Super Mario Soundboard

Level

500 x

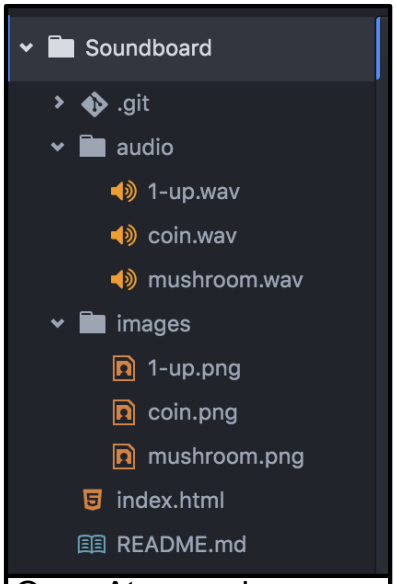
Hey! I'm Lakitu, your coding teacher, but you can call me sir... no, sensei!
Here are some things you'll need to start building your own crazy music machine:

* Atom- a text editor for writing code. It has helpful shortcuts and special colouring for your code to make it easier to write. Download it at: **https://atom.io**

And that's it!

Here's what the final result will look like

To get started you need to download the starting code at:
bit.ly/coderdojo-soundboard
You should try putting in a special folder where you keep all your coding projects so you can find it later. The download is a **.zip** file so you'll have to unzip it before you start!



Open Atom and use **Crtl + Shift + o** to open the project folder

index.html

```
<!DOCTYPE html>
<html>

  <head>
    <meta charset="utf-8">
    <title>Mario Soundboard</title>
  </head>

  <body>
    <audio id="coin">
      <source src="audio/coin.wav">
    </audio>

    <button onclick="document.getElementById('coin').play()">
      Coin
    </button>
  </body>

</html>
```

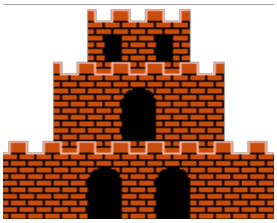
If you click on **index.html** it will open up in Atom. This is the file where you'll add all of our code for our application.

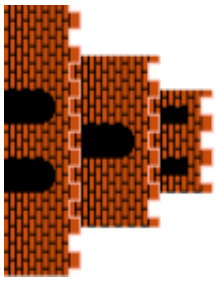
Super Mario 2 Soundboard

Toad Tip

The HTML code we write looks a little different than what shows up on the webpage. HTML uses tags like **<this>** to add things like pictures or change how text appears. Having all those **<open>** and **</closed>** tags can get jumbled, so programmers will put <matching> </matching> tags on different lines and indent everything inbetween those tags.

It kinda looks like a sideways castle!





Step One

Let's take a look at the different parts of this html file.

<!DOCTYPE html>
This tag lets your web browser know that it's opening an html document. All of your code goes between the **<html>** tags.

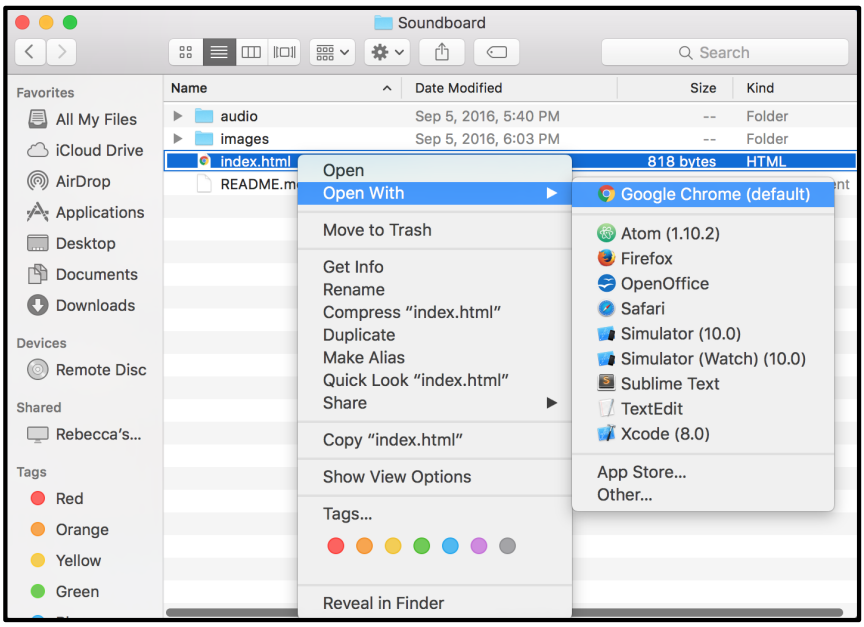
The **<head>** tag contains bits of code you can't see on the page. Here we'll put things like the **<title>**, **<style>** info for our page and **<link>**s to files

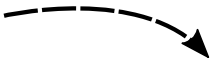
```
1  <!DOCTYPE html>
2  <html>
3
4    <head>
5      <meta charset="utf-8">
6      <title>Mario Soundboard</title>
7    </head>
8
9    <body>
10     <audio id="coin">
11       <source src="audio/coin.wav">
12     </audio>
13
14     <button onclick="document.getElementById('coin').play()">
15       Coin
16     </button>
17   </body>
18
19 </html>
20
```

<audio> is how we link audio files to our webpage. The **<source>** tag has a path to the file we want. That **id** attribute is important later.

<button> is what we'll actually see on our page. That code in our **onclick** property is JavaScript. We use it to play our audio.

Super Mario 3 Soundboard





Go to the folder where you saved the project and open it with your web browser by right-clicking and selecting **Open With**.
You should see just one button like this
Press it and see what happens!

Step Two

Alright! Now it's time to start coding! We're going to add another button, this one plays the "mushroom" sound when you press it.

We've added another **<audio>** tag, this one points to a different audio file for the "mushroom" sound.

This code adds a another **<button>** to our webpage, however, part of the JavaScript code is missing!

document.getElementById is a function that we use to find another element on our page by matching its **id** property. This is how we attatch our audio to our button so we can **play()** it when the button is pressed.

```
<!DOCTYPE html>
<html>

  <head>
    <meta charset="utf-8">
    <title>Mario Soundboard</title>
  </head>

  <body>
    <audio id="coin">
      <source src="audio/coin.wav">
    </audio>
    <audio id="mushroom">
      <source src="audio/mushroom.wav">
    </audio>

    <button onclick="document.getElementById('coin').play()">
      Coin
    </button>
    <button onclick="document.getElementById('_____?_____').play()">
      Mushroom
    </button>
  </body>

</html>

```

Once you fix the **getElementById** function go back to your browser and refresh the page (**Ctrl + r**). You should now see another button and if your guess was correct, it should play a new sound!

Super Mario 4 Soundboard

Looking good so far! But these buttons look a bit plain. I think it's time to learn the **<img>** tag to add some pictures to our soundboard.

Step Three

```
1   <!DOCTYPE html>
2   <html>
3
4     <head>
5       <meta charset="utf-8">
6       <title>Mario Soundboard</title>
7     </head>
8
9     <body>
10      <audio id="coin">
11        <source src="audio/coin.wav">
12      </audio>
13      <audio id="mushroom">
14        <source src="audio/mushroom.wav">
15      </audio>
16
17      <button onclick="document.getElementById('coin').play()">
18        <img src="  images/coin.png" />
19      </button>
20      <button onclick="document.getElementById('mushroom').play()">
21        Mushroom
22      </button>
23    </body>
24
25  </html>
26
```

Here we replaced our old text with an **<img>** tag.

Like the **<source>** tag, it has an **src** attribute which points to the location of our image.

If you look in the **"images"** folder in the project you downloaded, you should find that **"coin.png"** file.

If you refresh your webpage (**Ctrl + r**) the new image will show up. If you look carefully, you can see it's inside the button! That's because our **<img>** tag is between **<button>** and **</button>** tags

Now it's your turn to add the next image! Replace the **"Mushroom"** text inside the second **<button>** tag with an **<img>** tag like the one above it.

Make sure the **src** attribute is pointing to the **"mushrom.png"** file.

Once it's hooked up, go back to your web browser and refresh the page to see if the mushroom picture shows up.

Super Mario 5 Soundboard

Good job with that last step! If you didn't get it, that's okay, just have a look at the code below for a hint!

Now we're going to change how our HTML code looks like using the **style** attribute. Remember the **onclick** attribute on our button? It used a different language called **JavaScript** to play a sound. The **style** attribute uses another language called **CSS** in order to make our HTML look different. Toad will explain it a little more, but right now lets look at how we use the **style** attribute in our code.

Step Four

```
<!DOCTYPE html>
<html>

  <head>
    <meta charset="utf-8">
    <title>Mario Soundboard</title>
  </head>

  <body>
    <audio id="coin">
      <source src="audio/coin.wav">
    </audio>
    <audio id="mushroom">
      <source src="audio/mushroom.wav">
    </audio>

    <button onclick="document.getElementById('coin').play()" style="border:none; background-color:white;">
      <img src=" images/coin.png" style="height:50px;"/>
    </button>
    <button onclick="document.getElementById('mushroom').play()">
      <img src=" images/mushroom.png" />
    </button>
  </body>

</html>

```

Here we've added a **style** attribute to our **<button>** and **<img>** tags in order to change how they look. There are lots of different ways we can change how our HTML looks, here we're using **border** to get rid of our button's default border, and **background-color** to make our button white. Now you can't even see the button (but don't worry, it's still there)!

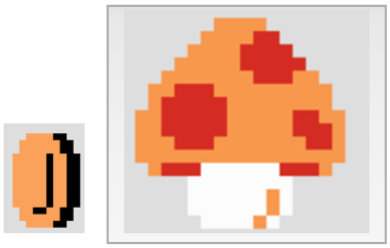
We are also changing the **height** of our coint image to 50 pixels. There are lots of ways you can measure the height of something on your webpage (like cm or %), but **px** is the most common.

Luigi Links

There are a lot of ways we can change our webpage using HTML tags and CSS styles. If you want to see some examples, try these links:

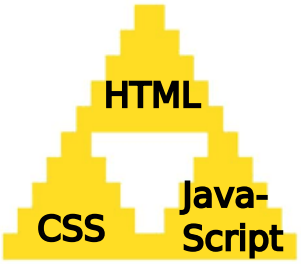
HTML - http://www.w3schools.com/tags/
CSS - http://www.w3schools.com/cssref/

Super Mario 6 Soundboard



Now if you refresh our webpage you can see the changes between our styled and un-styled buttons. You can copy the styles of the coin button over to the mushroom button.

Toad Tip



Most modern webpages are made up of three different parts: **HTML**, **CSS** and **JavaScript**. Think of it like a house. **HTML** is like the house's frame: it provides structure and gives us a place to hold our stuff. **CSS** is like the paint and upholstry: it makes the house look nice. **JavaScript** is like the wiring: it works behind the scenes to make all of our stuff work. Things like buttons or search bars would use JavaScript.

So far you've seen all three used for our soundboard, but more often than not programmers like to keep each part in its own seperate file so their code is easier to read. You can create a CSS file by using the **.css** extension at the end of a file name or a JavaScript file by using the **.js** extension.

To connect your CSS file to your webpage, you can add the **<link>** tag with a **rel** attribute of "**stylesheet**" and an **href** attribute pointing to the CSS file. To add a JavaScript file to a webpage, use the **<script>** tag with a **src** attribute pointing to the JavaScript file.

To keep things easy for now, we're going to mix our CSS and JavaScript together in our **index.html** file; no need to worry about **<link>** or **<script>** tags!

Step Five

Once you've copied over the CSS, you might notice a lot of our styles get repeated. Let's clean it up!

```
<button onclick="document.getElementById('coin').play()" style="border:none; background-color:white;">
  <img src="images/coin.png" style="height:50px;"/>
</button>
<button onclick="document.getElementById('mushroom').play()" style="border:none; background-color:white;">
  <img src="images/mushroom.png" style="height:50px;"/>
</button>
```

An important part of writing code is something that programmers call **DRY** (**Don't Repeat Yourself**). If you can write code once and try to re-use it where you need, it's easier to read and if you have to change it, you only have to change it in one place!
Let's make our code more DRY!

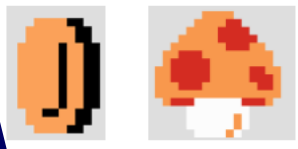
Super Mario 7 Soundboard

```
<button onclick="document.getElementById('coin').play()">
  <img src="images/coin.png"/>
</button>
<button onclick="document.getElementById('mushroom').play()">
  <img src="images/mushroom.png"/>
</button>
```

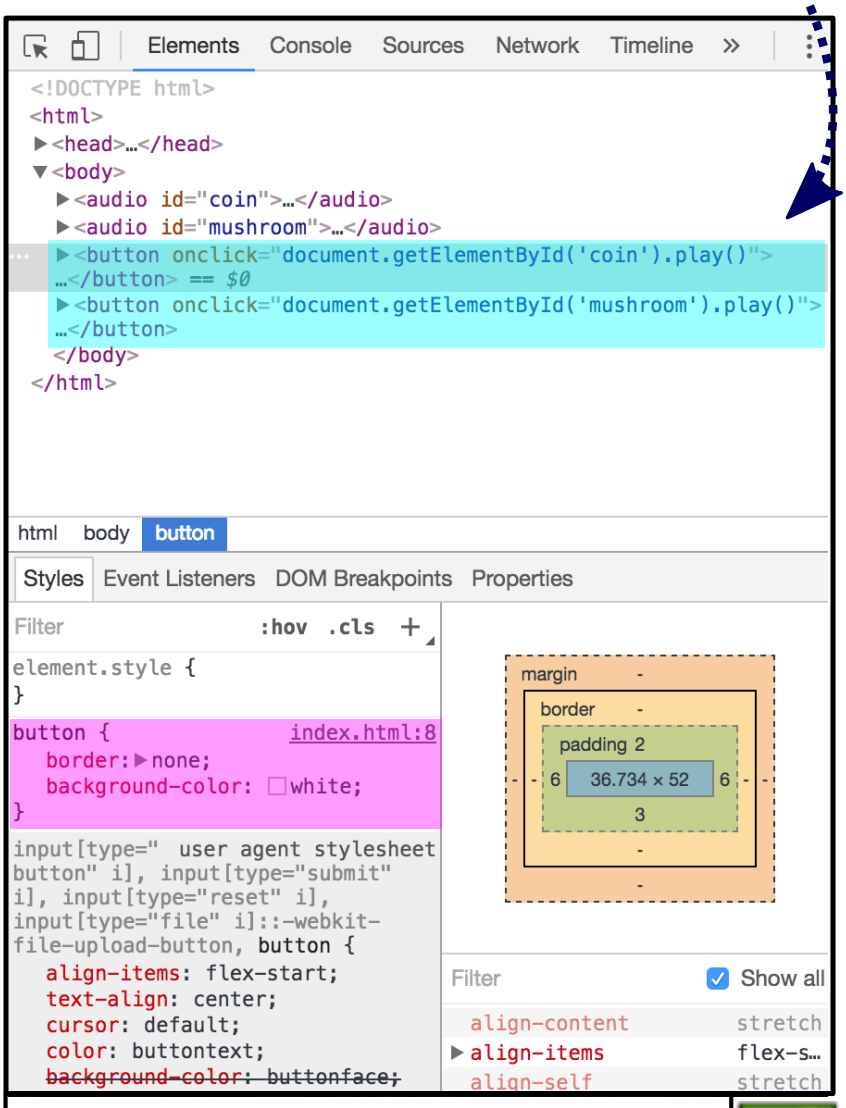
Now go ahead and delete that **<style>** tag. You heard me! It seems like a step backward, but don't worry, we'll add our styles back!

```
<head>
  <meta charset="utf-8">
  <title>Mario Soundboard</title>
  <style>
    button {
      border: none;
      background-color: white;
    }
    img {
      height: 50px;
    }
  </style>
</head>
```

In our **<head>** tag we'll re-add our styles. Inside our **<style>** tag we have to say which tags we want to add which styles to.



If you refresh your browser... no changes! But there's one more web development trick: go to **View > Developer > Developer Tools**



Whoa! It's our HTML code!
Try clicking around in here and notice how it changes.

Here we can see the styles we've added to the different parts of our page We can even change our styles. Try clicking on the "white" background-color and changing it to "red".

What happens if you refresh the page?

If you have Google Chrome, you should see something like this appear on the bottom or side of your browser!

Super Mario 8 Soundboard

Alright my young apprentice, now it's time to take off the training wheels and code the last button yourself! The image and audio file for **1-up** will already be in your project folder, you just have to add the appropriate **<audio>**, **<button>** and **<img>** tags. Good luck!

Bowser Bonus

Oh, so you've made a soundboard with **three** buttons? Now add **three** more! **Gwahahaha**!

You'll have to find the audio and images yourself on the internet. Make sure you name them something easy to remember and save them in the right place in your project folder!

x 200

Hey, remember that **Toad Tip** from a few pages ago about using **<link>** and **<script>** tags so you can keep your JavaScript and CSS in seperate files? Why don't you give it a try?

The CSS will be pretty easy: just move everything inside your **<style>** tag into a **styles.css** file, then attach it to your **index.html** file using the **<link>** tag.

The JavaScript might be harder: you'll have to move the code from each **<button>**'s onclick attribute and move it to an **index.js** file. In order to attatch this script back to the button, you'll have to use the **window.onload** event! Try looking it up on **https://developer.mozilla.org/en-US/** . Then attatch it with the **<script>** tag!

x 300