

EV3 LESSONS



Introduction to the EV3 Brick
and EV3 Classroom Software

By Sanjay and Arvind Seshan

BEGINNER PROGRAMMING LESSON

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

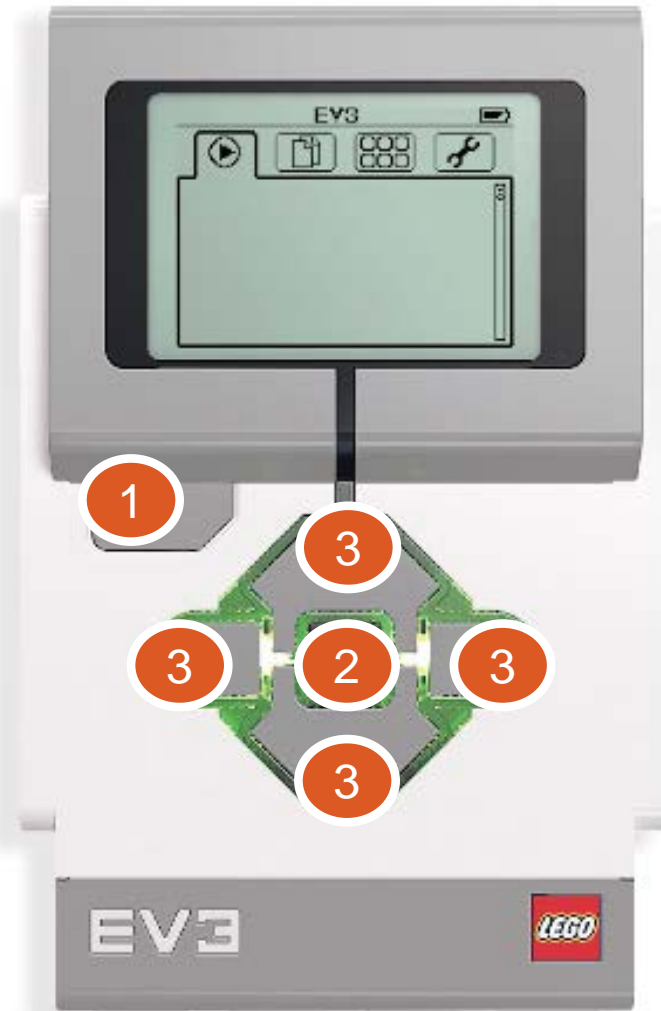
Select options

Run Program/Project

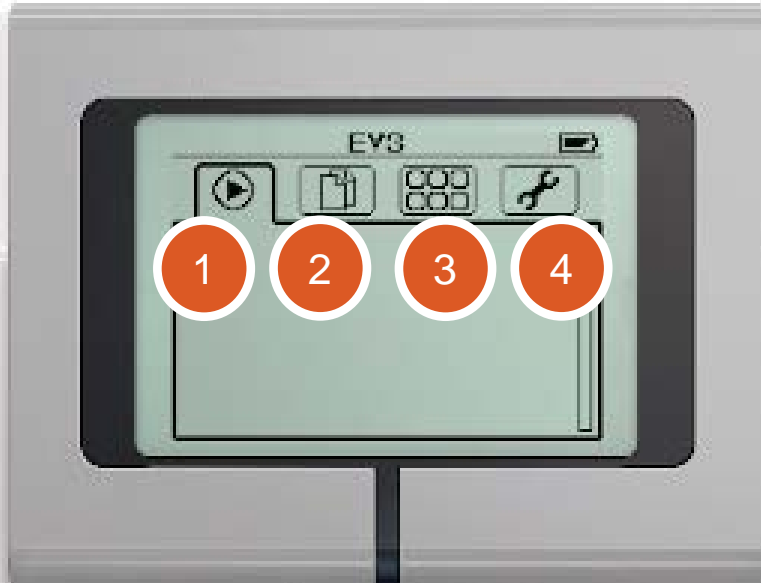
Turn robot on

3 = L, R, Up, Down

Navigate menus



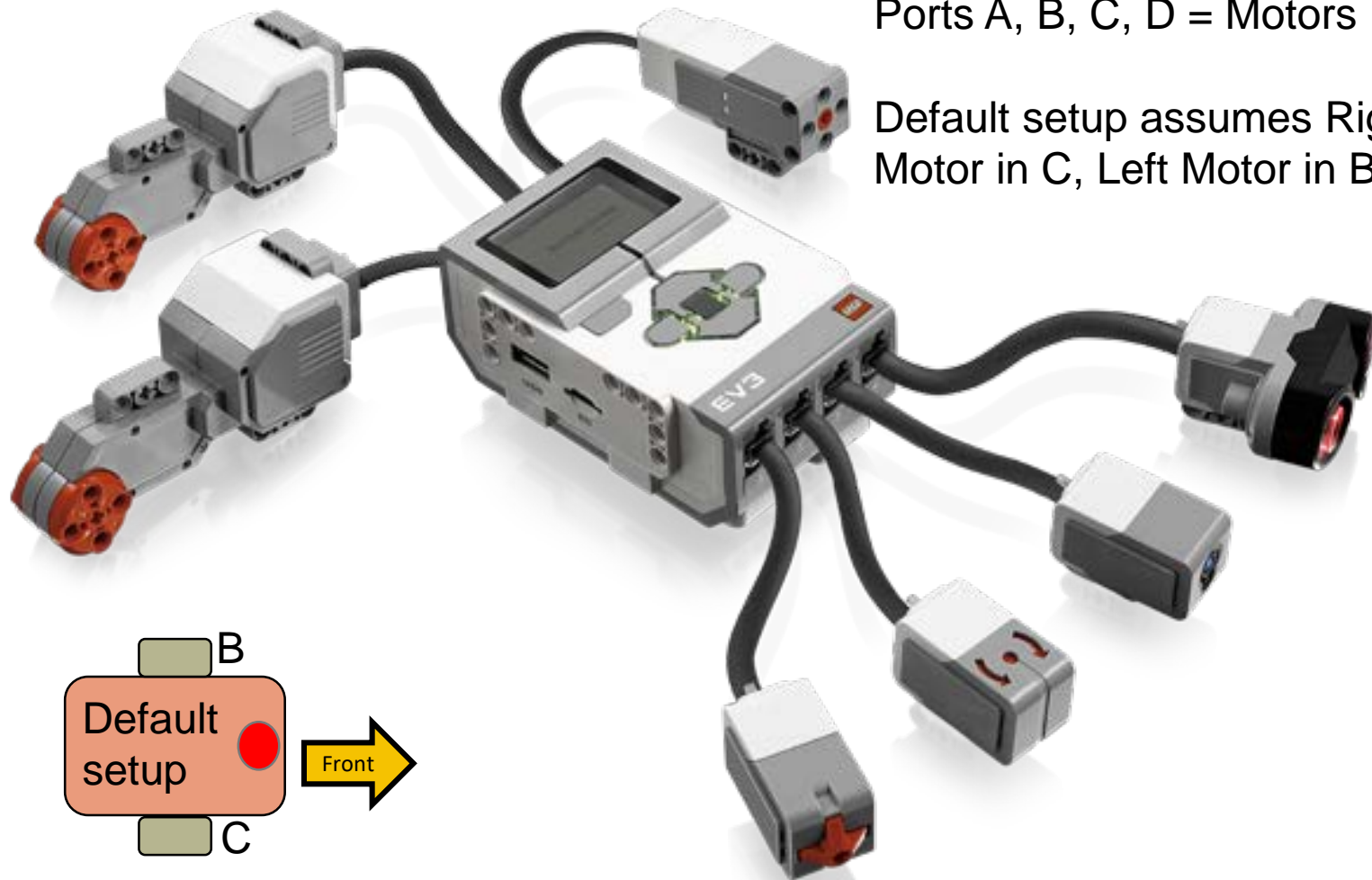
THE "BRICK" SCREEN



Tabs on Screen

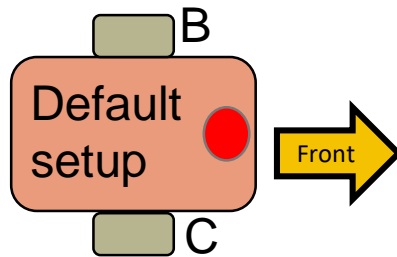
- 1. Run Recent**
Find programs/projects you ran recently
- 2. File Navigation**
Find all programs by project
- 3. Brick Apps**
Port views
- 4. Settings**
Bluetooth, Wifi, Volume

PORTS, SENSORS, MOTORS



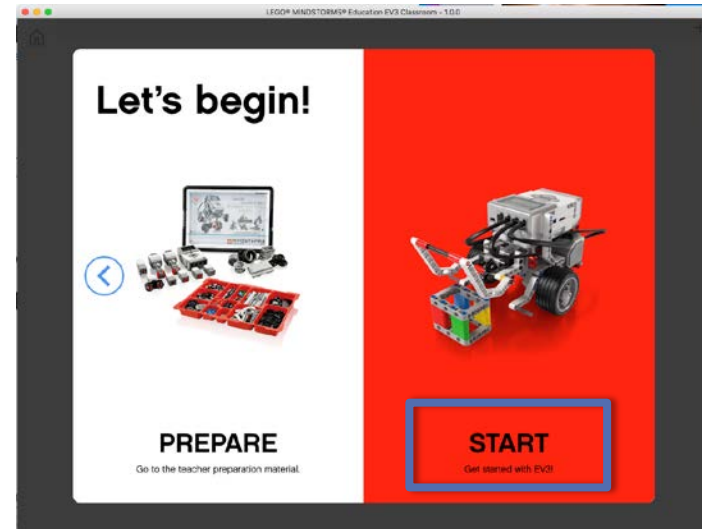
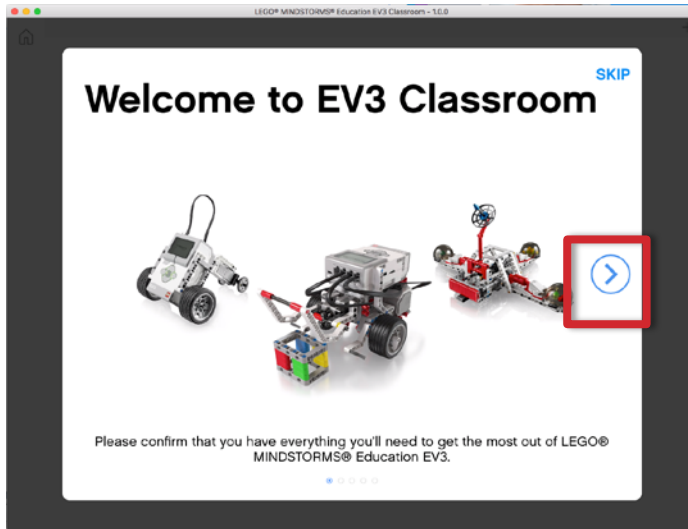
Ports A, B, C, D = Motors

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



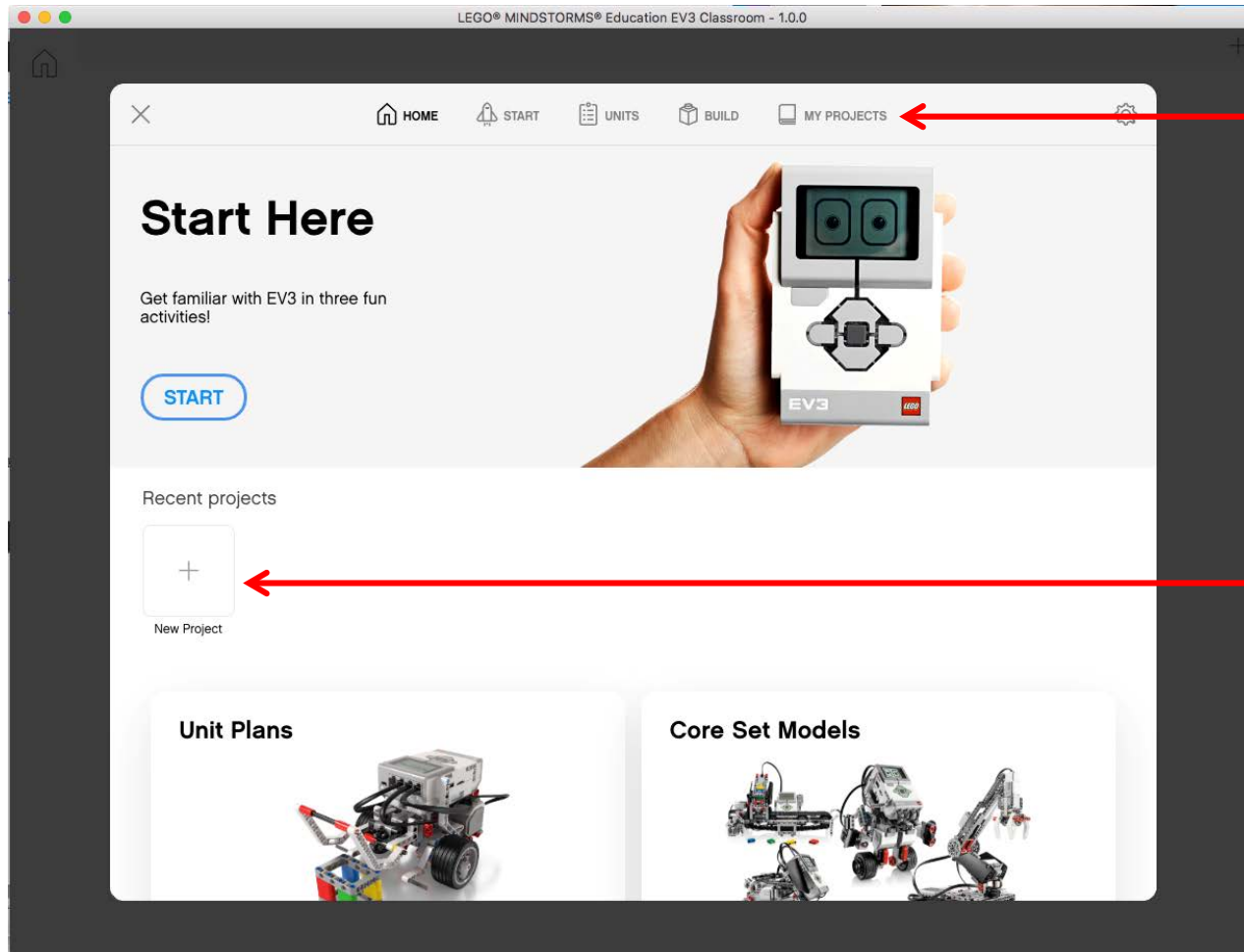
Ports 1, 2, 3, 4 = Sensors

EV3 CLASSROOM: GETTING STARTED



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

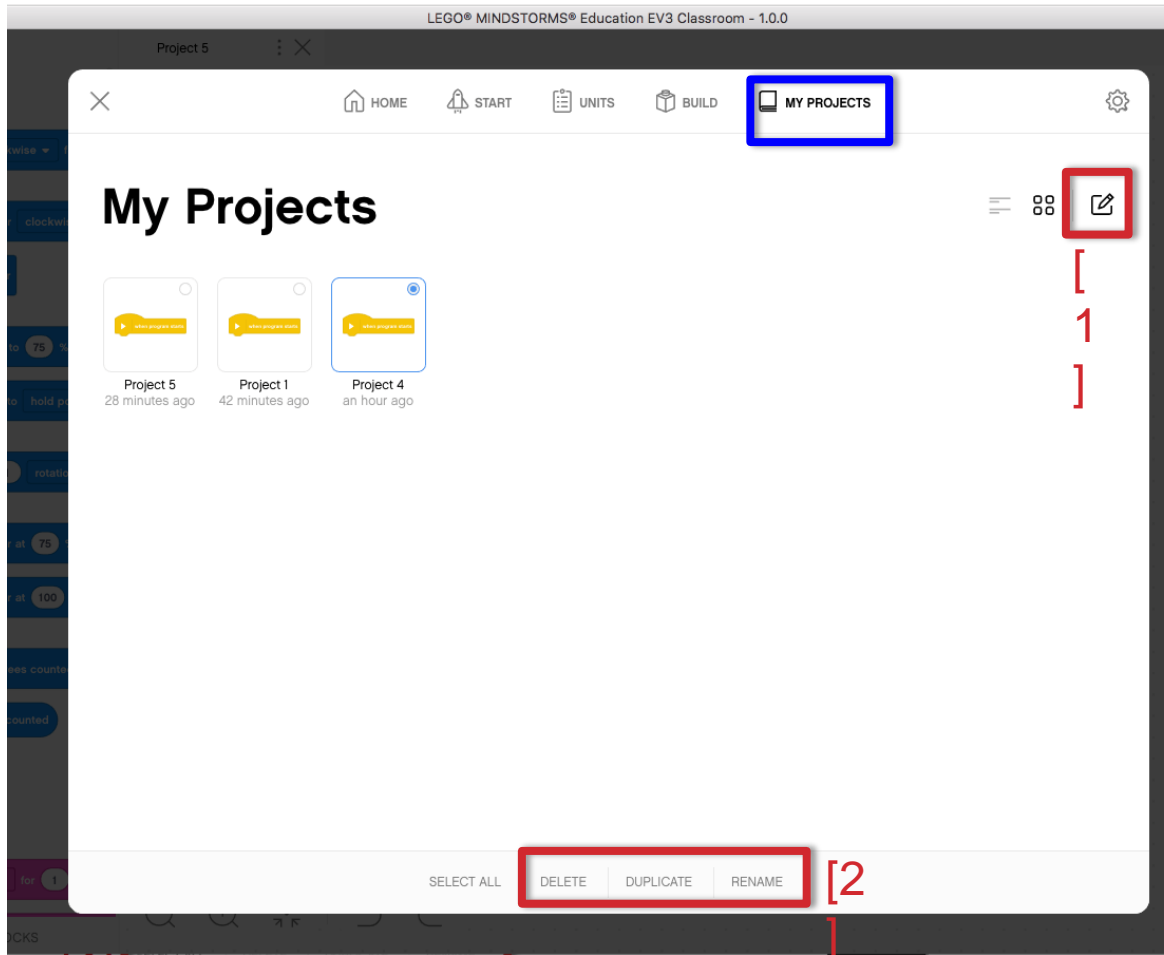
EV3 CLASSROOM: HOME



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 'Motors' section with various motor control blocks (run, start, stop, set speed, hold position, run for) and a 'Movement' section with movement blocks (move forward, move straight). The main workspace shows a 'Project 1' window with a 'when program starts' block. The top bar includes a 'connect' button and a 'Project Properties' button. The bottom bar includes a 'toggle code blocks' button and a 'play' button.

Back to Home

New Project

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 area is the **Programming Area**, which contains a sequence of blocks: a 'when program starts' event block followed by a 'run clockwise for 1' motor block. A red box highlights a 'Brick Dashboard' icon in the top toolbar, which opens a window showing a 3D model of the EV3 robot. Another red box highlights a 'Download/Run' button in the bottom right corner, which opens a context menu with options: Undo, Redo, Clean up Blocks, Add Comment, and Delete 4 Blocks. A yellow box labeled 'Brick Dashboard' points to the 3D model window, and an orange box labeled 'Programming Area' points to the main workspace.

Block Palette

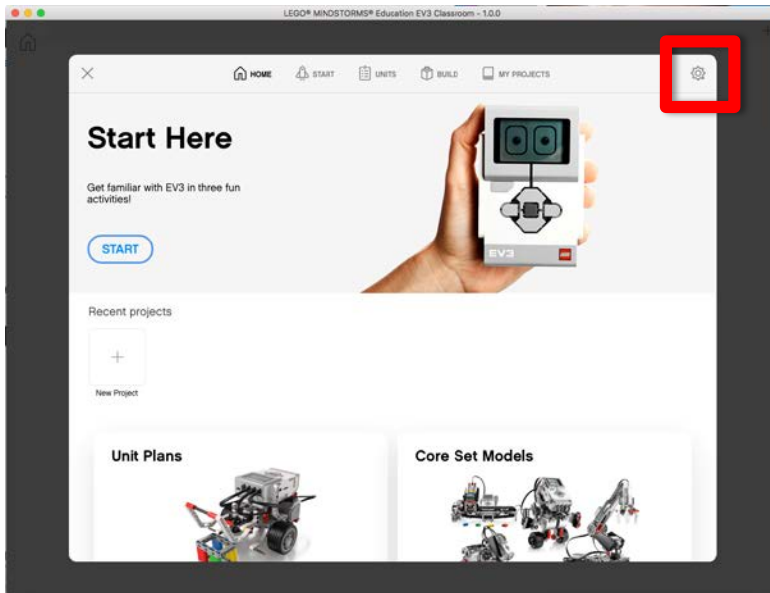
Brick Dashboard

Programming Area

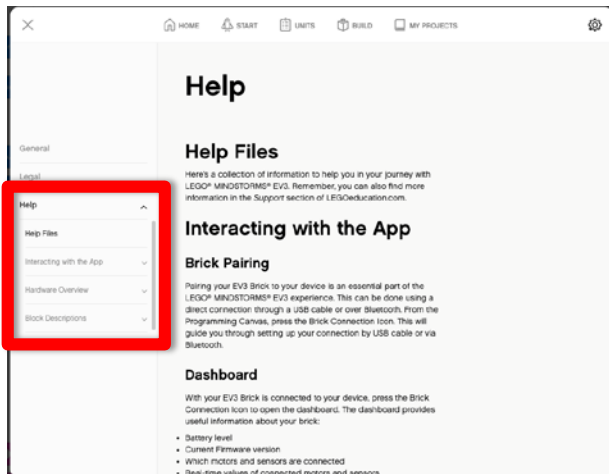
To add a comment or delete a block, right click on the programming area.

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.

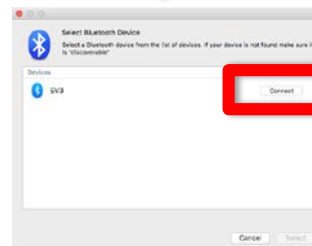
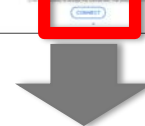
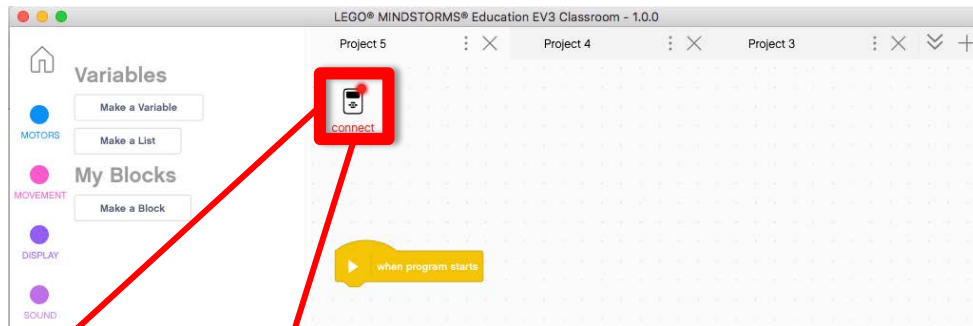
Sensors – Read a sensor value

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

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More lessons are available at www.ev3lessons.com



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