Educating with Ruby

Why Ruby is a Great Language for Teaching (and Learning) Programming

Brett Chalupa

Who are you?

Who are you?

Who are you?

Hopefully someone who is interested in how and why people learn programming.

Who are you?

Maybe you have kids or are going to have kids or teach people or want to learn programming yourself.

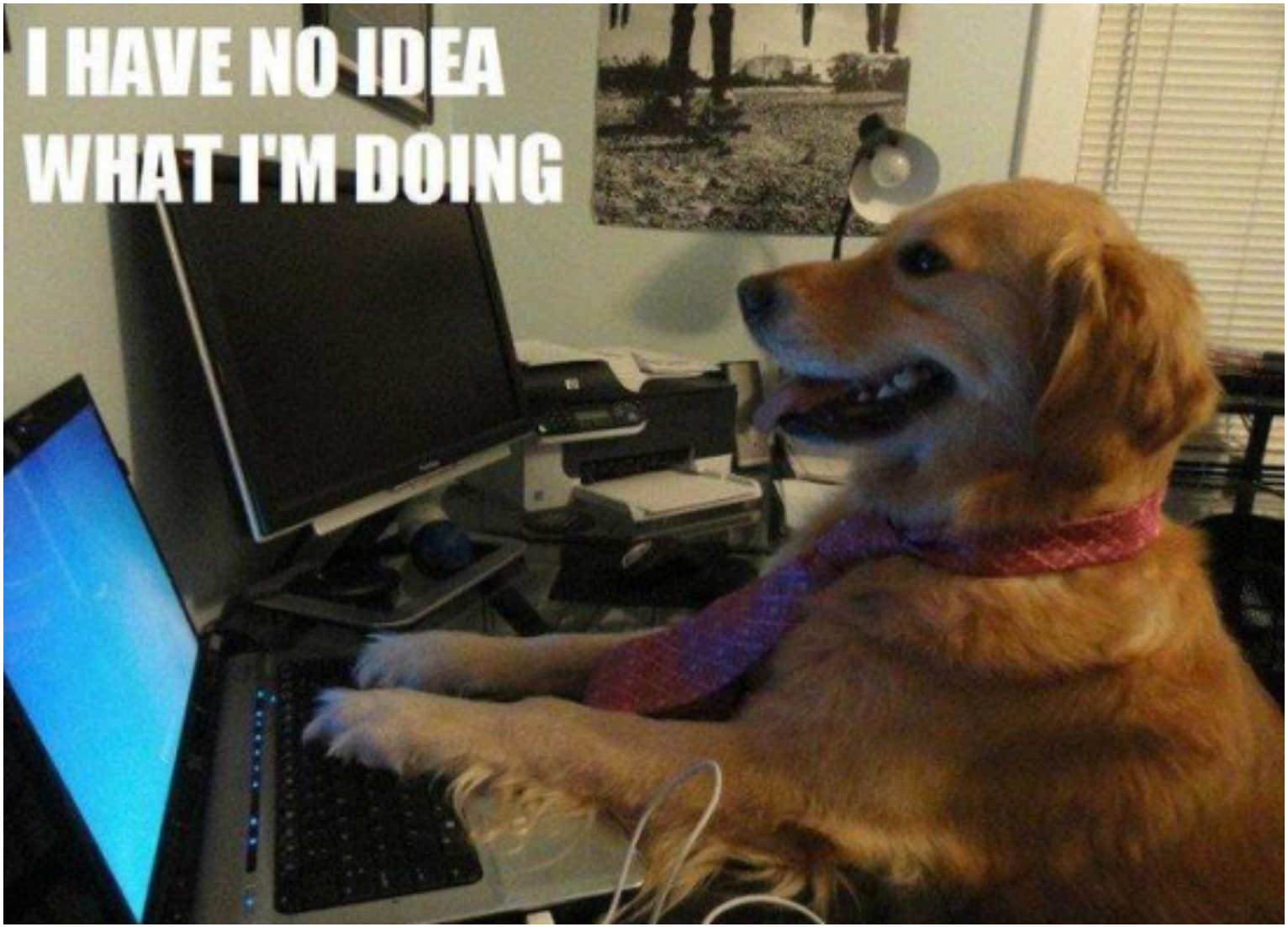
Who am I?

Who am I?

Who am I?

My name is Brett Chalupa.

Who am I?



Who am I?

I work at Burton, as an associate web programmer.

Who am I?

I am an organizer of the annual Burlington Ruby Conference.

Who am I?

I teach Ruby to kids.

Who am I?

I make things.

Introduction

Programming is important?
Right?

Introduction

Look, even Mr. i.am is taking coding classes!

Introduction

Programming is empowering.

Introduction

Programming is exhilarating.

Introduction

Programming is expressive.

Introduction

Is programming accessible?

Introduction

```
Is programming accessible?
```

Yes.

Introduction

```
Is programming accessible?
```

Yes, but it is overwhelming.

Language

Java, JavaScript, Python, C, C++, C#, Objective-C, Lua, F#, Scala, Clojure, the list goes on and on.

Language

There are quite literally hundreds of programming languages out there, each with their own role in the world of computer science.

Language

How does one pick a language to learn? Pick a name out of a hat? Do some research?

Language

Maybe you go to Stack Overflow or ask on a forum.

Language

If someone has had little-to-no exposure to programming, it is difficult to know the intricacies of languages and how they work.

Language

Do I use Netbeans, Eclipse, XCode, IntelliJ? What the heck is the terminal?

Language

Some languages are much more difficult to learn than others, whether it is due the syntax, the tools, the community or the resources available.

Language

There is one language, though, that is perfect for those new to programming - Ruby.

Language

Ruby is an expressive, open-source, object-oriented language that is actually fun to program in from the beginning.

Why Ruby

A person can learn Ruby and use it for their personal projects. A person can use it at work projects. There is a demand for Ruby developers.

Why Ruby

There is a logical path of progression.

Introduction to Ruby

Ruby is really cool. So cool that anyone naturally can read it.

Introduction to Ruby

C++:

```
#include <iostream>
using namespace std;

int main ()
{
  for (int i = 0; i < 5; i++)
  {
    cout << "Save me!";
  }
  return 0;
}
```

Introduction to Ruby

Ruby:

```
5.times do
  print "Konichiwa!"
end
```

Introduction to Ruby

Ruby:

```
5.times { print "Konichiwa!" }
```

Introduction to Ruby

There is much more to a language than looping and printing out words, but a lot of that elegance, readability and simplicity is common throughout Ruby.

A Brief History of Ruby

Ruby is from Japan and was initially created in the early 90s by a man named Yukihiro Matsumoto.

A Brief History of Ruby

"I hope to see Ruby help every programmer in the world to be productive, and to enjoy programming, and to be happy. That is the primary purpose of Ruby language."

Why Ruby

Ruby covers a large amount of concepts that are important in programming (and object-oriented programming).

Why Ruby

And it leaves out the "hard" stuff.

Why Ruby

There are "career paths" and you are not just limited to using Ruby. You should pretty easily be able to hop into C++, Java, Python, etc. without too much of a problem.

Why Ruby

Really inspiring and helpful community.

Why Ruby

Great resources like:

- Hackety Hack
- _why's poignant guide
- try ruby
- Learn Ruby the Hard Way
- Railscasts

How I Learned to Code

It is story time.

How I Learned to Code

I started dabbling with code when I was 13 with some HTML and CSS on a Wordpress blog.

How I Learned to Code

Let's rewind.

How I Learned to Code

I grew up with the Internet.

How I Learned to Code

My first formal introduction to programming in the education world was Java when I was 15.

How I Learned to Code

Why is Java the go-to language for high school AP computer science courses?

How I Learned to Code

Onward! To College!

How I Learned to Code

Python, AS3, C++, C# OH MY.

How I Learned to Code

Apprenticeships. Let me tell you about apprenticeships.

How I Learned to Code

I got apprenticeship doing more HTML, CSS and Wordpress (and some thinking).

How I Learned to Code

I got an apprenticeship where I learned Ruby (and some Python).

How I Learned to Code

At this point, on any given day, I was coding in C++, C#, AS3, Ruby and Python.

How I Learned to Code

I got to really see the particulars each of those languages have.

How I am Still Learning to Code

I decided to leave school and do my own thing - to learn and grow in my own environment.

How I am Still Learning to Code

I messed with Lua. I continued to use C++ and C#. I tried to build games for iOS with Objective-C.

How I am Still Learning to Code

After being stretched too thin, I decided to pick one language and run with it.

How I am Still Learning to Code

I picked the one that made the most sense to me - Ruby.

How I am Still Learning to Code

That focus allowed me to become a better developer and really realize the problems that come with learning programming.

The Focus

The focus really needs to be on creating things and letting the language just be a tool.

The Focus

The language needs to be the right tool.

Code Camps

I taught two code camps this summer.

Code Camps

The students were ages 9~13 (with a few parent students as well).

Code Camps

WOW. Kids are smart.

How I Taught Code

Well, I used Ruby.

How I Taught Code

I outlined what I wanted to go over.

How I Taught Code

I wanted to go over data types, math, variables, user input, arrays, methods, loops, classes.

How I Taught Code

I quickly realized that those all mean **nothing** to someone new to programming.

How I Taught Code

I went with the flow!

How Students Learn Code

I found that the most effective way to teach was by having exercises that were interactive, engaging and built upon each other.

How to Effectively Teach Code

The examples, samples, labs, projects, tests need to be fun.

How to Effectively Teach Code

F U N

How to Effectively Teach Code

Forget foobar, forget Hello World, forget any boring example that is not silly, humurous or actually applicable in the real world.

Challenges Faced

Creating exercises that do not fall into the trap of being boring or non-engaging.

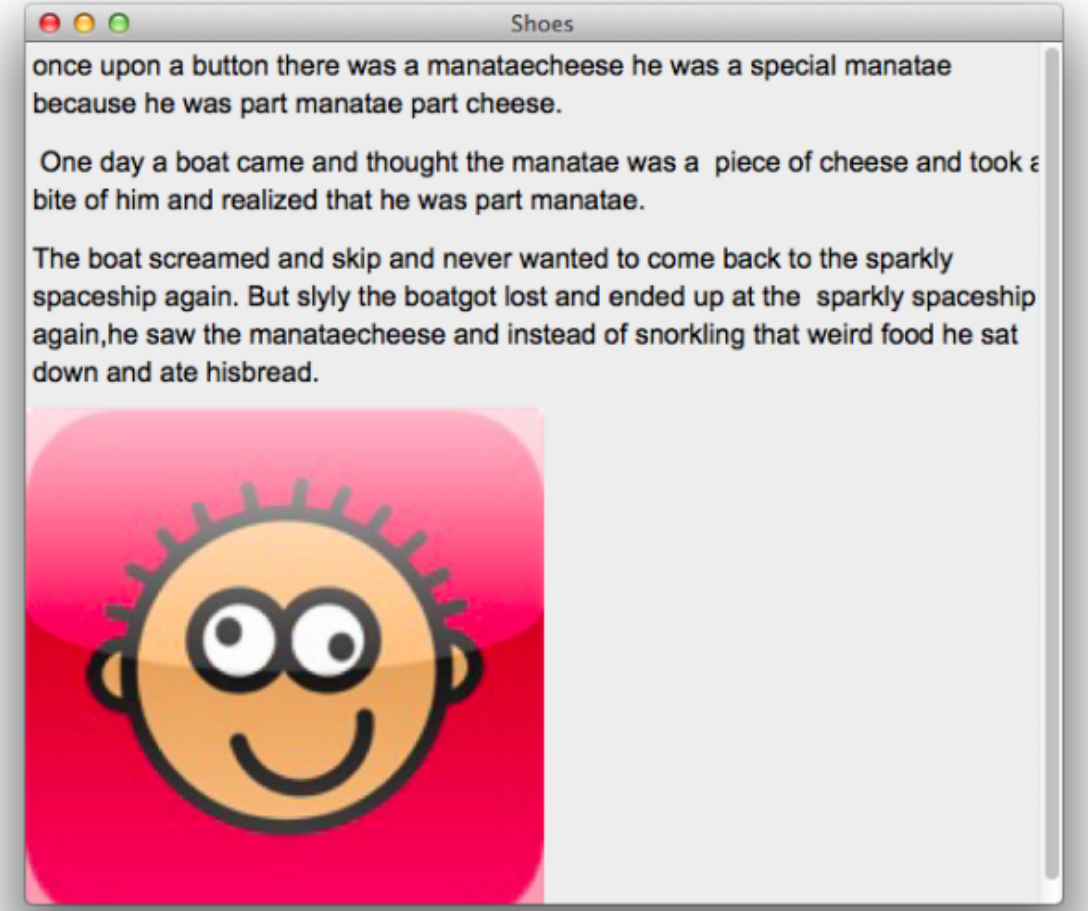
Challenges Faced

Getting through the sludge of technical stuff (that is still important).

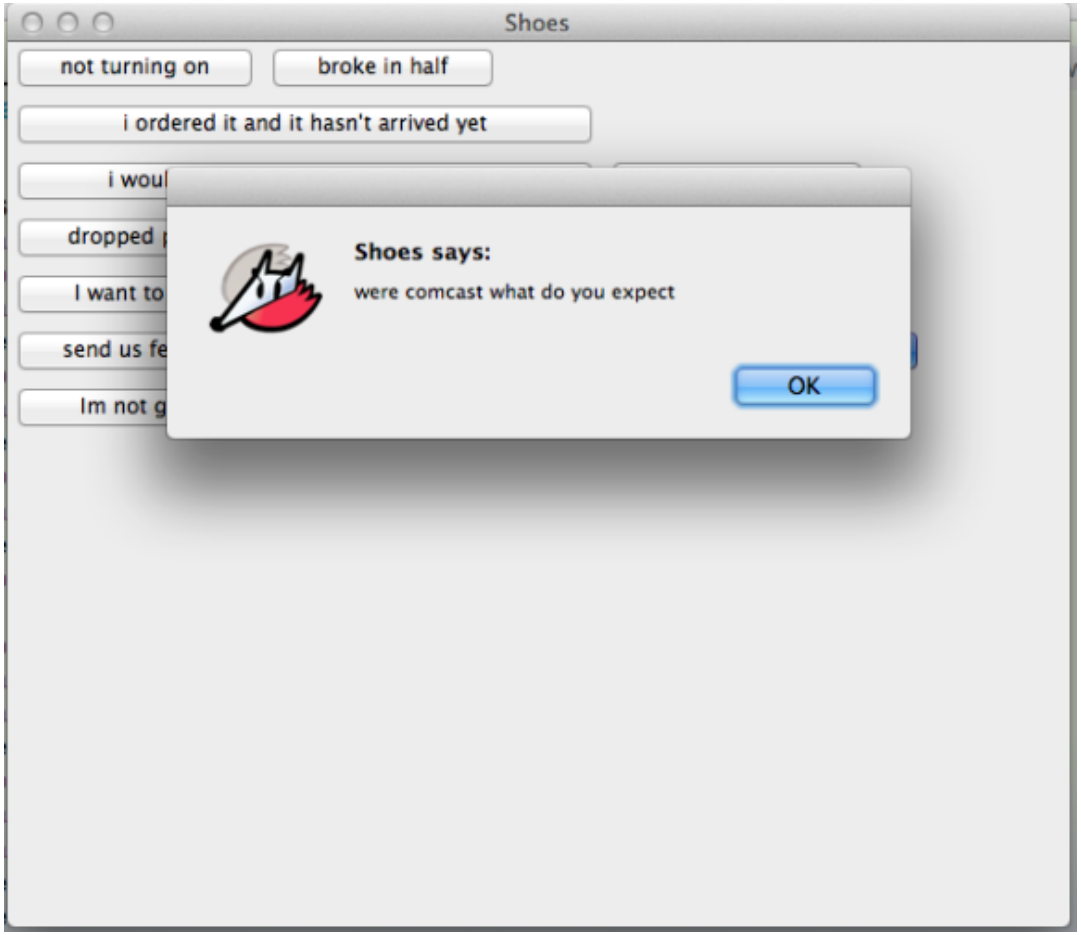
What the Students Made

What the Students Made

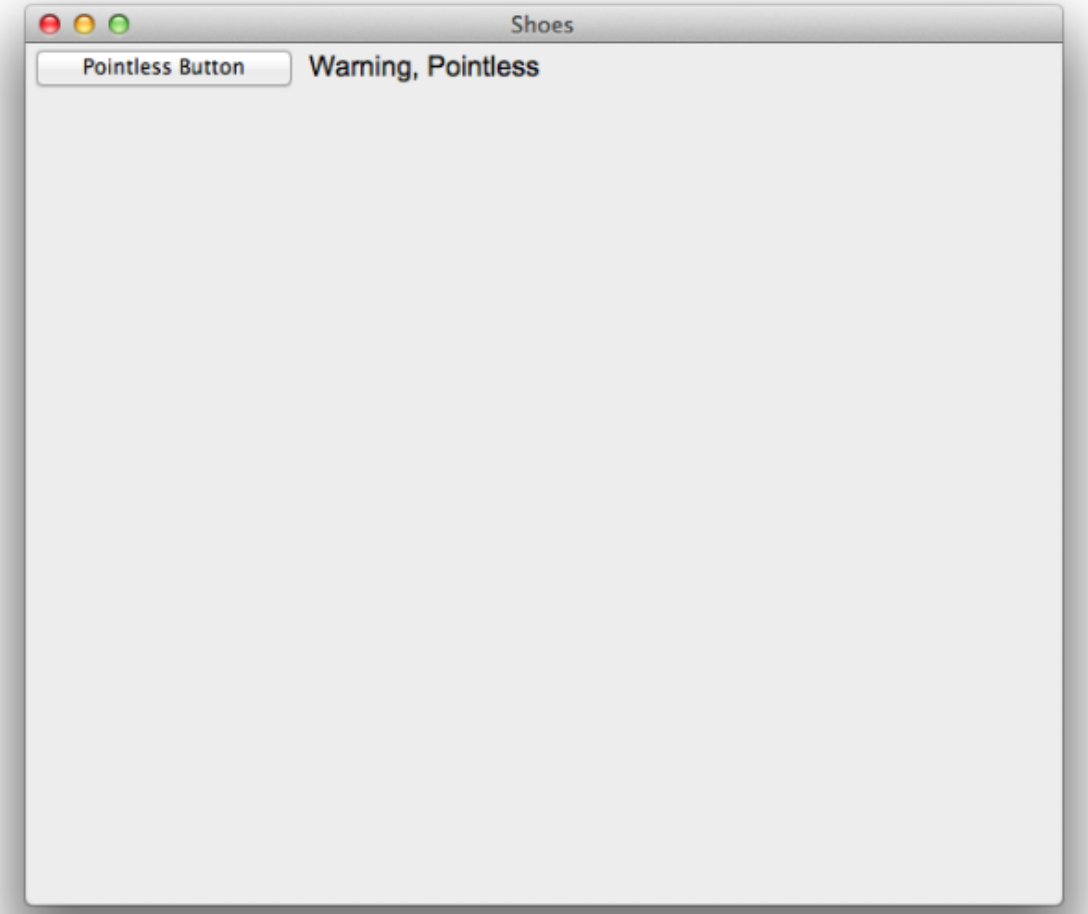
Madlib


Shoes
once upon a button there was a manataecheese he was a special manatae because he was part manatae part cheese.
One day a boat came and thought the manatae was a piece of cheese and took a bite of him and realized that he was part manatae.
The boat screamed and skip and never wanted to come back to the sparkly spaceship again. But slyly the boatgot lost and ended up at the sparkly spaceship again,he saw the manataecheese and instead of snorkling that weird food he sat down and ate hisbread.

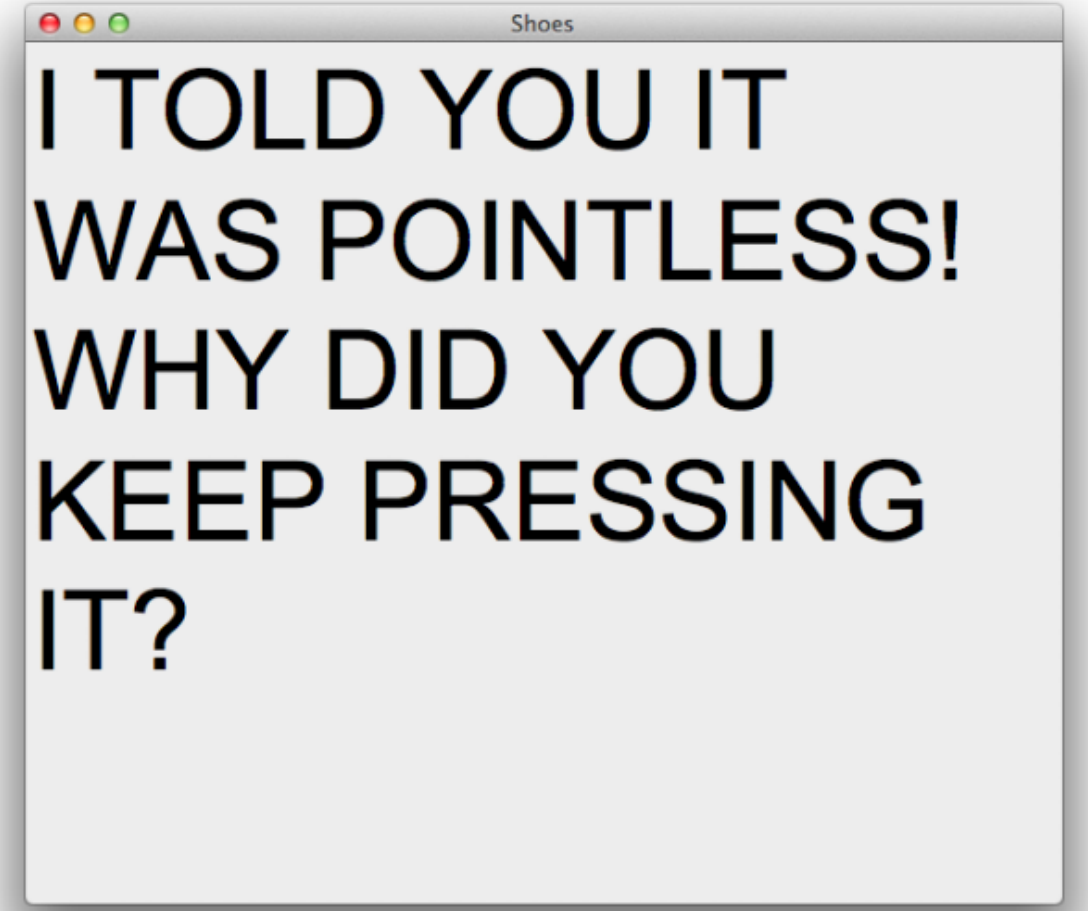
Comcast Customer Support



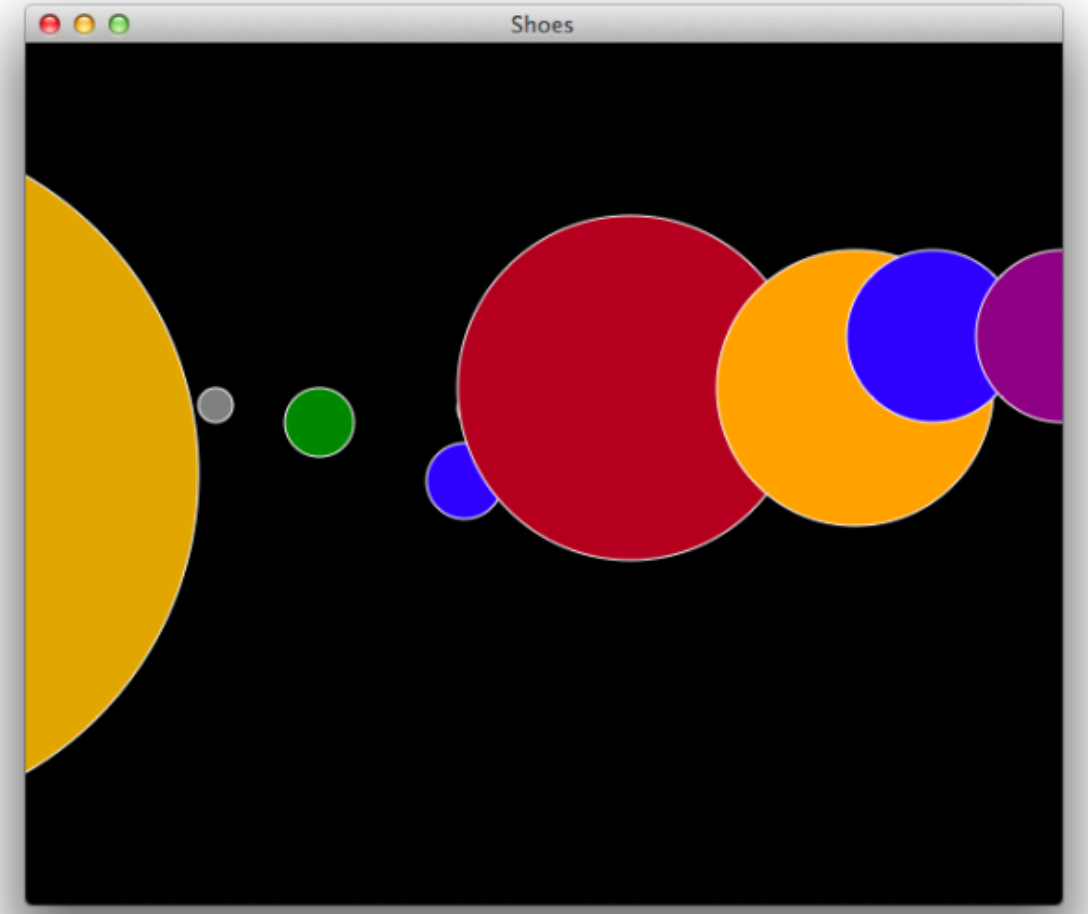
Pointless Button



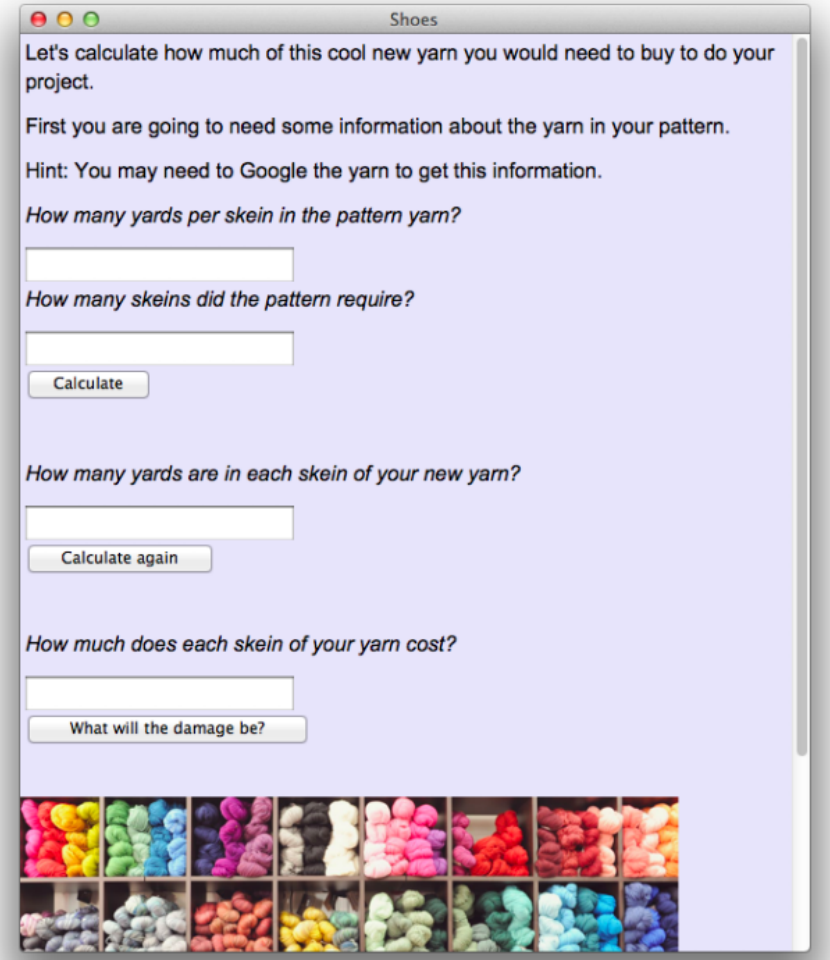
Pointless Button



Solar System



Yarn Calculator



How Programming Should Be Taught

Gotta be consistent. Gotta be fun. Gotta be real.

Needs to be Long Term

I truly believe if anyone wants to learn anything, they need to do it consistently and for an extended period of time (read as YEARS).

Why It Should Change

My experiences learning and teaching really let me see first hand the good and the not-so-good.

Why It Should Change

I think the language and process matter.

Why It Should Change

Institutions, like schools, where students go regularly are the best place to get new programmers on the right path.

How It Can Change

It can change through conferences, code camps, meetups, workshops and creating resources that are accessible.

How It Can Change

However, what will really help change the way programming is taught is by questioning how, why, and what.

Thank You

Thank you so much for listening, I appreciate your time.

Questions & Suggestions

Please ask them and share them!