

Re: Multiplexing signals

Source: <http://sci.tech--archive.net/Archive/sci.electronics.basics/2007-11/msg00786.html>

- *From:* T <nospam.kd1s@xxxxxxxxxxxxxxxx>
 - *Date:* Sun, 25 Nov 2007 19:13:23 -0500
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In article <nshjk3th0raq6ivsm1u9dgs18p6h8kr267@xxxxxxx>, jfields@xxxxxxxxxxxxxxxxxxxxxx says...

On Sun, 25 Nov 2007 08:02:21 -0800 (PST), Chris <cfoley1064@xxxxxxxx> wrote:

On Nov 25, 1:34 am, T <nospam.k...@xxxxxxxxxxxxxxxx> wrote:

I don't know if I'm going down the right path here. I'm an electronics hobbyist with no formal training.

I've got an Arduino board and I want to drive an 8x8 LED matrix. The thing is there are 24 pins on the matrix.

Figured out that with six bits I could control all 24 lines if I could multiplex it somehow.

I believe what I'm looking for is probably in a 74LS type chip but what I've run across so far takes eight bits and shoots out a serial signal. Not what I need at all, I need something with a bit of smarts.

The easiest way to control a lot of I/O with just a few pins is to use a latching shift register. Data is presented serially (1 bit at a time) to the data input, and then clocked in with another I/O pin. These data bits are shifted in one bit at a time until you've got 'em all. Then you toggle another pin to latch the data to the shift register output pins. Simple, and you can daisy-chain the latching shift register chips to allow you almost an unlimited number of outputs.

Here's a data sheet for an inexpensive IC that will do the job:

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<http://www.onsemi.com/pub/Collateral/MC74HC595A-D.PDF>

The 'HC 595 (or actually three of them daisy-chained together) will cover your 24 outputs quite nicely. You can just tie a small (.01uF) cap to Vcc and a 10K pulldown resistor on the other side to have a good power-on reset signal to ensure the chips all come up with all zeroes, if you want it. The output enable shouldn't be necessary for your application, so just tie it low. Be sure to tie SQh of the first IC to the data input of the second and SQh of the second to the data input of the third IC to daisy chain.

Depending on which Arduino board you have, you've probably got software commands available to shift out data bytes serially — Read The Fine Manual for more info.

Remember that the HC595 outputs can source only 6mA or so with all of them on, so if you're driving the LEDs directly, choose resistors accordingly. Either that, or go for greater complexity and get some driver ICs.

These are handy:

http://www.allegromicro.com/en/Products/Part_Numbers/6275/6275.pdf

http://www.allegromicro.com/en/Products/Part_Numbers/6276/6276.pdf

I requested samples of the 6276. Hopefully they don't sit on it forever like some of the chip vendors out there.

I'm still waiting for an FM transmitter chip sample I ordered a long time ago.

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