

Dumb Users

How Processing Changed
Computing Culture

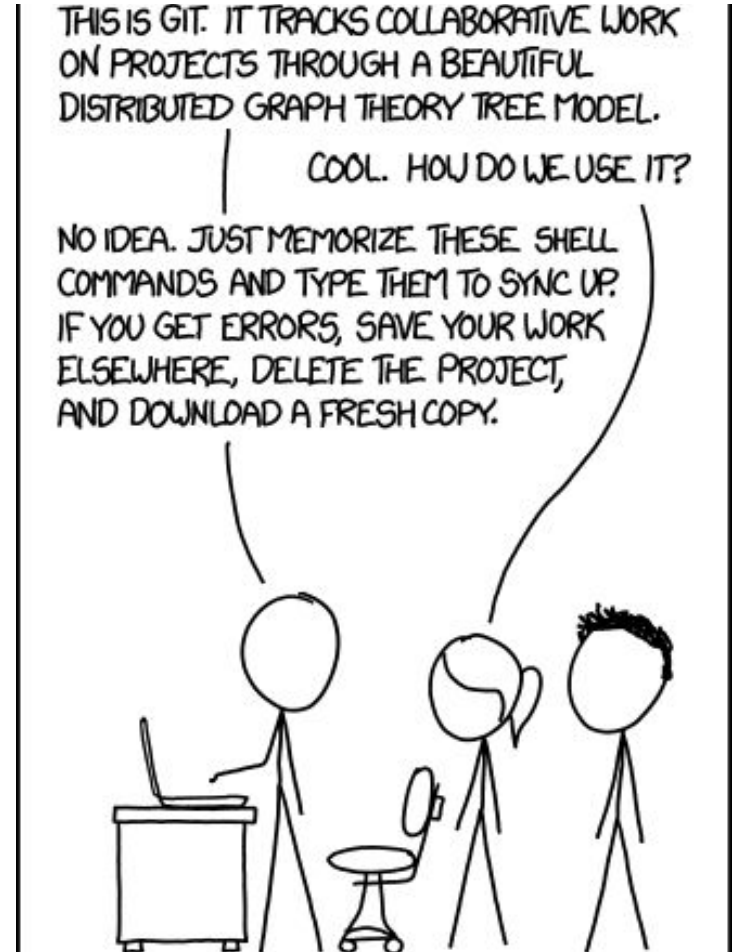
Today

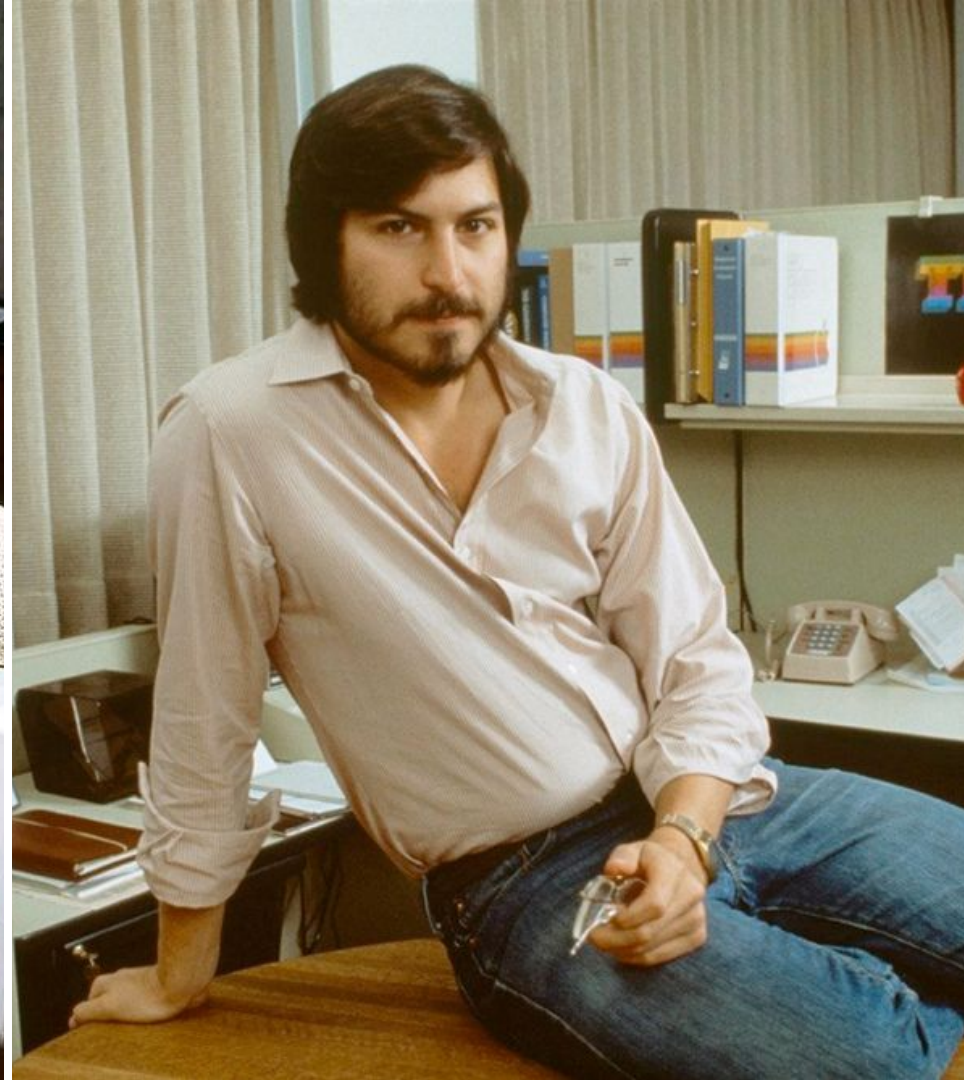
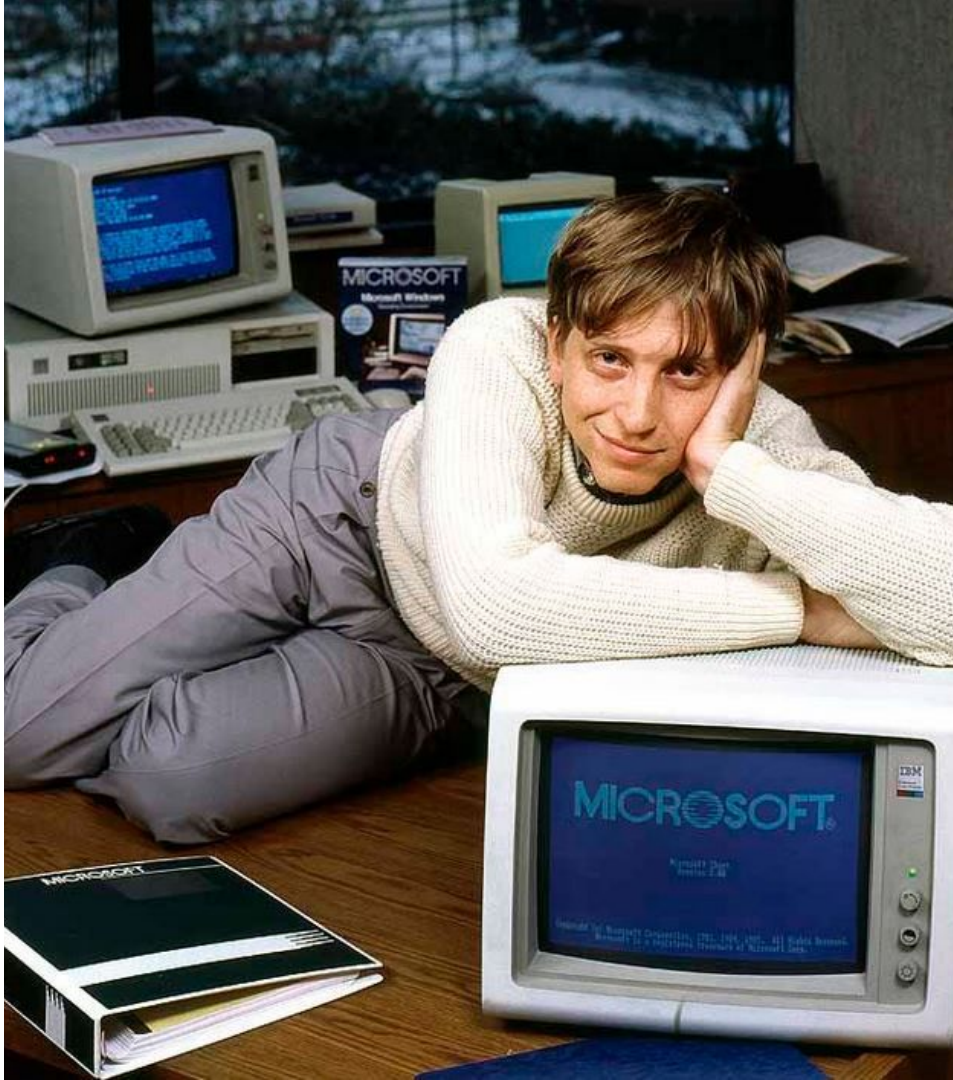
The Context

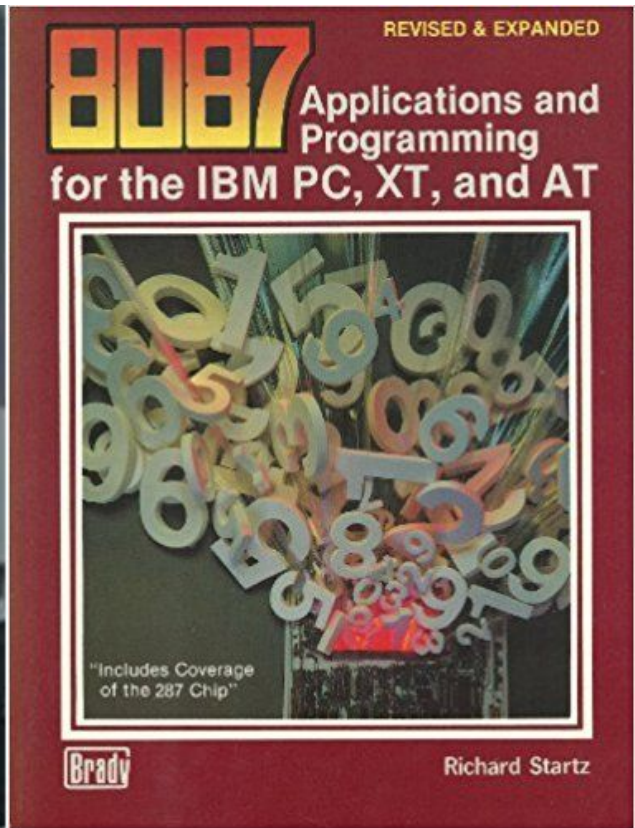
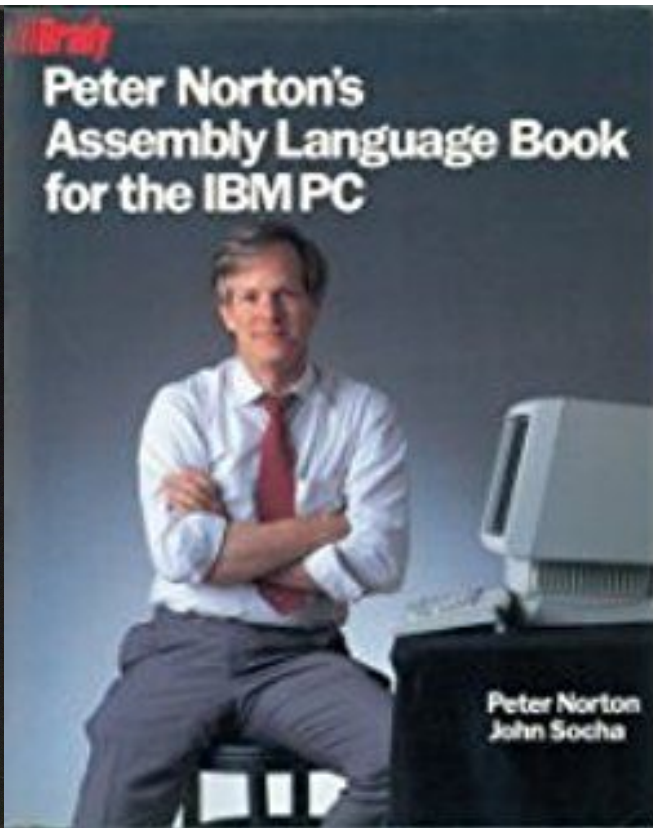
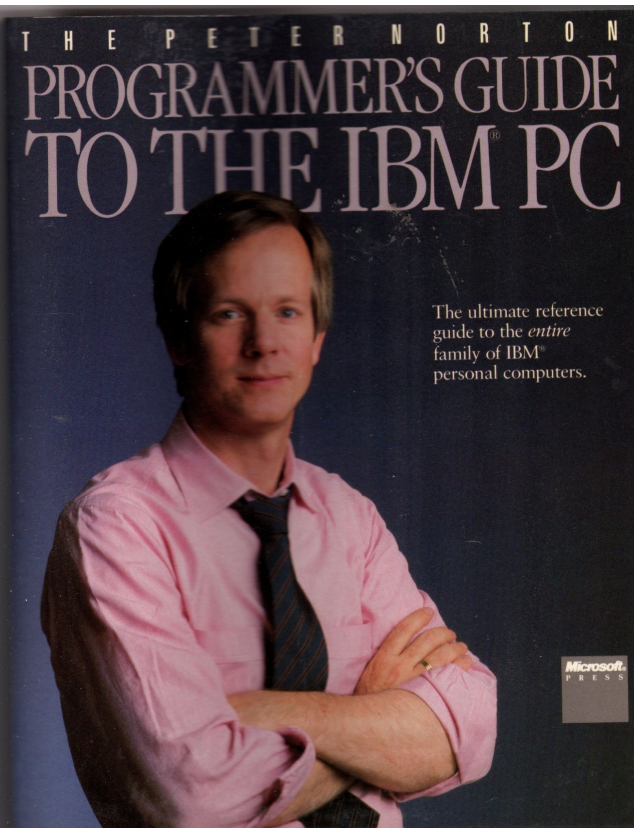
Ben Fry

Processing /
Culture

Repercussions







Ethos?



Richard Stallman (GNU) & Linus Torvalds (Linux)

Programmers Context:

Countless issues on LKML

Sexism

Elitism

Bullying

Personal Attacks

Verbal Abuse for Status



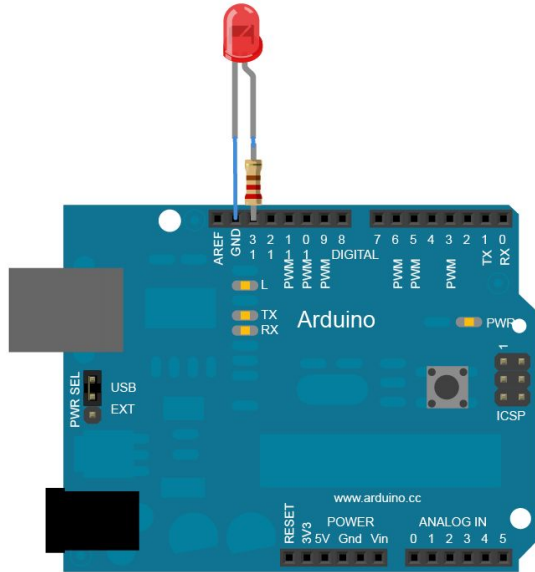
```
> So Greg, if you want it all to change, create some real threat: be frank  
> with contributors and sometimes swear a bit. That will cut your mailqueue  
> in half, promise!
```

My Student:

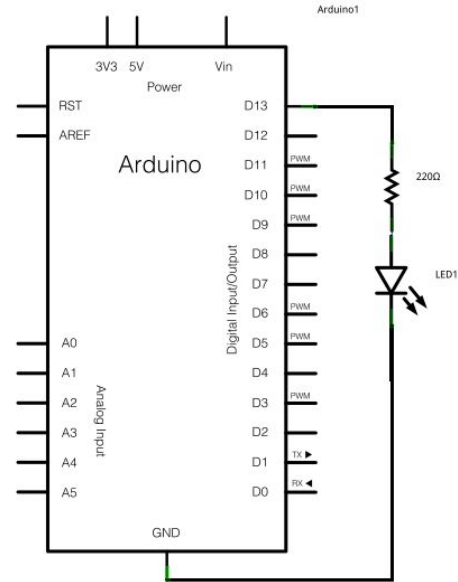
Discussion [RANT] People, please learn to read/draw REAL schematics (self.electronics)

submitted 11 days ago by epilefric

Why does everybody started using this shitty ""schematics""?!?! this is pure garbage this is a valid schematic.



VS



The Promise

Stack Overflow is a community of 4.7 million programmers, just like you, helping each other. Join them; it only takes a minute. Join the Stack Overflow community to: Ask programming questions, [...]



The Reality

“Almost every time I’ve been told to read the documentation, there’s nothing about my problem in the documentation.”

“I gave up programming after the last time I asked a question on StackOverflow.”

“I must have gone to a couple dozen IRC rooms, whatever online communities I could find. Everywhere I went people shat on me, and I never got an answer to a single question.”

Well, I’m mostly embarrassed because my last Stack Overflow account got banned for asking a dumb (but legitimate) question.

I would tell someone “oh yea, I started learning HTML and what a string is” and they would reply back with “please, HTML isn’t even a real programming language” and then go on to boast about how much they knew and what they could do. So I kind of kept to myself and tried learning on my own

**Most technical forums
fail new users.**



“It is the duty of machines and those who design them to understand people. It is not our duty to understand the arbitrary, meaningless dictates of machines.”

— Donald A. Norman, The Design of Everyday Things



Enter Ben Fry

Graduate M.I.T. Media Lab

Ph.D. Computational Information Design

Designer based in Cambridge, MA.

Coded Processing (2001) w/Casey Reas

Nierenberg Design Chair 2006-2007 CMU

Principal of Fathom consultancy



Recognition

- ❖ Whitney Biennial in 2002
- ❖ Visualization of genetic data featured at the Cooper-Hewitt Design Triennial in 2003
- ❖ Golden Nica winner 2005
- ❖ Ars Electronica in Linz, Austria (2000, 2002, 2005)
- ❖ Featured in the 2006 Cooper-Hewitt Design Triennial
- ❖ Museum of Modern Art in New York (2001, 2008),
- ❖ Films: Minority Report and The Hulk.
- ❖ Winner 2011 National Design Award for "Interaction Design"

What Creatives Needed

Reduced Choice Interface

Documentation:

 Accessible

 Complete

Direct Non-Technical Usage Examples

Coaching

Technique Discussions

Creatively Focused Community

Opportunities to Learn Visually



P

Processing

Cross platform environment

Alternative to proprietary tools

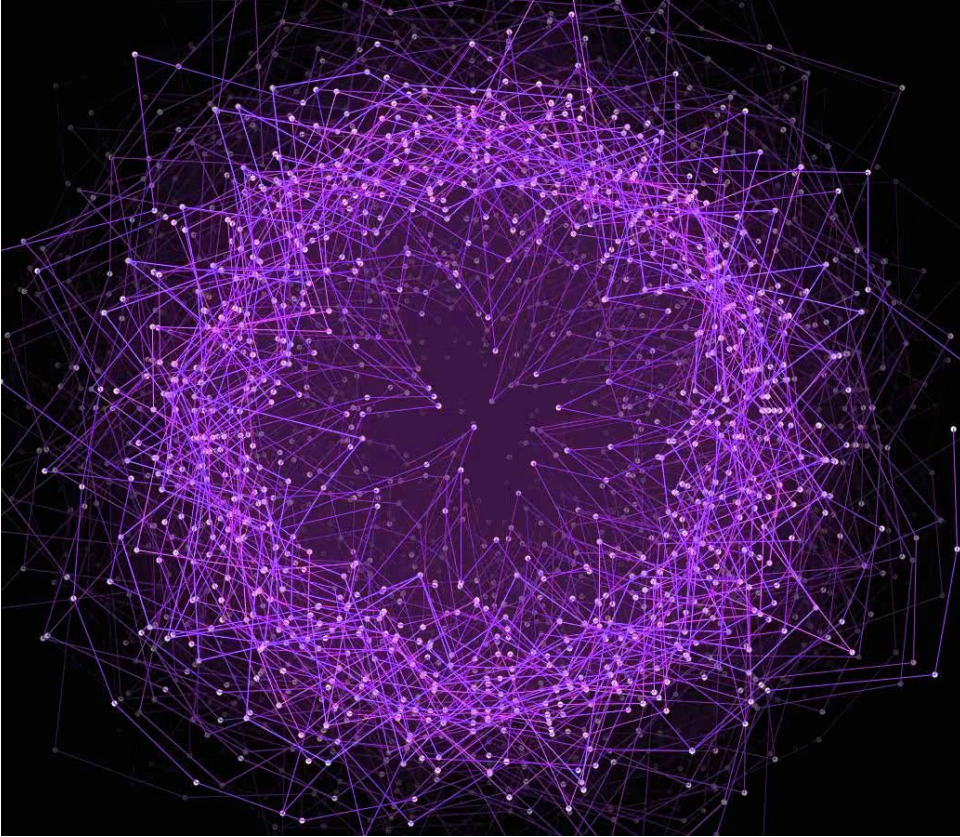
Beginner friendly

For visual designers & education

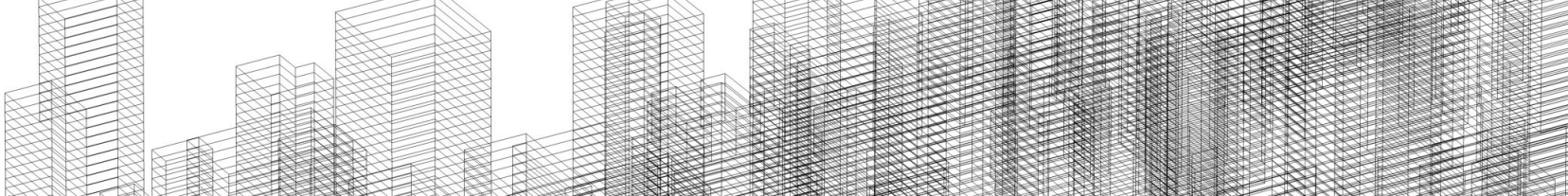
De-emphasis on technical expertise

His Goals

My bottom line is that I want more **designers** to use computation to move their work along. So if Processing gets other people **to create things that they couldn't** with commercial software then I think that's a great success. As for where it should go, I think the most interesting things in the next few years are at opposite ends of the spectrum—large scale **installation work** and **mobile/small-scale computing**.



The Challenge



Pillars of Processing

IDE, Libraries, Community, Documentation

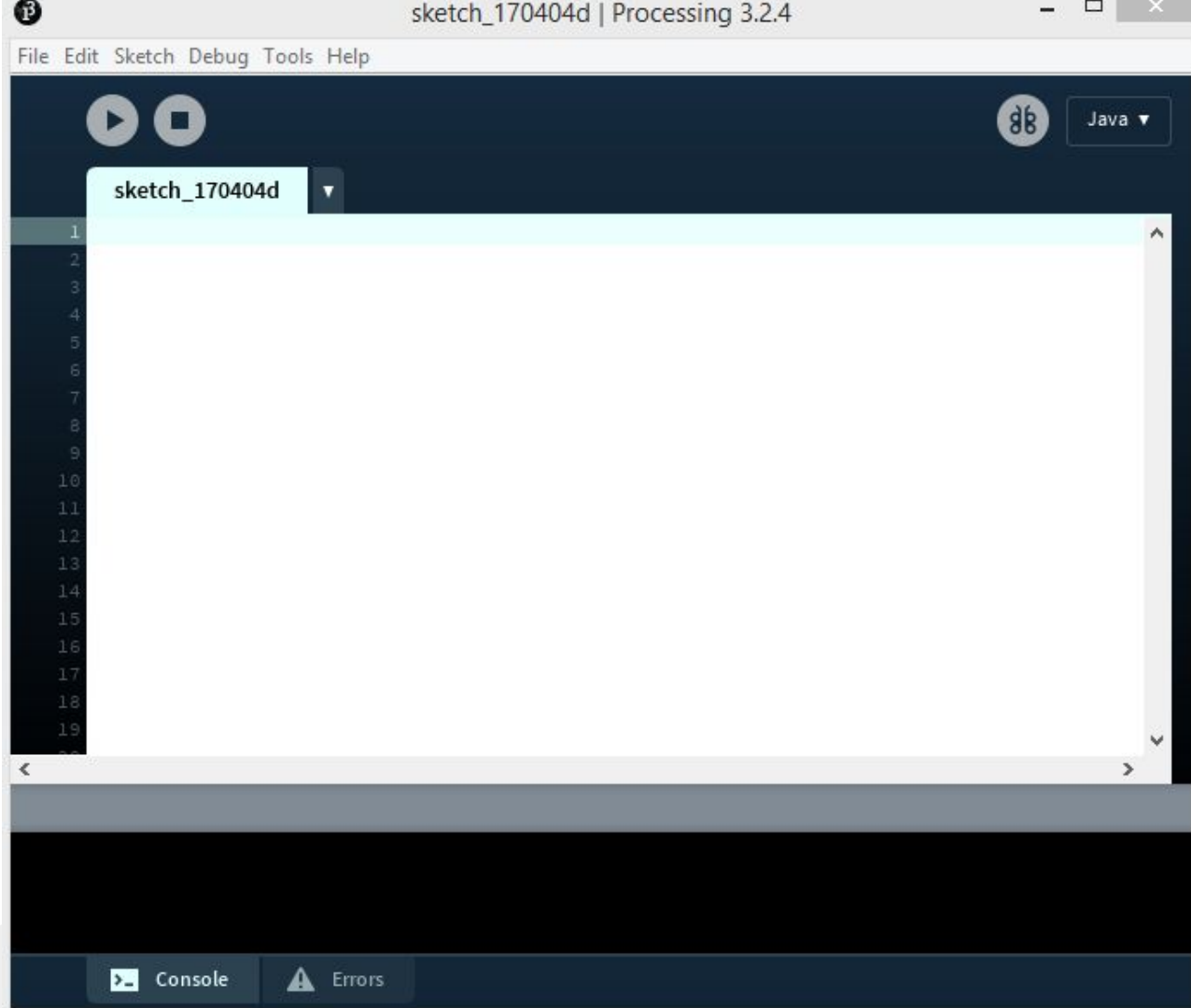
Processing IDE

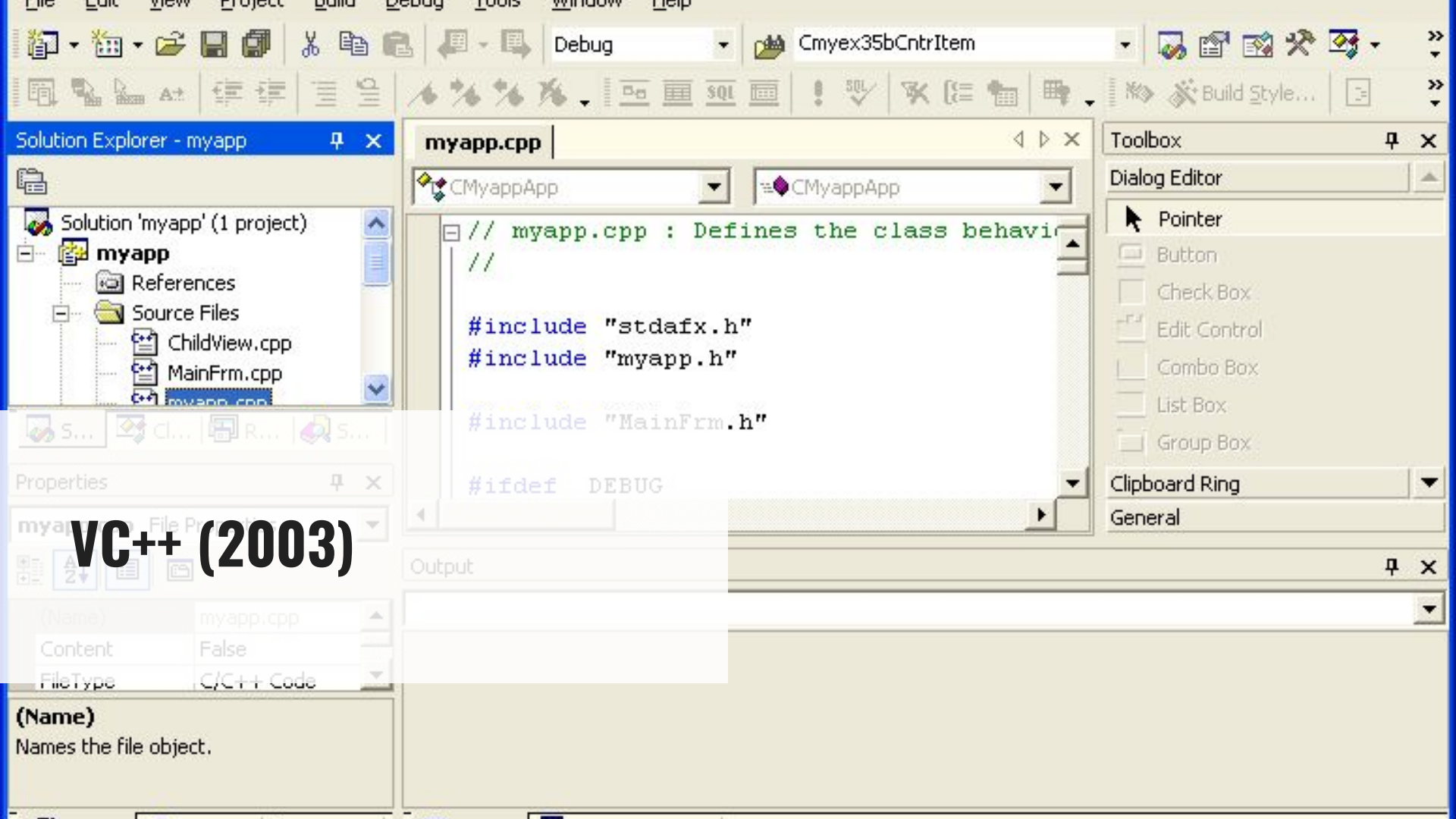
Approachable

Simple

Hides Complexity

Powerful





VC++ (2003)

Equivalents: 3 Widgets vs A Host of Commandline Tools

Editor

[Compiler](#)

Linker

Make (build scripter)

Terminal

Debugger



Libraries and Convenience Functions

Foundations for common tasks:

setup()

draw()

2D/3D Primitives (Eg: [rect\(\)](#))

Extensions (Libraries):

Animation, Kinect, Typography, Ketai(Android)

Interactivity variables:

mouseX, mouseY

key

Keep the User Focused On What They Care About

(Right: Using a mouse
through Xlib)

```
—  
  
#include <X11/Xlib.h>  
#include <assert.h>  
#include <unistd.h>  
#include <stdio.h>  
#include <malloc.h>  
  
static int _XlibErrorHandler(Display  
*display, XErrorEvent *event) {  
    fprintf(stderr, "An error occurred  
detecting the mouse position\n");  
    return True;  
}  
  
// xlib to get mouse coords  
// vs mouseX mouseY  
int main(void) {  
    int number_of_screens;  
    int i;  
    Bool result;  
    Window *root_windows;
```

```
—  
  
Window window_returned;  
    int root_x, root_y;  
    int win_x, win_y;  
    unsigned int mask_return;  
  
    Display *display =  
    XOpenDisplay(NULL);  
    assert(display);  
  
    XSetErrorHandler(_XlibErrorHandler);  
    number_of_screens =  
    XScreenCount(display);  
    fprintf(stderr, "There are %d screens  
available in this X session\n",  
    number_of_screens);  
    root_windows =  
    malloc(sizeof(Window) *  
    number_of_screens);
```

...cont

```
    for (i = 0; i <
number_of_screens; i++) {
        root_windows[i] =
XRootWindow(display, i);
    }
    for (i = 0; i <
number_of_screens; i++) {
        result =
XQueryPointer(display,
root_windows[i],
&window_returned,

&window_returned, &root_x,
&root_y, &win_x, &win_y,
&mask_return);
```

```
        if (result == True){
            break;
        }
    }
    if (result != True) {
        fprintf(stderr, "No
mouse found.\n");
        return -1;
    }
    printf("Mouse is at
(%d,%d)\n", root_x, root_y);

    free(root_windows);
    XCloseDisplay(display);
    return 0;
}
```


Documentation and Examples



Examples. Short, prototypical programs exploring the basics of programming with Processing.

Some examples are running online through [p5.js](#) using HTML Canvas for rendering. There are many more examples included with the Processing application; please look there if you don't find what you're looking for.

Examples Section *data, images, color, typography, and more...*

(w/live P5.js)

Structure

Image

Input

Elements and Comments

Load and Display Image

Mouse 1D

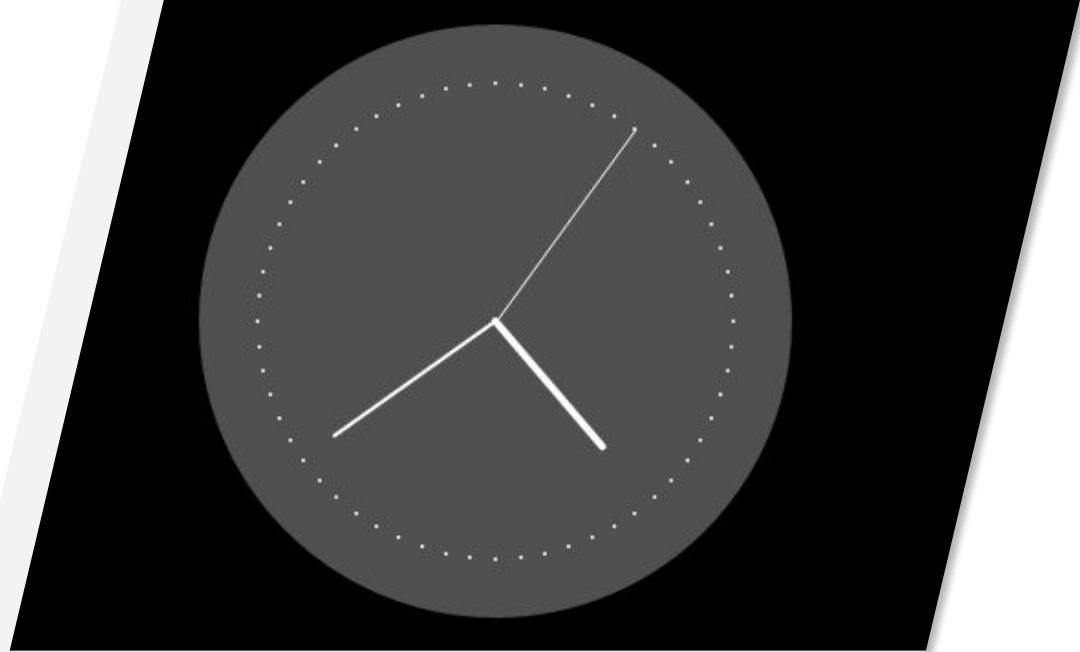
Coordinates

Background Image

Mouse 2D

Example: Time

Each variable or function page is accompanied by example code.



Current time can be read with the `second()`, `minute()`, and `hour()` functions. In this example, `map()` functions are used to set the position of the hands.

```
int cx, cy;
float secondsRadius;
float minutesRadius;
float hoursRadius;
float clockDiameter;

void setup() {
  size(640, 360);
  stroke(255);
```

Topic Examples. *Programs about to animation, interaction, motion, simulation, and more...*

Drawing	Interaction	Simulate
Continuous Lines	Tickle	Spring
Pattern	Follow 1	Springs
Pulses	Follow 2	Chain
	Follow 3	Flocking
Animation	Reach 1	Simple Particle System

Examples of Common Techniques

Visual & Textual Learning

Video Tutorials. Links to videos that cover the Processing basics.

Large collections of instructional Processing videos are online from [Daniel Shiffman](#), [Andrew Glassner](#), [Jose Sanchez](#), and [Abe Pazos](#).



[Hello Processing](#)
by Daniel Shiffman et al.

Short video lessons introduce coding exercises that lead to designing an interactive drawing program.



[Welcome to Processing 3](#)
by Daniel Shiffman

What's new in Processing 3? Dan walks through the new features and changes.



[Debug](#)
by Daniel Shiffman

Learn how to pause and step through your running code with the Processing 3 Debugger.

Text Tutorials. A collection of step-by-step lessons covering beginner, intermediate, and advanced topics.



[Getting Started](#)
by Casey Reas and Ben Fry



[Processing Overview](#)
by Ben Fry and Casey Reas



[Coordinate System and Shapes](#)
by Daniel Shiffman

Tools. Extend the capability of the Processing Environment beyond the core functionality.

The following tools are included with the Processing software. Select the tool you want to use from the Processing Environment. These tools are open source; the code is distributed with Processing.

Visual Tools Augment Programming

Color Selector

Simple interface for selecting colors as RGB, HSB, and Hex values.

Movie Maker

Creates a QuickTime movie from a sequence of images. Options include

Archive Sketch

Archives a copy of the current sketch in .zip format. The archive is placed in the same directory as the sketch.

Create Font

Converts fonts into the Processing

Exhibition. A curated collection of projects created with Processing.
New software added each month.

Curated by Filip Visnjic of CreativeApplications.net



Particle Flow
by NEOANALOG



Objectifier
by Bjørn Karmann



Random Access Memory
by Ralf Baecker

Exhibit & Get Critique

Link: [CreativeApplications.Net](#)

Link: [Bjørn Karmann, CreativeApplications.Net](#)

Links: [Ralf Baecker, CreativeApplications.Net](#)



Community Forums

Code / Hardware

Events

Projects

Outreach

Pedagogy

p5.js Development Questions



29 discussions

102 comments

Most recent: p5js

General

This header category groups the questions about this



1,318 discussions

5,444 comments

Most recent: Can we make a CAD model

Share Your Work

You made something cool with Processing? Show it off! (This is not a place to ask questions about your code!)



604 discussions

2,212 comments

Most recent: 1

Events & Opportunities

Announce an event or job offers, related to Processing.



What Non-Experts Needed

Reduced Choice Interface

Includes Creative Audience Affordances In a Single Vertical Community That Understands Pedagogy and Non Technical Needs

Documentation Examples

Critically Focused Community

Opportunities to Learn Visually

The most capable tool ever is useless if I don't know how it works.

getSize()

`ofVec3f ofBoxPrimitive::getSize()`

If you have any doubt about the usage of this module you can ask in the [forum](#).

If you want to contribute better documentation or start documenting this section you can do so [here](#)

Processing Changed the Landscape

It gave access to non technicals/professionals

Introduced a different pedagogy & approach

Resulted in a creative explosion and power shift

Inspired a much-copied model

