

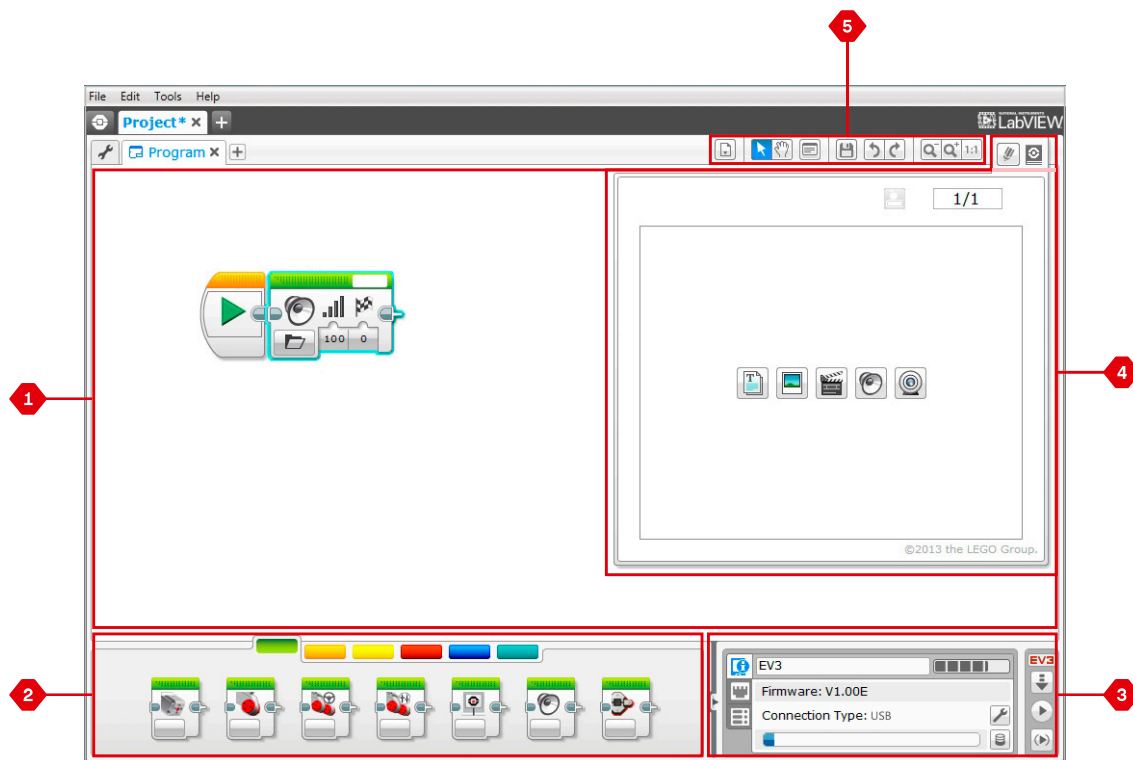
EV3 SOFTWARE

Programming

Without a program, a robot is just a statue. It may be a cool statue, but it's still a statue. When you program a robot you give it abilities—to move, to follow lines, to avoid objects, to make mathematical calculations, and much more. The EV3 Software has an intuitive, graphics-based format that users from 10 to 100 years of age can quickly learn and successfully use.

The EV3 Programming environment consists of the following main areas:

1. **Programming Canvas**—Lay out your program here.
2. **Programming Palettes**—Find the building blocks for your program here.
3. **Hardware Page**—Establish and manage your communication with the EV3 Brick here and see what motors and sensors are connected where. This is also where you download programs to the EV3 Brick.
4. **Content Editor**—A digital workbook integrated into the software. Get instructions or document your project using text, images, and videos.
5. **Programming Toolbar**—Find basic tools for working with your program here. Learn more about these tools in the **EV3 Software Help**.



Programming environment

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Programming Blocks and Palettes

All the programming blocks that are used for controlling your robot are located in Programming Palettes at the bottom of the Programming environment underneath the Programming Canvas. The Programming blocks are divided into categories according to type and nature, making it easy to find the block you need.

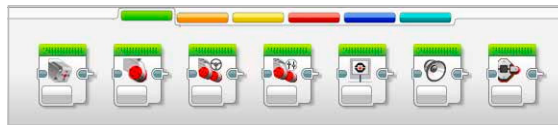
To learn more about the EV3 Programming environment and see how you can get started with your first program, see the **Programming** and **Programming Overview** videos in the Quick Start section of the Lobby.

You can also find more information about how to program in the **EV3 Software Help**.

ACTION BLOCKS

(In order from left to right)

- + Medium Motor
- + Large Motor
- + Move Steering
- + Move Tank
- + Display
- + Sound
- + Brick Status Light



FLOW BLOCKS

(In order from left to right)

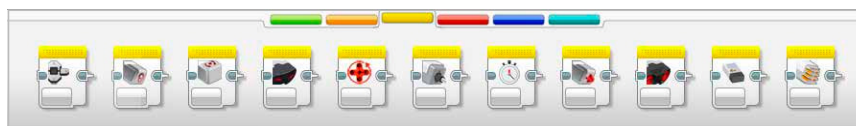
- + Start
- + Wait
- + Loop
- + Switch
- + Loop Interrupt



SENSOR BLOCKS

(In order from left to right)

- + Brick Buttons
- + Color Sensor
- + Gyro Sensor
- + Infrared Sensor
- + Motor Rotation
- + Temperature Sensor
- + Timer
- + Touch Sensor
- + Ultrasonic Sensor
- + Energy Meter
- + NXT Sound Sensor



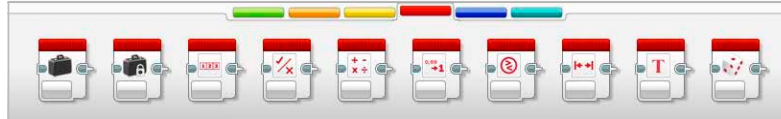
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Programming Blocks and Palettes

DATA BLOCKS

(In order from left to right)

- + Variable
- + Constant
- + Array Operations
- + Logic Operations
- + Math
- + Round
- + Compare
- + Range
- + Text
- + Random



ADVANCED BLOCKS

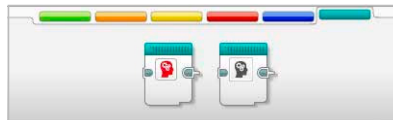
(In order from left to right)

- + File Access
- + Data Logging
- + Messaging
- + Bluetooth Connection
- + Keep Awake
- + Raw Sensor Value
- + Unregulated Motor
- + Invert Motor
- + Stop Program



MY BLOCKS

When you are repeatedly using the same segment of a program in many programs, that is a good time to create a My Block. Once your My Block is created, you can simply insert that single block into future programs within the same project.



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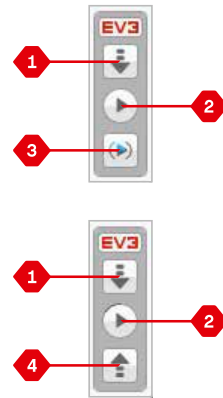
Hardware Page

The Hardware Page provides a range of information about your EV3 Brick. It is always located in the lower right-hand corner when working with both Programs and Experiments and can be collapsed when needed using the Expand/Collapse tab. Even when collapsed, the Hardware Page Controller will be visible, allowing you to download your program or experiment.

The different Hardware Page Controller buttons have the following functionality:

- 1. Download**—Downloads the Program or Experiment to the EV3 Brick
- 2. Download and Run**—Downloads the Program or Experiment to the EV3 Brick and runs it immediately
- 3. Download and Run Selected**—Downloads only the highlighted blocks to the EV3 Brick and runs them immediately
- 4. Upload**—Uploads your collected datasets from the EV3 Brick to your Experiment

The EV3 text in the small window at the top will turn red when an EV3 Brick is connected to your computer.



Hardware Page Controllers

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Hardware Page

BRICK INFORMATION

The Brick Information tab displays important information about the EV3 Brick that is currently connected, such as EV3 Brick name, battery level, firmware version, connection type, and memory bar. It also gives you access to the Memory Browser and Wireless Setup tools.

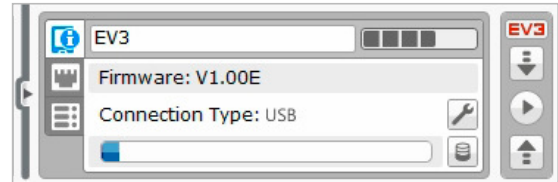
PORT VIEW

The Port View tab displays information about the sensors and motors connected to the EV3 Brick. When your EV3 Brick is connected to the computer, this information is automatically identified and you will be able to see the live values. If your EV3 Brick is not connected, you can still set up the Port View tab manually. Select a port, then select the appropriate sensor or motor from the list.

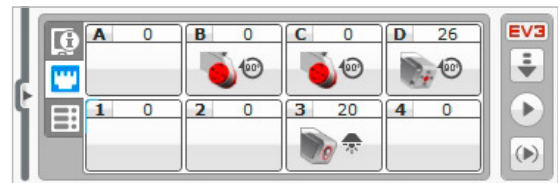
AVAILABLE BRICKS

The Available Bricks tab shows the EV3 Bricks that are currently available for connection. You are able to choose which EV3 Brick you want to connect to and the type of communication. Also, you can disconnect an existing EV3 Brick connection.

You can find more information about how to use the Hardware Page in the **EV3 Software Help**.



Brick Information tab



Port View tab



Available Bricks tab

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Content Editor

The Content Editor offers a convenient way for users to document the purpose, process, and analysis of their projects. You can include text, images, videos, sound effects, and even building instructions. It is also a convenient, paperless way for educators to monitor and evaluate student projects. Content Editor is also the place where already-made content—for example, Robot Educator tutorials and purchased LEGO® Education activity packs—is displayed and used.

Each page can be customized with different layouts and can automatically perform a range of actions, such as opening specific programs or highlighting a particular programming block.

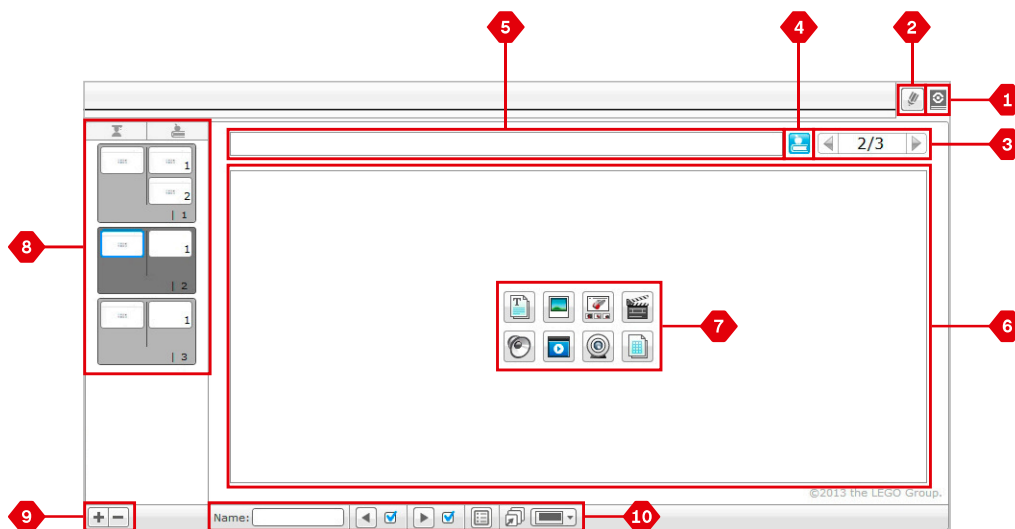
The Content Editor is located in the top right corner of the EV3 Software and is available whether you are working with a Program or an Experiment. You open the Content Editor using the large button with the book icon. Once open, you will be able to see whatever content has been made for the project: for example, a Robot Educator tutorial.

The Content Editor consists of the following main areas and features:

1. Open/Close Content Editor—Here you open and close the Content Editor.

- 2. Edit/View Mode**—Allows you to view or edit your pages.
- 3. Page Navigation**—Go to the next or previous page.
- 4. Teacher/Student Toggle**—Switch between the Student Page and Teacher Notes while viewing the content. This functionality is only available in the Teacher version of the EV3 Software.
- 5. Page Title**—Add a title to your page.
- 6. Page Area**—This is where the main content is shown and edited.
- 7. Media Icons**—Select what content type you wish to add to the page area.
- 8. Page Thumbnails**—Go to a specific page using the thumbnail images. In the Teacher version of the EV3 Software, Teacher Notes will also be available.
- 9. Add/Delete Page**—When adding a page, you get to choose from fourteen different templates.
- 10. Page Setup**—Make special settings for each page, such as format, page action, and navigation to the next page.

You can find more information about how to use the Content Editor in the **EV3 Software Help**.



Content Editor

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Tools

In the top menu bar of the EV3 Software you will find a number of small Tools that can add extra functionality and support to your EV3 Software experience.

You can learn more about most of the Tools in the [EV3 Software Help](#).

SOUND EDITOR

Create your own sound effects or customize one from our selection of official EV3 Sound files. The sounds can then be used for programming your robot by use of the Sound Programming Block.

IMAGE EDITOR

Make creative use of the EV3 Brick Display by designing original images or customizing existing images. The images can then be used for programming your robot by the use of the Display Programming Block.

MY BLOCK BUILDER

Sometimes you make a great miniprogram that you want to use again in another project or program. My Block Builder helps you take this miniprogram and create a unique My Block where you define the name, icon, and parameters that are relevant for you. My Blocks will automatically be archived in the My Block Programming Palette.

FIRMWARE UPDATE

Periodically, updated firmware will become available for your EV3 Brick. We recommend that you install new versions as they become available. This tool will tell you if there is a new firmware version available and help you update it on your EV3 Brick.

WIRELESS SETUP

In case you wish your EV3 Software to communicate with your EV3 Brick using Wi-Fi, this tool will help set up the wireless connection. To do so, you will need to acquire a Wi-Fi USB dongle for the EV3 Brick and enable Wi-Fi communication on the EV3 Brick.

BLOCK IMPORT

Add new blocks to your Programming Palettes. This can be new LEGO® Programming Blocks or blocks developed by other manufacturers: for example, in relation to a third-party sensor. These Blocks first need to be downloaded to your computer—then you can import them into your EV3 Software using this tool.

MEMORY BROWSER

It is easy to lose track of what you have stored on your EV3 Brick. The Memory Browser provides an overview of memory use on your EV3 Brick (including an SD card if you have it inserted). You can use the Memory Browser to transfer programs, sounds, graphics, and other files between your EV3 Brick and a computer, and copy and delete files that are already on your EV3 Brick.