CREATE Lab Visual Programmer Connection Guide

Introduction

The CREATE Lab Visual Programmer is a software application that allows you to use a computer to control certain types of CREATE Lab / BirdBrain Technologies robots. Both versions of the Arts & Bots Hummingbird and the Finch robot are controllable with the Visual Programmer.

Contents

Step One – Computer Setup

Computer Requirements

Any computer will work with the Visual Programmer. However, using a computer with the following capabilities will make your experience better:

- Screen Resolution: 1024 x 768 or larger (preferred)
  - Low screen resolution may prevent all controls from fitting on screen at once.
- Screen Size: 13" or larger (preferred)
  - Small screen size may make smaller controls challenging to operate and will reduce text size.
- Memory: 1 GB or more (preferred)
  - Memory shortages occasionally cause visual glitches.
- Mac or Windows operating system
- Internet Access (required for installation and updates)
  - After installation, the software does not require an Internet connection to run. You will need an Internet connection, however, to get software updates.
- Keyboard and Mouse Operation (preferred)
  - Touch-screen users may have challenges operating the drag-and-drop features.
- Administrator privileges
  - Some school and company owned computers have restricted security features that require computer support staff to unlock during installation. Please check with your organization's technology support group to see if this applies to you.

Getting the Visual Programmer

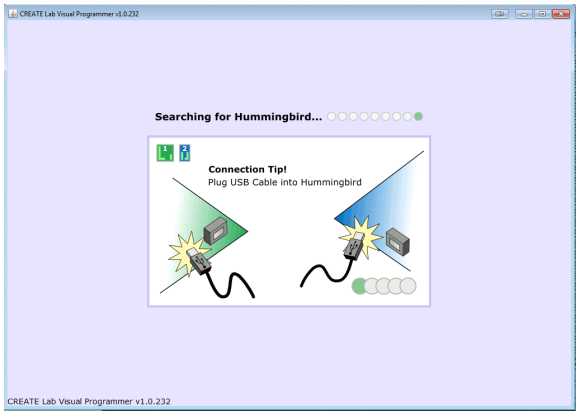
We offer two methods for downloading and installing the Visual Programmer: a direct install and launch from the artsandbots.com web site via Java Web Start, or as a downloadable zip.

Direct launch via Java Web Start

Downloading the Visual Programmer via Java Web Start is the preferred and recommended method for obtaining the software. Java Web Start is a technology to deliver a standalone application to a user's computer via a single click from a web site. After the initial install of the Visual Programmer via Web Start, there will be a single icon for the Visual Programmer on the user's Desktop (or location of her choosing) from which to launch the software, making it very easy to launch and use. Web Start also ensures that the Visual Programmer software is always up to date, downloading necessary updates in the background. This helps ensure you always have the most recent version available, and will receive new features and bug fixes as we release them. Although the Web Start version will run fine when there is no Internet connection available (it uses the most recent, cached version), it does however, require an Internet connection for the initial install and for obtaining updates. Furthermore, each computer on which you would like to install the Visual Programmer will need to have an Internet connection for the initial installation—the software cannot be (easily) copied from, say, a USB thumb drive to multiple machines. If these restrictions do not work for your organization, please consider using the downloadable zip version discussed below.

To download and install the Java Web Start version, please do the following:

1. Go to: http://artsandbots.com/visualprogrammer/
2. Click the appropriate "Launch!" Button for your robot (Hummingbird or Finch). Choosing the correct launch button is very important!
3. Some computers will not automatically launch Web Start to download the Visual Programmer, and instead merely download a .jnlp file to your computer. If this is the case for you, save the file and double-click it to open it (the file will be either "visual_programmer.jnlp" or "visual_programmer_finch.jnlp", depending on which you chose in step 2).
4. (On some computers) You may be asked to install Java. Please do so. The Visual Programmer requires Java SE 6 or newer.
5. (On some computers) You may be asked to approve the software or security certificate from CREATE Lab (for computer security reasons). Please do so.
6. If you run the software and see a screen like one of the ones below, you're done!

	
Hummingbird	Finch

Please note that, after this initial install, you need not go to the artsandbots.com site to launch the Visual Programmer software. You can simply open it by double-clicking the CREATE Lab Visual Programmer icon that Web Start added to your desktop.

Download as a zip file

Although we recommend users use the Java Web Start version of the software as described above, we also make it available as a zip for users who cannot rely on an available Internet connection for installation and updates. Please be aware, however, that if you install from the zip file, you will not automatically receive updates to the software, and will need to re-download the zip from artsandbots.com and re-install to upgrade.

To install and run from the zip file, do the following:

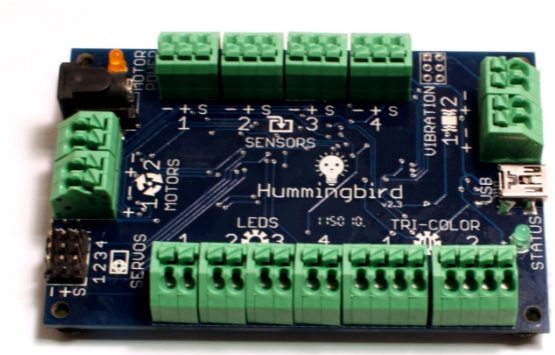
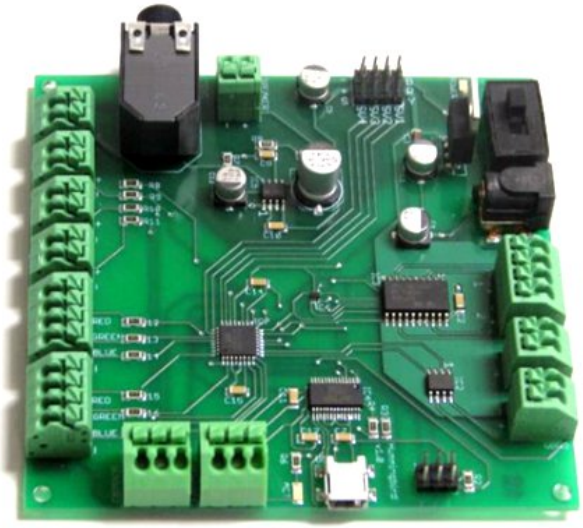
1. Go to: http://artsandbots.com/visualprogrammer/visualprogrammer.zip
2. Your browser should download the zip file.
3. Unzip the visualprogrammer.zip archive to your preferred location.
4. Read the README.txt file for instructions on how to launch the software.

Step Two – Connecting to a Hummingbird or Finch

The Visual Programmer supports either the Hummingbird or the Finch. See the instructions below for the hardware you have.

Connecting to a Hummingbird

There are two different types of Hummingbirds. The newer Hummingbird v2 is a dark blue rectangular circuit board. The older Hummingbird Beta is a green square circuit board. Use the images below to determine which type of Hummingbird you are using:

	
Hummingbird v.2	Hummingbird Beta

The Visual Programmer can work with both types of Hummingbirds, but setup is slightly different for each. Please follow the instructions for your Hummingbird version.

Hummingbird v.2

The Hummingbird v.2 is designed to simplify connecting it to a computer. In order to work, the Hummingbird merely needs to be connected to a computer via a USB cable. Additionally, use of motors and servo (please see the Arts & Bots Hardware Reference Sheet for details) requires that the Hummingbird be connected to an AC power adapter.

1. Plug the USB cord into your computer (large plug) and the USB port on the Hummingbird (small plug).
2. Your computer should recognize the Hummingbird and setup a "HID Device" driver automatically.
3. After the driver setup is finished, run the Visual Programmer.
4. (Optionally) Plug the AC power adapter into a wall power outlet and the power plug on the Hummingbird in order to use motors and servos.

Hummingbird Beta

The Hummingbird Beta is an older version that takes a few extra steps to connect to a computer. In order to work, it requires connections to both an AC power adapter and a USB connection to a computer.

1. Install the Hummingbird Beta driver on your computer, called a "Virtual COM Port Driver". Go to: http://www.ftdichip.com/Drivers/VCP.htm and follow the instructions for your computer's operating system.
    - Installation guides are also available here: http://www.ftdichip.com/Support/Documents/InstallGuides.htm
    - Windows - http://www.ftdichip.com/Drivers/CDM/CDM20814_WHQL_Certified.zip
    - Mac - http://www.ftdichip.com/Drivers/VCP/MacOSX/FTDIUSBSerialDriver_v2_2_17.dmg
2. Plug the AC power adapter into a wall power outlet and the power plug on the Hummingbird.
3. Plug the USB cord into your computer (large plug) and the USB port on the Hummingbird (small plug).
4. Turn switch to "ON" position. A red light should light up.
5. Your computer should recognize the Hummingbird and setup the "Virtual COM Port Driver" (that you installed in #1) automatically.
6. After the driver setup is finished, run the Visual Programmer.

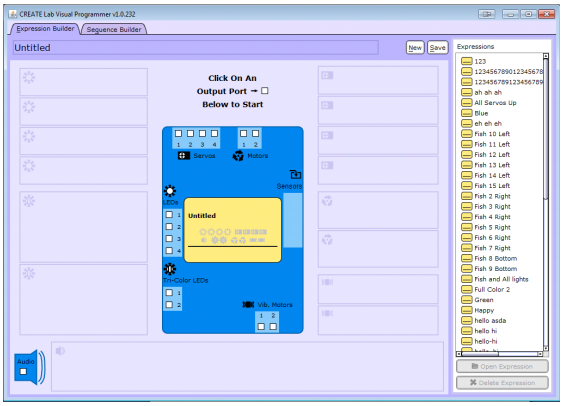
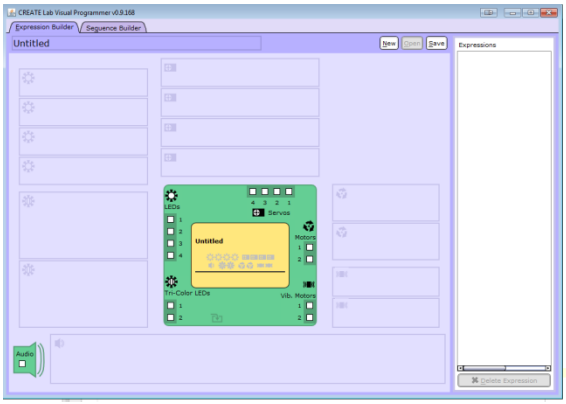
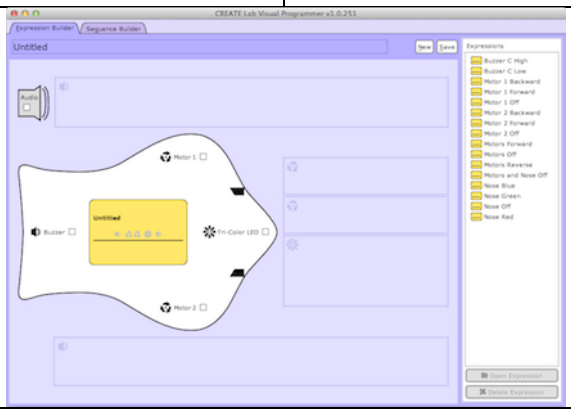
Connecting to a Finch

The Finch is designed to simplify connecting it to a computer. In order to work, the Finch merely needs to be connected to a computer via a USB cable.

1. Plug the USB cord into your computer (rectangular plug) and the USB port on the Finch (square plug).
2. Your computer should recognize the Hummingbird and setup a "HID Device" driver automatically.
3. After the driver setup is finished, run the Visual Programmer.

Visual Programmer

When the Visual Programmer successfully connects, it will stop searching for the device and stop displaying the "Connect Tip" illustrations. The new screen is the main Visual Programmer screen and will be showing the Expression Builder tab. The Expression Builder tab is easy to recognize by its large "cartoon" image of a Hummingbird or Finch. Note that the on-screen Hummingbird's appearance will depend on what Hummingbird version you are using.

<table>
<tr><td>  </td><td>  </td></tr>
<tr><td>Hummingbird v.2</td><td>Hummingbird Beta</td></tr>
<tr><td colspan="2">  </td></tr>
<tr><td colspan="2">Finch</td></tr>
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When you see one of the screens above, you are ready to create your first expression.

Frequently Asked Questions (FAQ)

What is Java Web-Start?

Java Web Start is a technology to deliver a standalone application to a user's computer via a single click from a web site. The preferred and recommended method for installing the Visual Programmer is with Java Web-Start. Web Start makes installation easier by helping you to install Java (if necessary) and the Visual Programmer with a single click. Additionally, this allows the CREATE Lab team to automatically distribute software updates when bugs are fixed and improvements are made to the Visual Programmer. Instead of reinstalling the improved software, users working with an Internet connection will receive the new versions automatically.

Where can I get more help?

The CREATE Lab staff is happy to help you get your system up and running with Arts & Bots.

Contact Information:

- Clara Phillips: clara@cmu.edu - CREATE Lab Outreach
- Jennifer Cross: jcross1@andrew.cmu.edu - CREATE Lab Researcher
- Chris Bartley: bartley@cmu.edu - CREATE Lab Principal Research Programmer