Girl Develop It

GDI

don't be shy. develop it.

Introduction to JavaScript

Class 4

Wi-Fi

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Slides	Class 4
GitHub	d3nise

Search up github user **d3nise**, and under organizations, click the **gdi-js** one, and download the class materials.

Let's Review

Anatomy of a Website

In the code spot the

- ▷ Your Content
- ▷ + HTML: Structure
- ▷ + CSS: Presentation
- ▷ = Your Website

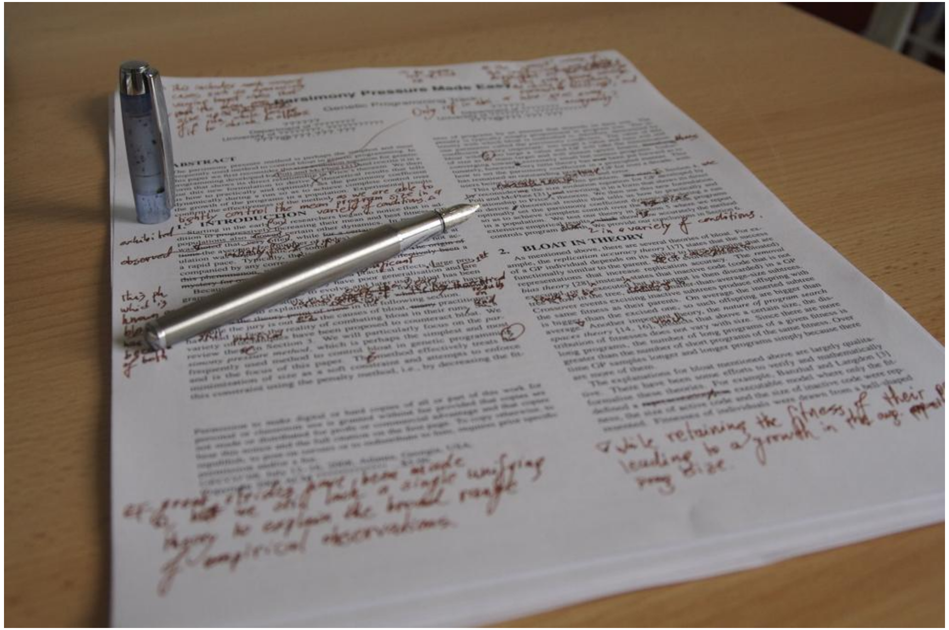
A website is a way to present your content to the world, using HTML and CSS to present that content & make it look good.

Coding Material

Section 4.1

- Open 4_1.html file
- Create a JS and link it to your 4_1.html

HTML is Markup



CSS is Style

IDs vs Classes

- **ID** - Should only apply to one element on a webpage, i.e., you might have an id of `banner` on your webpage's banner.
- The `#` is how you find ids in CSS.

- **Class** - Lots of elements can have the same class, i.e., There can be many elements with a `warning` class on one webpage.
- The `.` is how you find classes in CSS.

Nesting

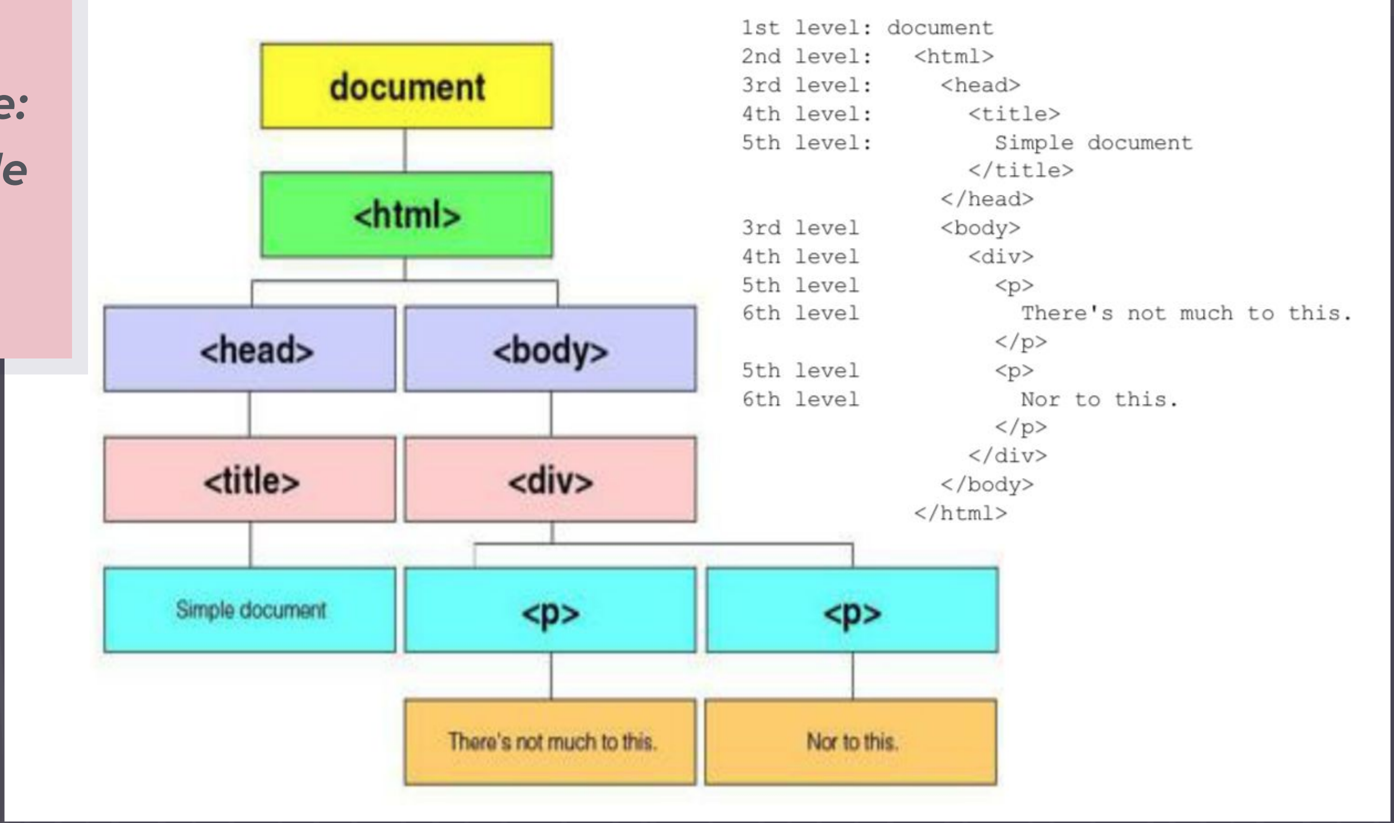
HTML elements "**nest**" inside one another

The DOM Tree: Sample Code

- Oftentimes, people think of HTML as something flat -- a bunch of text with tags in the middle.

```
<!DOCTYPE html>
<html>
  <head
    <title>Test Page</title>
    <style>
      h1 {
        color: red;
      }
    </style>
  </head>
  <body>
    <h1>My Page</h1>
    <p>Hello World!</p>
    <img src="http://placekitten.com/g/200/300" alt="cat"/>
  </body>
</html>
```

The DOM Tree: Sample Code



document

<html>

<head>

<body>

<title>

<div>

Simple document

<p>

<p>

There's not much to this.

Nor to this.

```
1st level: document
2nd level:   <html>
3rd level:     <head>
4th level:       <title>
5th level:         Simple document
                 </title>
               </head>
3rd level      <body>
4th level        <div>
5th level          <p>
6th level            There's not much to this.
                   </p>
5th level          <p>
6th level            Nor to this.
                   </p>
                 </div>
               </body>
             </html>
```

DOM Access

- ▷ Your browser automatically loads the content of a webpage into a `Document` object which serves as the entry point into a web page's content.

Using the `document` you can:

1. Change the content tree any way you want.
2. Build an HTML document from scratch.
3. Access or replace any existing DOM nodes (HTML elements in the DOM).

Finding Nodes

DOM Access: By Tag Name

- You can also get HTML elements by their `tag` using this method:

```
document.getElementsByTagName(tagName);
```

To find:

```
  <ul>
     <li>British Shorthair Cat</li>
     <li>Siamese Cat</li>
   </ul>
```

We would use:

```
var listItems = document.getElementsByTagName('li');

for (var i = 0; i < listItems.length; i++) {
  var listItem = listItems[i];
}
```

DOM Access: HTML 5

- In newer browsers, you can use methods `getElementsByClassName`, `querySelector`, and `querySelectorAll`.

Available in IE9+, FF3.6+, Chrome 17+, Safari 5+:

```
document.getElementsByClassName(aClassName);
```

Available in IE8+, FF3.6+, Chrome 17+, Safari 5+:

```
document.querySelector(cssQuery);

document.querySelectorAll(cssQuery);
```

getElement vs. getElements

- Any method that starts with `getElement` will return a single node.

```
document.getElementById('uniqueID'); // returns a single node
```

- Any method that starts with `getElements` will return an array of nodes. To modify a single node, you will need to use bracket notation to get the correct one.

```
document.getElementsByTagName('p'); // returns multiple nodes
var specificParagraph = document.getElementsByTagName('p')[2];
```

Changing Nodes

DOM Nodes: Attributes

- You can access and change attributes of DOM nodes using dot notation.
- To change this element:

```
   <img id="kittenPic1" src="../images/cat1.jpeg" alt="cat"
width="50%" />
```

We could change the src attribute this way:

```
var imgKitten = document.getElementById('kittenPic1');
// will return src attribute on image-- imgKitten.src
console.log(imgKitten.src);
// will set our src to a new src
imgKitten.src = '../images/cat3.jpeg';
```

DOM Nodes: Getting and Setting Attributes

- You can also use `getAttribute` or `setAttribute`

```
<img id="kittenPic2" src="http://placekitten.com/g/200/300"
alt="cat"/>
```

We could change the src attribute this way:

```
var imgKitten = document.getElementById('kittenPic2');
// will return src attribute on image
imgKitten.getAttribute('src');
// will set our src to a new src
imgKitten.setAttribute('src', 'http://placekitten.com/g/200/300');
```

DOM Nodes: Styles

- You can change page css using `style`
- To make this CSS:

```
body {
   color: red;
}
```

- Use this JavaScript:

```
var pageBody = document.getElementsByTagName('body')[0];

pageBody.style.color = 'red';
```

DOM Nodes: Styles

- The rule of thumb in JavaScript is to change CSS styles with a "-" to camelCase.
- To make this CSS:

```css
body {
  background-color: pink;
  padding-top: 10px;
}
```

- Use this JavaScript:

```javascript
var pageBody = document.getElementsByTagName('body')[0]
pageBody.style.backgroundColor = 'pink';
pageBody.style.paddingTop = '10px';
```

Let’s Develop It

- Isolate a node (an element on the page) and change an attribute or add a new style.
  - Add another image to your HTML page, then change it with another image is your JS.
  - Change background color.
  - Change header text, “JavaScript Test Site” to something else.

Coding Material

Section 4.2

- We will still use 4_1.html file
- Create a new JS and link it to your 4_1.html

DOM innerHTML

- Each DOM node has an innerHTML property with the HTML and content of its children. You can use the property to view or change the HTML of a node.
- For example, you can overwrite the entire body:

```
var pageBody = document.getElementsByTagName('body')[0];
pageBody.innerHTML = '<h1>Oh Noes!</h1><p>I changed the
whole page!</p>
```

- Or just add some new content to the end

```
pageBody.innerHTML += '...just adding this at the end of the
page.';
```

DOM innerHTML continued

- You can also target one specific element's content
- To put content in this paragraph element:

```
<p id="warning"></p>
```

- We can select the node and modify it

```
var warningParagraph = document.getElementById('warning');
warningParagraph.innerHTML = 'Warning: Cute kitties!';
```

Creating New Nodes

- The `document` object also has methods to create nodes from scratch:

```
document.createElement(tagName);
document.createTextNode(text);
element.appendChild(element);
```

Creating New Nodes: Sample Code

```
var pageBody = document.getElementById('newNew');
// create our image tag with attributes
var newImg = document.createElement('img');
newImg.src = 'http://placekitten.com/g/500/200';
newImg.style.border = '1px solid black';
// add our image to the body
pageBody.appendChild(newImg);
```

Let’s Develop It

- Create a new paragraph element and add it to a `div` on your page.

Coding Material

Section 4.2

- Use 4_2.html file
- Create a new JS and link it to your 4_3.html

Events

Events

- An event is an object that is sent when actions take place on your webpage, most often when a user interacts with your webpage.
- For example, JavaScript creates an event when a user clicks an element.

```
element.addEventListener('click', function(event) {
  // code to be executed when user clicks
});
```

Types of Events

There are a variety of events. Some of the more common events are:

- ▹ click: Occurs when the user clicks on an element
- ▹ mouseover: Occurs when the pointer is moved onto an element
- ▹ mouseout: Occurs when the pointer is moved off an element
- ▹ keyup: Occurs when the user releases a key
- ▹ load: Occurs when a document has been loaded
- ▹ focus: Occurs when an element gets focus
- ▹ blur: Occurs when an element loses focus

Calling Functions from HTML

- You can call a function directly from your HTML code:

```
<button id="myBtn" onclick="sayHi()">Click Me!</button>
```

```
function sayHi (event) {
  alert('Hi!');
};
```

Calling Functions from JavaScript

- You can call a function from the addEventListener:

```
<button id="myBtn">Click Me!</button>
```

```
var button = document.getElementById("myBtn");
button.addEventListener("click", function (event) {
  alert("Hi!");
});
```

```
var button = document.getElementById("myBtn");
var sayHi = function (event) {
  alert("Hi!");
};
button.addEventListener("click", sayHi);
```

Preventing Defaults

- Elements like links and checkboxes have default behaviors determined by the browser. However, the event object has a built-in method to prevent the default behavior
- Our anchor link in HTML

```html
<a id="myLink" href="https://www.girldevelopit.com">GDI</a>
```

- Code to prevent going to link's href on click

```javascript
var link = document.getElementById("myLink");
link.addEventListener("click", function(event) {
  event.preventDefault();
});
```

Let’s Develop It

- When a user clicks the link, the page should display an error message instead of going to a webpage.

currentTarget

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currentTarget

- The event's `currentTarget` references the element the event listener was attached to.
- Our button in HTML:

```
<button id="myBtn2">Click Me!</button>
```

- This code adds styles and text to our clicked button
- You may also see code that references the keyword `this` as the "target".

```
myButton = document.getElementById("myBtn");
myButton.addEventListener("click", function(event) {
  btn = event.currentTarget;
  btn.style.backgroundColor = 'red';
  btn.innerHTML = 'Clicked!';
});
```

Let’s Develop It

- Go back to the sample files you downloaded earlier.
- Make some JavaScript code fire after a `mouseover` event.

Coding Material

Section 4.3

- Use 4_3.html file
- Create a new JS and link it to your 4_3.html

User Input

Forms

- You can collect information from users to use in your code. The most common method is an HTML form.

```html
<form>
  <label for="name">First Name:</label>
  <input type="text" name="nameF" id='firstname'>
  <br>
  <label for="name">Last Name:</label>
  <input type="text" name="nameL" id='lastname'>
  <br>
  <label for="marriage">Are you married:</label>
  <input type="radio" name="married" value="Yes" /> Yes
  <input type="radio" name="married" value="No" /> No
  <br>
  <label for="name">Hours you spend coding a day:</label>
  <input type="text" name="hoursStudy" id='hours'>
  <br>
  <input type="submit" id="submitBtn" value="Submit"/>
</form>
```

Retrieving Form Data

- You retrieve the values of form elements using the `value` method.

```
var userName = document.getElementById('firstname').value;
console.log('First name: ' +userName);
```

Radio Buttons

- Radio buttons usually do not have IDs, so you will need to use a `for` loop to get the value on each radio:

```
var radios = document.getElementsByName('married');
var length = radios.length;
for (var i = 0; i < length; i++) {
    if (radios[i].checked) {
        var radioButtonValue = radios[i].value;
        // only one radio can be checked, so stop now
        console.log('Married: ' + radioButtonValue);
        break;
    }
}
```

Submit buttons

- If you are going to retrieve form values with the submit button, be sure to prevent the default action!

```
var submitButton = document.getElementById('submitBtn');

submitButton.addEventListener("click", function (event) {
   event.preventDefault();
   var userName =
document.getElementById('firstname').value;
   console.log('First name: ' +userName);
```

Let’s Develop It

- ▷ Collect a value from the input box on the page.
- ▷ Use it inside a function of some kind.
- ▷ For example, collect a number and multiply it by five or collect a name and display a greeting.

Resources

- JavaScript Guide, from the Mozilla Developers Network.
- Code Academy, with interactive JavaScript lessons to help you review.
- W3schools
- Freecodecamp
- udemy

YOU DID IT!

Any questions?