

# CREATE Lab Visual Programmer

The CREATE Lab Visual Programmer was developed with Hummingbird as part of the [CMU CREATE Lab Arts & Bots program](#). The Visual Programmer uses a story-boarding approach to programming that is quick and easy to learn. The interface allows you to rapidly create **expressions** by selecting outputs and setting them on or off. Once several expressions have been built, you can create a **sequence** that uses these expressions to make a program.



## Exporting to Arduino



By exporting a sequence to Arduino mode, you can see the same program expressed as Arduino code, and you can run the program on your Hummingbird Duo with it unplugged from the computer. Follow the instructions, or download the **comic version**.

- Select to highlight the sequence you would like to export.
- Click "export sequence."
- Windows explorer or Mac finder should pop up to display the new Arduino program.

## Uploading the Program to Duo with the Arduino Environment

- Set up the [Arduino Environment for Hummingbird](#).
- Double click the file to open it in the Arduino environment
- Follow the instructions in this [tutorial for switching to Arduino mode](#). This tutorial uses a program called the Hummingbird Firmware Burner.

- Once in Arduino mode, the Hummingbird will no longer be recognized by CREATE Lab Visual Programmer. Use the Hummingbird Firmware Burner to switch the Hummingbird back to USB-tethered mode when you are ready to start programming it again.

## Changing where Expressions and Sequences are Stored

To save programs to a specific directory, you need to:

- Click on the gear tab (the settings tab)
- De-select “Keep using this directory”
- Close and re-open Visual Programmer
- When Visual Programmer opens again you will have an option to Choose Location where new Expressions and Sequences will be stored (it will not move existing Sequences/Expressions to the new directory).