PFNP: THE BASICS

GENERAL ASSEMBLY

PROGRAMMING FOR NON-PROGRAMMERS

Joe Bliss
Sr. Front-End Engineer @ Bonobos

AGENDA

Intros / Icebreaker
What is Programming?
Thinking Programmatically
The Web Development Process
How the Web Works
HTML, CSS, JavaScript Primers
Code Examples
Personal Website

JOE BLISS

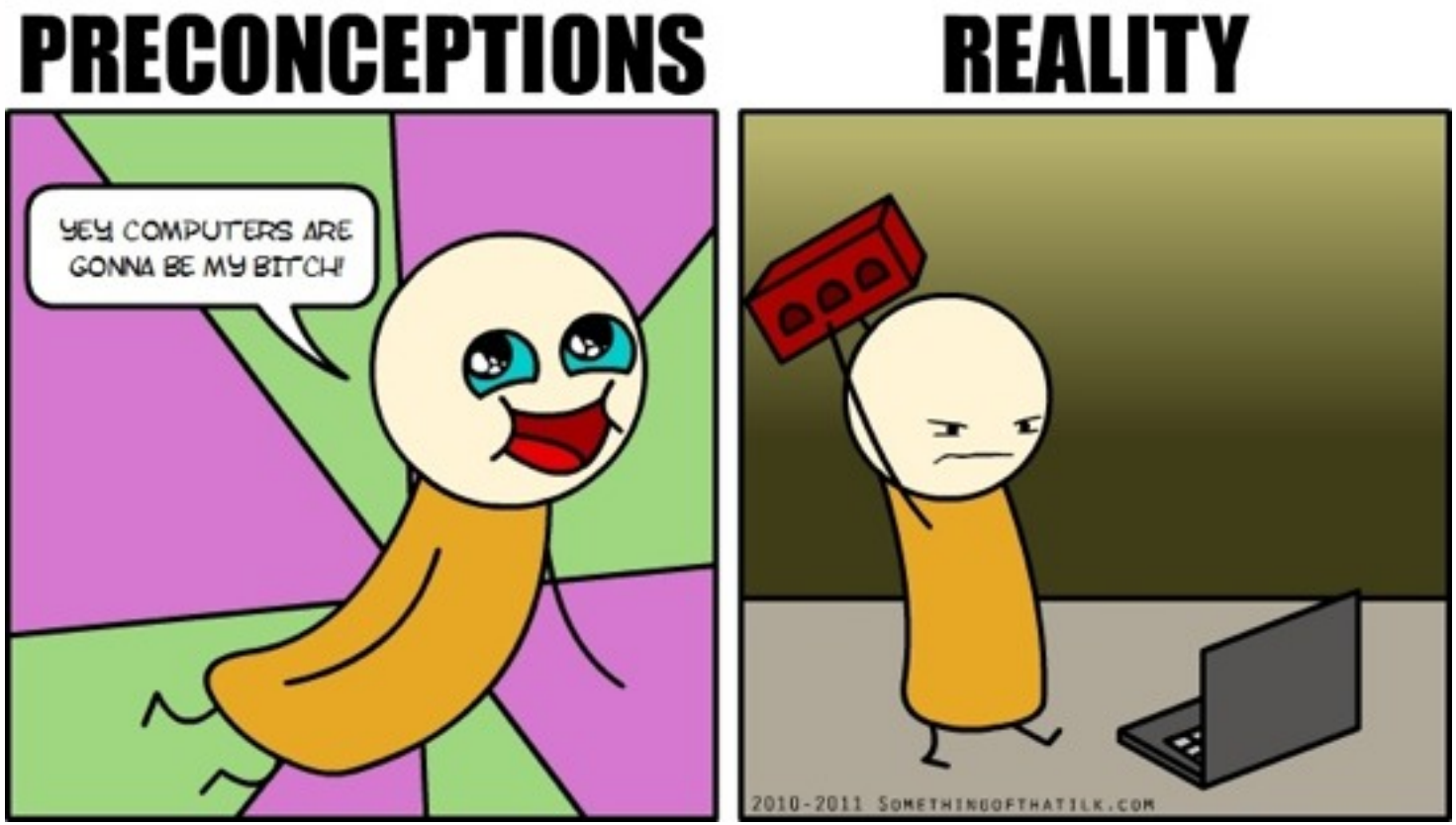
Joe Bliss is a Front-End Web Developer who has worked with Bloomberg, American Express, Sports Illustrated. His expertise is in HTML, CSS, and Javascript, and has been building websites since Geocities weren't just ironic.

He teaches many courses at GA, and currently works for Bonobos as a Sr. Front-End Engineer.

ICEBREAKER

- Your name.
- What you do.
- Your goal in taking this class.
- Your “Jam” song.

When I decided to take Computer Science as a second major



THIS STUFF IS HARD

My goal is to give you a baseline of understanding to empower you and allow you to communicate better with your team.

And maybe (just maybe) pique your interest to go on to learn more!

PARKING LOT

WHAT IS PROGRAMMING?

WHAT IS PROGRAMMING?

In your own words.

WHAT IS A PROGRAM?

You've probably already written a program before without knowing it! If you've ever written a formula or macro in Excel, you've written a program!

A program is a set of instructions that a person writes to tell a computer how to carry-out a task.

Programming is the task of writing those instructions.

WHAT IS A COMPUTER?

"An electronic device for storing and processing data [...] according to instructions given to it [...]" (Wikipedia.org)

- Laptop, Desktop
- Phone, Tablet
- Watch, Fitbit, Calculator
- Thermostat, calculator, microwave, smart toaster, etc. etc. etc.

PFNP: THE BASICS

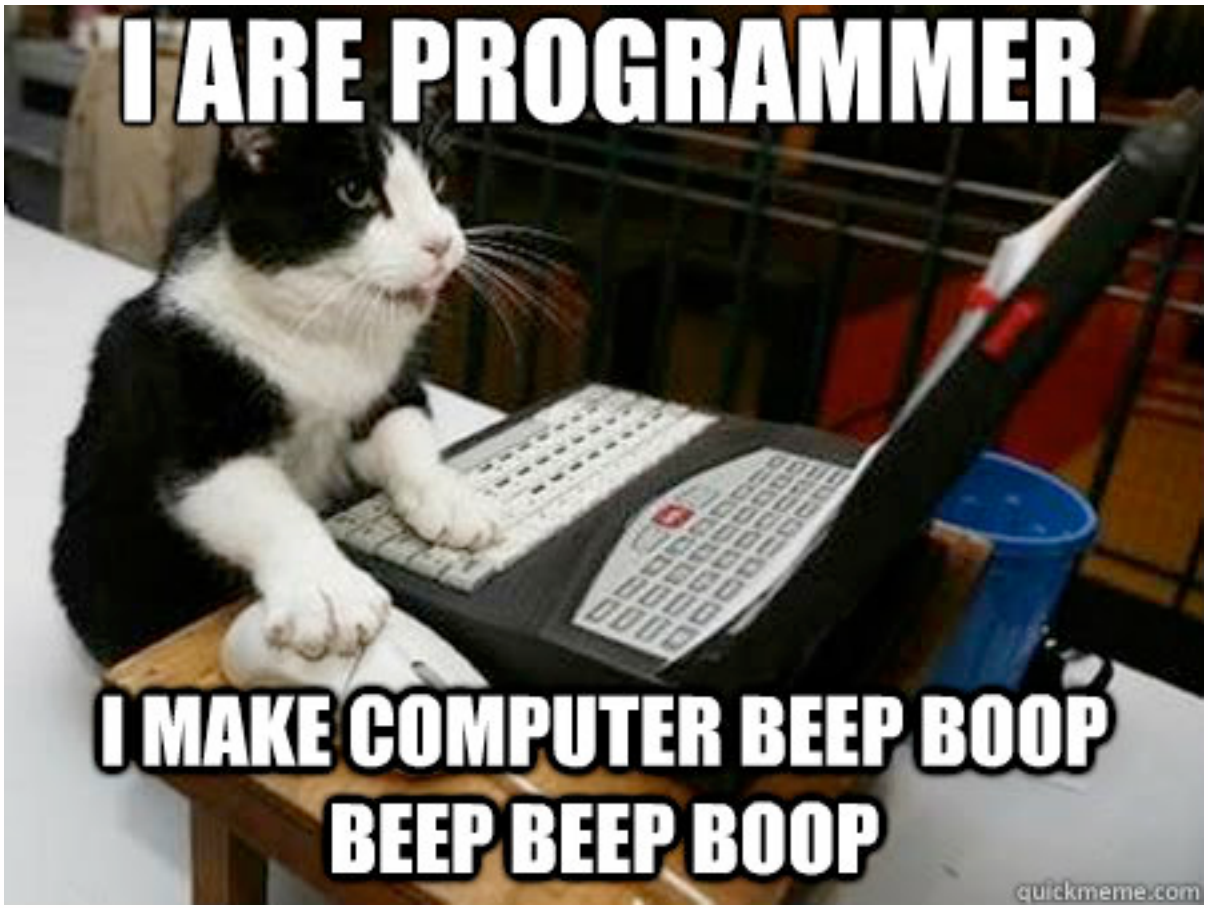
BECOMING A PROGRAMMER

So, pretty much any electronic device is a computer these days. To get these computers to do what we want, we give them sets of instructions in languages the computer understands. I.e. We program them.

To program them, though, we must first learn to think like the computer thinks.

THINKING PROGRAMATICALLY

THINK LIKE A COMPUTER



CLOSE YOUR LAPTOPS

Seriously.

LAB TIME

WHAT DID WE LEARN?

You have to be speaking the same language.

You have to know what's pre-defined in the language.

Steps execute sequentially.

Steps must be small, granular.

The computer will do ONLY and EXACTLY what you tell it to do.

WHAT DID WE LEARN?

When we are working on a computer, these commands aren't written-out in English. They are written in a Programming Language. Programming languages take many different forms.

NAME A FEW PROGRAMMING LANGUAGES

TO NAME A FEW …

RUBY RUBY ON RAILS PHP JAVA JAVASCRIPT HTML CSS
C++ C# OBJECTIVE C PYTHON C JQUERY NODE
BACKBONE ANGULAR EMBER R DJANGO SINATRA
PADRINO SCALA ERLANG HASKELL ASSEMBLY PERL SQL
FORTRAN PASCAL LISP J2EE OCTAVE

WHY ARE THERE SO MANY?

Because they all do different things!

Interactive, Rich Websites -> HTML, CSS, JavaScript
Enterprise applications -> Java
Mobile Apps -> Objective-C, Swift, Java
Web Apps -> PHP, Ruby (on Rails)
Data Science -> Python

SO HOW DO YOU CHOOSE?

It depends on a number of factors:

- What you are trying to make.

- What languages you already know or can easily get up-to-speed on.

- The current “Technology Stack” at your company.

- Third-party integrations.

- Security concerns.

- Open-source.

SO HOW DO YOU CHOOSE?

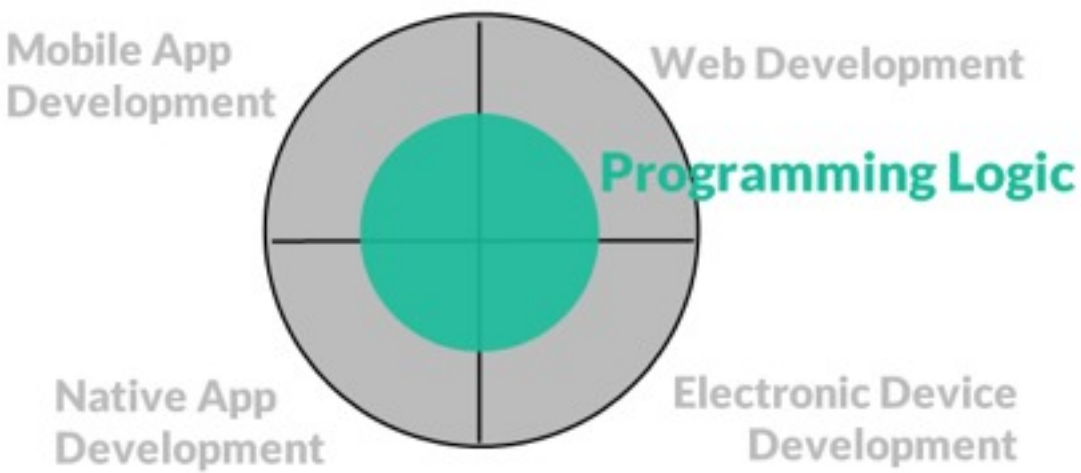
“You wouldn’t spend months brushing up on Mandarin before a trip to Germany"

A helpful (and not totally SWF) guide:

http://www.wfplsiu.com/

PROGRAMMING LOGIC

At the core of each of these, though, is the same Programming Logic - Data Types, Data Structures, Variables, Conditionals, Loops, Functions.



PROGRAMMING LOGIC

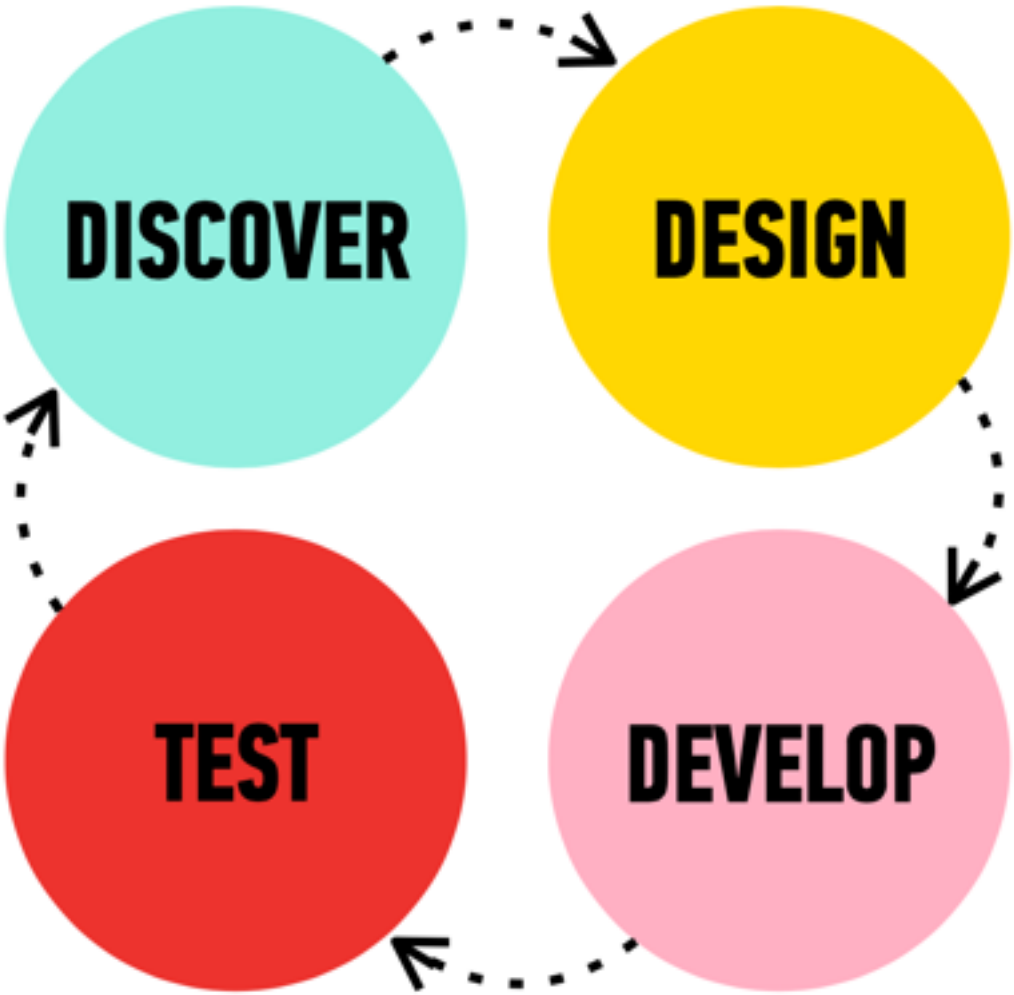
Play the following game based on FROZEN:
http://studio.code.org/s/frozen/stage/1/puzzle/1

LAB TIME

Code got you down? Let it go!

THE WEB DEVELOPMENT PROCESS

PFNP: THE BASICS



THE WATERFALL APPROACH

WATERFALL

Sequential

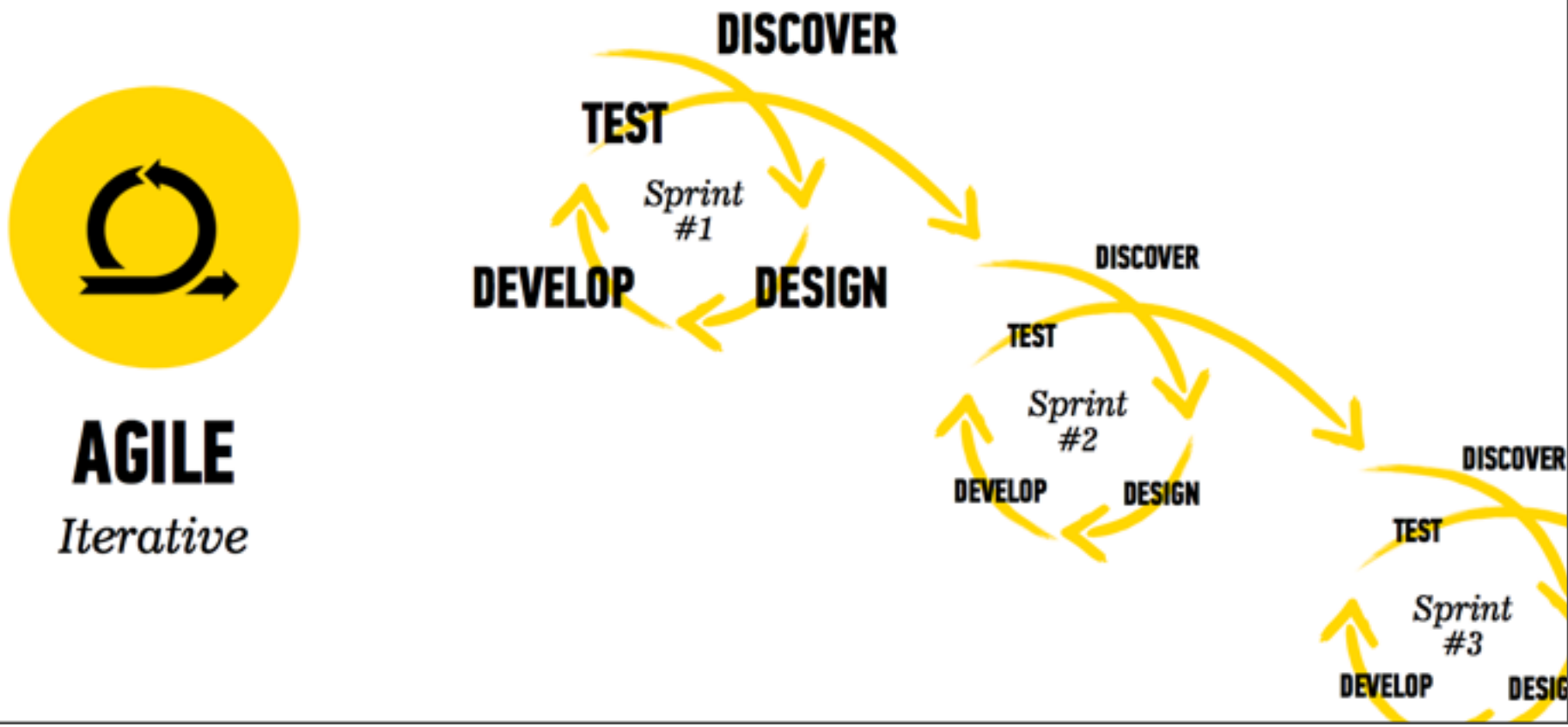
DISCOVER
Business Requirements

DESIGN
Technical Design

DEVELOP
Coding and Testing

TEST
Client OK and Launch

THE AGILE APPROACH

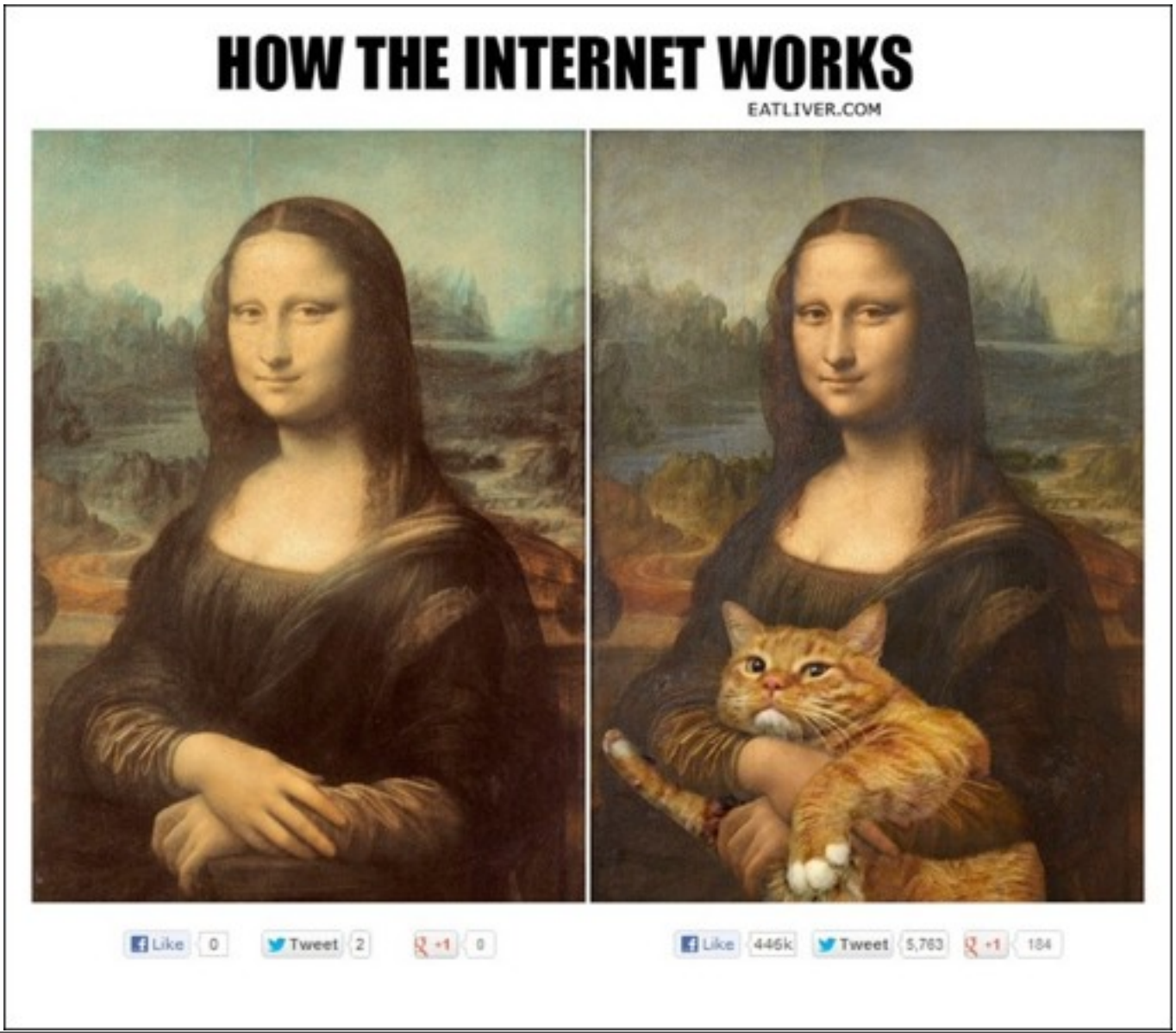


A COMPARISON

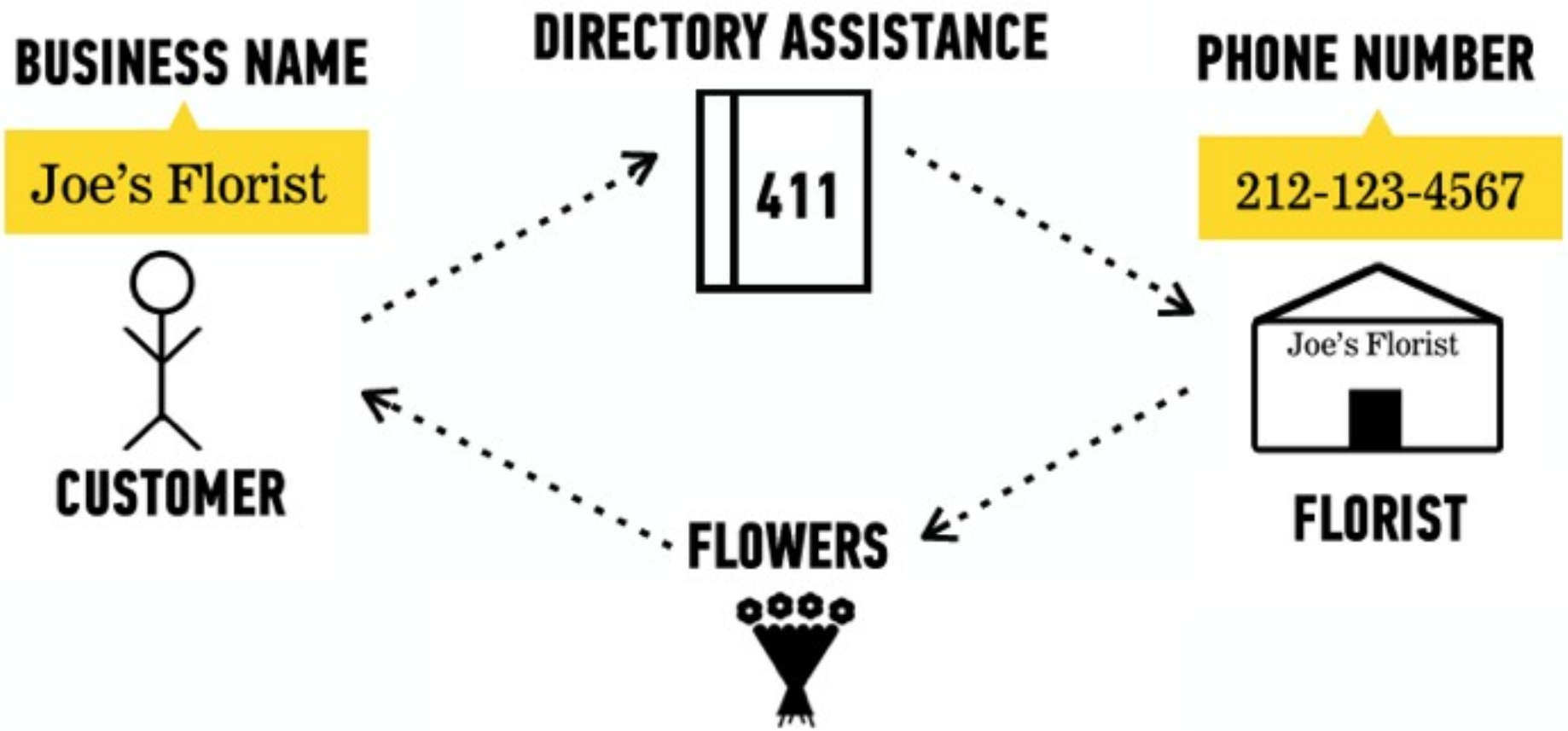
- One chance to get the product right
- Less opportunity for feedback
- Less communication between different groups
- Following a plan
- Creates needless complexity

- Many chances to get the product right
- More opportunity for feedback
- More communication between different groups
- Responding to change
- Complexity presents itself early

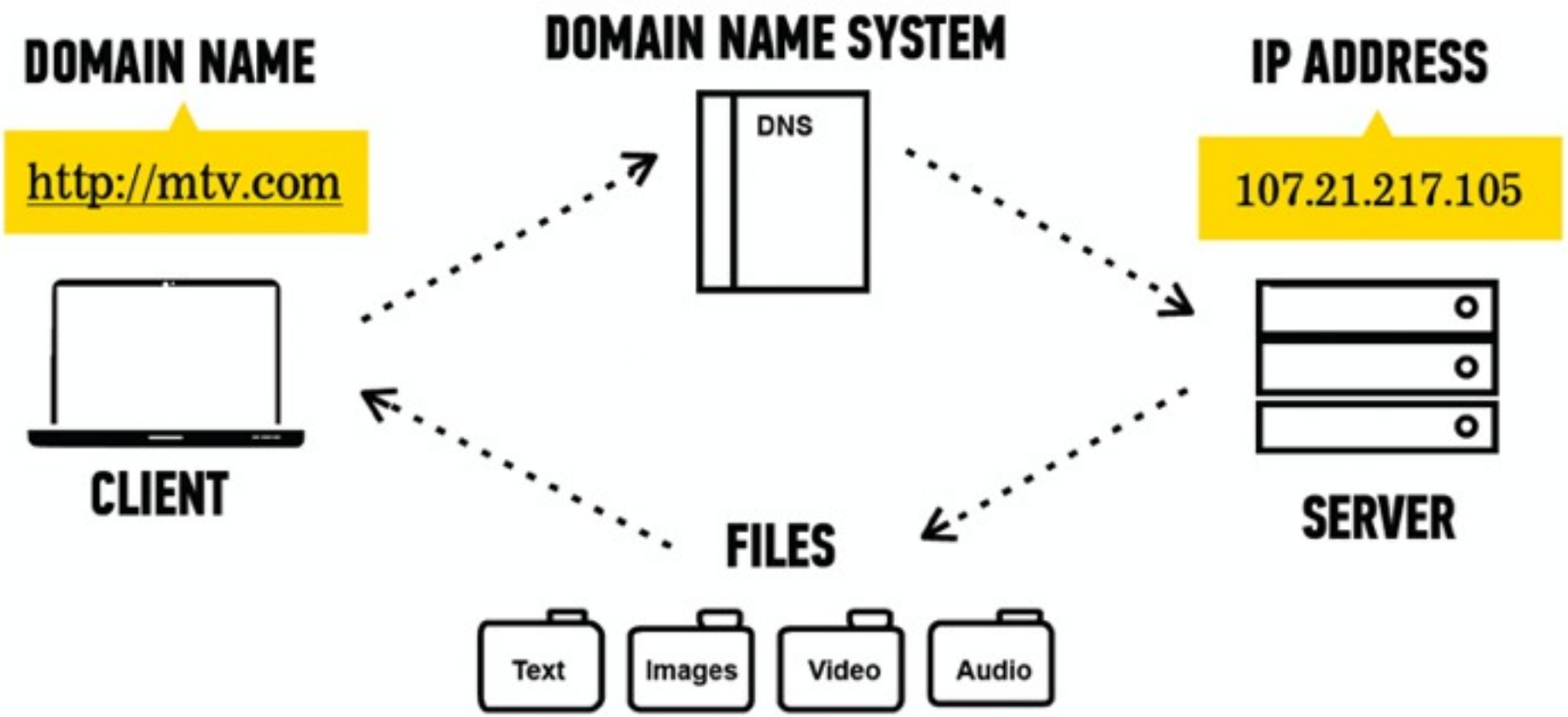
HOW THE WEB WORKS


HOW THE INTERNET WORKS
EATLIVER.COM
Like 0
Tweet 2
+1 0
Like 445k
Tweet 5,763
+1 184

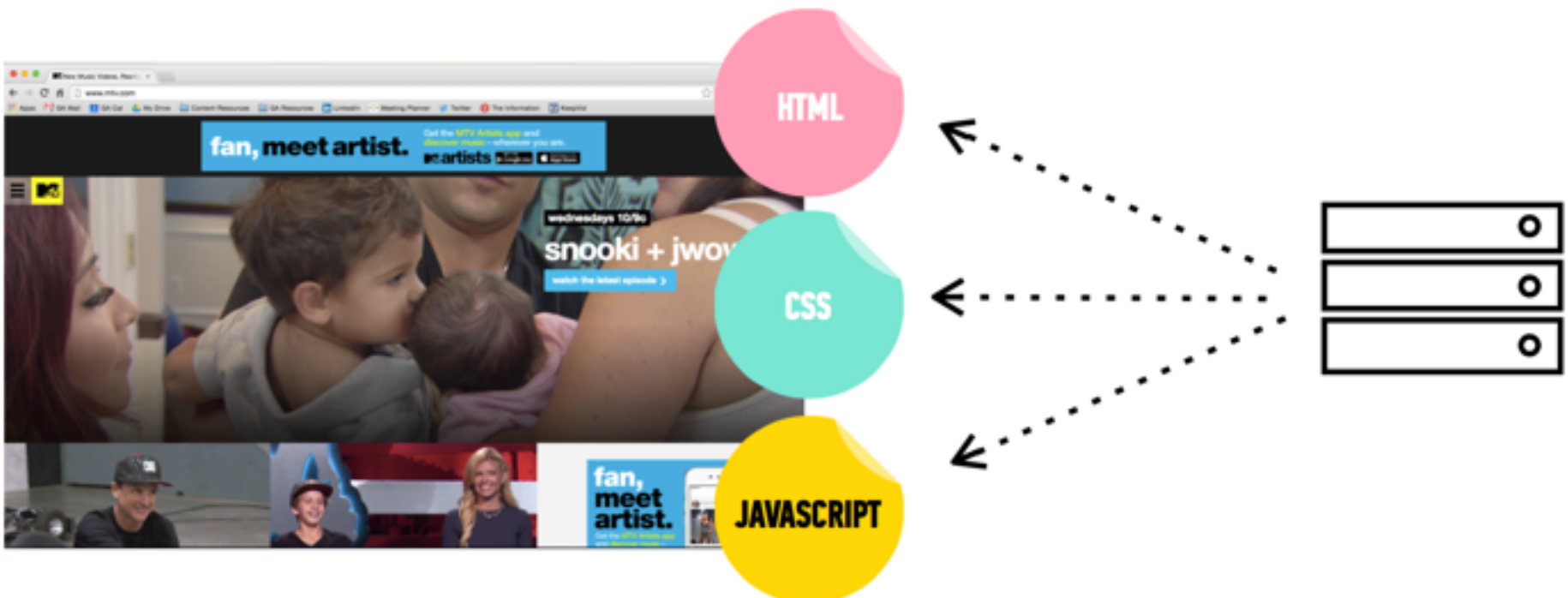
HOW THE WEB WORKS: AN ANALOGY



HOW THE WEB WORKS



WHAT GETS SENT BACK?



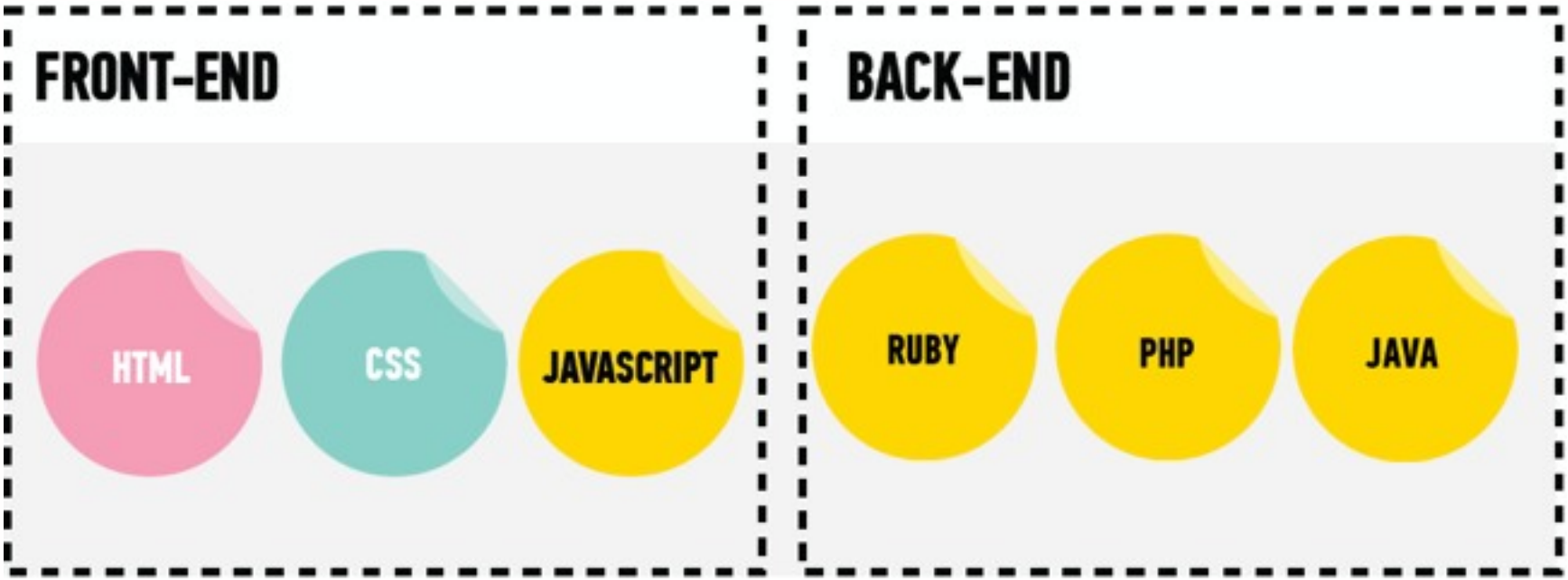
HTML = CONTENT / STRUCTURE

CSS = STYLE / DESIGN

JAVASCRIPT = BEHAVIOR / INTERACTION

http://codepen.io/ga-joe/pen/QGQJKa

FRONT-END VERSUS BACK-END



HTML PRIMER

http://codepen.io/ga-joe/pen/NbyMZW?editors=1100

I'M GONNA POP SOME TAGS ...

I'M GONNA POP SOME TAGS ...

I'M GONNA POP SOME TAGS ...

We use code called "tags" to group content into different chunks.

Hello!

There generally is an opening tag "<sometag>" and a closing tag "</sometag>" wrapping the chunk of content.

GROUP “CHUNK”S OF CONTENT

HEADING ELEMENTS

Heading Elements

<h1>Largest Heading</h1>

<h2> . . . </h2>

<h3> . . . </h3>

<h4> . . .</h4>

<h5> . . . </h5>

<h6>Smallest Heading</h6>

HEADING ELEMENTS

Heading tags <h1> through <h6> are meant to be used for text that you want to appear as a title or headline on your webpage. Think of the way that headlines look in a newspaper or an online news website.

PARA-NORMAL ACTIVITY

This is a paragraph.

One of our bread-and-butter tags. The tag gives us paragraphs of wrapping content.

Think of it as a paragraph of content in a book, article or word processing program.

LISTS - UNORDERED LIST

```
<ul>
    <li>First Item</li>
    <li>Second Item</li>
    <li>Third Item</li>
</ul>
```

OMG! <IMG>

Images are placed using the <img> tag.

The <img> doesn't wrap content, so it doesn't close!

The img tag requires a src attribute, which tells the browser where to find the image to be placed.

<img src="cookie.png">

<IMG> CONTINUED

They can be linked relative to a local file or to an absolute address on the internet:

<img src="images/mycat.jpg"> - Relative

<img src="http://www.myblog.com/images/mycat.jpg"> - Absolute

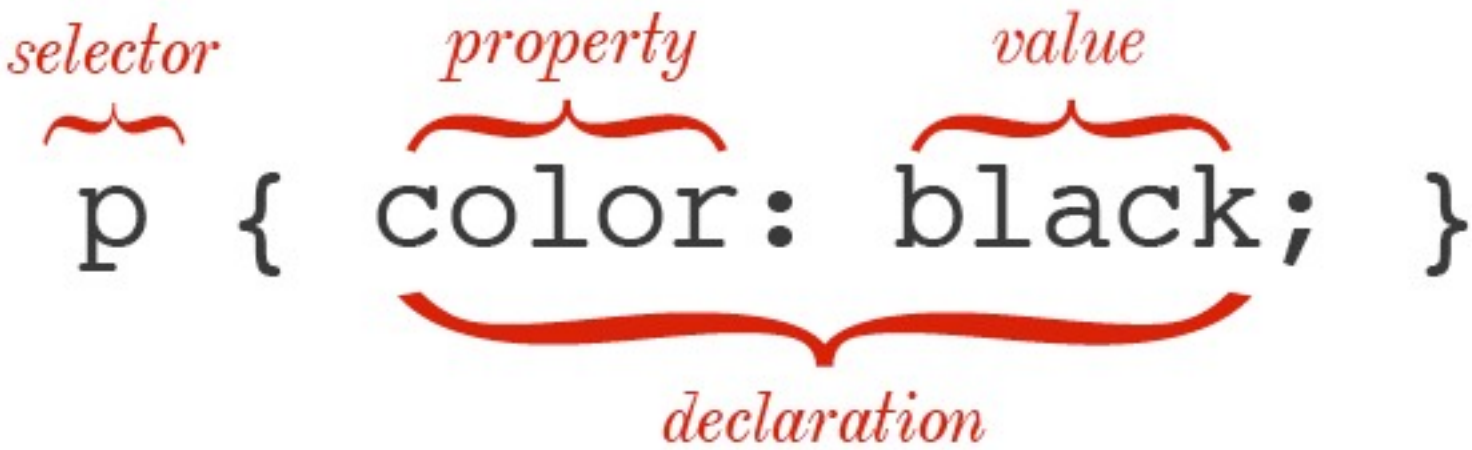
CSS PRIMER

CSS SYNTAX

```
p { color: black; }
```

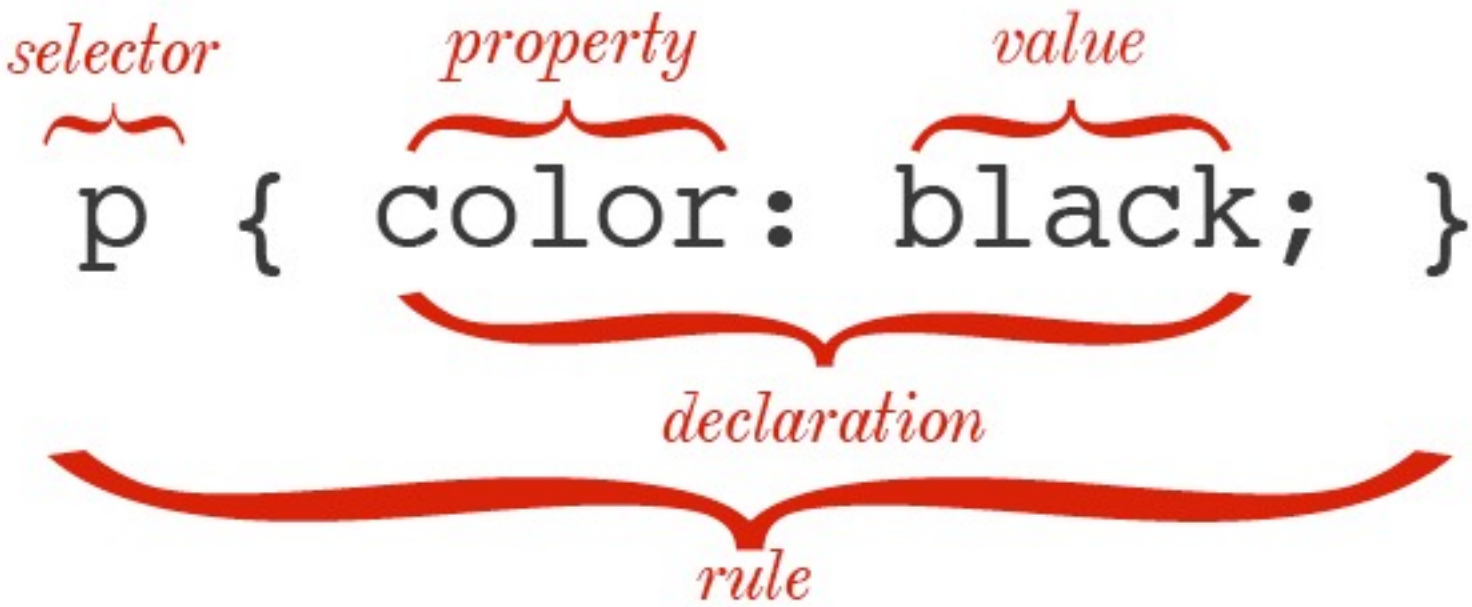
This CSS statement turns the text of every paragraph - <p> - on our page black.

CSS SYNTAX



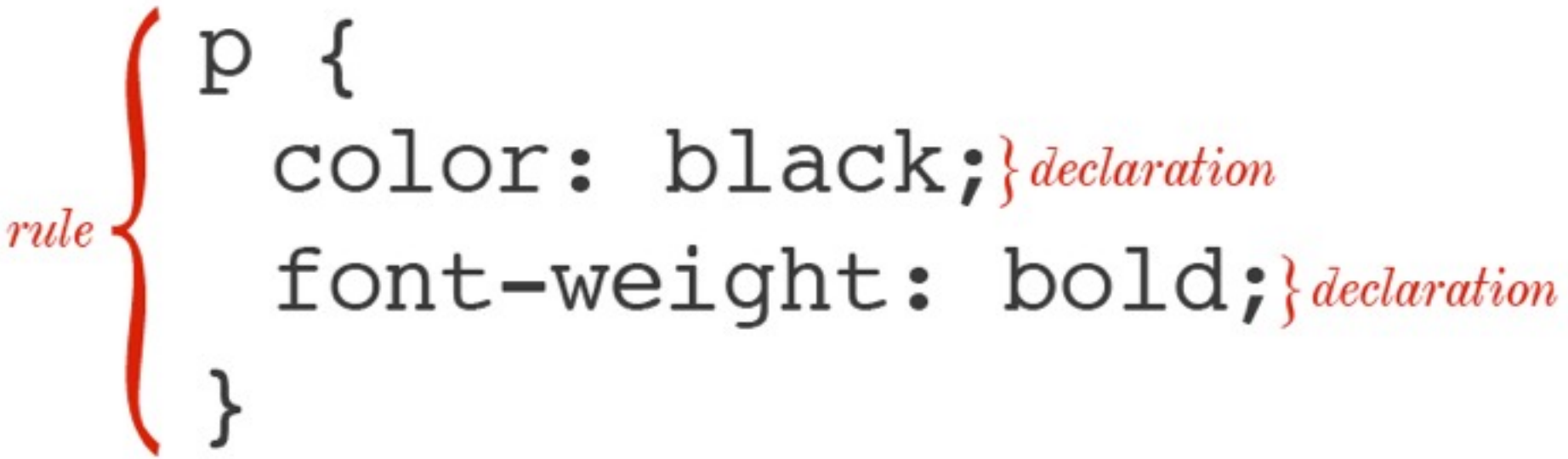
We refer to what we are changing as a “selector”, what we are changing about it as the “property”, and what we are changing that property to as the “value”. property: value; pairs are referred to as a “declaration”.

CSS SYNTAX



The entire block of CSS is referred-to as a “CSS rule”. Your CSS files will have many CSS rules.

CSS SYNTAX



One selector can have multiple declarations (that is, property: value; pairs). This is still referred-to as a rule. It's common for each declaration to be on its own line.

CSS PROPERTIES

http://www.w3schools.com/cssref/css_colors.asp
- Colors
http://www.w3schools.com/css/css_font.asp
- Fonts

Every CSS Property you (n)ever wanted to know:
https://css-tricks.com/almanac/

CODE CHALLENGE: PERSONAL WEBSITE

CREATE A WEBSITE FOR YOURSELF WITH:

Your name
Your title
A photo
A blurb about yourself
A list of your interests

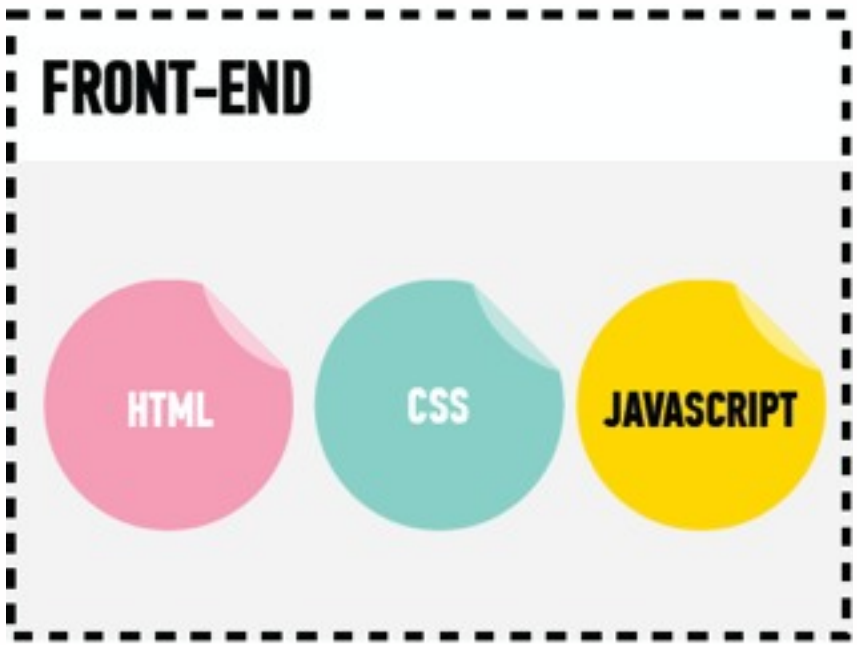
JAVASCRIPT PRIMER

HTML AND CSS AREN'T PROGRAMMING LANGUAGES!

SURPRISE!

SURPRISE!

WHERE DOES JAVASCRIPT FIT IN?



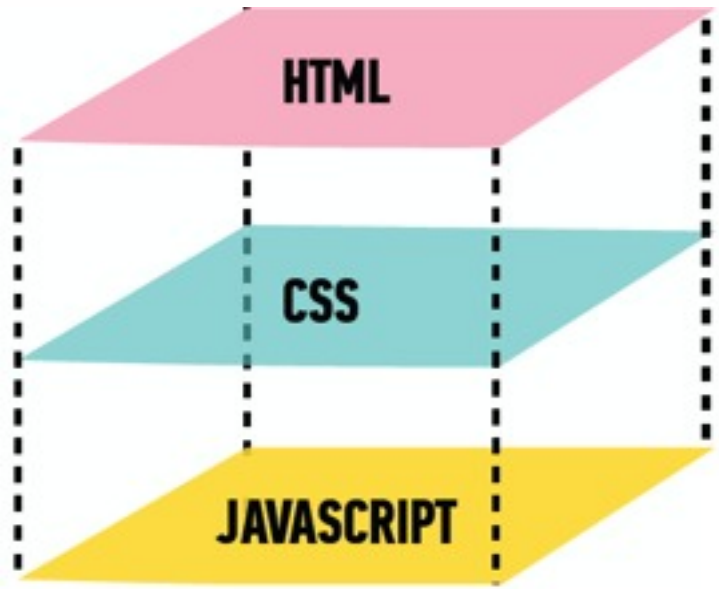
HOW IT DIFFERS FROM HTML AND CSS

HTML and CSS are used to define the initial state of our website.

JS is used to define how this state changes.

HTML and CSS are static.

JS is dynamic.



WHAT CAN WE DO WITH JAVASCRIPT?

Adding / Removing Elements
Changing CSS “on-the-fly”
Animating content
Detecting user interactions
Form validation
Loading dynamic content
Etc.

SYNTAX

Syntax: Spelling and grammar rules of a programming language.

Like with any language, there are formal rules around how to write it. This is the syntax.

(SOME) JAVASCRIPT SYNTAX

JavaScript statements end in semicolons: ";"

JavaScript is case-sensitive. Variables, function names, etc. must be consistent. joeBliss(); is not the same as joebliss();

Javascript uses various keywords (i.e. function, if, else, for, while) or symbols (i.e. ( ), { }, [ ]) to demarcate control flow.

CODEALONG - OUR FIRST JAVASCRIPT

Open up http://codepen.io/pen/

Type into the JS panel:

```
document.write("Hello, World!");
```

TYPES OF DATA - NUMBERS

Integers

1, 2, 3, 4, 5

Floats (numbers with decimal points)

3.14159, 2.718281828459045

Can be Signed or Unsigned (- or +)

6, -8.2

We can perform arithmetic on number data types

TYPES OF DATA – STRINGS

Strings

- A sequence of characters enclosed in quotes, i.e. “I am a String”, “Hello!”, “Joe Bliss”
- Stores textual information
- Can be “double” or ‘single’ quoted

SCAVENGER HUNT: TRAFFIC LIGHT

SEE IF YOU CAN FIGURE OUT WHAT'S WRONG WITH THIS TRAFFIC LIGHT

And fix it!

http://codepen.io/ga-joe/pen/ONeJwL

CODEALONG : COLOR SCHEME SWITCHER

LET'S MAKE YOUR COLOR SCHEME DYNAMIC WITH JAVASCRIPT!


AMA
Ask Me Anything

THANK YOU!

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