CORNELL NYC TECH

Lecture 9

Browsers

adam@honestbuildings.com

DOM Defined

Document Object Model

- A tree representation of objects in HTML + XML documents
- Navigable in both *parent* and *child* directions
- Browsers use an internal model very similar to the DOM for rendering
- Can be manipulated programmatically using JavaScript
- Can be navigated using JS, XPath and CSS Selectors
- DOM, JavaScript, HTML and Browsers tightly related
- Think of browsers as a DOM-rendering engine

Browser History

1995 - DOM v0

- Navigator 2.0, LiveScript
- hierarchical object access e.g. `document.forms[].elements[]`

1997 - DOM v1

- Navigator 4.0 & IE released, ECMAScript standard defined
- Complete model for all document objects available

2000 - DOM v2

- getElementById

2004 - DOM v3

- XPath & event handling

2005 - jQuery

- http://ejohn.org/blog/selectors-in-javascript/

JavaScript

- Created in 10 days in 1995
- document.write() was state of the art
- AJAX sparked a massive innovation
- Many fundamental weaknesses addressed
- Radically extended to new environments
- A language in its *adolescence*

CSS (is amazing)

check
https://pattle.github.io/simpsons-in-css/

these
http://cssdeck.com/labs/dancing-robot-with-reflection

out!
http://codepen.io/anon/pen/gnqlc

Rendering

1. **Parse** HTML to create a DOM tree
   Parse CSS to create a CSS model

2. **Combine** Structure (DOM) and styling (CSS) into a combined **render tree**
   (render tree contains ONLY the nodes required to render the page)

3. **Compute** the display geometry of each node

4. **Paint** the screen

CORNELL NYC TECH

Using the DOM for Fun and Profit

- ➔ HTML was the primary path to DOM manipulation
- ➔ JS now the primary path (Angular)
- ➔ Browsers are DOM-renderers
- ➔ Create and Manipulate DOM nodes
- ➔ DOM Attach == Render
- ➔ Use Chrome’s Developer Console

R.I.P. HTML “Pages”

- ➔ WebSites are now client-side programs. index.html == script
- ➔ Naturally, assets get loaded as-needed
- ➔ self-contained + well-behaved components ideal
- ➔ DOM is alive + well