CSIS 3380
Advanced Web Programming with JavaScript & AJAX

Introduction

Week 1

About Edmund Leng

- Developing software since 2000
- Part time instructor with Douglas College
- Code in Java, Ruby and Javascript
- Mentor junior developers and lead software team
- Grew up in Singapore, lived in Boston for 2 years and been in Canada since 2008

Introductions

- Name
- Background
- What do you wish to learn from this class
- Previous experience with Web programming:
  - HTML, CSS, JS, NODE

Course Expectation

- Students are expected to attend the class and sit for exams
- No cell phones
- No cheating
- Late assignments will not be accepted

Course Outline

- Learn about fundamental aspects of Javascript
  - How javascript is used in the browser
  - How javascript is used in the backend
- Use AJAX to develop web pages
- Develop a Single Page Application

Grading

- Participation: 5%
- Group assignments (3): 30%
- Quizzes (2): 15%
- Mid-term: 20%
- Final exam: 30%

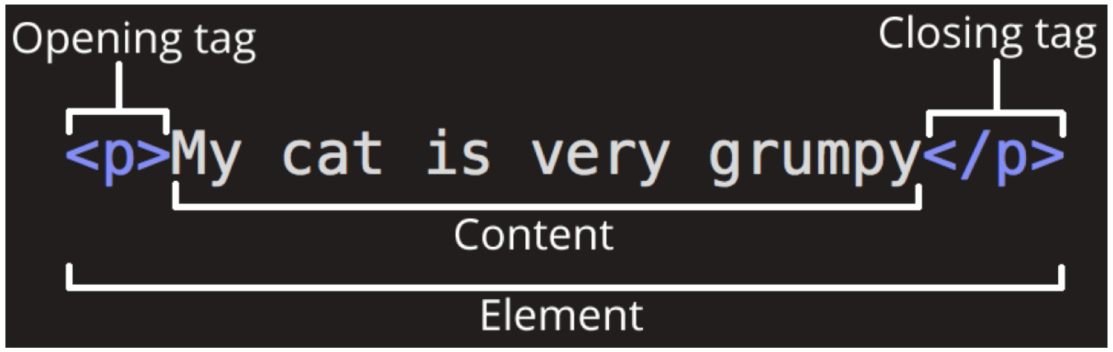
Review of HTML

- Hypertext Markup Language
- the code that is used to structure a web page and its content
- For example, content could be structured within a set of paragraphs, a list of bulleted points, or using images and data tables

```
<!DOCTYPE html>
<html>
  <head>
    <title>Hello World</title>
  </head>
  <body>
    <h1>Introduction to HTML</h1>
    <p>Hello World</p>
  </body>
</html>
```

Review of HTML

- https://developer.mozilla.org/en-US/docs/Learn/HTML/Introduction_to_HTML/Getting_started



Review of HTML

- Headings
  - <h1>, <h2>
- Paragraphs
  - <p>
- Lists
  - Unordered lists:
  - Ordered lists:
  - Each item inside the lists is put inside an <li> (list item) element
- Links:
  - HTML resources

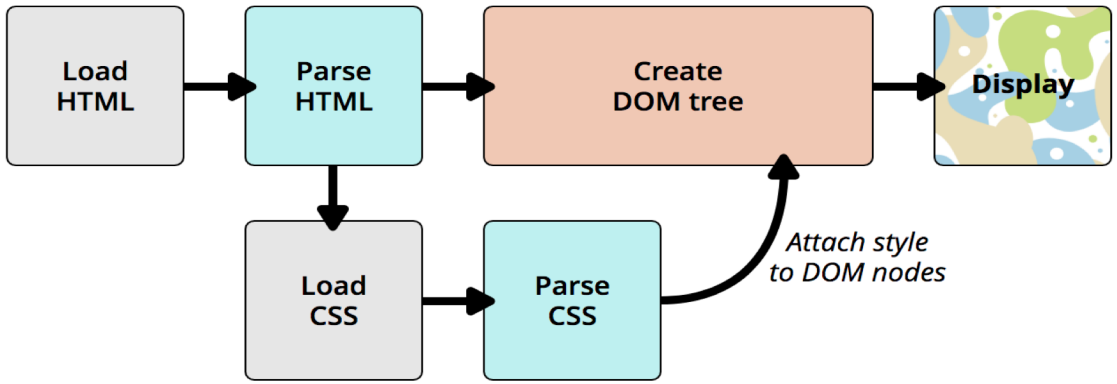
Review of CSS

- Cascading Style Sheets
- CSS is used to style and lay out web pages
- CSS uses
  - <link> element to apply external stylesheets to HTML
  - <style> element to apply internal stylesheets to HTML
- Cascading order:
  - Inline > internal > external > browser default
- Syntax*: selector { property: value }*
- The property-value pair is called the declaration

```
h1 {
    color: blue;
    background-color:
     yellow; border: 1px solid black;
}
```

Review of CSS

- When a browser displays a document, it processes the document in two stages:
  - The browser converts HTML and CSS into the DOM (Document Object Model). The DOM represents the document in the computer's memory. It combines the document's content with its style.
  - The browser displays the contents of the DOM.



About the DOM

- A DOM has a tree-like structure
- Each element, attribute and piece of text in the markup language becomes a DOM node in the tree structure

```
<p>
  Let's use:
  <span>Cascading</span>
  <span>Style</span>
  <span>Sheets</span>
</p>
```

```
P
├─ "Let's use:"
├─ SPAN
|  └─ "Cascading"
├─ SPAN
|  └─ "Style"
└─ SPAN
   └─ "Sheets"
```

CSS Selector

- Type selector
  - case-insensitive match between the selector name and a given HTML element name

```
/*** All p elements are red ***/
P {
  color: red;
}
```

CSS Selector

- Class selector
  - consists of a dot, '.', followed by a class name
  - A class name is any value, without spaces, placed within an HTML class attribute.

```
<ul>
  <li class="first done">Create an HTML document</li>
  <li class="second done">Create a CSS style sheet</li>
  <li class="third">Link them all together</li>
</ul>
```

```
/* The element with the class "first" is bolded */
.first {
  font-weight: bold;
}

/* All the elements with the class "done" are strike through */
.done {
  text-decoration: line-through;
}
```

CSS Selector

- ID Selector
  - ID selector consists of a hash/pound symbol (#), followed by the ID name of a given element
  - The id of an element should be unique within a page, so the id selector is used to select one unique element

```
<p id="polite"> — "Good morning."</p>
<p id="rude"> — "Go away!"</p>
```

```
#polite {
   font-family: cursive;
}

#rude {
    font-family: monospace;
    text-transform: uppercase;
}
```

Combinators and groups of selectors

Name	Syntax	Selects
Descendant selector	A B	Any element matching B that is a descendant of an element matching A (that is, a child, or a child of a child, etc.).
Child selector	A > B	Any element matching B that is a direct child of an element matching A.

```
/* all <p> elements inside <div> elements */
div p {
    background-color: yellow;
}
```

```
/* all <p> elements that are immediate children of a <div> element */
div > p {
    background-color: yellow;
}
```

Examples

```
/* All <th> within <thead> that are within <table> */
table thead th {
  color: white;
  background: black;
}

/* All <th> within <tfoot> that are within <table> */
table tfoot th {
  text-align: right;
  border-top-width: 5px;
  border-left: none;
  border-bottom: none;
}
```

Debugging

- To access Chrome DevTools:
  - open a web page with Google Chrome
  - Right click and select **Inspect Element**
- Select the **Elements** tab
- Hover over the section of the html and observe the highlighting of the website
- More info at https://developer.chrome.com/devtools
- Demo with Chrome DevTools

Lab

- Add your CSS to the HTML on the right to do the following:
  - Change the sentence “This is the first paragraph.” to “red”
  - Change the sentence “This is the second paragraph.” to “blue”
  - Ensure the sentence “This is a Heading” remains “black”

```
<!DOCTYPE html>
<html>
 <head>
  <style>
   <!-- add your css here -->
  </style>
 </head>
<body>
 <h1 class="myClass">This is a Heading</h1>
 <p id="myId">This is the first paragraph.</p>
 <p class="myClass">This is the second paragraph.</p>
</body>
</html>
```

Lab

- Open your favourite website and use the Chrome Dev Tools to look for the following:
  - 2 – 3 CSS classes
  - 2 – 3 CSS IDs
- Try changing the CSS and the content of the website

Lab

1. Create a personal page with HTML and CSS. Add the following details:
   - Name
   - About you
   - Image (you don’t have to use your real image, an avatar will do)

Homework

1. Go through this tutorial
   - https://www.khanacademy.org/computing/hour-of-code/hour-of-html/p/css-basics