MAKE SCHOOL

JavaScript in the DOM

WEB 1.0

Agenda

- Learning Outcomes
- Warm-Up
- What is the DOM?
- Using querySelector
- **BREAK**
- Tip Calculator
- Lab Time

Learning Outcomes

MAKE SCHOOL

By the end of today, you should be able to...

1. Creating design layout with Flexbox
2. Using `parseInt()`, `parseFloat()`, and `toFixed()`
3. (Stretch) Describe what `NaN` is

Warm-Up

Share a Story (12 minutes)

Breakout groups of 3:

- Solo, each person answers “what’s a hard experience you went through that helped you grow?"
  - Answer by telling a story with a beginning, middle, and end.
- Next, pick a sharer, listener, and observer. The sharer tells their story, the listener listens and then reflects back the story in their own words.

MAKE SCHOOL

What is the DOM?

What is the DOM?

MAKE SCHOOL

The **DOM**, or **Document Object Model**, is the structure defined by your HTML code.

The HTML code your write creates a **document** that is structured and organized. This means your code can access elements based on the structure, or influence or control elements based on the their position in the DOM and their relation to other elements.

Every element is an **Object**. An Object in computer terms is a collection of **functions** and **variables**.

What is the DOM?

Imagine you have a web page that looks like this.

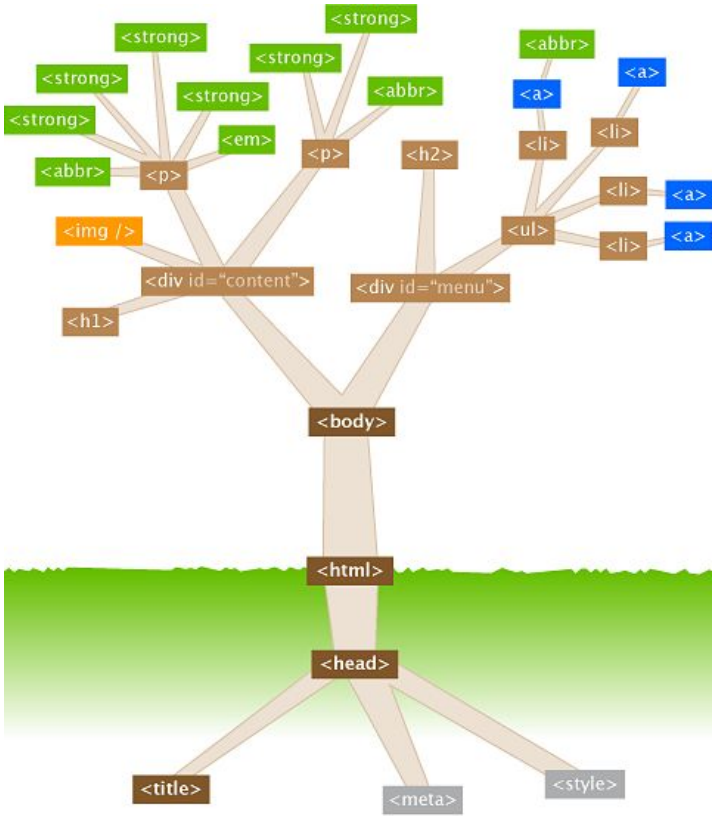
```
<html>
  <head>
    <title>Hello</title>
  </head>
  <body>
    <h1>Hello World</h1>
    <p>Foo bar</p>
  </body>
</html>
```

We could also describe it as:

- html
  - head
    - title
  - body
    - h1
    - p

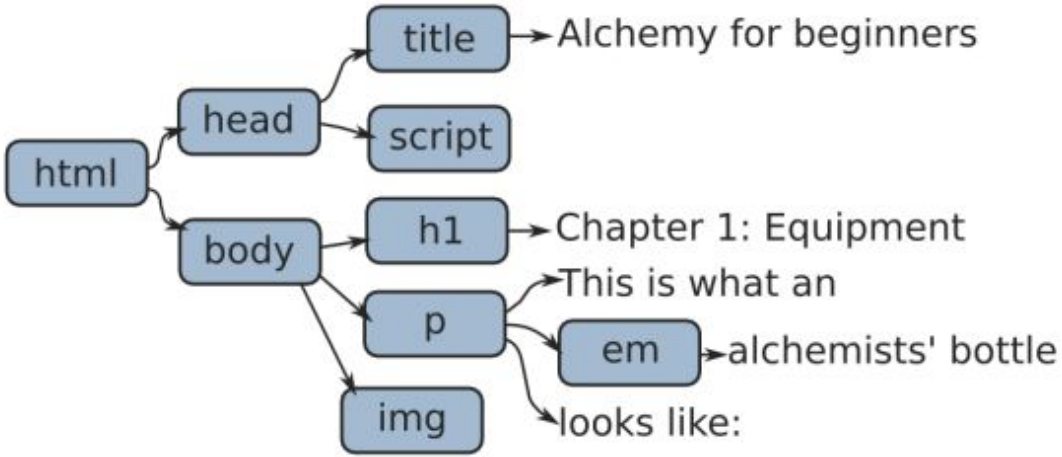
What is the DOM?

We can represent this diagram as an inverted tree, where `<html>` is the "trunk" and all other elements extend from it.



What is the DOM?

Here's another representation. We could say that `<h1>` and `<p>` are "siblings" and that `<body>` is their "parent".



Activity

MAKE SCHOOL

Grab a piece of paper & a pen and draw a picture of the DOM tree structure for this code:

```
<section>
  <header>
    <h1>Hello</h1>
  </header>
  <ul>
    <li>Item 1</li>
    <li>Item 2</li>
  </ul>
</section>
```

MAKE SCHOOL

Using `querySelector()`

querySelector

MAKE SCHOOL

We can use JavaScript to change the contents of the DOM, by adding/deleting elements or by changing their contents.

For example, you can change the inner text of an `<h1>` element with the following code:

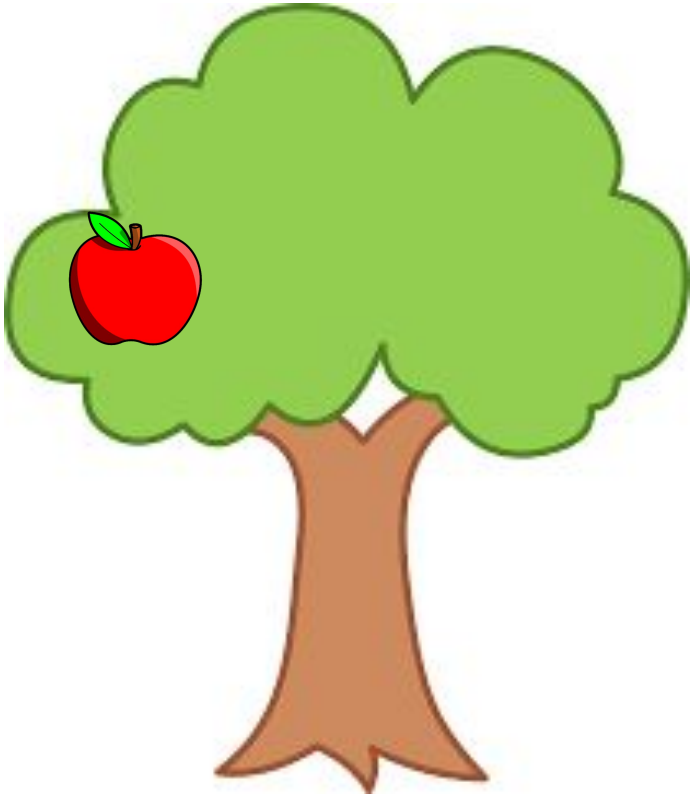
```
const h1 = document.querySelector('h1') // selects the h1 tag
h1.innerHTML = 'JS FTW!' // Changes the text content of the tag
```

See it in action!

The DOM

Let's imagine that your web page is an apple tree. It might look like:

- root
  - trunk
    - branch
      - leaf
      - apple



querySelector

We can get a reference to the apple with:

```
const apple = document.querySelector('apple')
```

The apple is an **object** with **properties**. We can access all of its properties with **dot syntax**. For example:

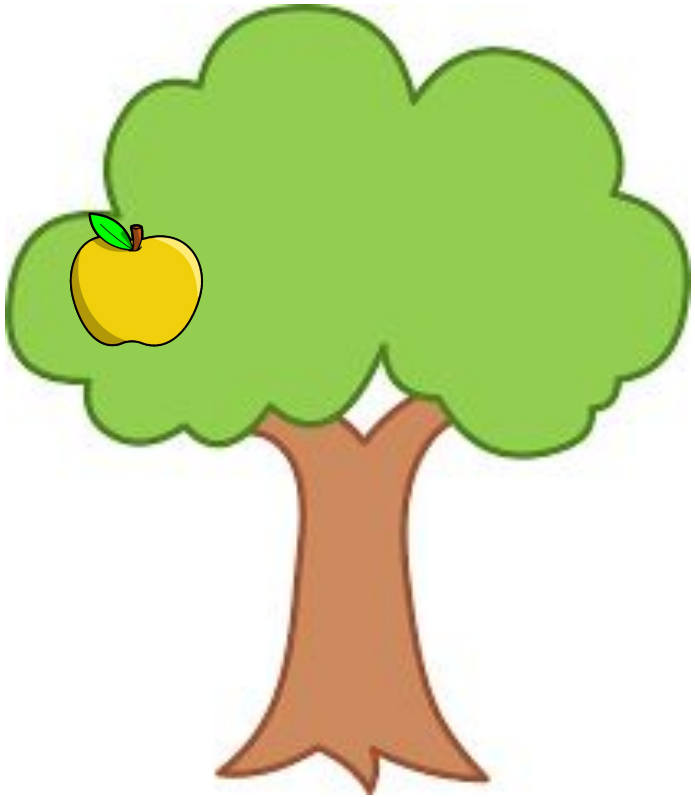
- `apple.hasWorm` might return true or false.
- `apple.color` might return red or green.

Properties

We can set properties with dot notation also:

```
const apple =
  document.querySelector('apple')

apple.color = 'golden'
```



Methods

Methods are functions that belong to an object.

- `leaf.photosynthesize()` calls the **photosynthesize** method of leaf.
- `leaf.fall()` causes the leaf to fall down.

MAKE SCHOOL

Break - 10 min

“Take a 10 minute break and wrap a tag around everything you see.”

MAKE SCHOOL

Tip Calculator

Tip Calculator (40 minutes)

MAKE SCHOOL

With a partner, follow the instructions in today's lesson to complete the Tip Calculator.

MAKE SCHOOL

Events

Events

MAKE SCHOOL

JavaScript is an **event-driven language**.

Things that happen in your programs generate events.

Your code can react to these events, we call this “handling” an event.

Events

What's an **event**?

Events in JavaScript are like events in your life:

Think about events like the events in your life:

- The alarm goes off...
- It's your birthday...
- It's Friday night...

Q: How do you handle these event?

Events

MAKE SCHOOL

Each event that occurs is handled with an action:

- **Event**: The alarm goes off - **Action**: get up take a shower!
- **Event**: It's your birthday - **Action**: throw a party!
- **Event**: It's Friday night - **Action**: Go out!

Events

MAKE SCHOOL

In JavaScript events are connected to things that happen in your programs.

There are many different events here is short list of a few:

- **click** - Occurs when an element is clicked
- **keydown** - Occurs when a key pressed on the keyboard
- **input** - occurs when text is input into a text field

Events

MAKE SCHOOL

To handle an event you'll "listen" for that event type.

You register a listener with an element.

```
element.addEventListener(eventName, handlerFunction)


function handlerFunction() {
    ...
}
```

Events

MAKE SCHOOL

In the tip calculator we used an event type of “input” and “calculateTip” was our handler function.

```
billInput.addEventListener('input', calculateTip)

function calculateTip() {
  ...
}
```

MAKE SCHOOL

Lab Time

Homework

MAKE SCHOOL

This week's assignments:

- Mood Shop Tutorial - NEW Parts 1-6 due today, parts 7-12 due next Tuesday
- Tip Calculator - due Thursday

Lab Rules

MAKE SCHOOL

Stay in the main Zoom room if you'd like to stay for more Q&A, homework help, etc.

Go to your individual breakout room if you'd prefer to work with a partner or have quiet time!