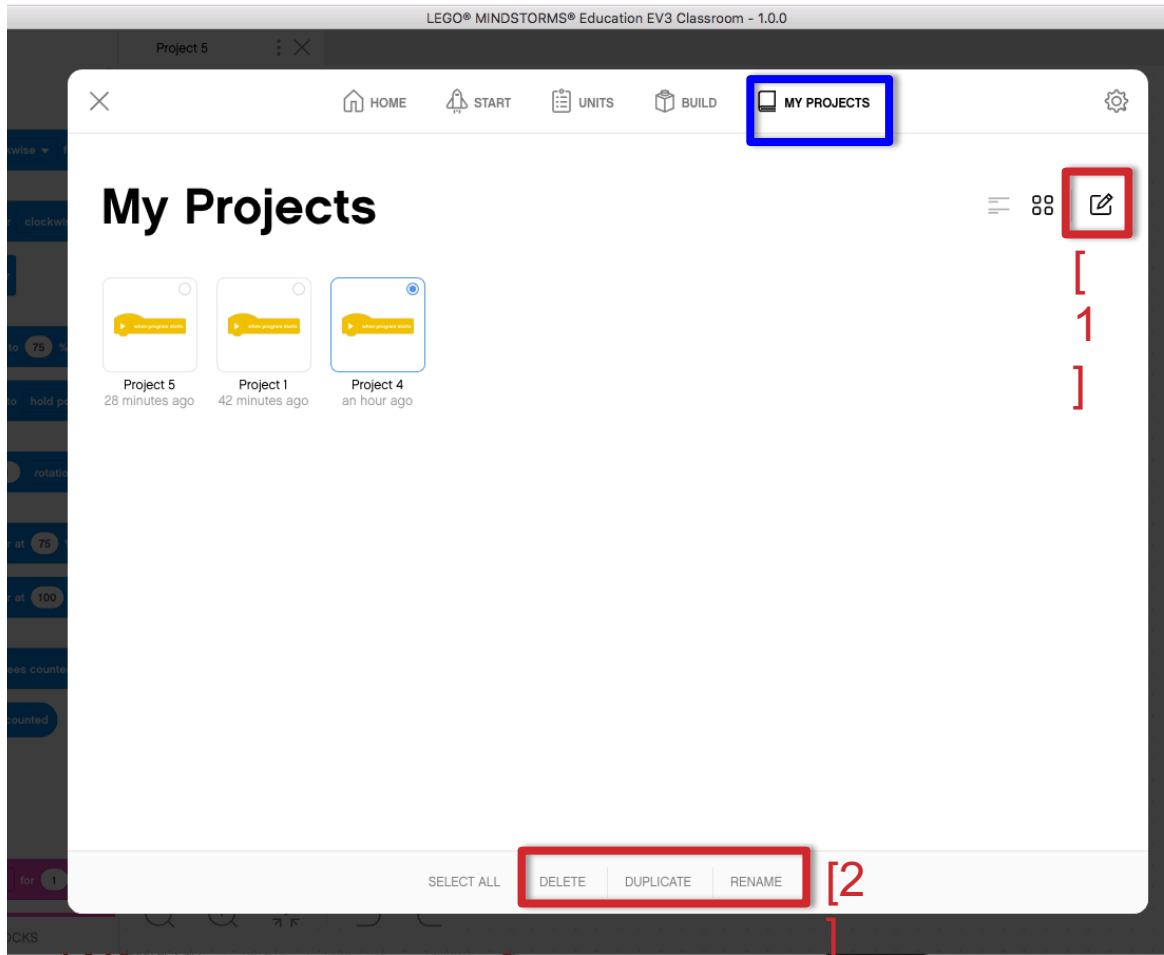
# EV3 CLASSROOM: HOME



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

The screenshot shows the LEGO MINDSTORMS Education EV3 Classroom software interface. The left sidebar contains a 'Back to Home' button at the top, followed by a home icon and a list of block categories: MOTORS, MOVEMENT, DISPLAY, SOUND, EVENTS, CONTROL, SENSORS, OPERATORS, VARIABLES, and MY BLOCKS. The main workspace is titled 'LEGO® MINDSTORMS® Education EV3 Classroom - 1.0.0' and displays a project named 'Project 1'. The workspace contains a 'when program starts' block and a 'connect' button. The bottom of the workspace features a toolbar with zoom in, zoom out, and other navigation icons. A dropdown menu at the bottom left is labeled 'ALL CODEBLOCKS'. Several yellow callout boxes with red arrows point to specific features: 'Back to Home' points to the home icon; 'New Project' points to the '+' icon in the top right; 'Opened Projects' points to the 'Project 1' header; 'Project Properties' points to the three-dot menu next to 'Project 1'; and 'Toggle between showing all/fewer code blocks' points to the 'ALL CODEBLOCKS' dropdown.

Back to Home

New Project

Project 1

connect

when program starts

Project Properties  
Rename Project or Move File to new location (i.e. Save as)

Opened Projects

Toggle between showing all/fewer code blocks  
We highly recommend you click this so that it will show all the blocks – our lessons require this.

ALL CODEBLOCKS

# 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

The screenshot displays the LEGO MINDSTORMS Education EV3 Classroom - 1.0.0 software interface. On the left is the **Block Palette** with categories: MOTORS, MOVEMENT, DISPLAY, SOUND, EVENTS, CONTROL, SENSORS, OPERATORS, VARIABLES, and MY BLOCKS. The main **Programming Area** contains a 'when program starts' block and a 'Brick Dashboard' window showing a virtual EV3 robot with sensor and motor connections. A red box highlights the 'Brick Dashboard' icon in the top toolbar and the dashboard window itself. A context menu is open over the programming area, listing: Undo, Redo, Clean up Blocks, Add Comment, and Delete 4 Blocks. A blue box explains: 'To add a comment or delete a block, right click on the programming area.' At the bottom right, a green button labeled **Download/Run** is next to download and play icons. The bottom status bar includes zoom and undo/redo icons.

Block Palette

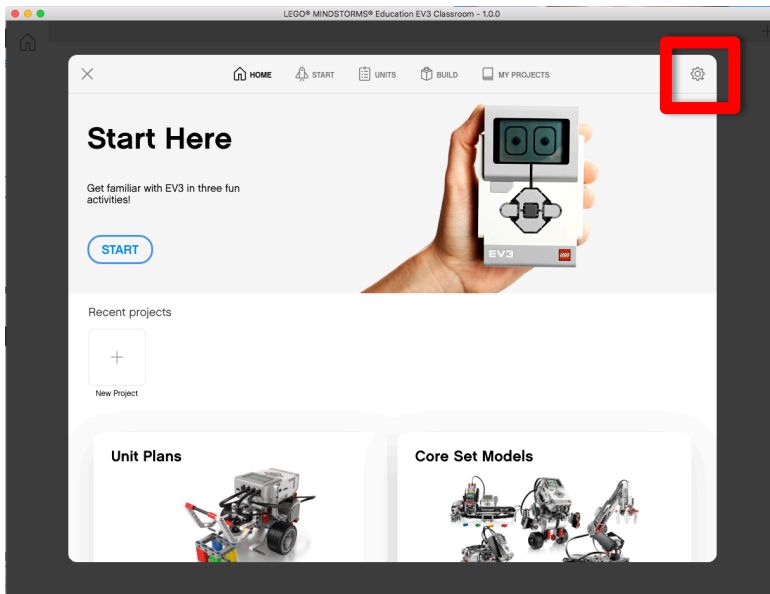
Brick Dashboard

Programming Area

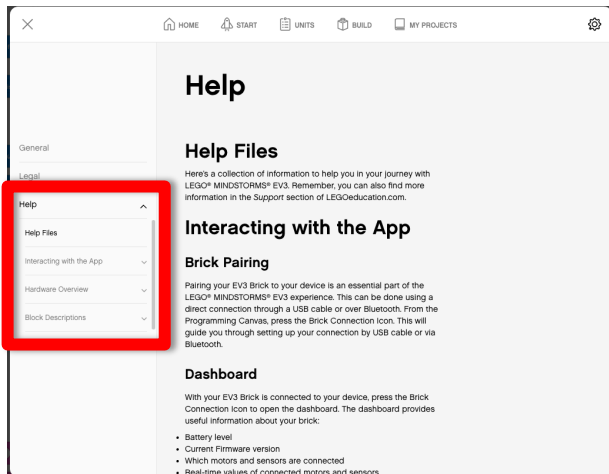
To add a comment or delete a block, right click on the programming area.

Download/Run

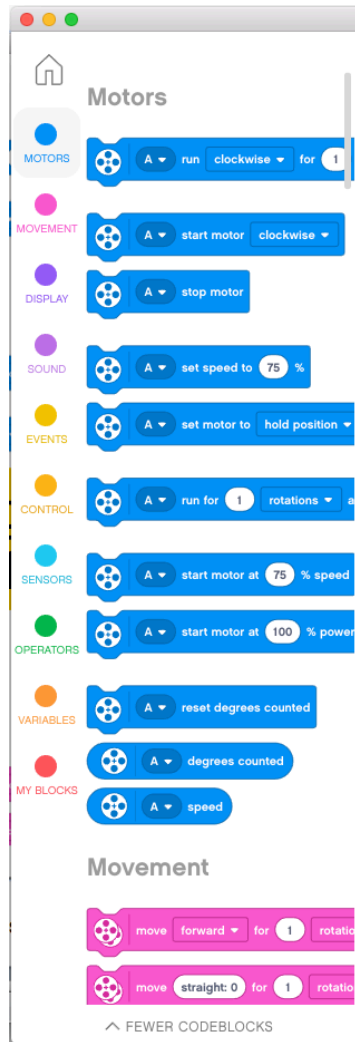
# HELP MENU



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.

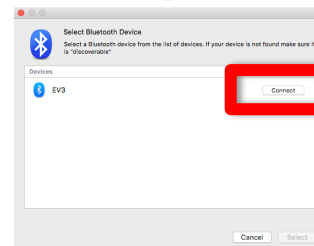
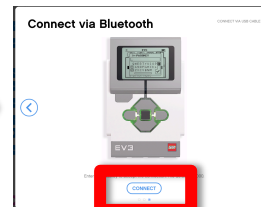
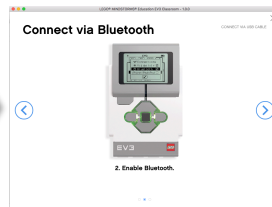
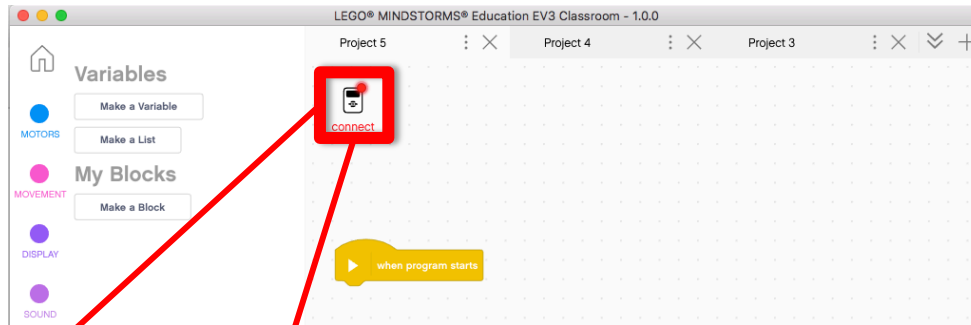
**Sensors** – Read a sensor value

**Operators** – Mathematics and logic

**Variables** – Store data in a variable or list

**My Blocks** – Custom defined blocks

# 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

**Author: Sanjay and Arvind Seshan**

**More lessons are available at [www.ev3lessons.com](http://www.ev3lessons.com)**



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