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Focus Web Developer

Week 1 - Lesson 1

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ACKNOWLEDGMENT

We walk gently as a guest working on the unceded homelands of

Coast Salish Peoples, the traditional territories of the Squamish, Musqueam and TsleilWaututh First Nations.

We acknowledge the traditional lands of this Nation and it is with gratitude that we now work, learn, and stay here as your guest.

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ACKNOWLEDGMENT

We gratefully acknowledge the many Indigenous peoples
that came forward to have their photos taken,
be videotaped, and to share their voices
throughout our curriculum.

“All My Relations”

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WELCOME TO YOUR TECH EDUCATION JOURNEY

ELDER’S WELCOME

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Your First Nations Technology Council (FNTC) Digital Elder

Introducing Elder Glida Morgan

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Opening Song

Elder Glida Opening Song

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Meet your Digital Elder

Introducing Elder Glida Morgan

Elder Glida Morgan

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Course Description

This course introduces students to computer programming best practices, application of advanced computer programming concepts, and introduces students to Java Script through the development of 2 projects and a capstone project.

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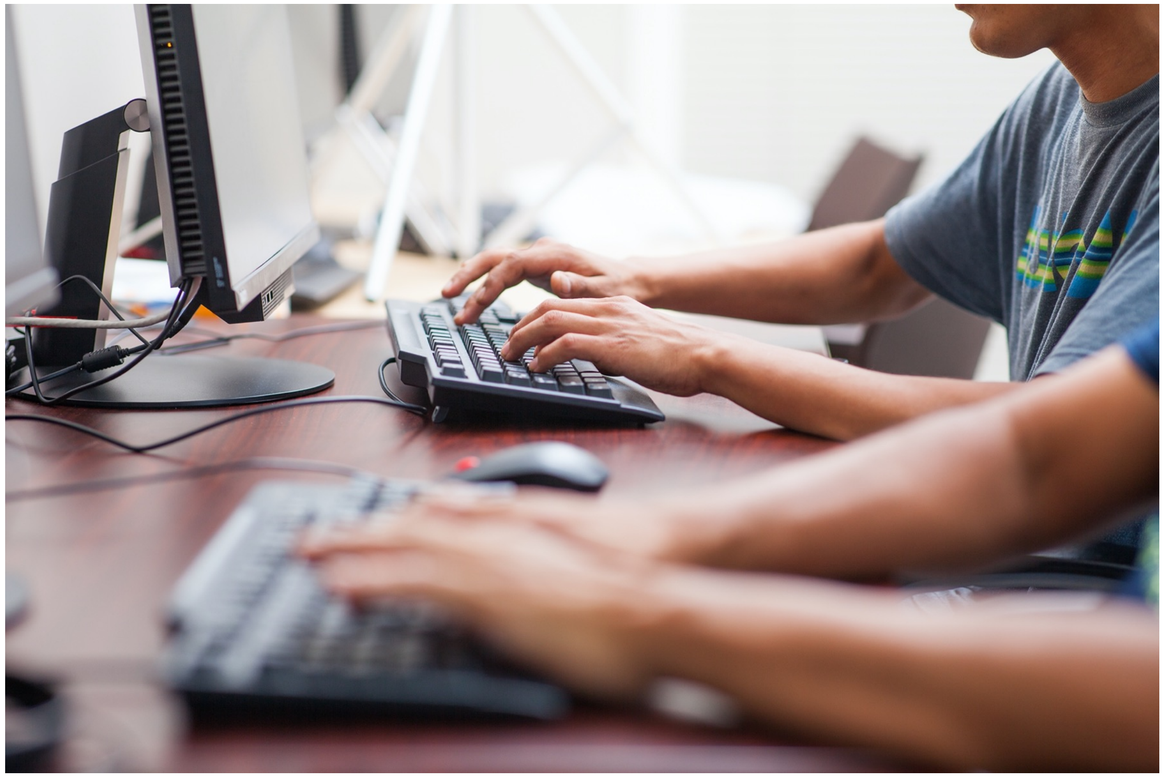
FITC Focus Web Development Learning Outcomes

- Apply computer programming best practices, including documentation standards, naming conventions and security
- Utilize foundational computer programming concepts to build a simple function
- Utilize foundational computer programming concepts to build a simple looping structure
- Utilize foundational computer programming concepts to build a simple data structure
- Create, access, add to, and delete from array based data structures



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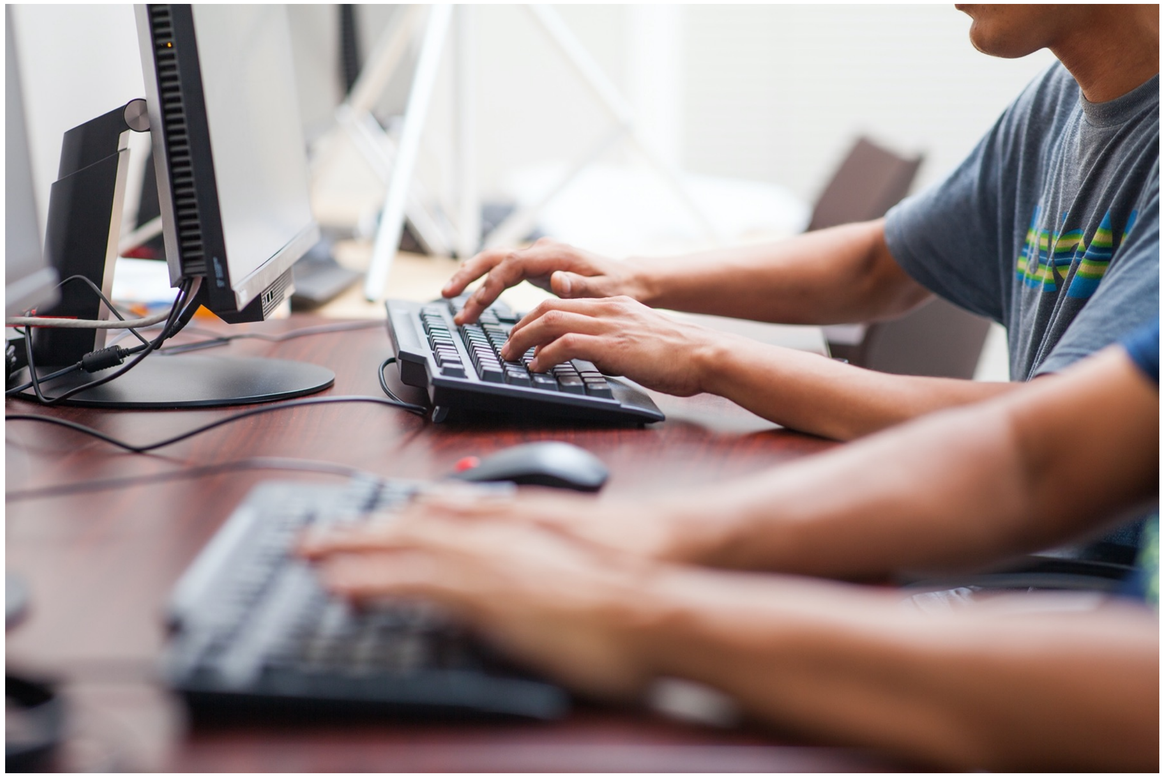
Learning Outcomes (con’t)

- Select and apply more advanced computer programming concepts to program solutions to common programming challenges
- Explain fundamental programming language concepts and describe their purpose within a program
- Explain the fundamental concepts of JavaScript and its role in forming the functionality of a website
- Identify issues in a program and successfully apply problem-solving techniques to resolve issues



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Course Breakdown
Unit 1 Programming Fundamentals

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Unit 2 Development/Coding

Unit 3 Building/Lab

Gathering Time

Gathering Time is a time for check-in.

Grab a stone, if you have one. Everyone will have an opportunity to speak and to listen.

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Gathering Time

Tell us about you (as much as you are comfortable). Here are some optional questions to help you get started:

- your name and your nation
- your expectations of this course
- your goal after the program has finished
- fun fact about you.

*If you don’t want to share just pass the stone to the next person.

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Lesson Topics

- Schedule
- Capstone and Projects Overview
- A Brief Introduction to Programming
- Programming Paradigms
- JavaScript’s Prominence
- Problem Domains
- JavaScript/HMTL/CSS Intro

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Capstone Project

JavaScript Programmed Web Application

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Capstone

- You will be building a JavaScript powered Web Application
- You will be programming your Web Based Application in JavaScript. HTML and CSS will be used to build the User Interface

Jo

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Capstone

- You will have the opportunity to work on your application in the last two weeks of the course
- On the last day you will be sharing your Web App with the class.
- When you present your App to the class, you will be sharing your programming journey with the class.

Dan

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Unit Projects

- This course is divided into three Units
- The First Unit is the Foundations of JavaScript
- The Second Unit is Developing with JavaScript
- The Third Unit is the Capstone

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Unit Projects

- Each Unit is two weeks long
- Unit 1 and Unit 2 conclude with a Unit Project
- Unit 3 is developing, debugging and presenting the final Capstone project

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Unit Projects

- There will be lab time built into both Unit 1 and Unit 2
- The lab time will be your time to work on the Unit Projects
- You will present your Unit Projects on the last day of the Unit

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Additional Course Information

- This is a very **hands-on** course.
- We will start with understanding and reading code - we will write code after developing a good basis of understanding
- We encourage you to work in pairs or groups to increase the learning experience.
- Learning programming can be a little overwhelming, but just remember to take it a step at a time.
- Remember to ask for help when you get stuck.

Jamie(left) & Jo(right)

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Assignment 1

Terminology

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Assignment 1

- There are three Units in this course
- Assignment 1 – Terminology will be cover all three Units, but the majority of new terminology will likely come up in Units 1 & 2
- Aim for 3 terms per day

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File Management and Activity Naming

- Create one folder per day
- Create separate folders for each activity
- Activity naming convention:
  - firstName_lastName_weekNumber_dayNumber_activityNumber

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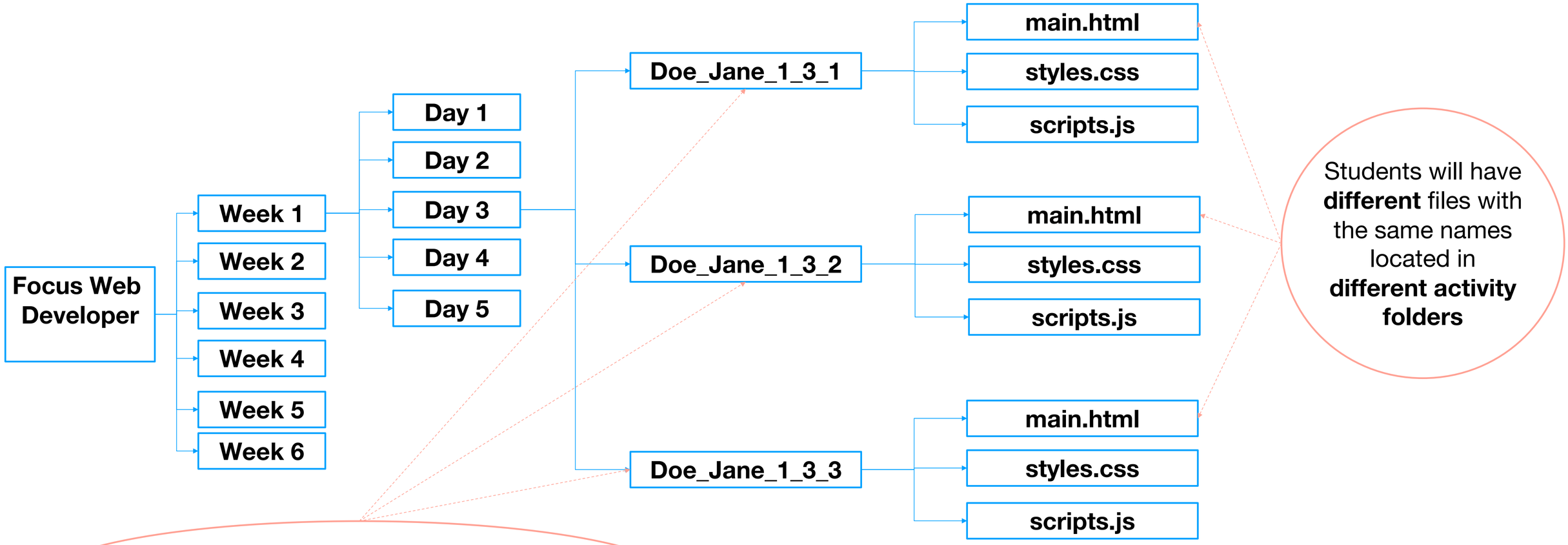
File Management and Activity Naming



Activity Naming Convention:
firstName_lastName_weekNumber_dayNumber_activityNumber

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Welcome to Programming!

Specifically - Welcome to JavaScript Programming!

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What is Programming?

Let’s talk about Programming

- We will talk about why JavaScript is a great language to begin with shortly, but right now let’s talk about **Programming**
- Many of you might have a preconception as to what Programming is
- Let’s start by examining what Programming means to all of us, and the world in general.

This is not Jo

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Programming Background

Discussion

Sharing your coding knowledge

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What is Programming?

Programming Overview

- Programming is manipulating Data
- Programming is creating Computer Code that is **parsed** (interpreted) by a **machine** (a computer) and gives **directives** (instructions) to the machine as to how to **manipulate data** (input)

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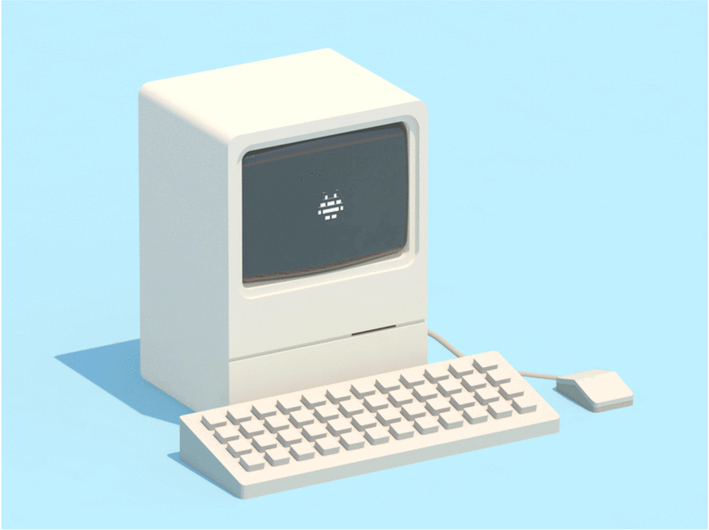
Computer Architecture

- When Programming first started it was very difficult to create a program
- Different computers have different **Architectures**
- An Architecture is the physical design of a computer



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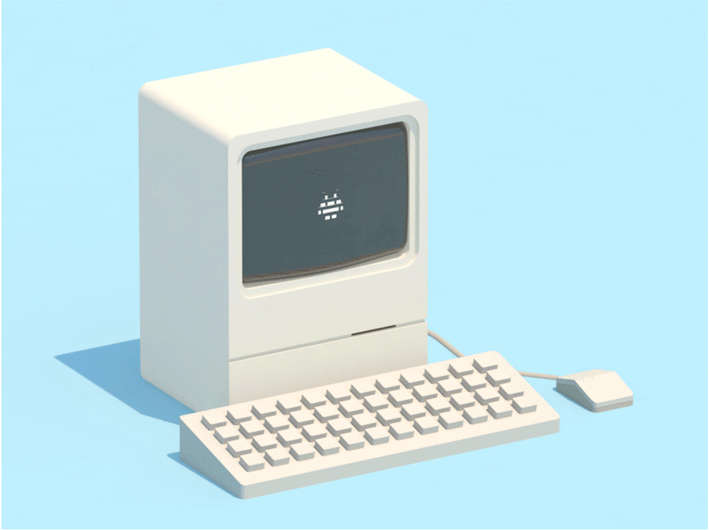
Computer Instructions

- Computer **Instructions** are the instructions that tell a computer what to do
- Each different computer **Architecture** requires a different set of computer Instructions



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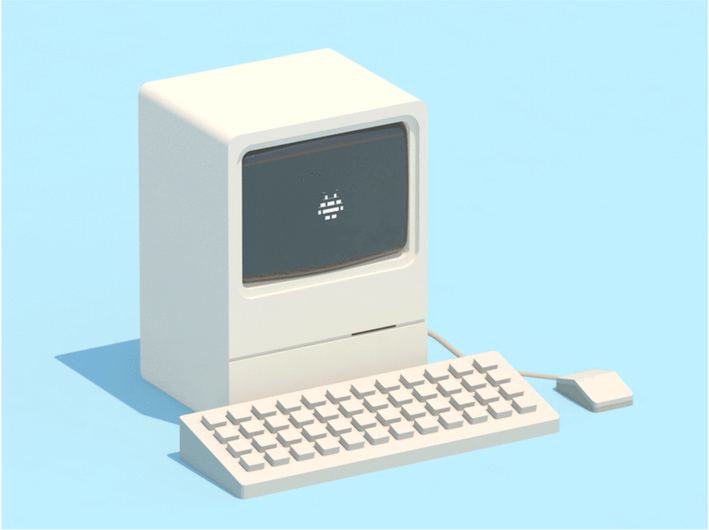
Instruction Sets

- That means that writing a computer program meant writing a different set of computer Instructions for each separate computer Architecture. These are called **Instruction Sets.**

- This created a lot of work for the first programmers.



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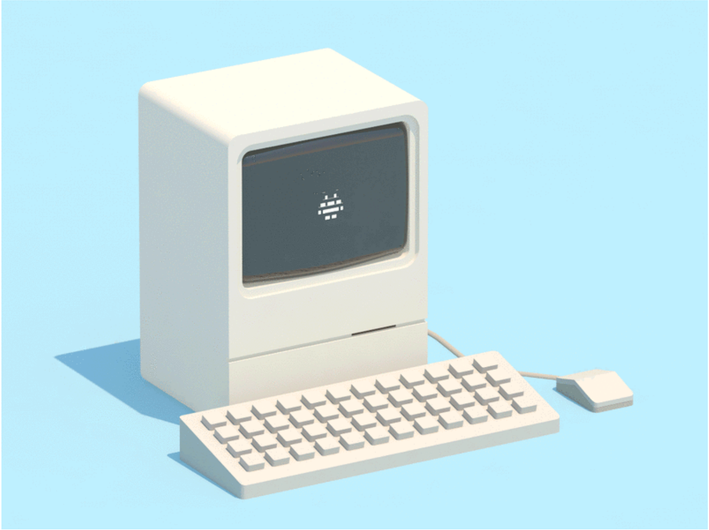
Instruction Sets

- These separate **Instruction Sets** were written for specific **Computer Architectures**, and computers do not understand instructions unless they are written in a language that they understand.

- Computers understand numbers only, they have no concept of language.

- So all these **Instruction Sets** needed to be written in number based languages.



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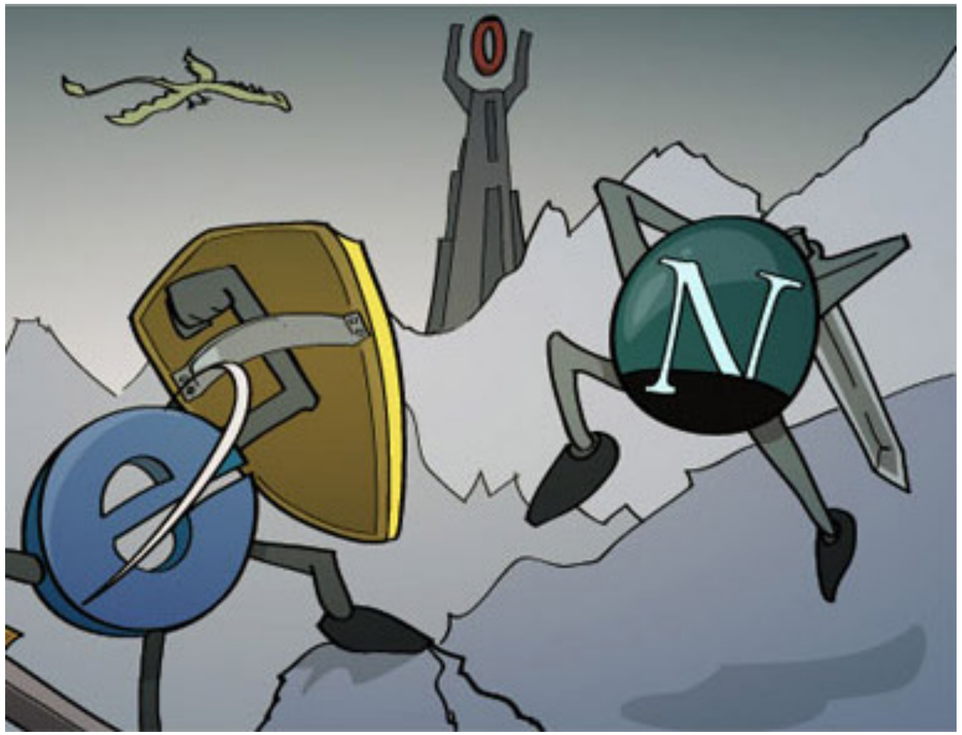
Instruction Sets



A set of instructions could look like this:

00011100

11000000

00010100

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Instruction Sets

Actually, more like this:

00011100 00011100 00011100 00011100 00010100 11011100 00011100

11000010 01111100 10001110 01011101 00000100 10000101 00010100

00010100 00011100 00011100 00011100 00011100 01011100 00001100

00010110 10011101 01011101 11011100 11000100 01001100 00010000

11000010 01111100 10001110 01011101 00000100 10000101 00010100

000101

00110101 00111100 11110010

- This would probably be very hard to write by hand.
- This is called **Assembly Language**, and the first programmers actually had to learn to write computer instructions this way.

Programming paradigms

- A **Paradigm** is a way of looking at a problem.
- In the programming world, when we have a problem that we want to solve, we have some decisions to make before we start to work on the actual programming.

Some of the questions we might ask ourselves are:

- What type of problem is this?
- Is it number based, like working out a monthly budget?
- Is it a word based problem, like a finding specific phrases in a long document?
- Is it part of the functionality of mobile app that I'm building?
- There are so many possibilities.

Problem Domain

- What type of problem is this?
- When you figure out the specific problem, this is called in computer science the **Problem Domain**
- What is the **exact problem** and what type of **data** is involved (numbers, text, etc).

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Activity 1

Defining the Problem Domain

1. Can you think of a problem that might be solved with programming?
2. What type of data is involved (numbers, text, etc)?

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Programming Languages

- Why are there so many programming languages?

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Discussion

Quick Research Project

1. Let’s do a quick research project – individually go on the internet and see how many program languages you can list in the next 10 minutes.

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Programming Languages

You might have been baffled by how many programming languages are out there, doing a quick search of the web shows a huge array of languages. It can be confusing.

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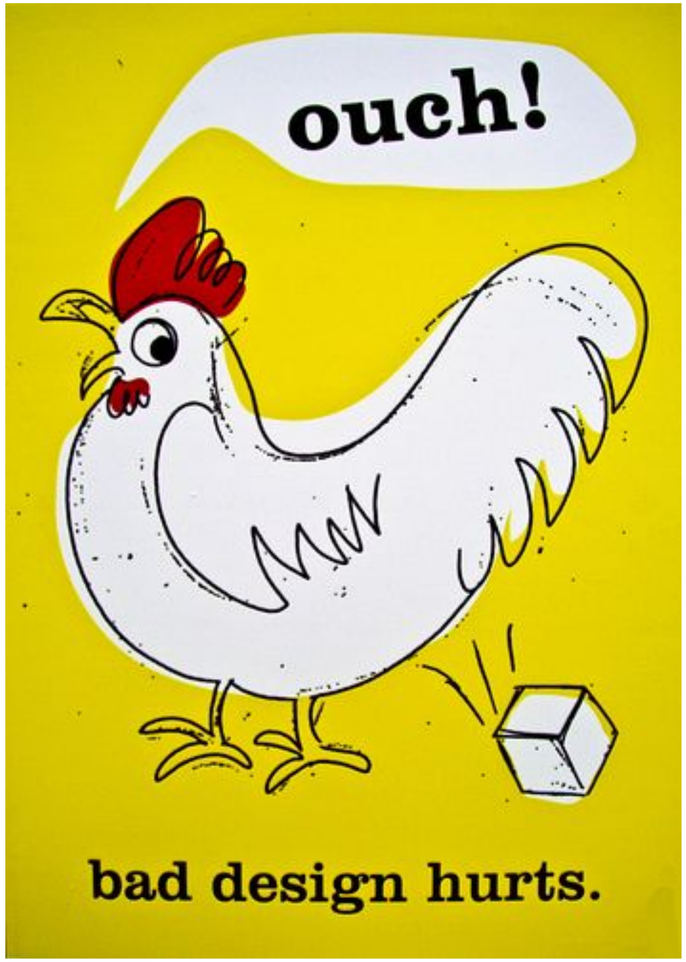
What Language?

- A common first question of beginning programmers is what programming language should I learn?



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Activity 2

What Language?

1. Let’s quickly research that - what programming language should I first learn?
2. Create a document that numbers them from 1 - 10
3. Let’s share with the class your findings.

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What Language?

- Did you find the same information?
- Did different lists show different results?

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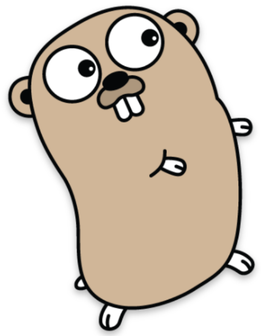
Did anyone find JavaScript in that list?

Programming Languages

- There are so many computer programming languages because there are so many different types of problems.
- All programming languages are developed around Problem Domains.



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Program Languages

- Most programming languages were created to fix a need - a specific Problem Domain.

- R, PHP, C Objective are all examples of Computer Programming Languages that are designed to be used for specific Problem Domains.

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First Programming Languages

[The First Programming Languages]

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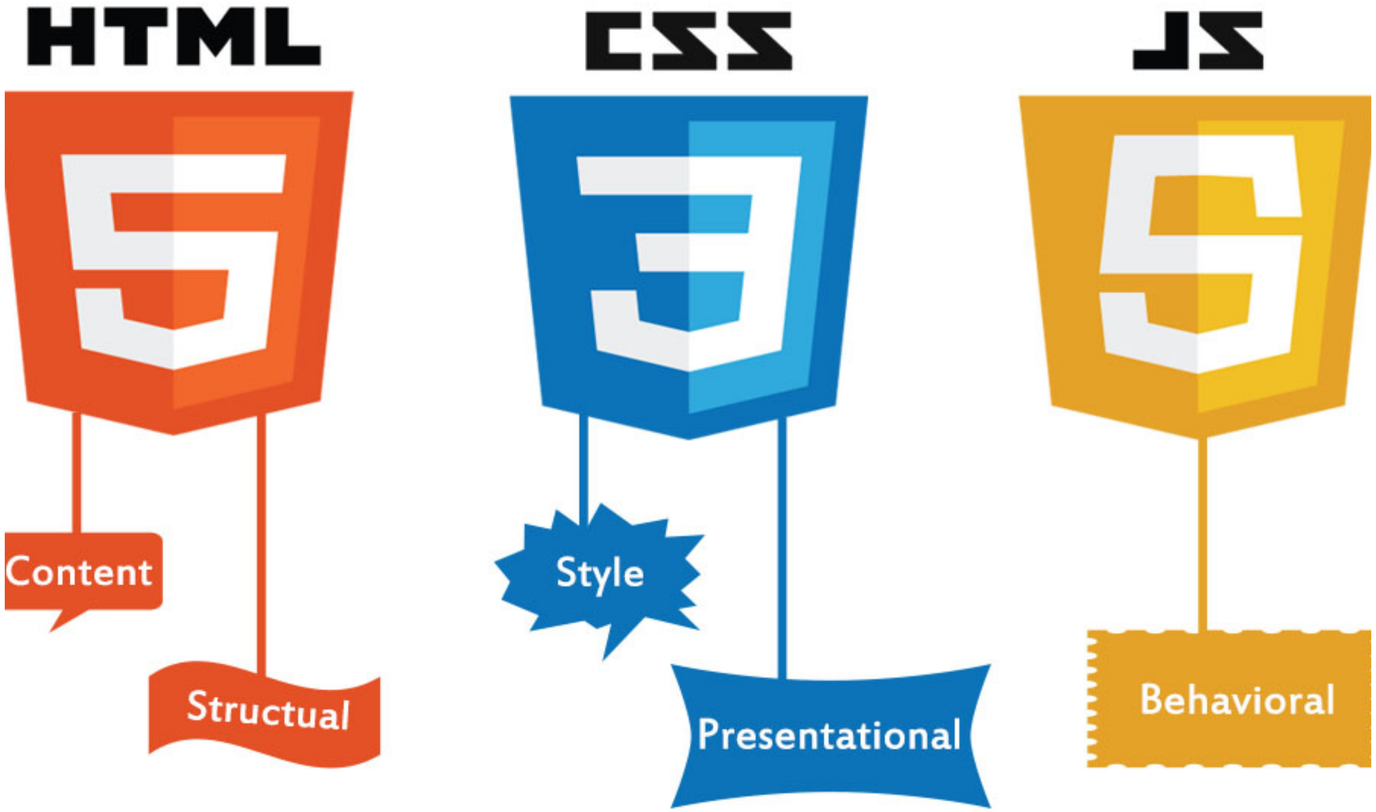
Web Technologies



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HTML

- Short for **Hypertext Markup Language**
- It is a **markup** language used for to organizing webpage content
  - e.g. paragraphs, images, links etc.

CSS

- Short for **Cascading Style Sheets**
- A **stylesheet** language
- Used to define the **look** of a website

JavaScript

- Often called **JS** for short
- A **programming** or **scripting** language
- Used to modify or animate the HTML and CSS of a webpage

HTML, CSS & JavaScript

HTML, CSS, JavaScript Explained

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Class Wrap-Up

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Image Credits

- Ruby — https://en.wikipedia.org/wiki/Ruby_(programming_language)
- PHP — https://www.drupal.org/project/php
- https://singularityhub.com/2017/11/19/how-technology-is-leading-us-into-the-imagination-age/#sm.013piyqh19z1f6010pb1y4iqentz1
- https://www.doyleqhs.com/the-far-side.html
- https://broadbandnow.com/report/apartment-landlords-holding-internet-hostage/