

WEEK 4

9.13.21

Agenda

THIS WEEK (4)

Discussion / Share Work

Review Web Development
HTML, CSS, Tools, Workflow

Javascript for Designers
The DOM

Intro to p5.js

Assignment 3

NEXT WEEK (5)

Web Apps

Libraries and Frameworks

p5.js

SHARE

Objectives

- Understand what JavaScript is, why it's used for the web (and beyond), and why designers should care about it
- Understand what the DOM is and how JS is used in a webpage
- Explore the ecosystem of JS tools, libraries, and frameworks in use today
- Experiment with p5.js to make something

JavaScript for Designers

What is JavaScript?

- Javascript is a programming language used in modern web development.
3 core languages: HTML, CSS, JavaScript
- Originally designed to enable dynamic interactions on web pages, it has evolved to be used in all areas of modern tech stacks (ie. front end, back end, full stack) and software development.
- Web developers can integrate scripts seamlessly into HTML to make web pages interactive and respond to users instantaneously.
- In my opinion, it's easy to learn with the abundance of resources available on the web AND a specific GOAL or reason to learn it and use it.

Entry points...

- You encounter a problem that requires JS to solve.
- You see something interesting and want to be able to make it. How does X work? I want to make X.
- You discover a new found love for writing code to do something. JS is a great first language.
- Your boss says we need code, and you happen to know a little something and can contribute, here's money, make a thing, so you level up your JS and your job.

designers + code

Designers who code can demonstrate front-end coding knowledge and JavaScript concepts would earn the respect of developers.

Designers who can blend programming and design, even a little, can make themselves a great asset to any multidisciplinary team and will see more doors open to greater job opportunities.

Why should designers learn it? Use it?

I don't believe that everybody needs to be a programmer or everybody needs to be an engineer, but I think people should have enough of an understanding of how software operates that they can get outside of the constraints imposed by software written for them.

*~ Casey Reas
(Co-Creator of Processing)*

Casey Reas on Coding: You need to be Able to Read and Write

JS Ecosystem

- JQuery - DOM manipulation; used in almost 80% of websites ([ref](#))
- Electron Framework - Cross platform software development (ie. Slack)
- React.js - Framework for creating dynamic user interfaces. Open source by FB.
- Node.js - Server-side JS run-time environment enabling real time applications (ie. Uber, Netflix, etc)
- Strapi - Open source headless CMS / API server
- Creative coding toolkits - [p5.js](#), [three.js](#), [d3.js](#), [A-Frame](#), [Johnny-Five](#)
- Adobe Products - ExtendScript is a special version of JS built for working with documents and creating extensions for Adobe products. Example: [adobe-scripting](#)
- And many many more - [awesome-javascript](#)

Sandboxes

A sandbox is a pre-configured development environment for prototyping with code. There are many out there with different features. Tools like this are a great way to share code.

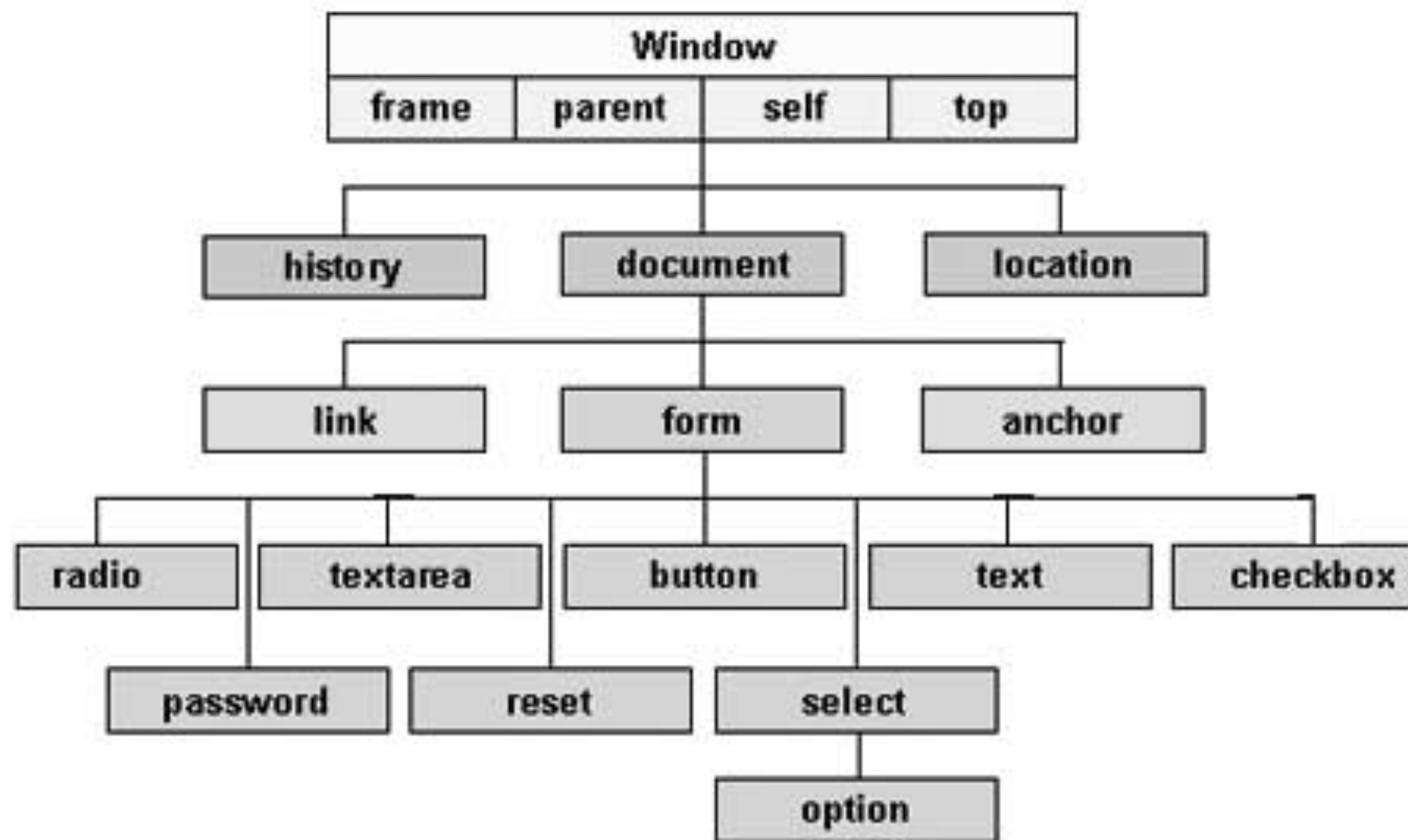
- Codepen
- Glitch
- JSFiddle
- Stackblitz

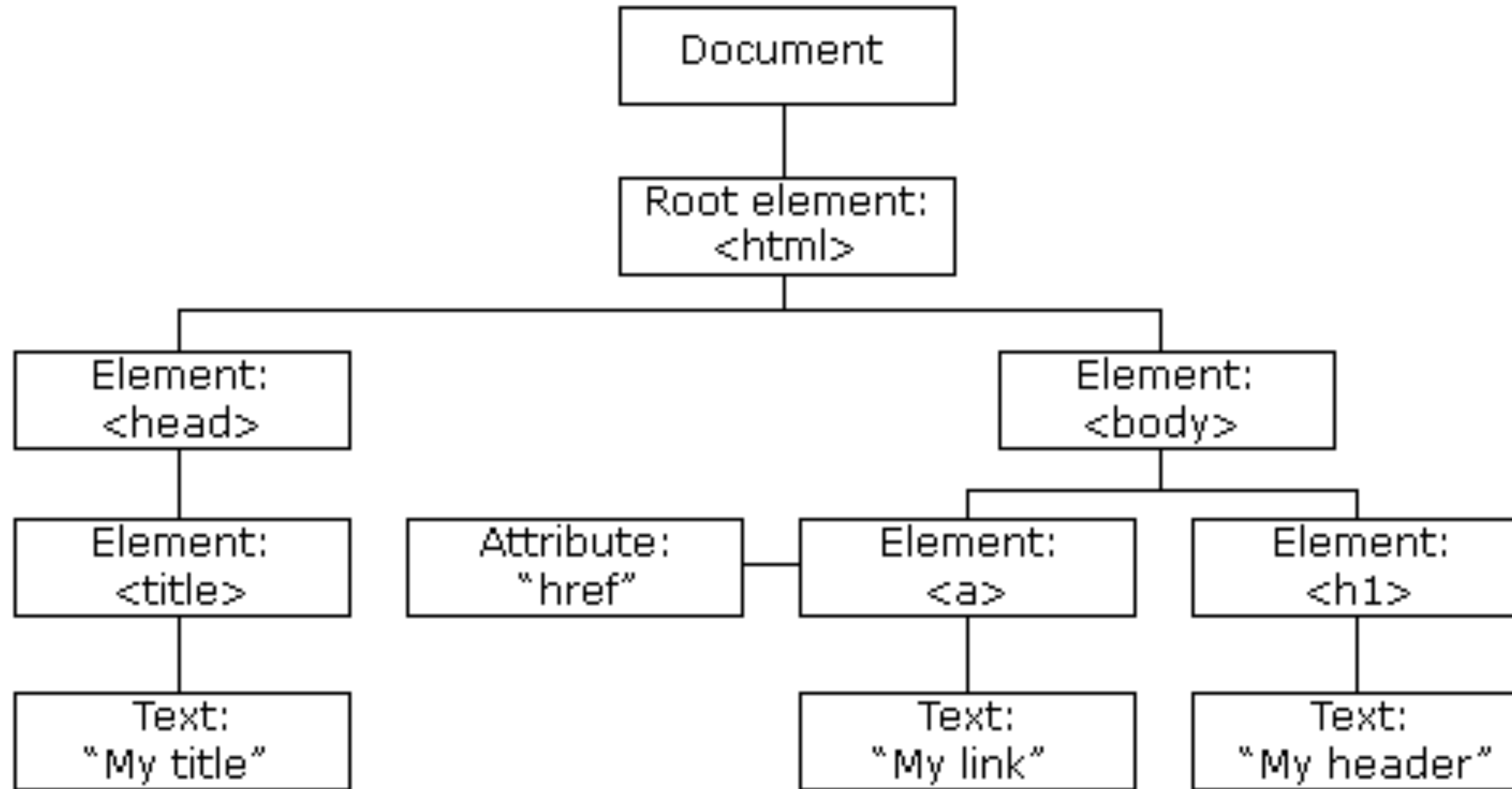
Document Object Model
(aka DOM)

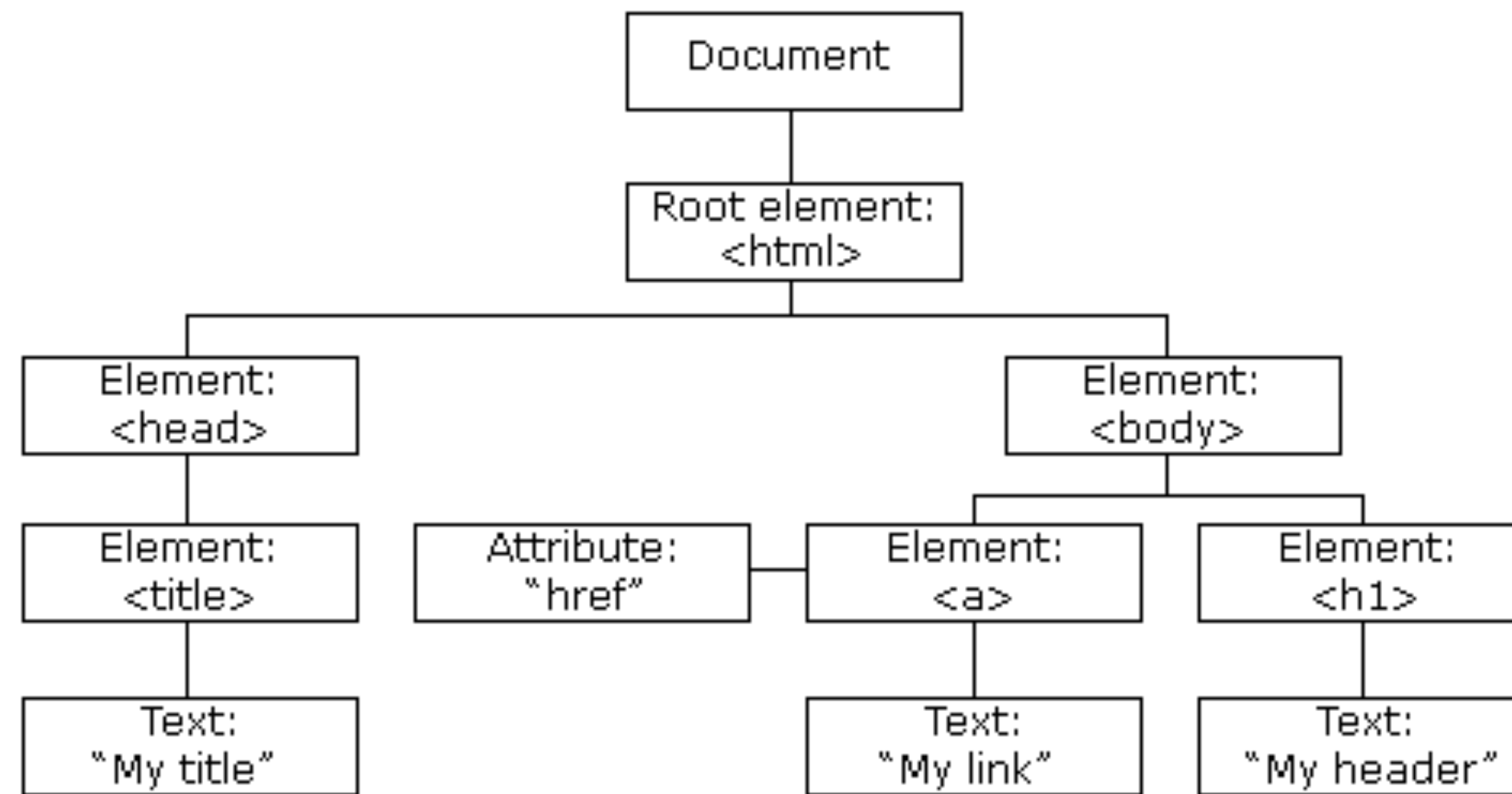
Document Object Model (DOM)

When a web page is loaded, the browser creates a Document Object Model of the page, which is an object oriented representation of an HTML document that acts as an interface between JavaScript and the document itself. This allows the creation of dynamic web pages, because within a page JavaScript can:

- add, change, and remove any of the HTML elements and attributes
- change any of the CSS styles
- react to all the existing events
- create new events







With the object model, JavaScript gets all the power it needs to create dynamic HTML:

- JavaScript can change all the HTML elements in the page
- JavaScript can change all the HTML attributes in the page
- JavaScript can change all the CSS styles in the page
- JavaScript can remove existing HTML elements and attributes
- JavaScript can add new HTML elements and attributes
- JavaScript can react to all existing HTML events in the page
- JavaScript can create new HTML events in the page

BREAK

p5.js

Using the Web Editor

Let's get familiar with the p5.js web editor.

1. Goto <https://p5js.org/>
2. Locate the Editor (left sidebar). Open in a new tab.
3. Press Play (*what happens in the Preview panel on the right?*)
4. Draw an ellipse somewhere on the canvas and give it a fill color of red.
(*Tip: think about how we did this in a Processing sketch*)
5. Make some changes to your shape. Experiment with position, stroke, fill, opacity.

Lets explore together

<http://www.generative-gestaltung.de/2/>

<https://editor.p5js.org/rjduran/collections/65DjOeZ4V>

How to use the mouse to drive interaction with objects in a sketch.

How to load images and use them.

Other things? What's interesting to you?

Alternate Configurations

Like most things in development, there are many ways to accomplish the same goal. Here are a few other ways to code with p5.js outside of using the p5.js web editor.

- VS Code + [live server extension](#) by Ritwick Dey
Just setup a folder with source files and use the live server to prototype.
- VS Code + [p5.vscode extension](#) by Sam Lavigne
Makes use of the live server extension installed and includes enhancements for project management, adding libraries, autocompletion, and running in VS Code.
- [p5live.org](#) by [Ted Davis](#)
A tool that makes p5.js available in a live-coding environment.