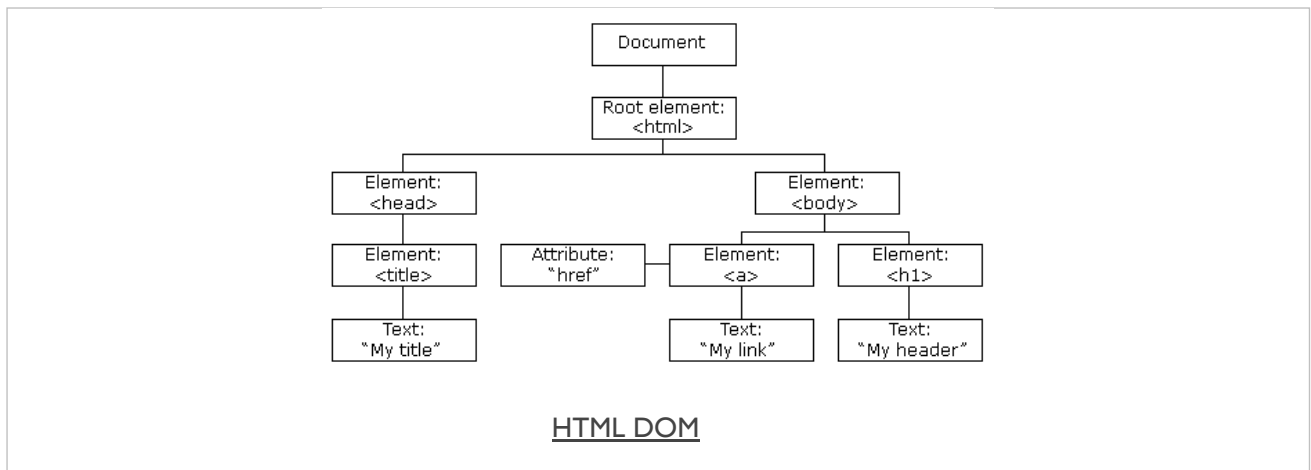# Comp 125 - Visual Information Processing

Spring Semester 2018 - week 4 - friday

Dr Nick Hayward

DOM Basics - intro

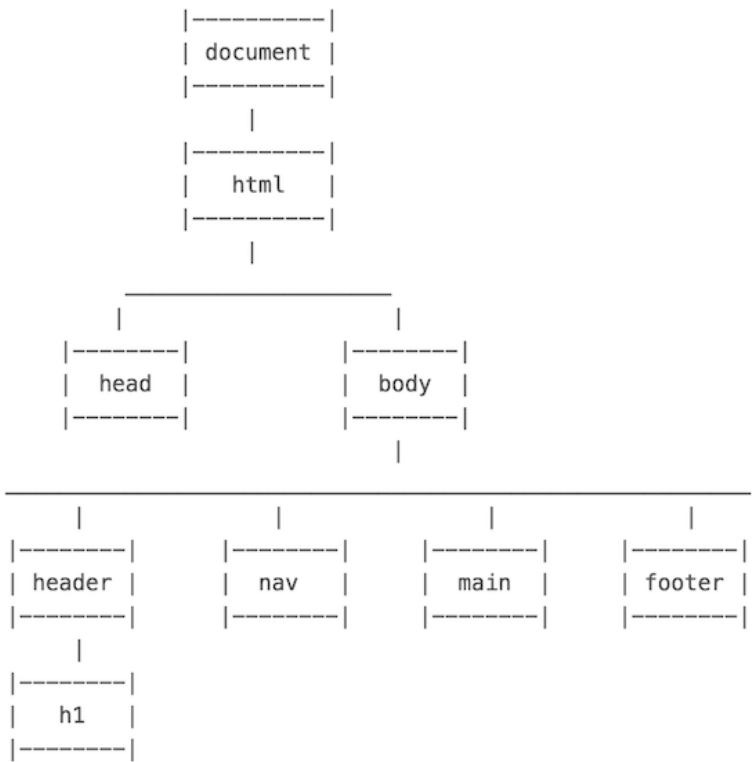**A brief introduction to the document object model (DOM)**

HTML DOM

- Source - W3Schools - JS HTML DOM

DOM Basics - what is DOM?

- **DOM** is a platform and language independent way
  - *to access and manipulate underlying structure of HTML document*

- structured as a representation of a tree data structure
  - *its manipulation follows this same, standard principle*

- DOM tree is constructed using a set of nodes
  - *tree is designed as a hierarchical representation of the underlying document*

- each node on our tree is an element within our HTML document

- inherent hierarchical order originates with the **root** element
  - ***root** sits at the top of our **tree***
  - *descends down following lineage from node to node*

- each node is a child to its parent
  - *we can find many siblings per node as well*

- root at the top of the tree...

Image - HTML DOM

```
                    |----------|
                    | document |
                    |----------|
                         |
                    |----------|
                    |   html   |
                    |----------|
                         |
             _____
            |                        |
        |--------|              |--------|
        |  head  |              |  body  |
        |--------|              |--------|
                                     |
                 _____
                |            |            |              |
           |--------|   |--------|   |--------|     |--------|
           | header |   |  nav   |   |  main  |     | footer |
           |--------|   |--------|   |--------|     |--------|
                |
           |--------|
           |   h1   |
           |--------|

                        HTML DOM
```

DOM Basics - useful elements

element tag	usage & description
`<html>`	container element for a HTML document
`<head>`	contains metadata and document information
`<body>`	contains main content rendered as the HTML document
`<header>`	page header...
`<nav>`	navigation, stores and defines a set of links for internal or external navigation
`<main>`	defined primary content area of document
`<footer>`	page footer...
`<section>`	a section of a page or document
`<article>`	suitable for organising and containing independent content
`<aside>`	defines content aside from the content which contains this element
`<figure>`	logical grouping of image and caption
`<img>`	image - can be local or remote using url in `src` attribute
`<figcaption>`	image caption
`<h1>, <h2>...`	headings from 1 to 6 (1 = largest)
`<a>`	anchor - link to another anchor, document, site...
`<p>`	paragraph
`<ul>, <ol>, <dl>`	unordered, ordered, definition lists
`<li>`	list item, used with `<ul>, <ol>...`
`<dt>`	definition term, used with `<dl>`
`<dd>`	definition description, used with `<dl>`
`<table>`	standard table with rows, columns...
`<tr> >`	table row, used with `<table>`
`<th>`	table heading, used with `<table>` and child to `<tr>`
`<td>`	table cell, used with `<table>` and child to `<tr>`
`<div>`	non-semantic container for content, similar concept to `<section>`
`<span>`	group inline elements in a HTML document
`<canvas>`	HTML5 element for drawing on the HTML page
`<video>`	HTML5 element for embedding video playback
`<audio>`	HTML5 element for embedding audio playback

NB: *`<div>` and `<span>` can be used as identifiers when there is no other suitable element to define parts of a HTML5 document. e.g. if there is no defined or significant semantic meaning...*

DOM Basics - sample

```html
<!DOCTYPE html>
<html>
  <head>
    <base href="media/images/">
    <meta charset="UTF-8">
    <!-- week 3 - demo 1 -->
    <title>Week 3 - Demo 1</title>
  </head>
  <body>
    <header>
      <h1>Ancient Egypt</h1>
    </header>
    <nav>...</nav>
    <main>
      <section>
        <p>
          Welcome to the Ancient Egypt information site.
        </p>
        <figure>
          <img src="philae-demo2.jpg" alt="philae temple" width="333px"
          height="200px">
          <figcaption>Ptolemaic temple at Philae, Egypt</figcaption>
        </figure>
      </section>
      <aside>
        Temple at Philae in Egypt is Ptolemaic era of Egyptian history.
      </aside>
    </main>
    <footer>
      foot of the page...
    </footer>
  </body>
</html>
```

- Demo - DOM Basics - Sample

DOM Basics - `index.html` page

`index.html` usage and structure

- basic `index.html` page for loading web apps
- app will start with the `index.html` document
  - *html pages saved as `.html` or `.htm`*
  - *`.html` more common...*

- `index.html` acts as a kickstart
  - *for loading and rendering the app*
  - *loads other app resources - CSS, JS...*

- consistent elements in the HTML DOM
  - *`<html>`, `<head>`, and `<body>`*

- HTML5 apps will add
  - *`<header>`, `<main>`, and `<footer>` (when required)*
  - *many other elements for building the app...*

HTML Basics - metadata & `<head>` element - part 1

- part of a HTML document's metadata
- allows us to set metadata for a HTML page
- customised just for that page or replicated as a site-wide implementation
- we can add numerous additional elements to `<head>`
- add similar links and code for JavaScript
  - *use the `<script>` element & attributes such as `type` and `src`*
  - *HTML4 requires `type` and `src`*
  - *HTML5 requires `src`*

```
<!-- HTML4 and XHTML -->
<script type="text/javascript" src="script.js"></script>
<!-- HTML5 -->
<script src="script.js"></script>
```

HTML Basics - metadata & `<head>` element - part 2

- add a `<title>` element with text added as the element content
  - *shown in the browser tab or window heading*

```
<title>Our Page Title</title>
```

- set a default base address for all relative URLs in links within our HTML

```
<base href="/media/images/" target="_blank">
```

- links now simply use the base URL or override with full URL

```
<img src="image.jpg">
<a href="http://www.flickr.com">Flickr</a>
```

- `<meta />` adds metadata about the HTML document

```
<meta name="description" content="The Glass Bead Game" />
<meta name="keywords" content="novel, fiction, herman hesse, electronic edition" />
```

HTML - `<head>` element example

```html
<head>
  <meta charset="utf-8">

  <title>Sample...</title>
  <meta name="description" content="sample metadata">
  <meta name="author" content="COMP424">

  <link href="style.css" rel="stylesheet">
  <script src="script.js"></script>

</head>
```