Intro to Programming

Lesson 7

Learning Objectives

- Gain an overview of the JavaScript landscape and its placement in the web development ecosystem
- Practice programmatic thinking by writing pseudocode and reading JavaScript code
- Predict DOM output / changes by reading JS code.

Agenda

- Review HTML/CSS & the DOM
- Introduction to Programming
- Pseudocode
- Intro to JavaScript
- Lab Time

Congratulations!

FEWD Overview

UNIT 1: HTML/CSS Basics

Unit 2: Adding Interactivity

Unit 3: Building In Concert

HTML/CSS Review

Open: **html_css_review/starter_code/**

Directions:

1. Open the **starter_code/html_css_review** folder
2. Let's build out the Relaxr landing page together

Timing:

- **15 minutes** - As a class, let's build the Assignment 2 Relaxr landing page together

Tips:

- We will use many of the HTML/CSS principles we've learned thus far
- This will solidify our foundation of basic HTML/CSS as we move into JavaScript

Introduction to Programming

What is a program?

A **program** is a set of instructions that you write to tell a computer what to do.

Therefore, **programming** is the task of writing those instructions in a language that the computer can understand.

Becoming a Programmer...

... isn't about the programming language. It is about changing how **YOU** think.

But first, we need to know how the computer thinks...

Computers Don't Think

They act as if they think by sequentially executing simple instructions **VERY** fast.

Computers can **ONLY** do what we tell them to do...

BE EXPLICIT!!

Key Objective:

Let's make a PB & J sandwich! Assume I am a computer. You will be split into 2 teams, and tasked with writing step-by-step instructions to tell me exactly how to make a classic peanut butter & jelly sandwich.

Timing:

- **7 minutes** - in your breakout rooms, discuss the steps to make a sandwich
- **3 minutes** - Each team shares their instructions in Slack, come together and discuss

Ingredients:

1 loaf of bread (sliced), several knives, 1 jar of peanut butter, and 1 jar of jelly

Pulse Check

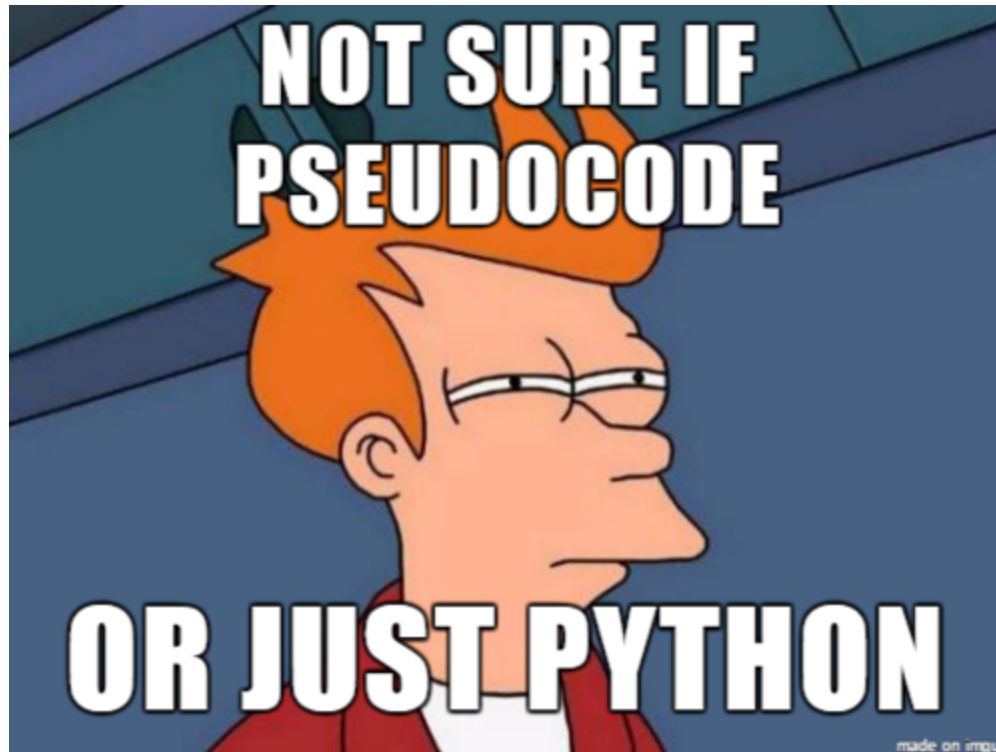# Pseudocode

What is Pseudocode?

"Pseudo" Code

Pseudocode is the logical representation of your program written in plain english.

It is **NOT** written in any specific coding language.

What's the point?

Pseudocode is meant to help a developer plan out the flow of a program *before* they start writing the actual code.

Ideally, it should also help non-programmers understand what a program is supposed to do
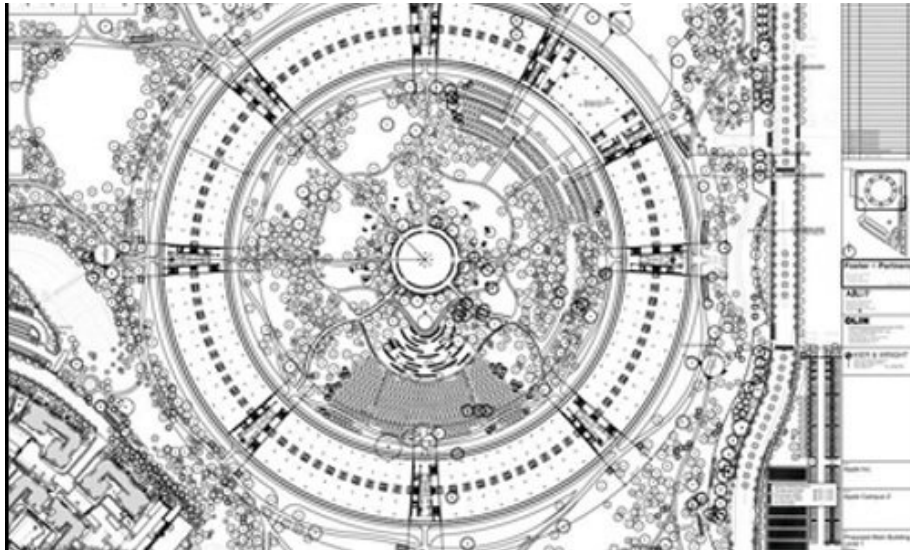
Renderings (Pseudocode)

- Communicates clear vision of the finished product
- Layman can understand it
- Can **NOT** be used to build an actual building

Blueprint (Code)

- Not clear what this is supposed to be (unless you are an architect/builder)
- Layman can't understand it
- A building can actually be built using this

Code Along

Open: **Thermostat Pseudocode**

Directions

Write pseudocode for a basic thermostat that determines when to turn on/off the A/C.

Timing:

- **10 minutes** - Discuss the pseudocode steps as a class

Hints:

1. What is our target temperature?
2. What is the current temperature?
3. Repeatedly check the current temperature, and decide whether to turn the a/c on or off

Thermostat Pseudocode

```
Set target temperature to 72 degrees

Repeat the following steps:
  Get current temperature

  If target temperature < current temperature
    then, turn on the A/C

  If target temperature >= current temperature
    then, turn off the A/C
```

You Do

Write: **Rock, Paper, Scissors Pseudocode**

6 . 1

Directions

Your turn to write pseudocode for a game of "Rock Paper Scissors"

Timing:

- **25 minutes** - Work in groups of 3 to write the pseudocode for the game
- **5 minutes** - Discuss together as a class

Tips:

- Use the thermostat syntax for clues.
- Be sure to think programmatically, and write out each line of instructions on paper, if it helps

Rock, Paper, Scissors Pseudocode

Get available options (rock, paper, scissors)

Get user selection (user types in selection)

Get computer selection (select from available options)

If user selection is the same as computer selection

  then, say "It's a tie"

If user selection is "rock" AND computer selection is "paper"

  then, say "You Lose"

If user selection is "scissors" AND computer selection is "paper"

  then, say "You Win"

If user selection is "paper" AND computer selection is "rock"

  then, say "You Win"

If user selection is "scissors" AND computer selection is "rock"

  then, say "You Lose"

If user selection is "paper" AND computer selection is "scissors"
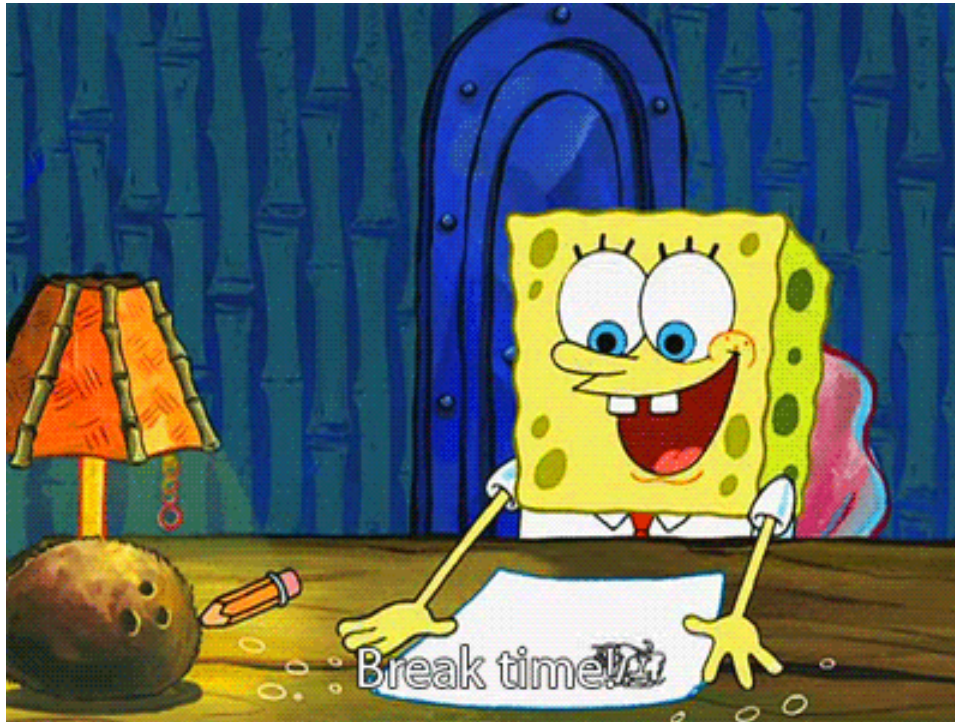
  then, say "You Lose"

If user selection is "rock" AND computer selection is "scissors"

  then, say "You Win"

ALWAYS REMEMBER!

Focus on solving the problem **first**!

Then, you can come back and simplify your (pseudo)code
-- this is called refactoring.

Break time!

Let's take 5-10 minutes to decompress...

Intro to JavaScript

What is JavaScript?

JavaScript

JavaScript is an object-oriented computer programming language commonly used to create interactive effects within web browsers.
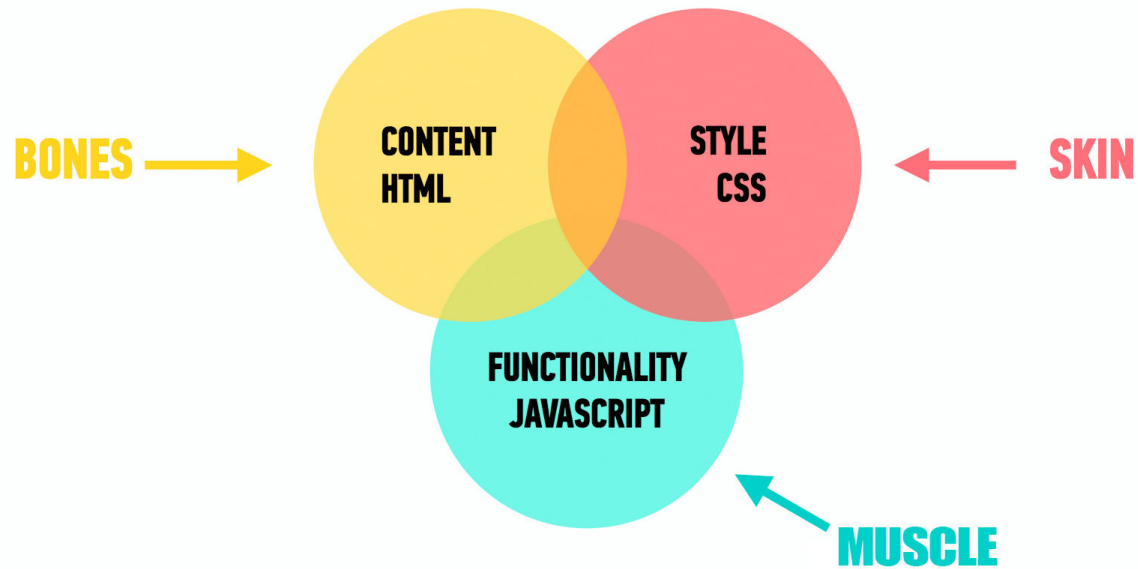
The 3rd Amigo

HTML

CSS

JavaScript

JavaScript moves the Web

JavaScript in the Wild

Javascript is primarily used for (among other things):

- DOM manipulation
- Input/Output
- Client-side data validation
- Displaying popup windows and dialog boxes
- Application Programming Interfaces (APIs)
- Server-side database

Code Along

Open: **Color Switcher Codepen**

Lab Time

Open: **Traffic Light Codepen**

Directions:

1. Open the **Traffic Light Codepen**
2. Read through the JavaScript and identify what additional code needs to be added to get the traffic light to work.

Timing:

- **60 minutes** - change the JS code so that the traffic light works properly.

Tips:

- Read through the code and make small changes
- No need to worry about the specifics just yet.

Exit Tickets

Take 5-10 minutes to give us some

(Link is in Slack Room)

Learning Objectives Review

- We gained an overview of the JavaScript landscape and its placement in the web development ecosystem
- We practiced programmatic thinking by writing pseudocode and reading JavaScript code
- We predicted DOM output / changes by reading JS code.

Week 3 HW Due Tonight

- **Due tonight by 11:59pm ET**
- Once you upload your HW to your repo, please PM the TA with a link to the Assignment folder.
- This is how we will know whether an assignment has been completed or not
- Once graded, the TA will reply with feedback

Next Class...

Lesson 8 - Intro to jQuery