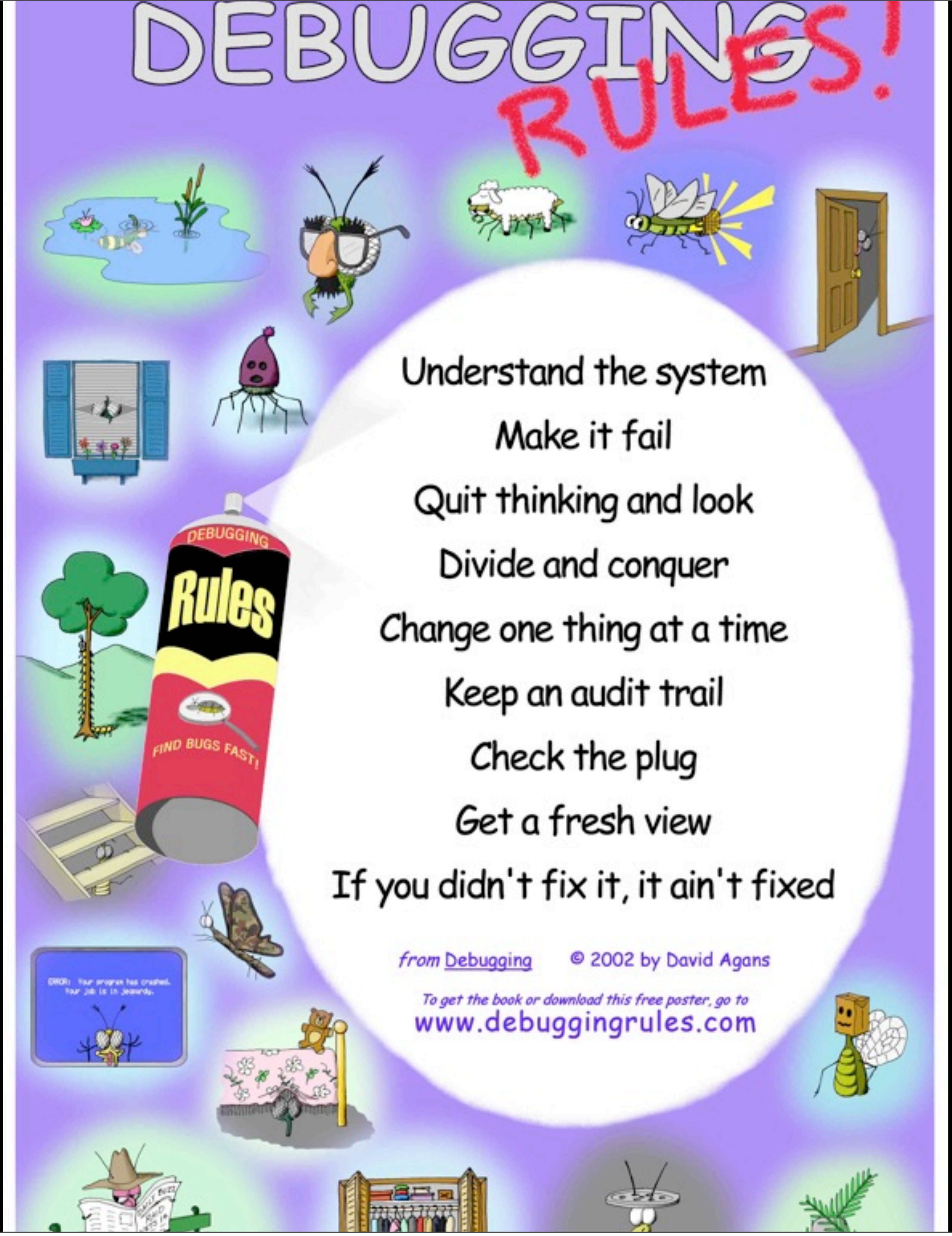
Debugging

Press Play: Interactive Device Design | May 2, 2010

In-class Activity

Review MP3 player Verplank diagrams



Understand the system

Make it fail

Quit thinking and look

Divide and conquer

Change one thing at a time

Keep an audit trail

Check the plug

Get a fresh view

If you didn't fix it, it ain't fixed

from Debugging © 2002 by David Agans

To get the book or download this free poster, go to
www.debuggingrules.com

Debugging
Advice & Philosophy

credit flickr: reuben

Debugging is an inevitable part of the design process.

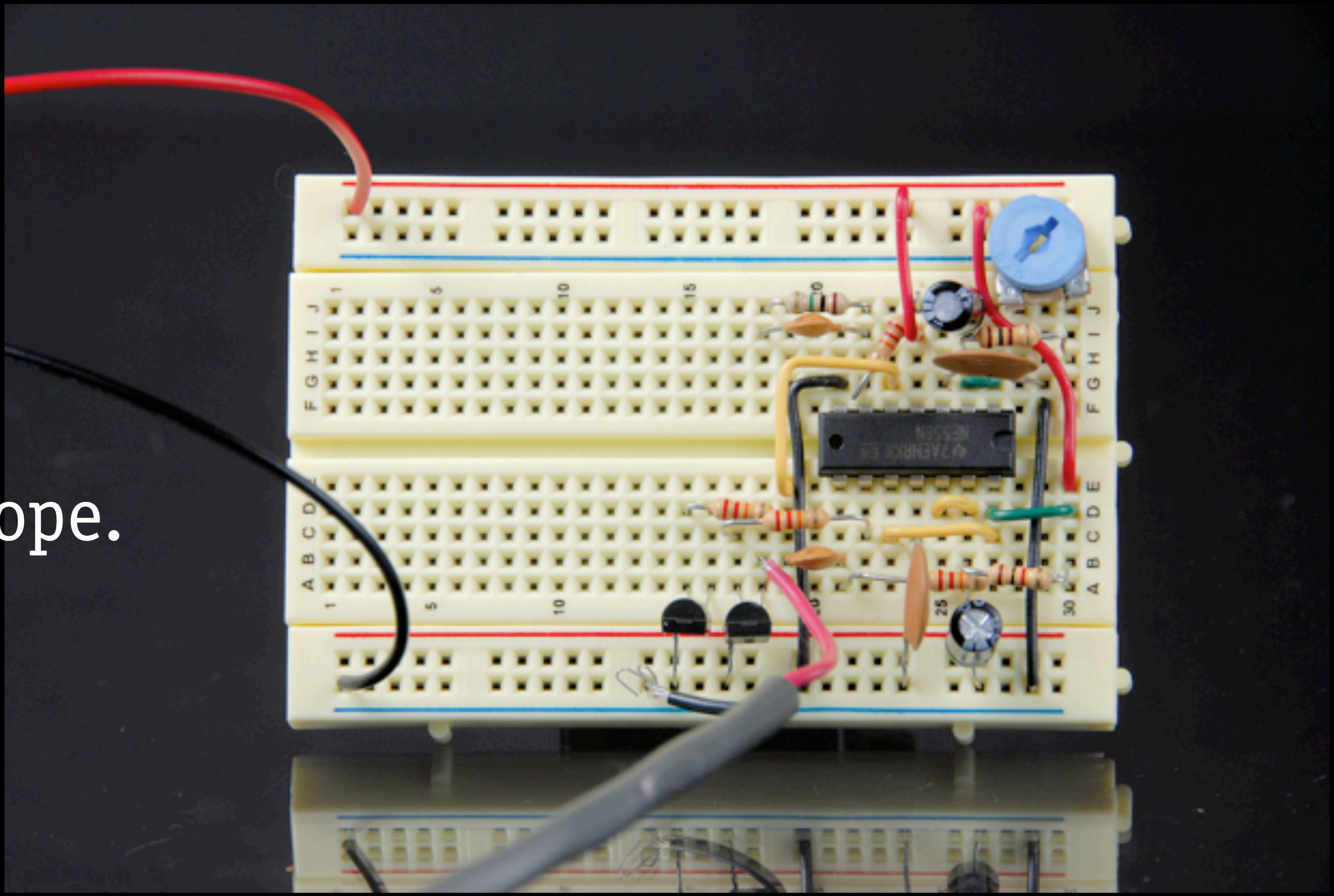
It always takes a disproportionate amount of time.

- Plan accordingly.

Debugging a problem
Check power and ground

Don’t assume.

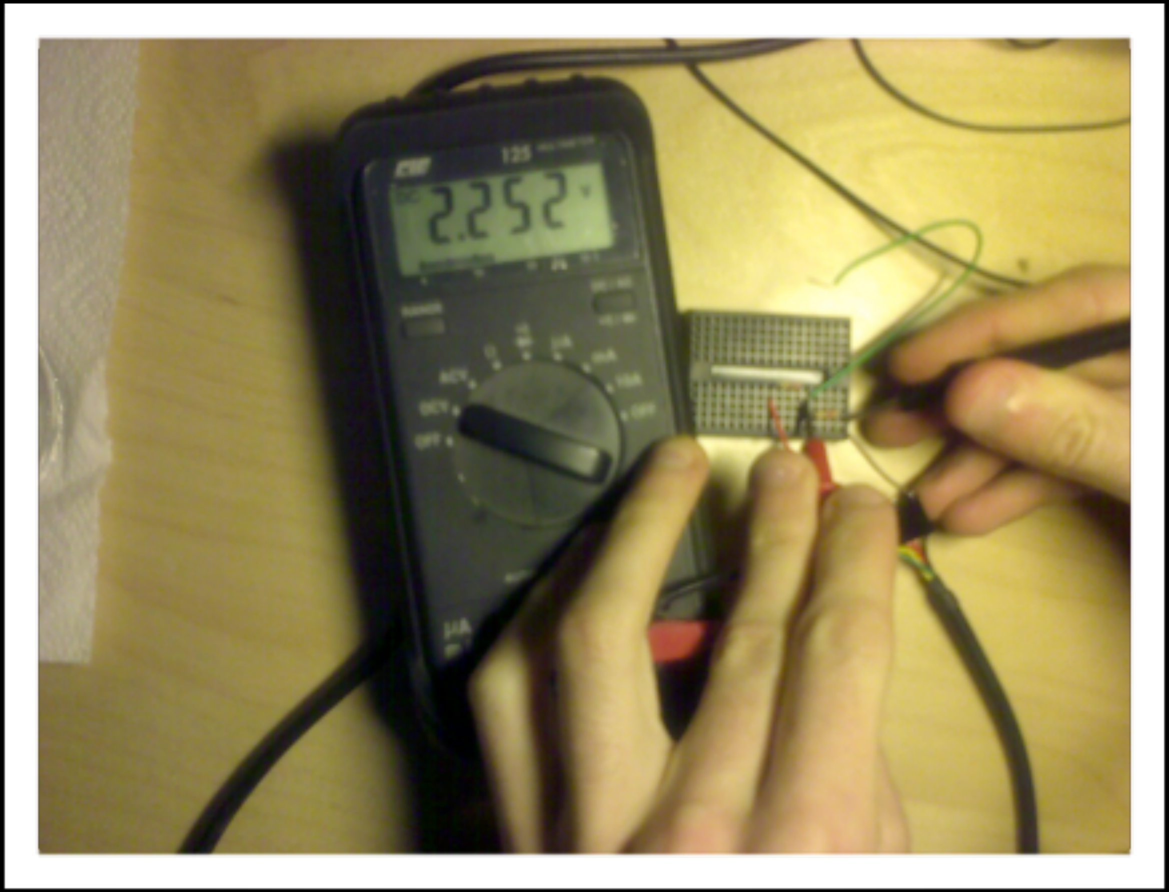
Use a multimeter or scope.



credit flickr: leprechaun947

Debugging a problem

Do a quick route-trace



credit flickr: deadhacker

Make sure the voltages along each path make sense.

Double check the pin-outs and other such problems against the datasheets.

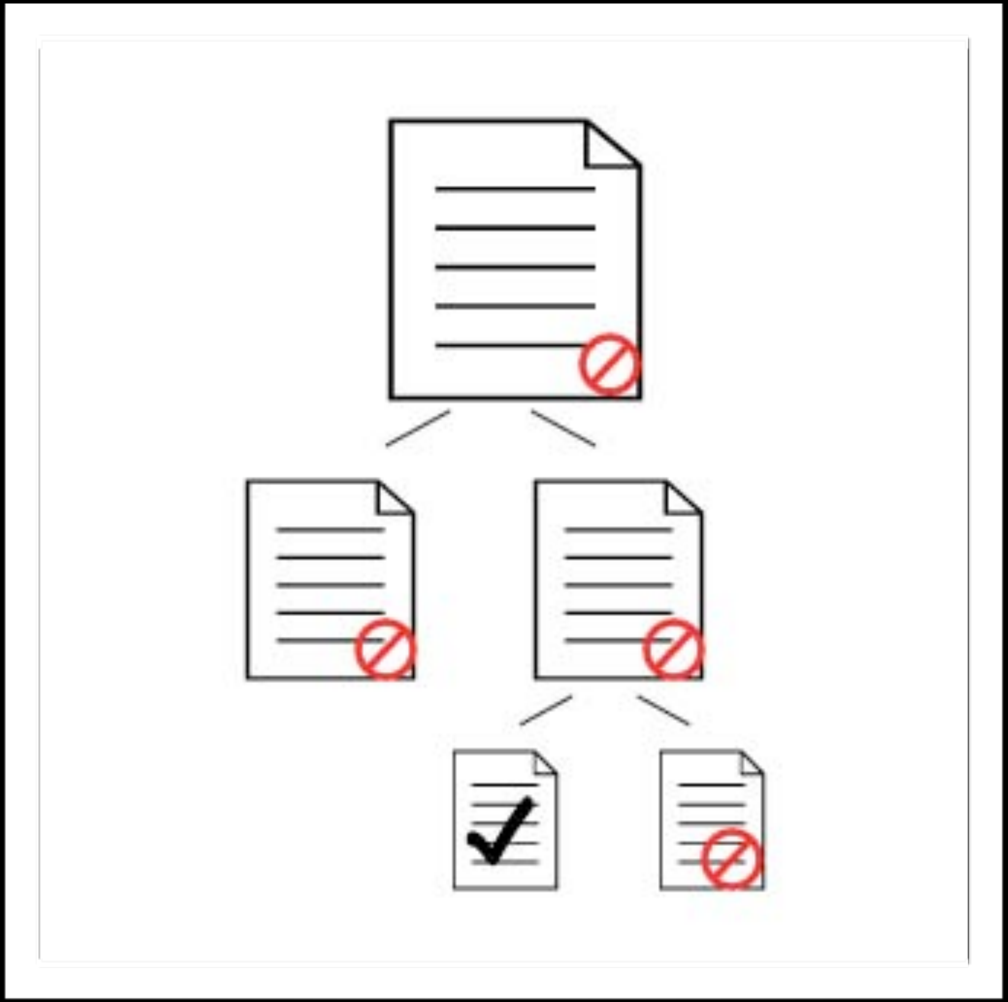
Debugging a problem

Divide and Conquer

Can you establish whether the problem is occurring in software or hardware?

In the first half of the circuit or the second?

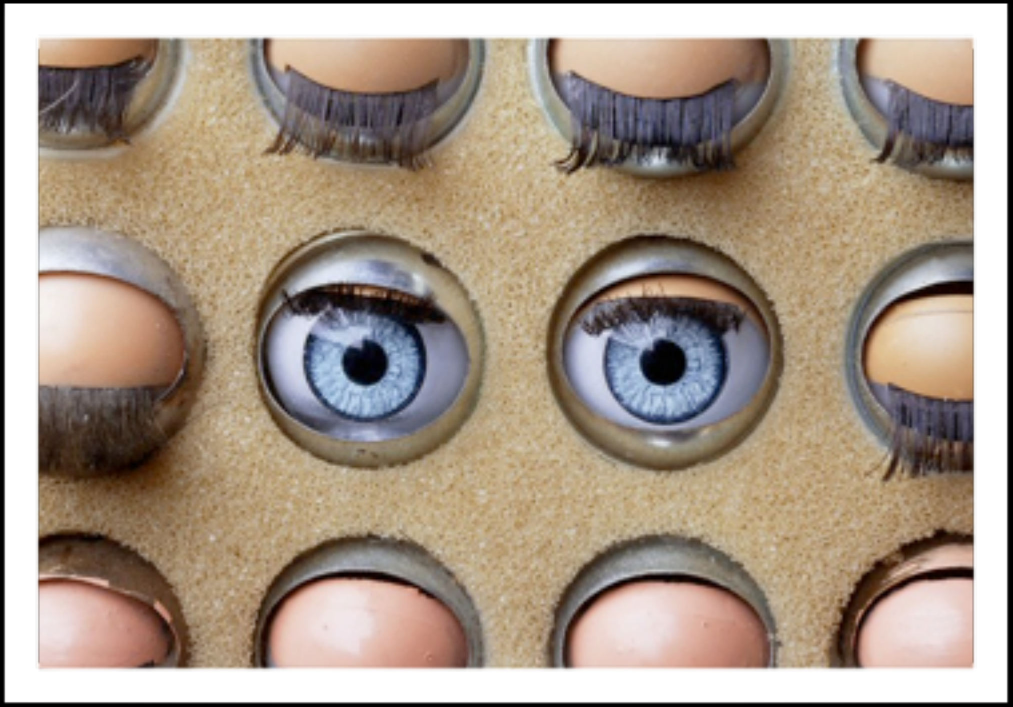
In one function or another?



credit technochakra.com

Debugging a problem

Get a fresh perspective



credit codinghorror.typepad.com

Get up, take a walk.

Ask someone else to look at the problem with you.

Work on another part of the problem for awhile.

Look online and see if anyone else has had the same problem!

Design for debug

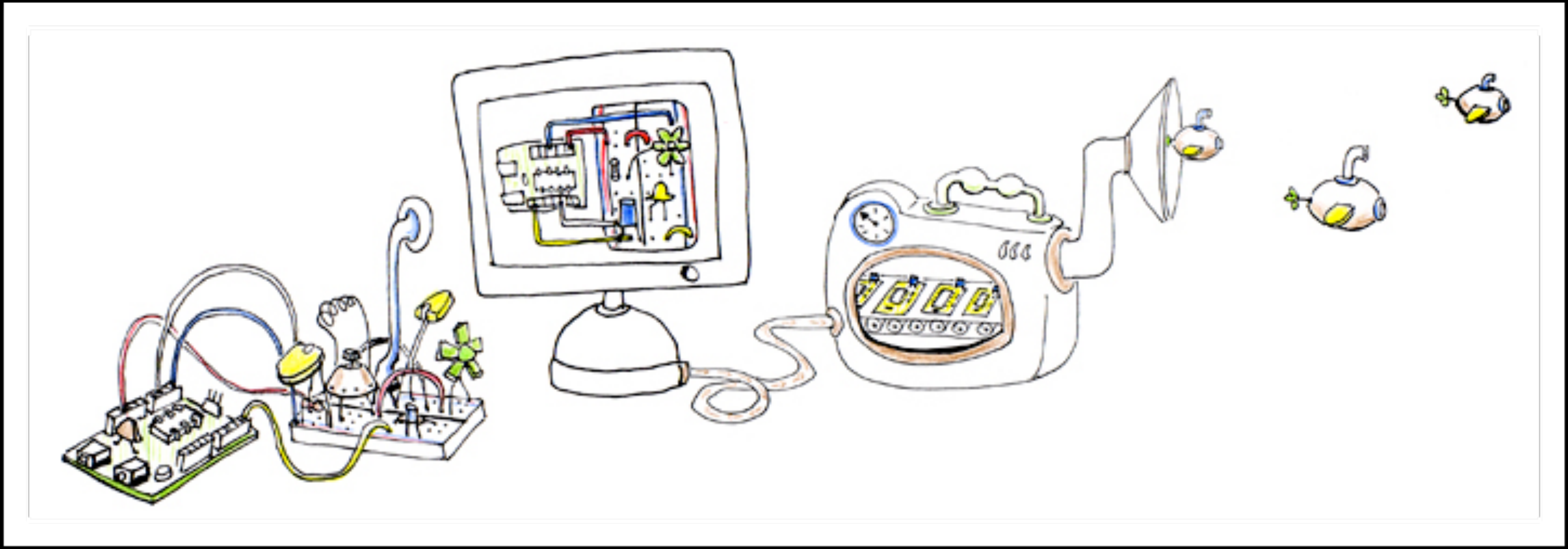
One of the secrets of debugging is not to write too many bugs in the first place!

Here's some tips for how.

credit moderndesignblog.com

Design for debug

Actually design your system.



credit fritzing.org

If you just throw stuff together, it's a miracle if it works.

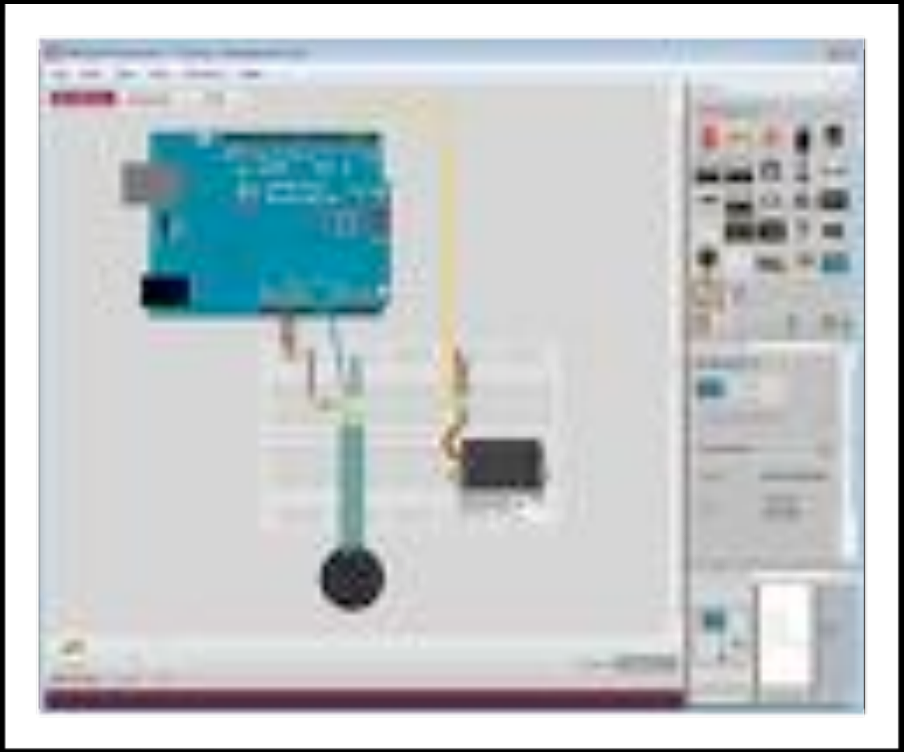
Design for debug

Actually design your system.

Take the time to draw sketches and schematics, both for hardware and software.

Move from high-level to low-level in your design.

Write pseudo-code first!



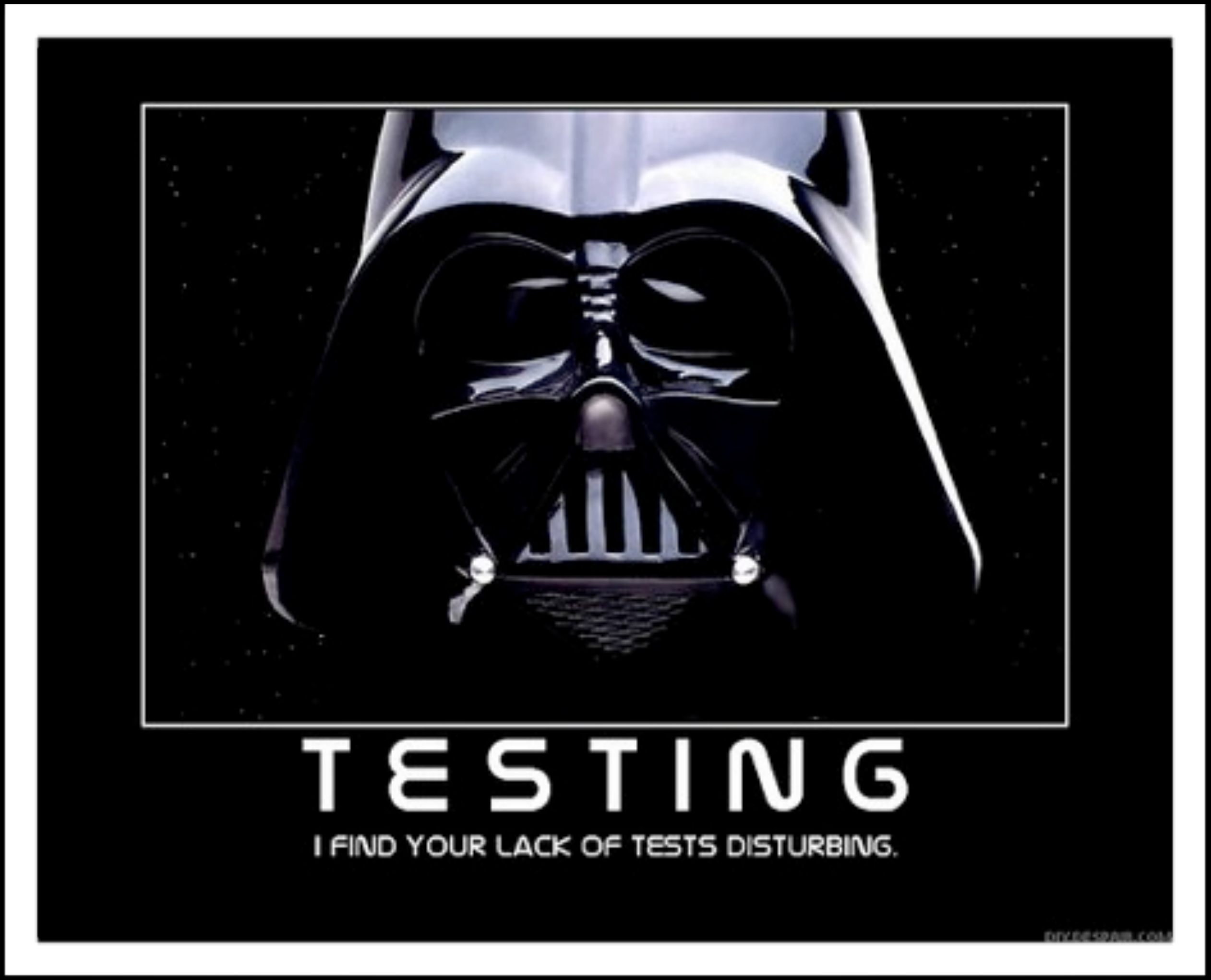
credit fritzing.org

Design for debug
Make one change at a time

…and make sure it works! And keep the tests around.

In computer science, this is known as unit testing.

This makes it easier to revert to a “known good” system, and to divide-and-conquer later.



credit garrenblog.blogspot.com

Design for debug

The early bird gets the bug

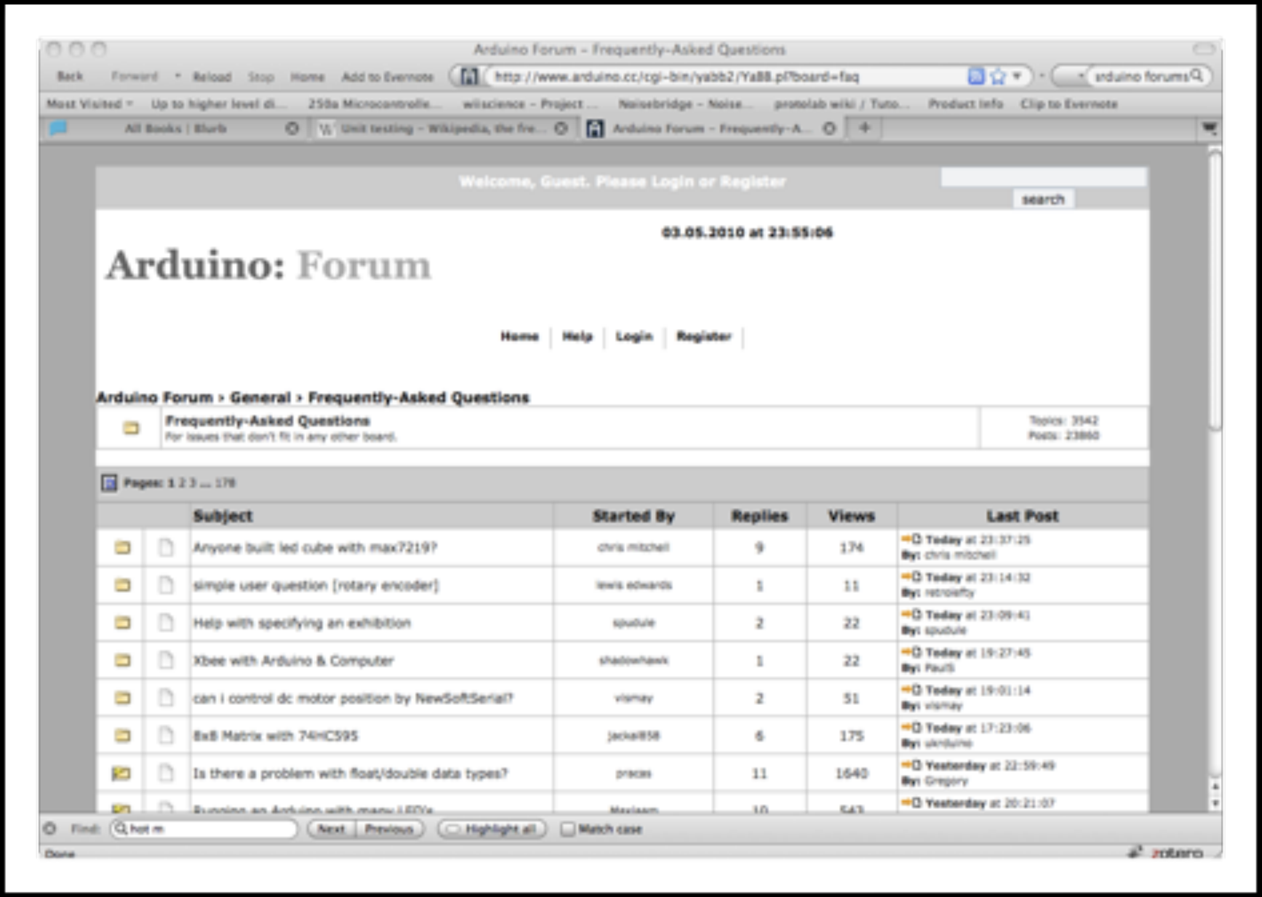
credit http://www.alleba.com/blog/

Everyone cuts corners and has difficulty seeing clearly when the deadline approaches.

Starting early gives you time to work in a calmer and cleaner manner.

Design for debug

Work within a broader community



Arduino Forum - Frequently-Asked Questions

http://www.arduino.cc/cgi-bin/yabb2/YaBB.pl?board=faq

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Arduino Forum › General › Frequently-Asked Questions

Frequently-Asked Questions
For issues that don't fit in any other board.

Topics: 3542
Posts: 23860

Pages: 1 2 3 ... 178

Subject	Started By	Replies	Views	Last Post
Anyone built led cube with max7219?	chris mitchell	9	174	Today at 23:37:25 By: chris mitchell
simple user question [rotary encoder]	lewis edwards	1	11	Today at 23:14:32 By: retrolefty
Help with specifying an exhibition	spudule	2	22	Today at 23:09:41 By: spudule
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can i control dc motor position by NewSoftSerial?	vismay	2	51	Today at 19:01:14 By: vismay
8x8 Matrix with 74HC595	jackal858	6	175	Today at 17:23:06 By: ukrduino
Is there a problem with float/double data types?	pracas	11	1640	Yesterday at 22:59:49 By: Gregory
Running an Arduino with many LED's	Maxiasm	10	543	Yesterday at 20:21:07

Picking hardware and platforms which are common (and better, open-source) gives you more resources when you hit the wall.

credit http://www.alleba.com/blog/

Open Source Hardware

Open Source Hardware

Million dollar baby