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Dinosaur Assembly

View the Assembly Video at:

https://retrolcd.com/Curriculum/Dinosaur

There are three key bits that need to be assembled.

- Arduino
- I2C Hub
- Controller

Arduino

The first is the Arduino. That will require soldering the header pins onto the board. The 6 pins on the back aren't required. They are power, ground, reset and a few digital pins that are duplicated. They are used to program the Arduino instead of using the USB connection.

https://www.quora.com/What-is-the-function-of-ICSP-pins-on-the-Arduino-Uno

I2C Hub

The 2 pin connectors are for power and the 4 pin connectors are for I2C connectors.

The rightmost pin is generally set to ground, the one next to it is 5V and then SDA and finally the left most pin is SCL.

When using standard 4 pin wiring, black corresponds with ground, red is 5V.

To put the I2C Hub together, simply solder in the header pins. Only 8 are needed for Dinosaur but you may want to fill in more so you can use this hub for other projects that have more connected I2C devices.

The Controller

The controller has a capacitor, resistor, 12mm buttons and IC with socket. The capacitor value does not really matter. And it does not matter which way you put it in. The capacitor is simply there to smooth the voltage to the integrated circuit.

The resistor value is not particularly important either. It serves as a pull-down resistor on the output pin of the integrated circuit. However, you will see later in the source code that we explicitly ground the output pin before checking the value. Without doing this, the voltage may not dissipate between reads causing the code to think buttons are pushed that aren't.

There is no set order anything needs to be soldered in, but it may be easiest to start with the buttons and the IC socket so that the capacitor and resistor are not pressing against the workspace when soldering them in. While there are two output pins, only one is needed. The second output just makes it easier to trigger something else when a button is pressed. There is room for two power connectors, but since we're using the I2C hub, it is not necessary that we populate it.

The reason for using the IC socket is just to ensure that if the Multiplexer chip is bad, it can be replaced.

The notch on the IC needs to point towards the ABC connectors. We will need all three header pins available as those pins are how we select each of the 8 buttons to see if they are pressed.

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Wiring It Up

From Arduino

D7 -> Output pin of controller
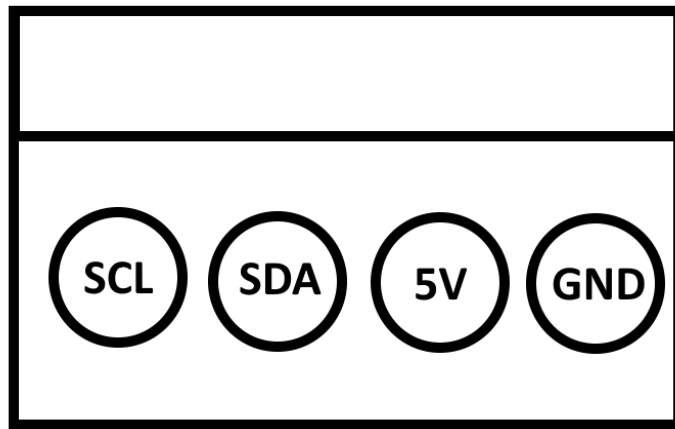
D5 -> C on controller

D4 -> B on controller

D3 -> A on controller

GND -> GND pin of hub

5V -> 5V pin of hub

A5 -> SCL on hub

A4 -> SDA on hub

From Hub

5V -> 5V on Display

GND -> GND on Display

SCL -> SCL on Display

SDA -> SDA on Display

GND -> GND on Controller

5V -> 5V on Controller