

PROGRAMMING FOR NON-PROGRAMMERS

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**WELCOME TO
GENERAL ASSEMBLY.**

INSTRUCTOR INTRODUCTION

Vocabulary:

- What is programming?
- What can I build?
- What is Web Development?
- Stages of Design/Development/Test
- Planning a project

The Basics of Code:

- HTML/CSS & JavaScript
- Code together!

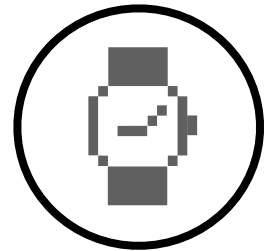
WHAT DO YOU WANT TO GET OUT OF THIS EXPERIENCE?

LEARN TO CODE. HTML/CSS. LEARN TECHNICAL VOCABULARY.
TRANSLATE IDEAS TO CODE. CREATE A WEBSITE. BE MORE
TECH SAVVY. BECOME A PROGRAMMER. BECOME A WEB
DEVELOPER. CREATE A WEB APPLICATION. KNOW THE
DIFFERENCE BETWEEN PROGRAMMING LANGUAGES, KNOW
WHAT LANGUAGE TO USE. KNOW THE DIFFERENCE BETWEEN
FRONT-END AND BACK-END. BECOME A CODE MONKEY

STRUCTURE



PAIRS



INTROS: 5 MIN
SHARING: 15 MIN

OBJECTIVES

1. Take 5 minutes to get to know your neighbor by finding out:
 - a. Their name
 - b. Where they're from
 - c. What they do (or what they're looking to do)
2. Once you've gotten to know each other, we'll take about 15 minutes to go around the class in order for you to introduce your partner.

WHAT IS PROGRAMMING?

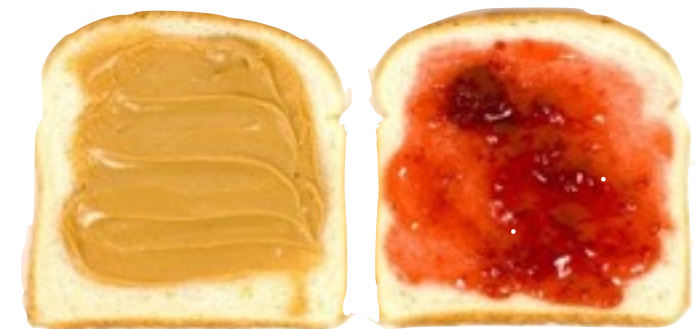
**A SET OF INSTRUCTIONS.
USED TO SOLVE A PROBLEM.**

**A RECIPE.
A STEP BY STEP PROCESS.**



- 1. FIND 2 SLICES OF BREAD**
- 2. SPREAD PEANUT BUTTER ON ONE SIDE OF ONE SLICE OF BREAD**
- 3. SPREAD JELLY ON ONE SIDE OF THE OTHER SLICE OF BREAD**
- 4. PUT THE TWO SLICES OF BREAD TOGETHER, PEANUT BUTTER FACING JELLY**

PROBLEM SOLVED!



THE QUESTION

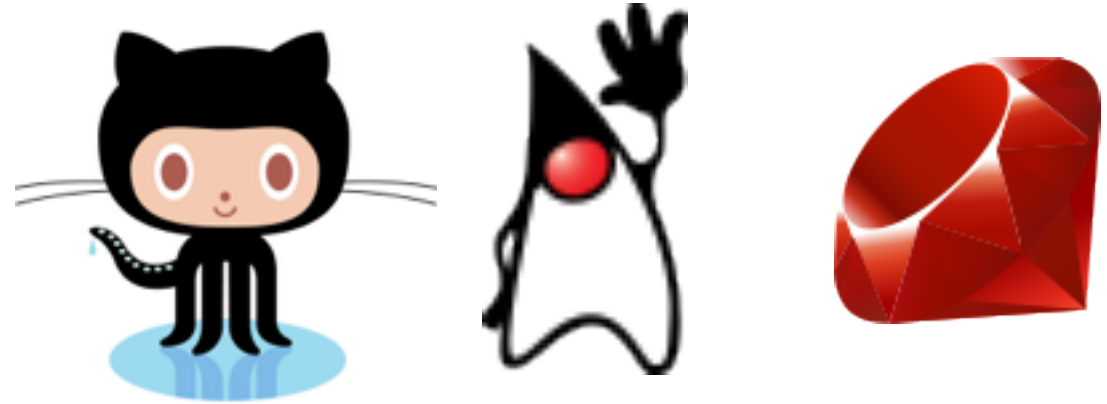
How do I communicate an idea
from my head... to a computer?



EXERCISE:
TELL YOUR NEIGHBOR HOW TO DRAW A HOUSE.

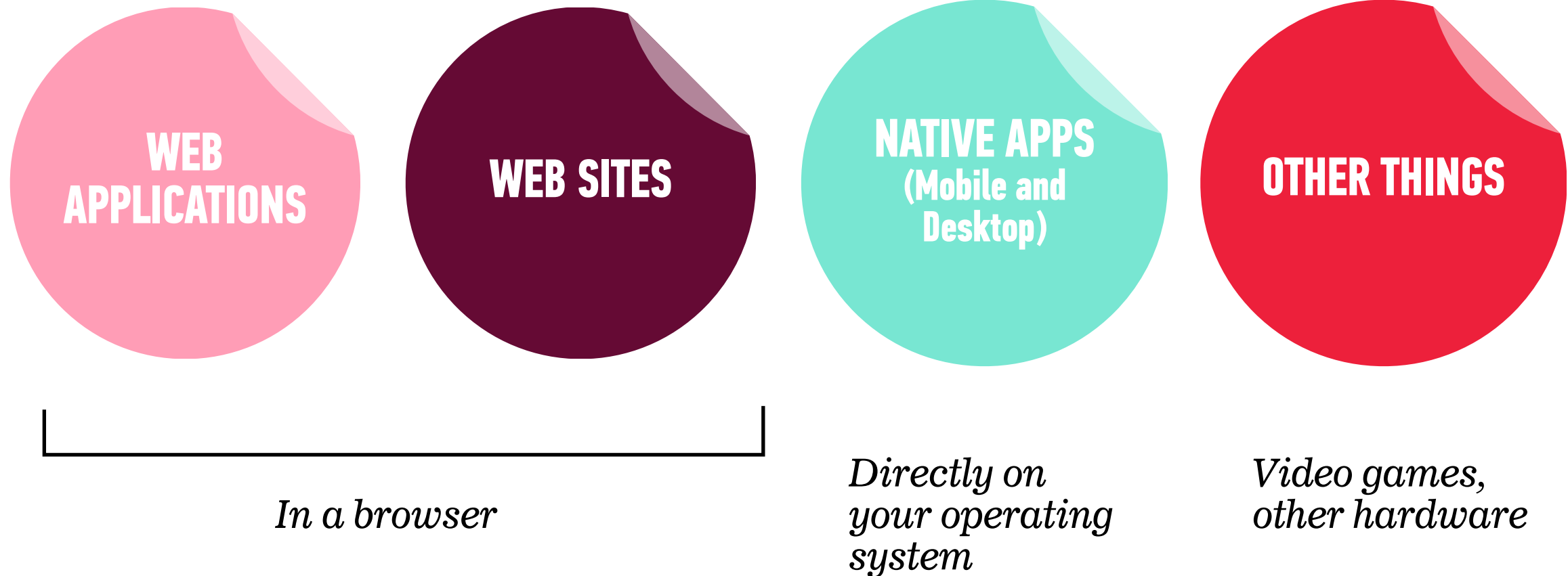


PROGRAMMING LANGUAGES

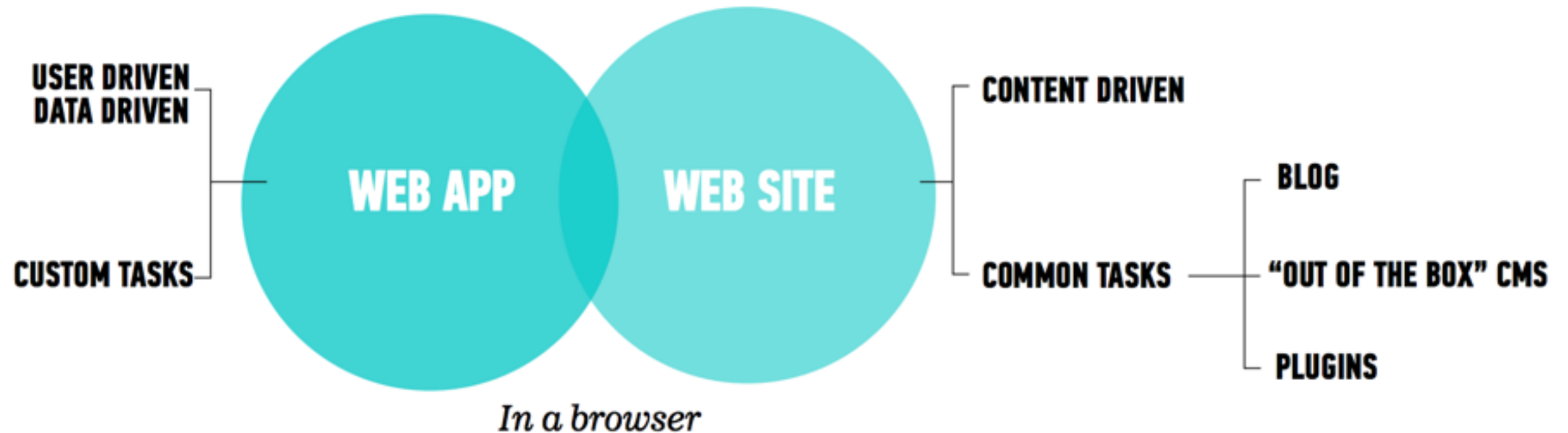


RUBY RUBY ON RAILS PHP JAVA JAVASCRIPT HTML
CSS C++ C# OBJECTIVE C PYTHON C JQUERY NODE
BACKBONE ANGULAR EMBER R DJANGO SINATRA
PADRINO SCALA ERLANG HASKELL ASSEMBLY PERL S
FORTRAN PASCAL PROCESSING SCRATCH HEROKU
MONGO-DB MYSQL SMALLTALK LISP J2EE XSLT OCTAV

WHAT CAN I BUILD?



WHAT CAN I BUILD?



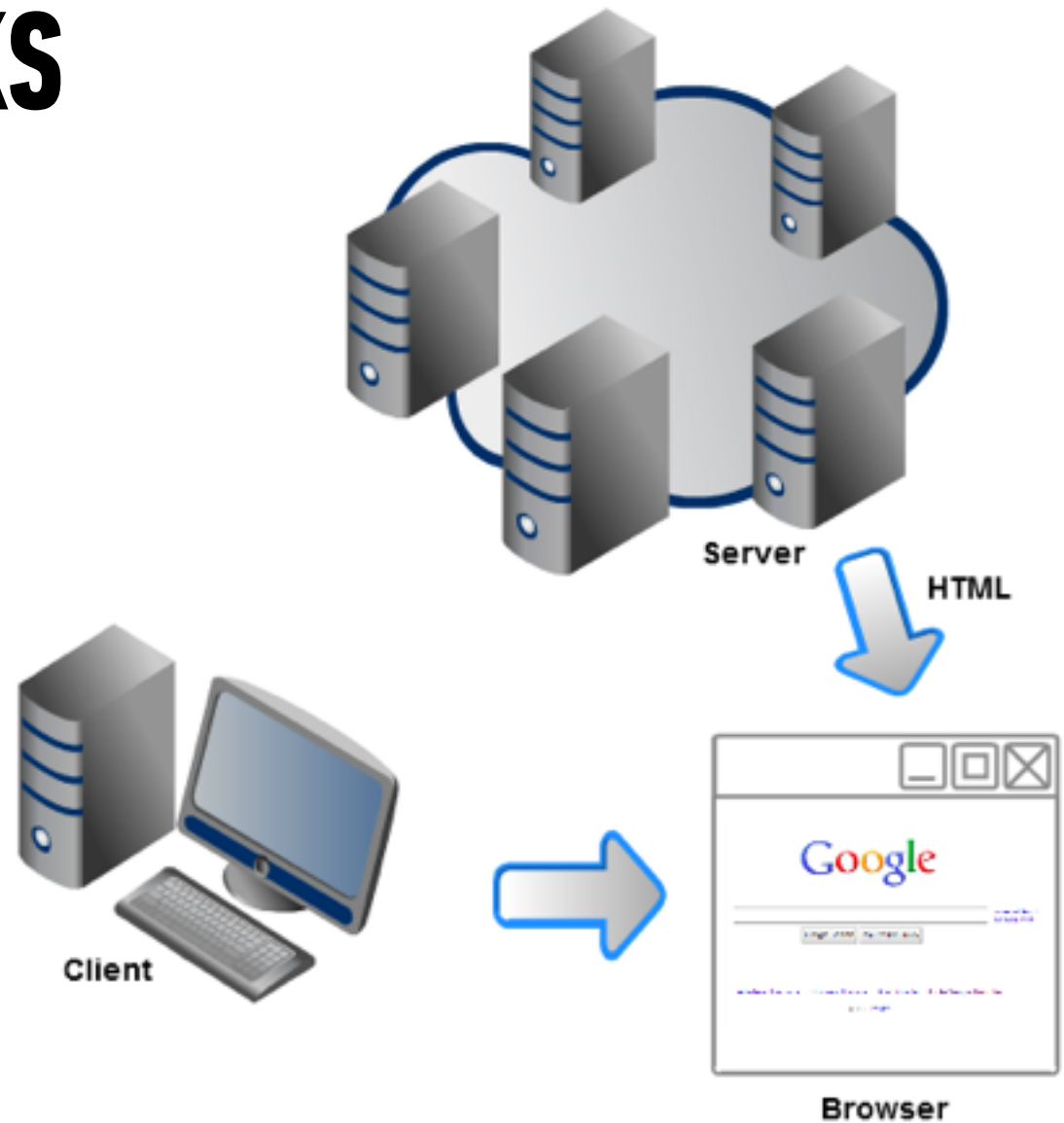
Web apps provide advanced user interactions & capabilities previously available only through installable software.
ex: Webmail, Google docs

WEB DEVELOPMENT VOCABULARY

HOW THE INTERNET WORKS

Client initiates a connection/request
Server listens/accepts connection

Data flows two-way



HOW THE INTERNET WORKS

STEP 1 DEPARTURE

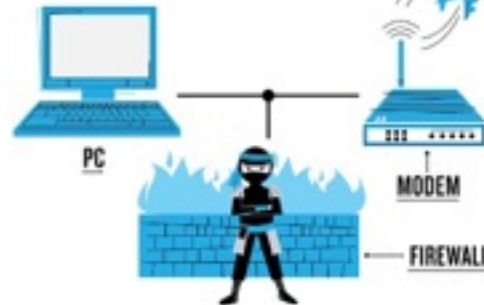
You type 'pcninja.us' into the web browser of your computer. Hop in the ninja mobile, and prepare for an adventure!

pcninja.us



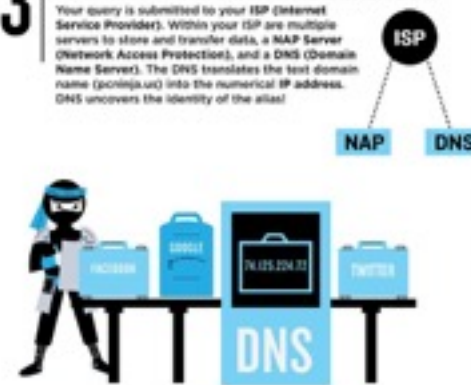
STEP 2 THE AIRPORT

Your computer is connected to the internet through a modem and/or router, a jumping-off point to other networks in the world. Firewalls, in your browser and/or modem, monitor incoming and outgoing data, allowing or disallowing unscrupulous data on the network. Airport security ensures safe travel.



STEP 3 CUSTOMS

Your query is submitted to your ISP (Internet Service Provider). Within your ISP are multiple servers to store and transfer data, a NAP Server (Network Access Protection), and a DNS (Domain Name Server). The DNS translates the text domain name (pcninja.us) into the numerical IP address. DNS uncovers the identity of the alias!



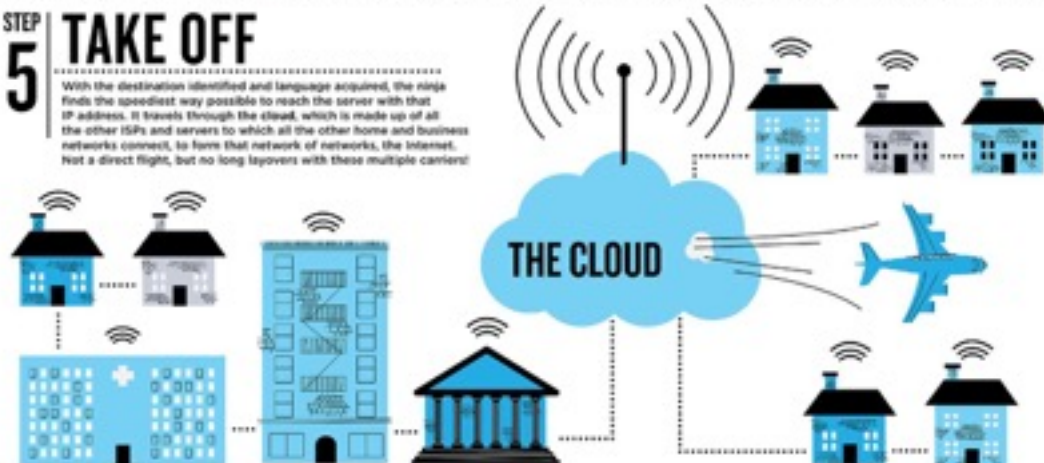
STEP 4 BUCKLE UP

Your browser maps itself to the desired IP address and establishes the hypertext transfer protocol (HTTP), or language used to communicate on the World Wide Web. Good idea to take a pocket translator!



STEP 5 TAKE OFF

With the destination identified and language acquired, the ninja finds the speediest way possible to reach the server with that IP address. It travels through the cloud, which is made up of all the other ISPs and servers to which all the other home and business networks connect, to form that network of networks, the Internet. Not a direct flight, but no long layovers with these multiple carriers!



STEP 6 LANDING

Jumping from server to server on the Web, the ninja finally locates the target server hosting the target IP address for pcninja.us. A connection is established with that website and your computer. Please make sure your seats are in the upright position, we're ready to land!



STEP 7 INCOMING!

The ninja makes an even quicker return journey, bringing to your computer screen the graphical website of pcninja.us, which is full of data, pictures, and contact information. Thank you for flying with PC Ninja, and enjoy your browse!



BROWSERS

Developers (namely, front-end developers) have to decide which browsers they want their webpages to look good in.

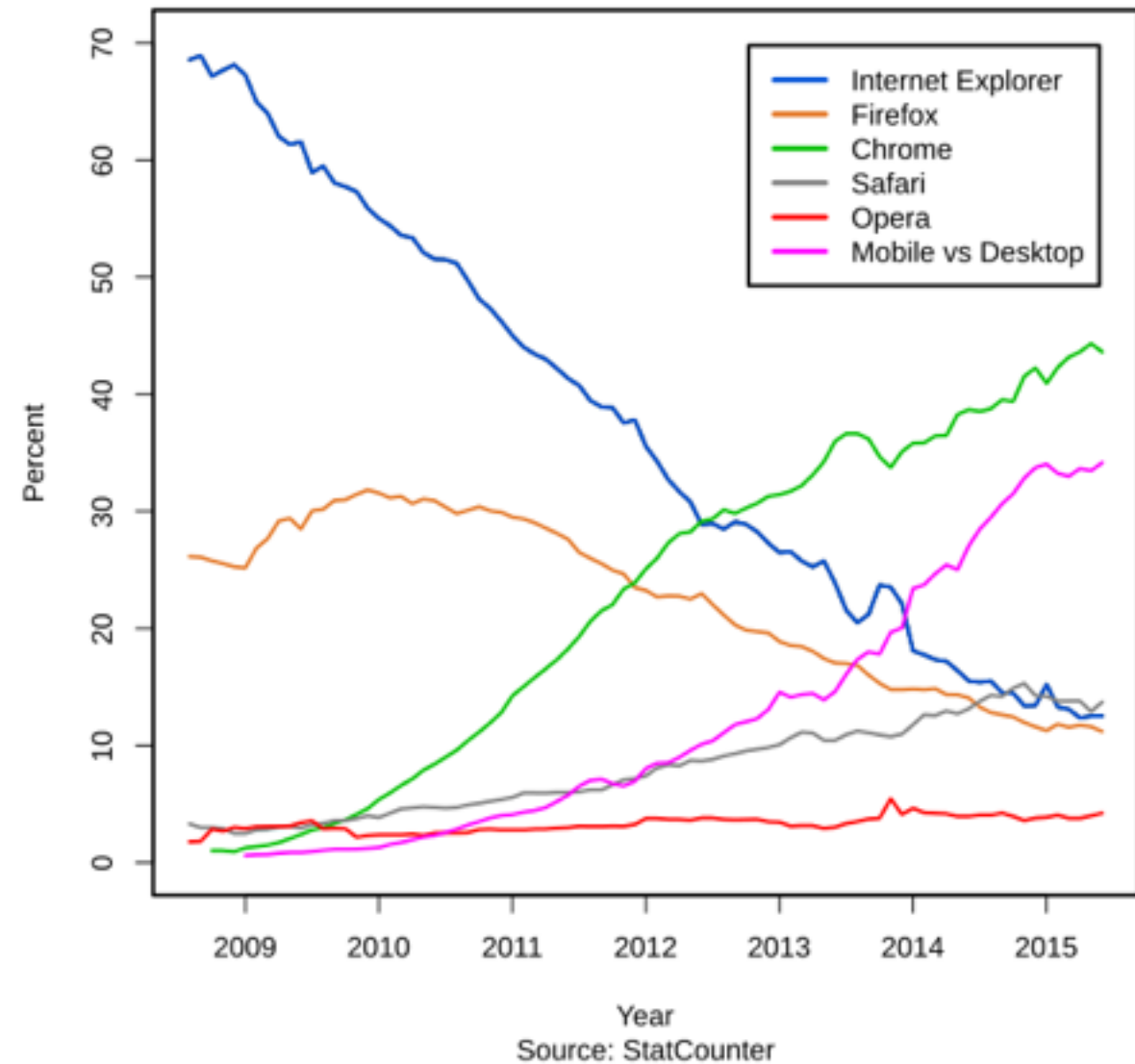


caniuse.com

BROWSERS

Latest browser stats:

http://en.wikipedia.org/wiki/Usage_share_of_web_browsers#StatCounter_.28July_2008_to_present.29



DEVELOPMENT

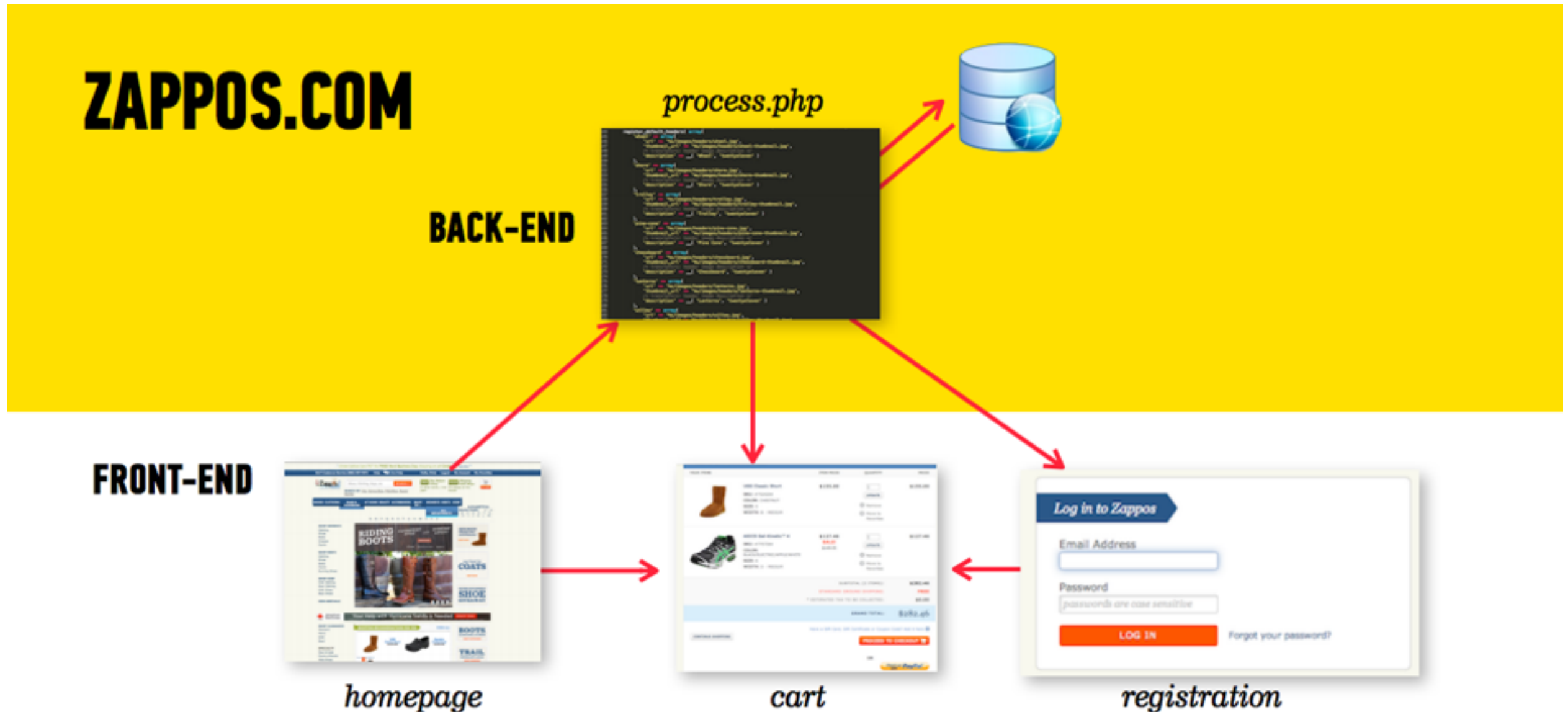
The development process can be broken into two separate responsibilities:

FRONT-END WEB DEVELOPMENT

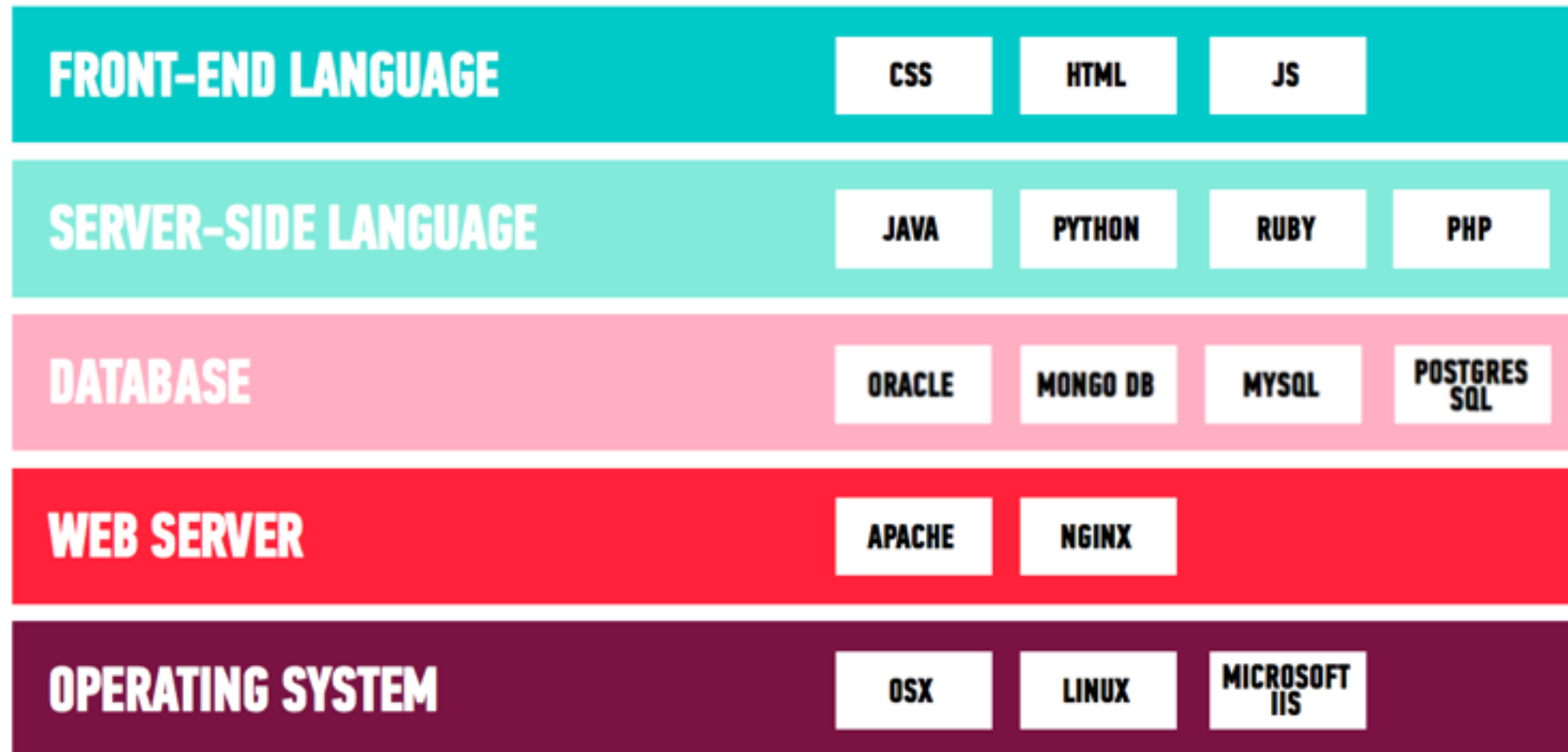
1. Client Side
2. How things look to the user
3. Involves: Images, content, structure
4. HTML, CSS, Javascript

BACK-END WEB DEVELOPMENT

1. Server Side
2. How things work
3. Involves: "business logic", data
4. Ruby, PHP, C++, Java, etc.



WHAT IS A TECH STACK?



WHAT DO PROGRAMS ACTUALLY DO?

They automate things to make our lives easier.

“Hey program, can you change the background of your website when I click on a button?”

- Keeping track of things (Variables)
- Making decisions (If -> then)
- Repeating things (Loops)
- Displaying things
- Logs things (Log files)
- Storing things (Databases)

STAGES OF WEB DEVELOPMENT

STAGES OF WEB DEVELOPMENT



DESIGN

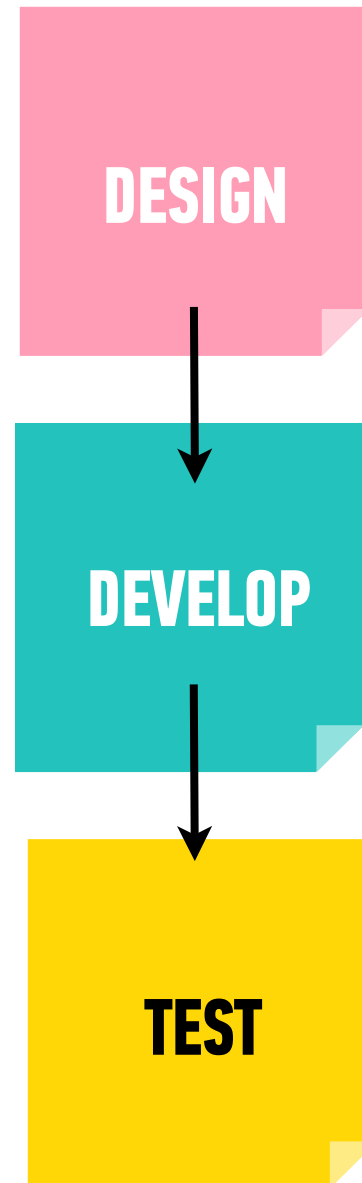


DEVELOP



TEST

WATERFALL



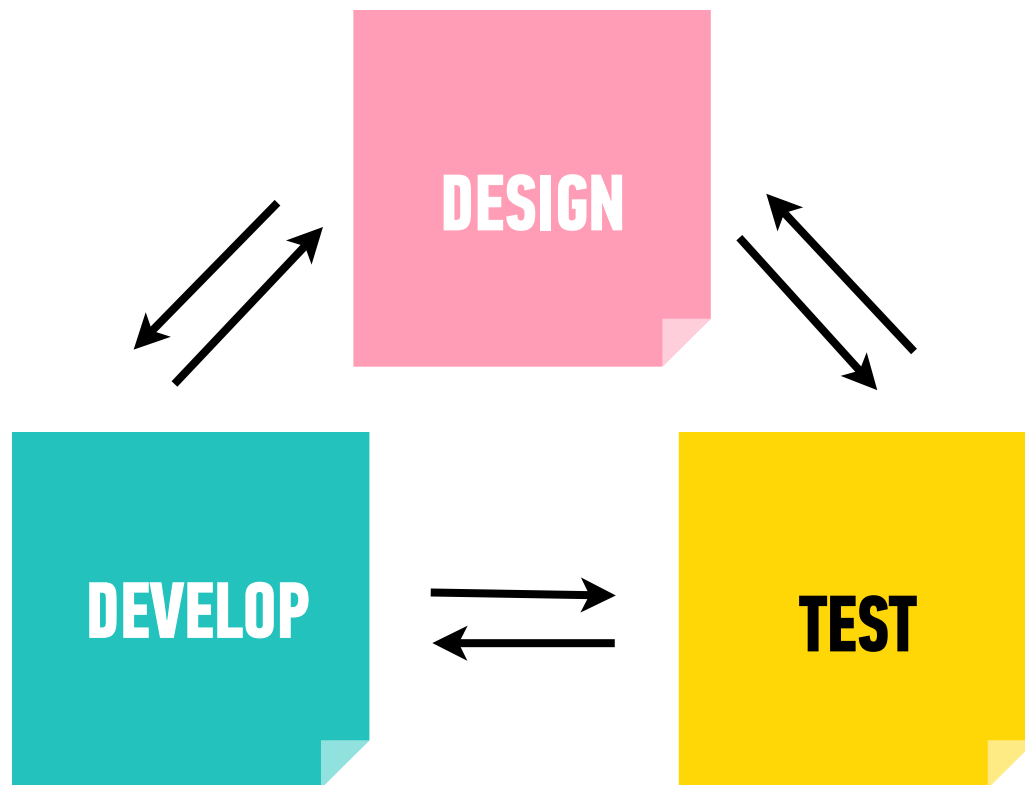
PROS

- Meticulous record keeping
- Client knows what to expect (size, cost, timeline for project)

CONS

- Once a step is completed, it is not revisited
- Relies heavily on initial requirements; not efficient because you may end up waiting for people to finish each step
- The whole product is only tested at the end
- Doesn't take into account a client's evolving needs

AGILE



PROS

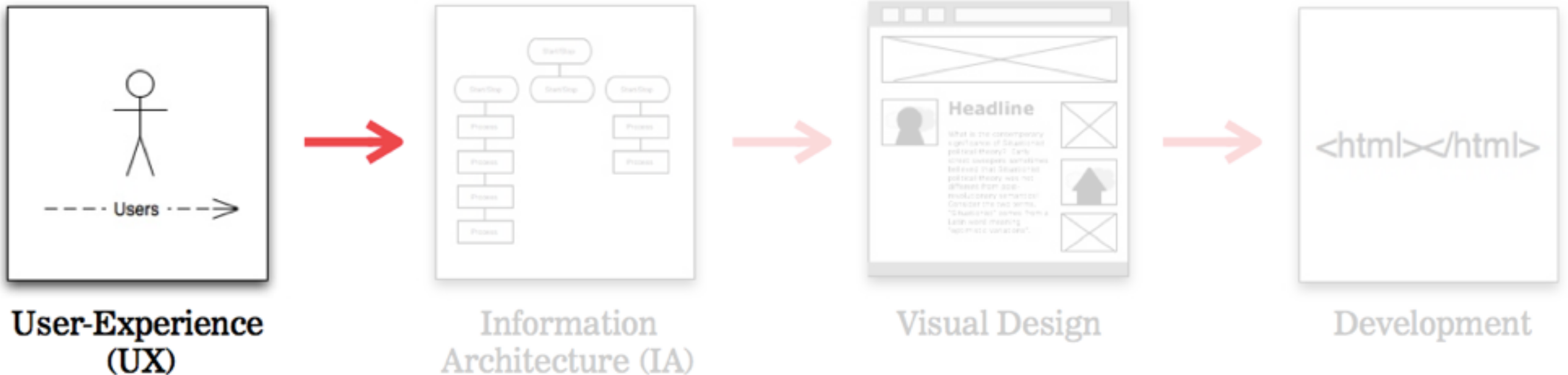
- Changes can be made after the initial planning; add features throughout
- Project priorities are constantly re-evaluated
- Testing throughout ensures bugs are caught early

CONS

- Depends heavily on a (good) project manager
- Project can be grossly different than what was initially intended, budgeted, time allotted for, etc.

DESIGN

USER EXPERIENCE



WHAT IS USER EXPERIENCE?

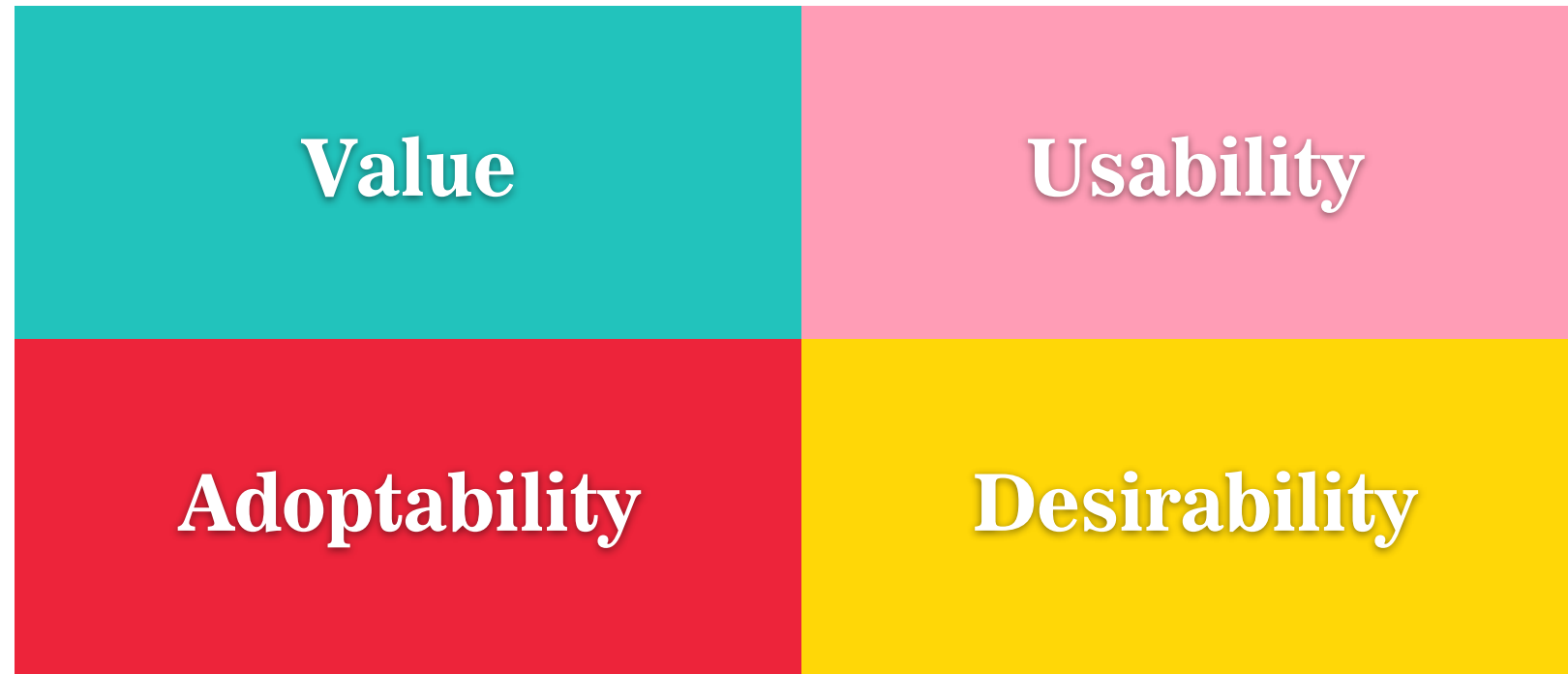
User experience (UX) involves a person's emotions about using a particular product, system or service. User experience highlights the experiential, affective, meaningful and valuable aspects of human-computer interaction and product ownership.

“Don’t Make Me Think” -Steve Krug

“The Design of Everyday Things” -Donald Norman

http://theoatmeal.com/comics/restaurant_website

WHAT IS USER EXPERIENCE?



WHO DOES UX?

USER RESEARCHER

Identifies user behaviors, goals and needs through interviews, studies and surveys

INFORMATION ARCHITECT (IA)

Defines the structure of a system, how content is described, organized and discovered

INTERACTION DESIGNER (IXD/UX DESIGNER)

Defines interactions, user flows, wireframes, and affordances of a system

UI DEVELOPER

Builds the system by interpreting the functional specification, sitemaps, wireframes while working within technical constraints

**WHAT DO WE NEED TO
KNOW TO UNDERSTAND
OUR USERS?**

- Why?
- Who?
- What?
- Where?
- When?
- How?

- Why are they coming to us?
 - goals?
 - what are their needs?

- Who are our users?
 - businesses vs. consumers?
 - demographics?
 - background knowledge?
 - understanding of terminology?

- When are they visiting?
 - morning or evening?
 - when they're in a crisis?
 - daily?
 - monthly?

- What are their habits?
 - do they use social networks?
 - content producers or consumers?
 - where are they accessing from?
- *what you ask depends on the product

- How are they accessing?
 - desktop or mobile?
 - tablet?
 - over the phone or in person?

COMPARE AND CONTRAST



<http://www.kayak.com/>

vs.



<https://www.hipmunk.com>



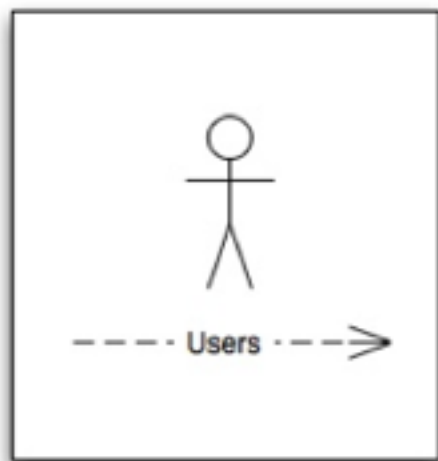
<http://www.united.com/>

vs.



<https://www.virginamerica.com>

INFORMATION ARCHITECTURE



User-Experience
(UX)



Information
Architecture (IA)

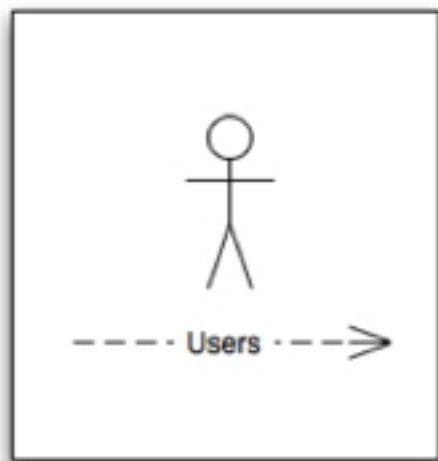


Visual Design



Development

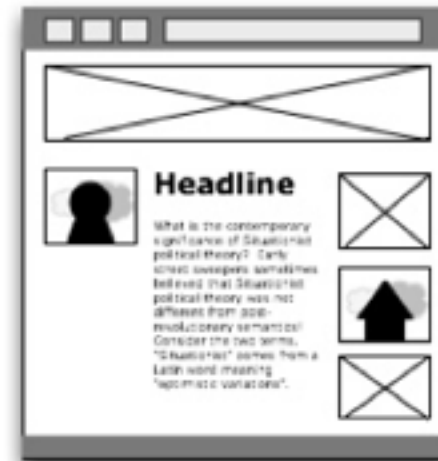
VISUAL DESIGN



User-Experience
(UX)



Information
Architecture (IA)

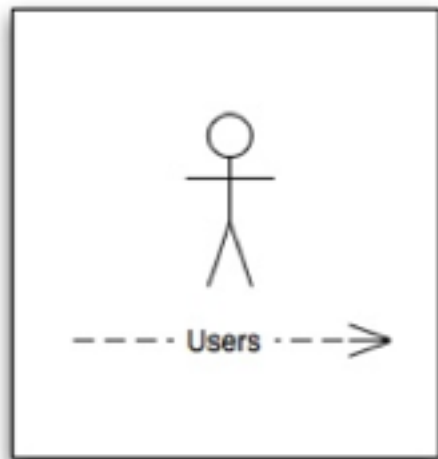


Visual Design



Development

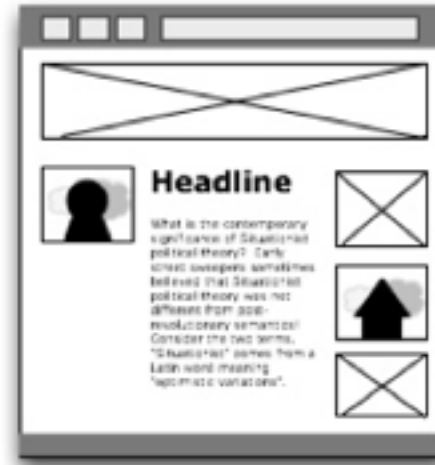
DEVELOPMENT



User-Experience
(UX)



Information
Architecture (IA)



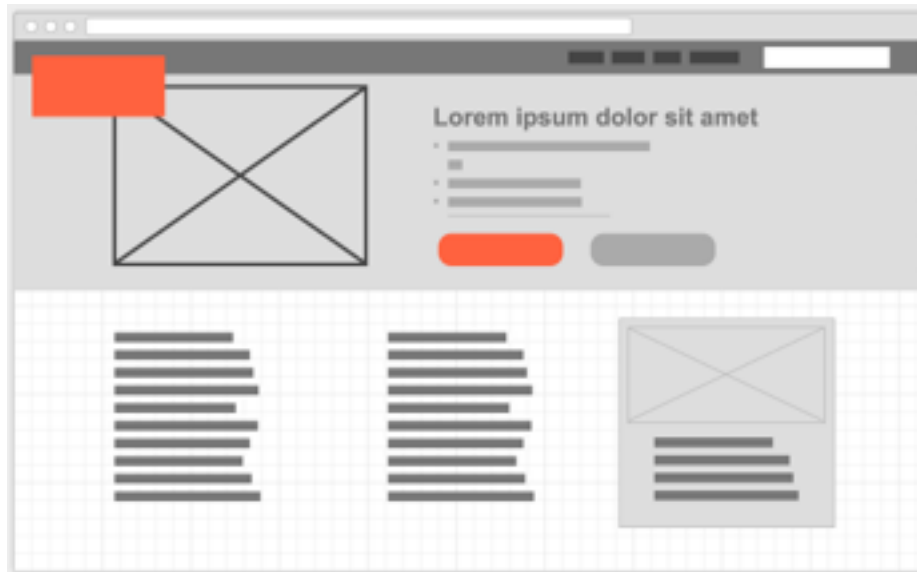
Visual Design



Development

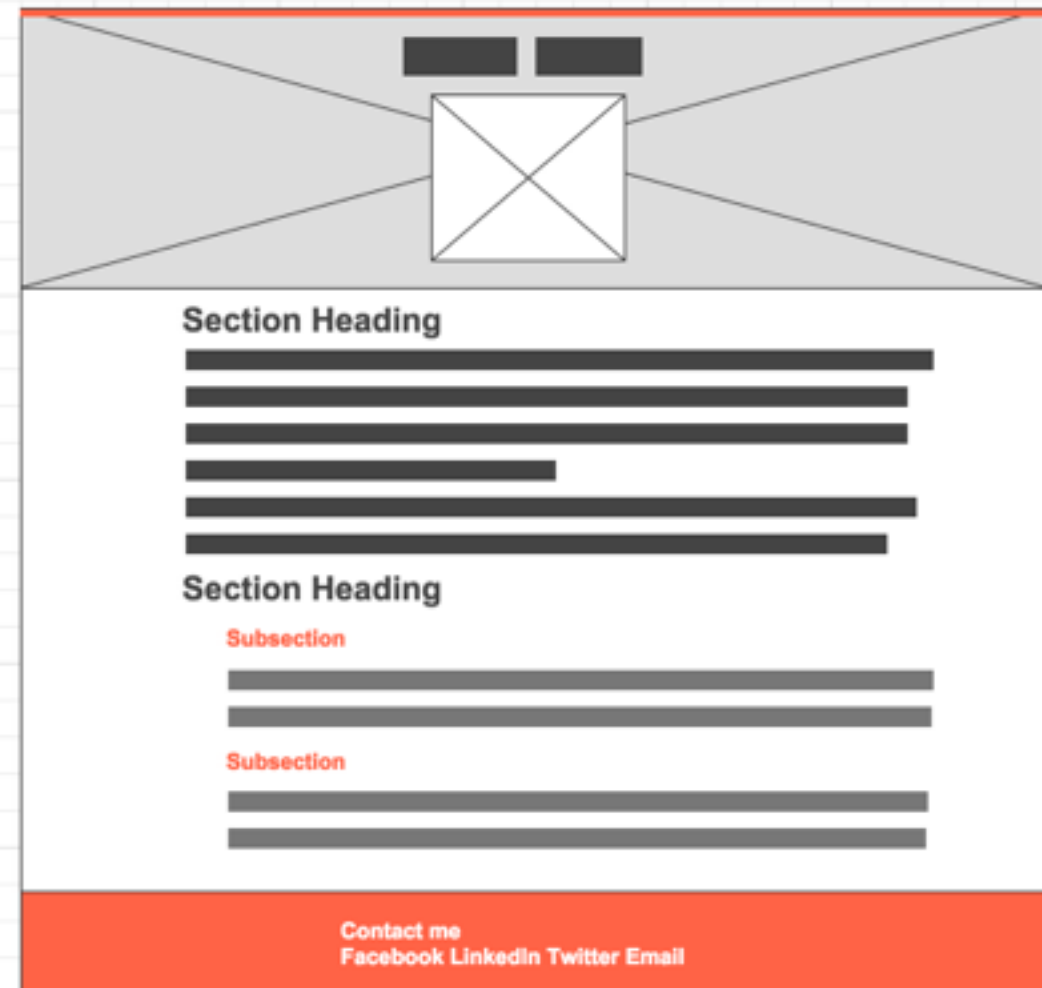
WIREFRAME.CC

Practice creating your own wireframe for a portfolio site to showcase your work.
Goal is that you provide enough details that a programmer can code this up later.



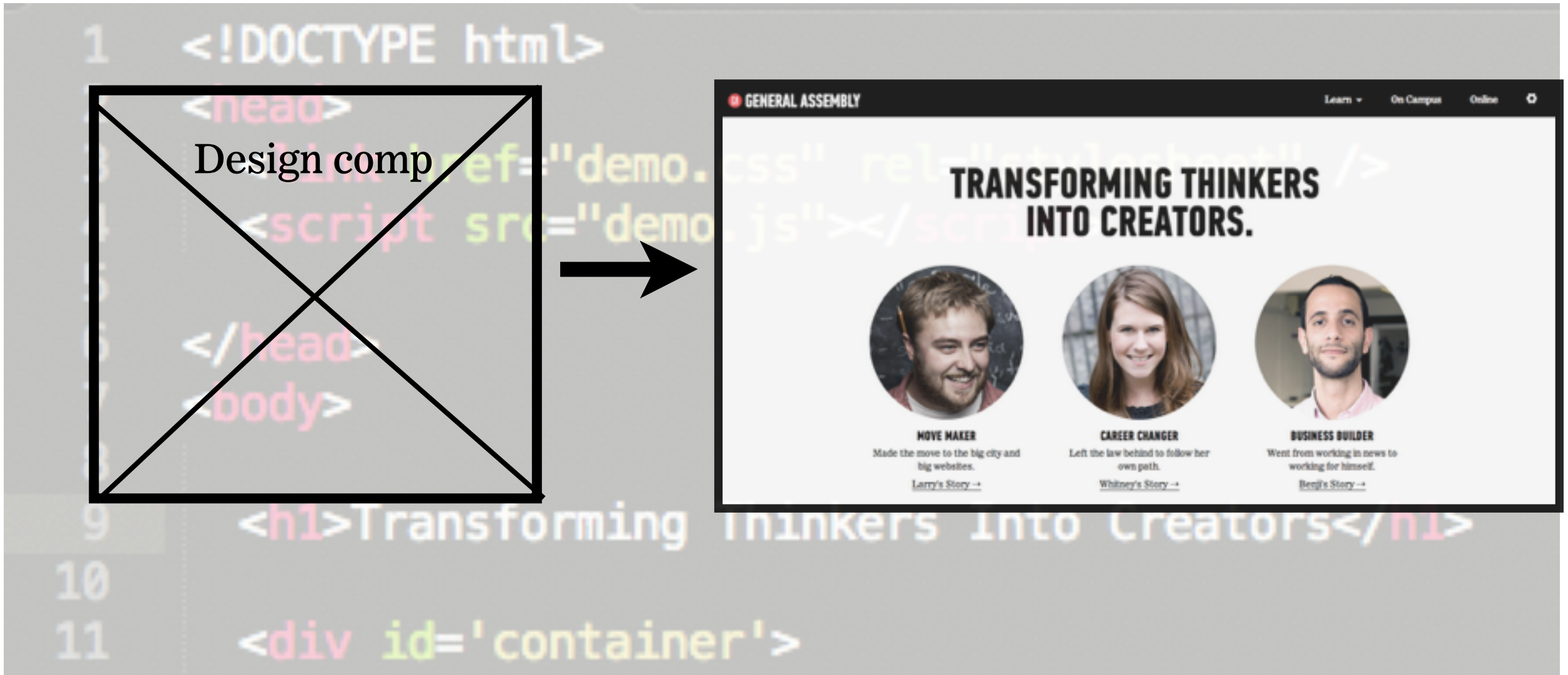
WIREFRAME.CC

<https://wireframe.cc/J8yg7f>



DEVELOP

TRANSLATE DESIGN INTO CODE



PAGE SOURCE

- Chrome web inspector

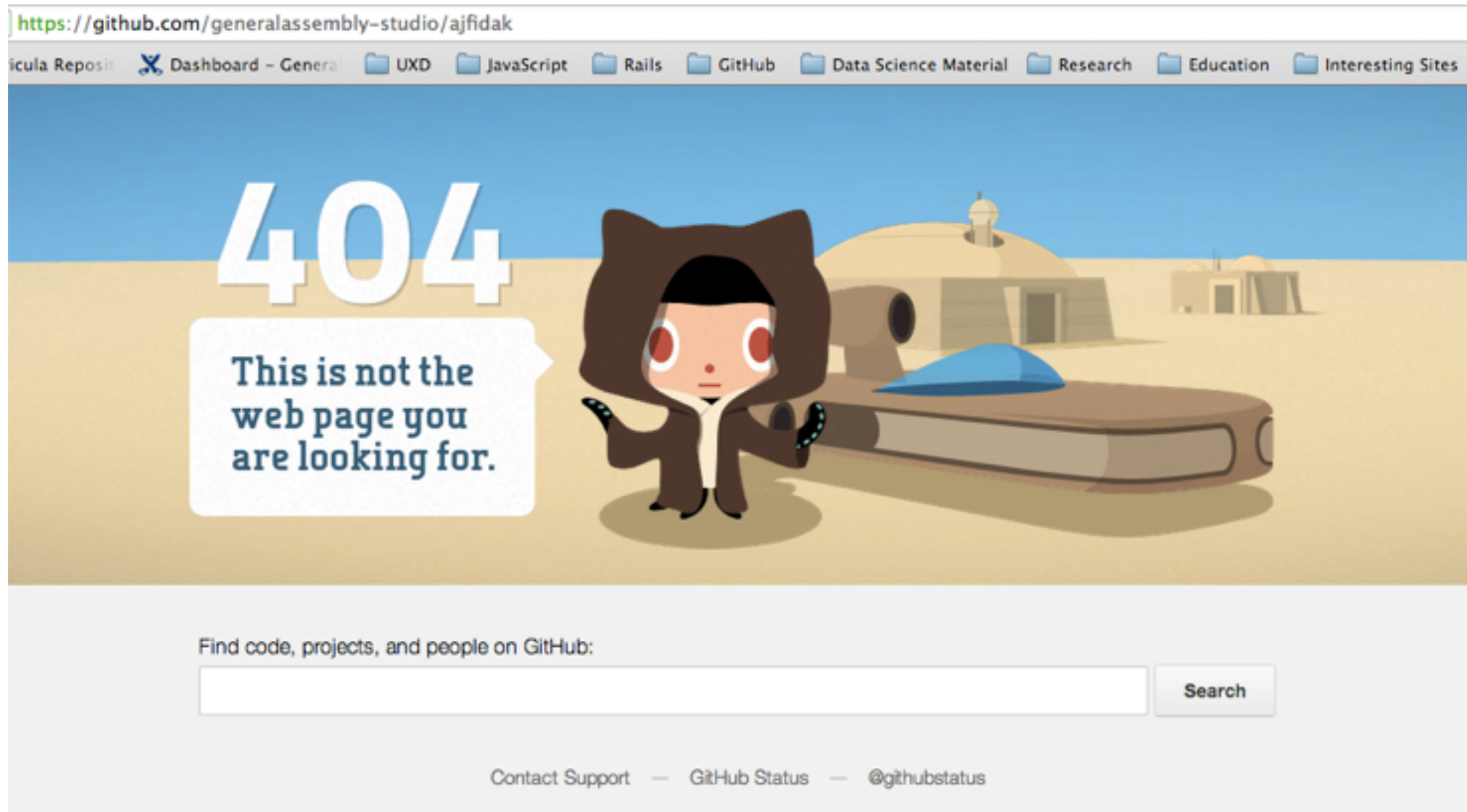
VERSION CONTROL

- Keep track of the version of code.
- Collaborate with others.
- Keep track of who contributed.
- Open-source (release it to the world for free!)
- Popular tools: GitHub, BitBucket



TEST

MAKE SURE IT WORKS!



**OK, SO I WANT TO
CREATE SOMETHING...**

HOW DO I DECIDE WHAT LANGUAGE TO USE?

WHAT TO LOOK FOR IN A LANGUAGE.

- Community support
- Difficulty level
- Development time
- Front-end or back-end?

SHOULD I USE AN API?

Wait, what's an API?



EVERNOTE Developers



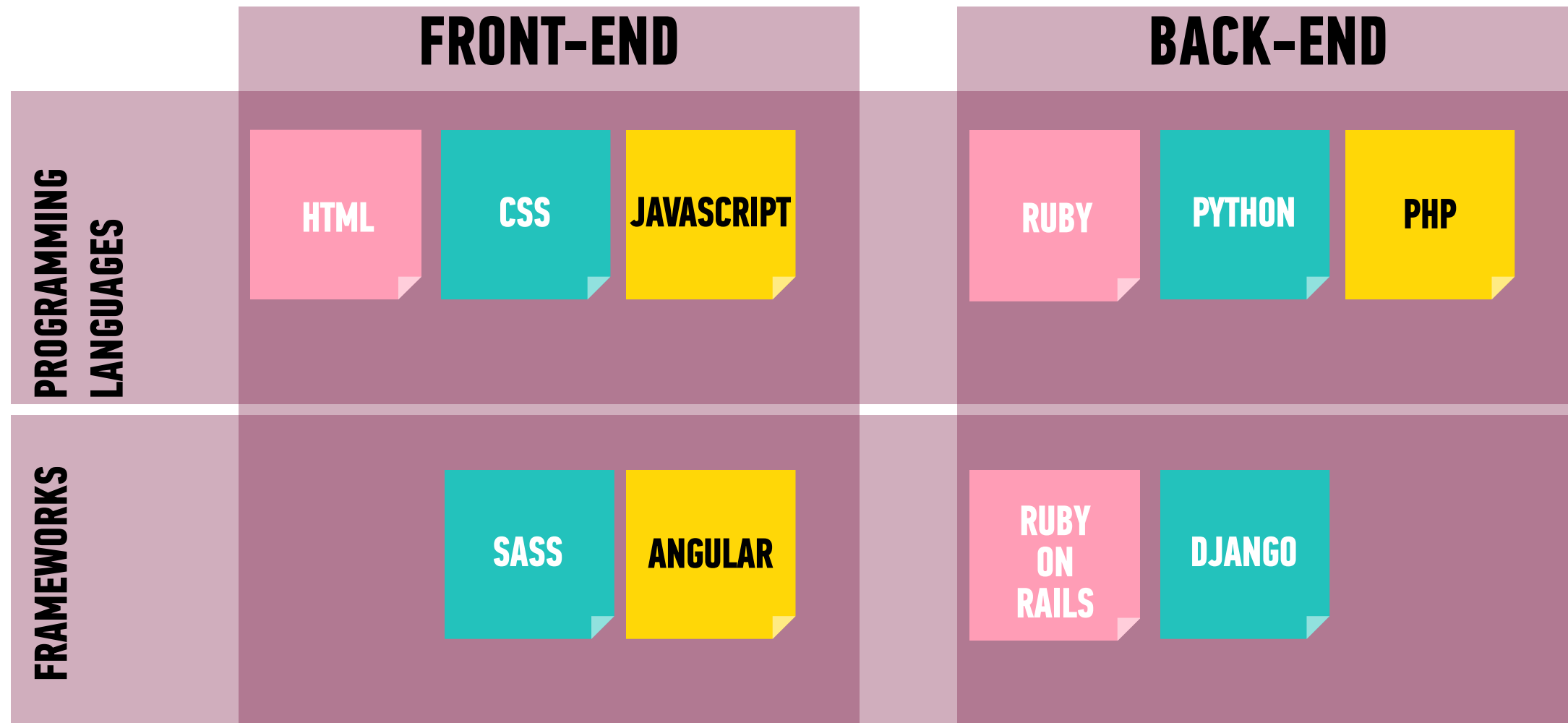
Developers

facebook developers



DEVELOPERS

LET'S BREAKDOWN SOME LANGUAGES



HTML *(noun)*

CSS *(adjective)*

JS *(verb)*

HEY LISA, CAN YOU...

make that grey heading fade in?

HEY LISA, CAN YOU...

make that **grey** heading **fadein?**

The diagram illustrates the roles of different web technologies in styling and animating a heading. The text 'make that grey heading fadein?' is shown. The word 'grey' is in a grey font, 'heading' is in a dark purple font, and 'fadein?' is in a red font. Above the word 'heading' is a dark purple speech bubble containing the text 'HTML'. Below the word 'grey' is a teal speech bubble containing the text 'CSS'. Below the word 'fadein?' is a red speech bubble containing the text 'JAVASCRIPT'.

HTML (STRUCTURE)

HTML SYNTAX



Ex:

`<h1>Hello!</h1>`

HTML EXAMPLE

Let's create an html example in Codepen

CSS (STYLE)

CSS EXAMPLE:

```
body {  
  background-color: red;  
  color: white;  
}
```

CSS EXAMPLE

Let's create a CSS example in Codepen

JAVASCRIPT (BEHAVIOR)

JAVASCRIPT EXAMPLE

- Prompt
- Alert
- Events
 - click
 - hover
 - etc.

JAVASCRIPT EXAMPLE

Let's create a Javascript example in Codepen

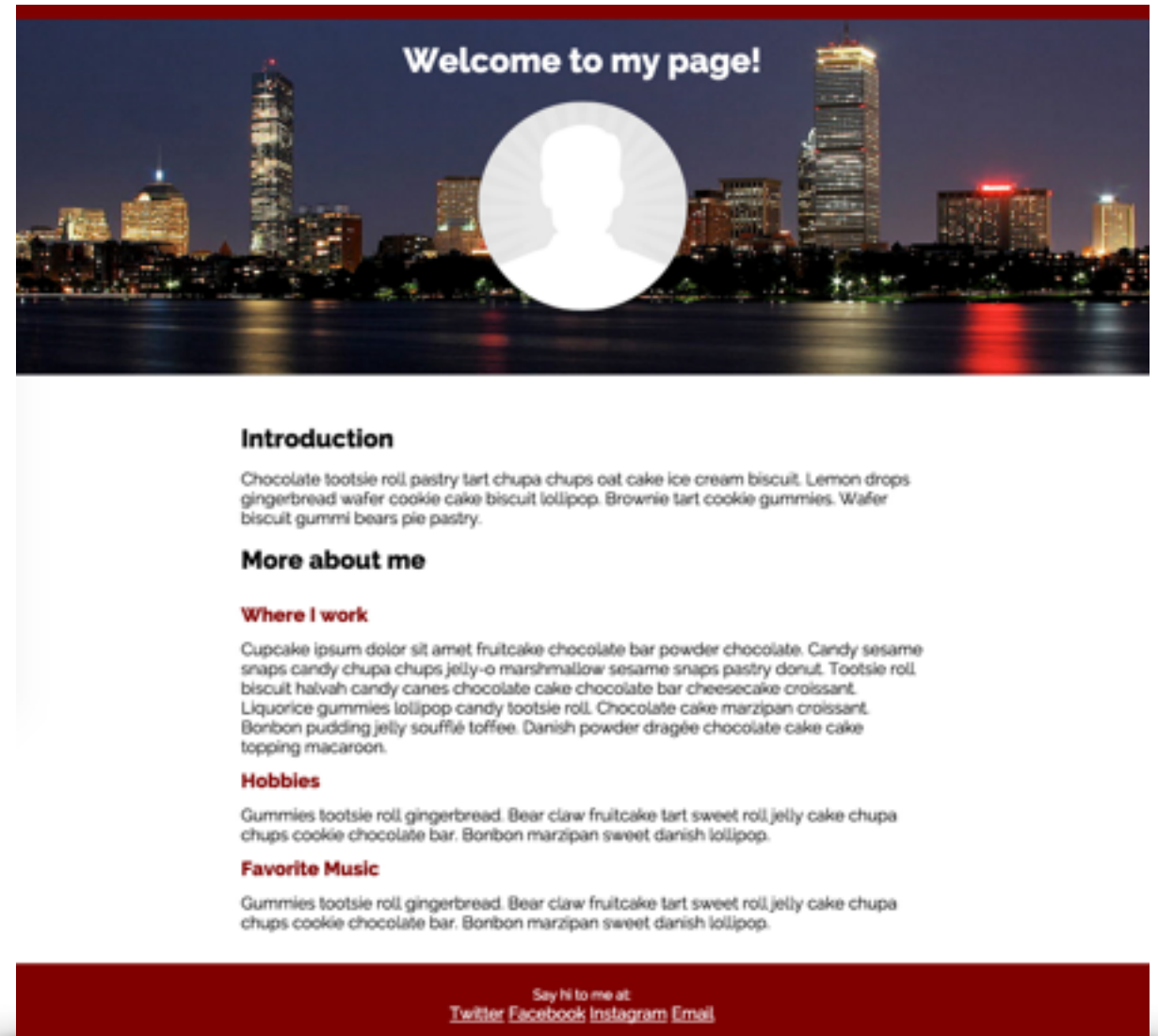
LET'S CODE!

HTML/CSS

HTML/CSS CODE ALONG

Portfolio page

<http://codepen.io/lisaplesko/full/jPYVRm/>



WHAT WE LEARNED:

Vocabulary:

- What is programming?
- What can I build?
- What is Web Development?
- Stages of Design/Development/Test
- Planning a project

The Basics of Code:

- HTML/CSS & JavaScript
- Code together!

RESOURCES

- <http://dash.generalassemb.ly> (GA HTML/CSS tutorials)
- <http://developer.mozilla.org/en-US/docs/Web/HTML/Element>
- <http://wireframe.cc>
- <http://www.csszengarden.com/>
- <http://codepen.io>
- <http://www.codecademy.com/tracks/apis>
- <http://bigemployee.com/how-to-build-your-first-web-application-tutorial-series/>