Module 3 - Lecture 8

Document Object Model

The DOM

- An in-memory representation of a web page's structure.
- Generated by the browser from an HTML document.

The DOM

- The DOM may be different than your HTML.
- CSS uses the DOM.

```
<table class="table">
    <tr>
        <td>Tech Elevator</td>
        <td>7100 Euclid Ave.</td>
    </tr>
</table>
```

```
<table class="table">
  <tbody>
    <tr>
      <td>Tech Elevator</td>
      <td>7100 Euclid Ave.</td>
    </tr>
  </tbody>
</table>
```

DOM Manipulation

Finding element(s)

- **getElementById(***String***);**
  - Finds an element by its unique identifier. Faster than querySelector.
  - Returns an Element. Returns null if not found.

```
let element = document.getElementById('someId');
```

- **querySelector(***String***);**
  - Selects the first descendant element that matches the selector. Selectors are CSS selectors.
  - Returns an Element. Returns null if not found.

```
let element = document.querySelector('ul > li');
```

- **querySelectorAll(***String***);**
  - Selects all descendant elements that match the selector.
  - Returns a NodeList.

```
let nodeList = document.querySelectorAll('ul > li');
```

Changing Elements

Changing how an element renders in the browser requires manipulating the element. This will update the DOM and force the browser to re-render.

- **innerText**
  - The text inside of an element.
  - All text (including HTML tags) is replaced.
  - All text is treated a string literal. HTML is not interpreted.

- **innerHTML**
  - The HTML inside of an HTML.
  - All text (including HTML tags) is replaced.
  - HTML is interpreted.
  - Do not use with user input!

Getting and Setting input values

Most input elements have a property **value** that contains the current value of the element. Checkboxes have a property **checked**.

- **Get the value of a textbox named “toDo”**

```
let toDoInput = document.querySelector(‘input[name=toDo]’);
let val = toDoInput.value;
```

- **Set the value of a textbox**

```
toDoInput.value = ‘Wash the car’;
```

- **Check a checkbox if it isn’t checked.**

```
let isFinished = document.querySelector(‘input[type=checkbox]’);
if (isFinished.checked) {
     isFinished.checked = true;
}
```

Manipulating Classes

Elements have a property **classList** that is a collection of its classes.

- Recall that HTML tags can have multiple classes listed in class attribute. The element below has 2 classes.

```
<p class=”paragraph main-content”>
     Some text here...
</p>
```

The **classList** property is a DOMTokenList.

- You may add a class using the **add()** method.

```
const mainParagraph = document.querySelector(‘.main-content’);
mainParagraph.classList.add(‘new-class’);
```

- You may remove a class using the **remove()** method.

```
const mainParagraph = document.querySelector(‘.main-content’);
mainParagraph.classList.remove(‘new-class’);
```

Adding to the DOM

- **createElement(***String***)**
  - Creates a new Element.
  - It is not in the DOM at this point.

```
const newDiv = document.createElement('div');
newDiv.setAttribute('id', 'myNewDiv');
newDiv.classList.add('container');
```

- **insertAdjacentElement(***Element***)**
  - Adds an Element as the last child of the selected Element.
  - The element is now in the DOM and will be rendered.

```
const sectionElement = document.querySelector('section');
sectionElement.insertAdjacentElement(newDiv);
```

Removing from the DOM

- **removeChild(*Node*)**
  - Removes a child node from the current element

- **remove()**
  - Removes the element from the tree it belongs to

Traversing the DOM

- **children** returns child elements.
  - Returns an HTMLCollection.
  - Only includes Elements.

- **childNodes** returns all nodes/elements inside.
  - Returns a NodeList.
  - Includes Elements and text content.

```
<p id="message">
  This is an <strong>awesome</strong> paragraph.
  <!-- with a comment -->
</p>
```

Traversing the DOM

- **parentNode**
  - Returns the parent Node.

- **nextElementSibling** or **previousElementSibling**
  - Returns the sibling of the currentElement.
  - Returns null if the Element doesn't have a sibling.

QUESTIONS?