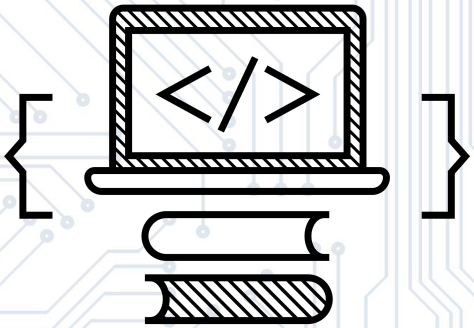
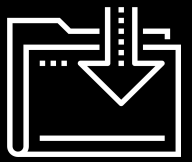


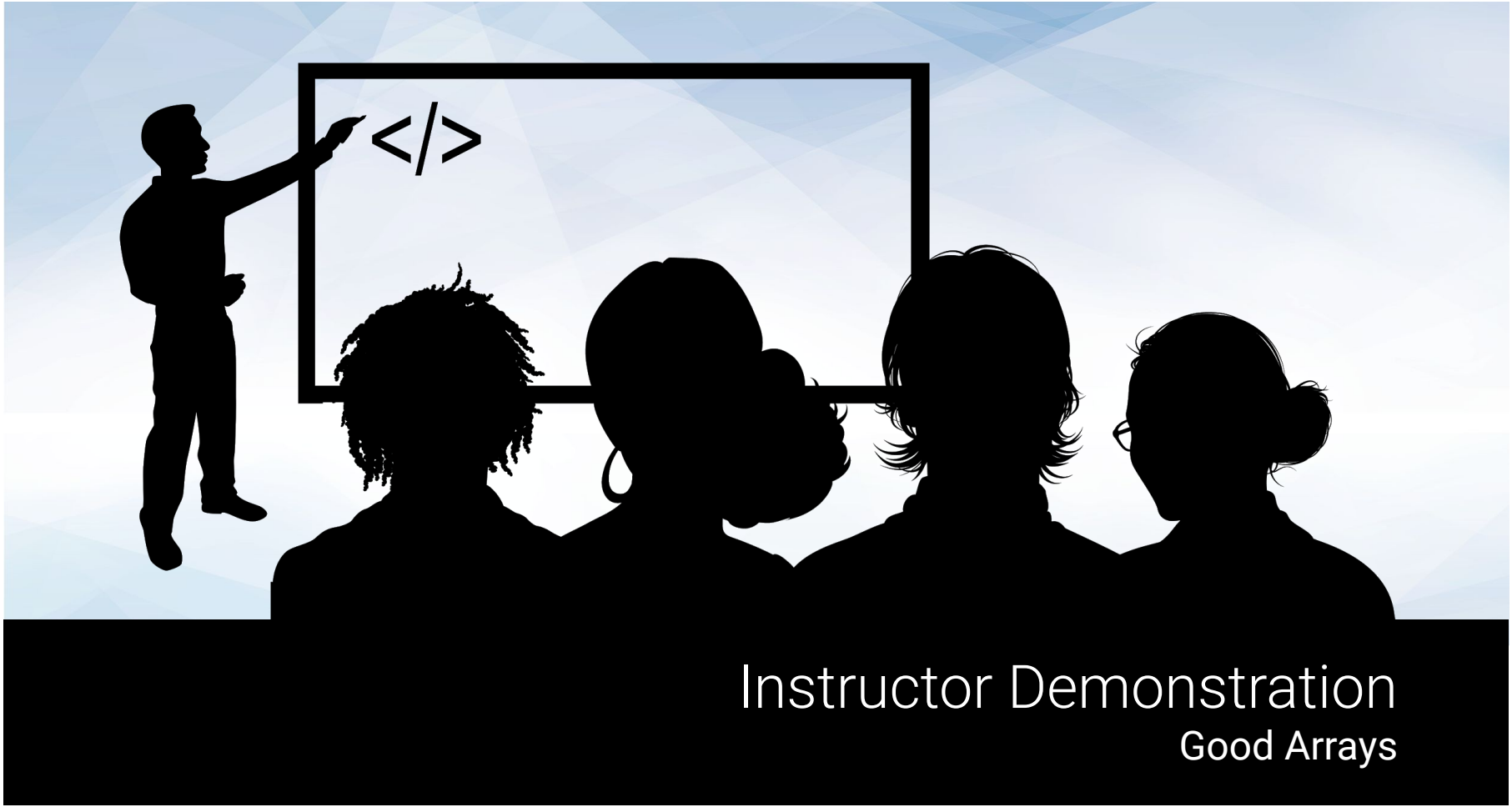
JavaScript & Introduction to the DOM

Web Development

Lesson 2.3

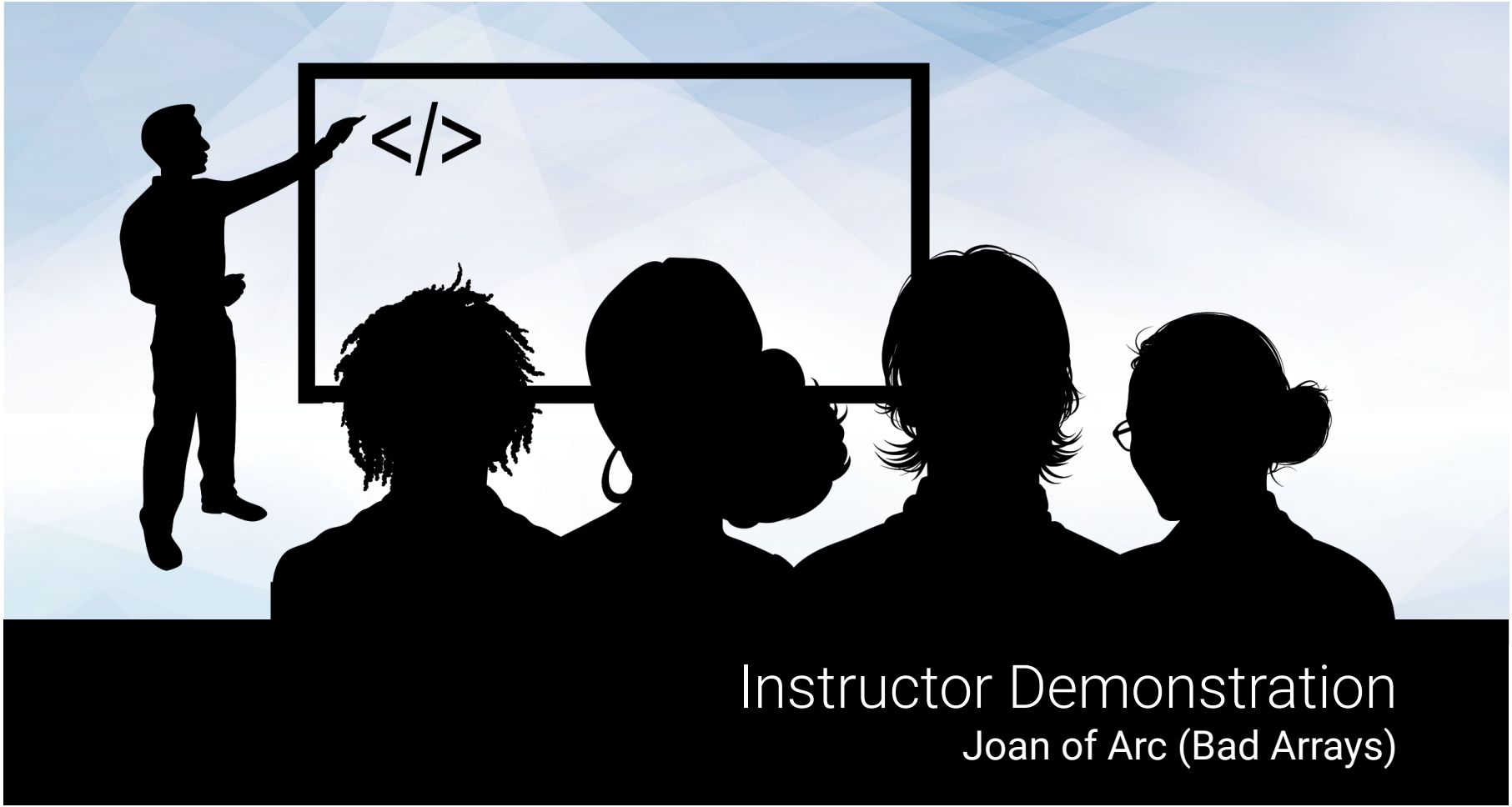


JavaScript Objects



Instructor Demonstration

Good Arrays



Instructor Demonstration

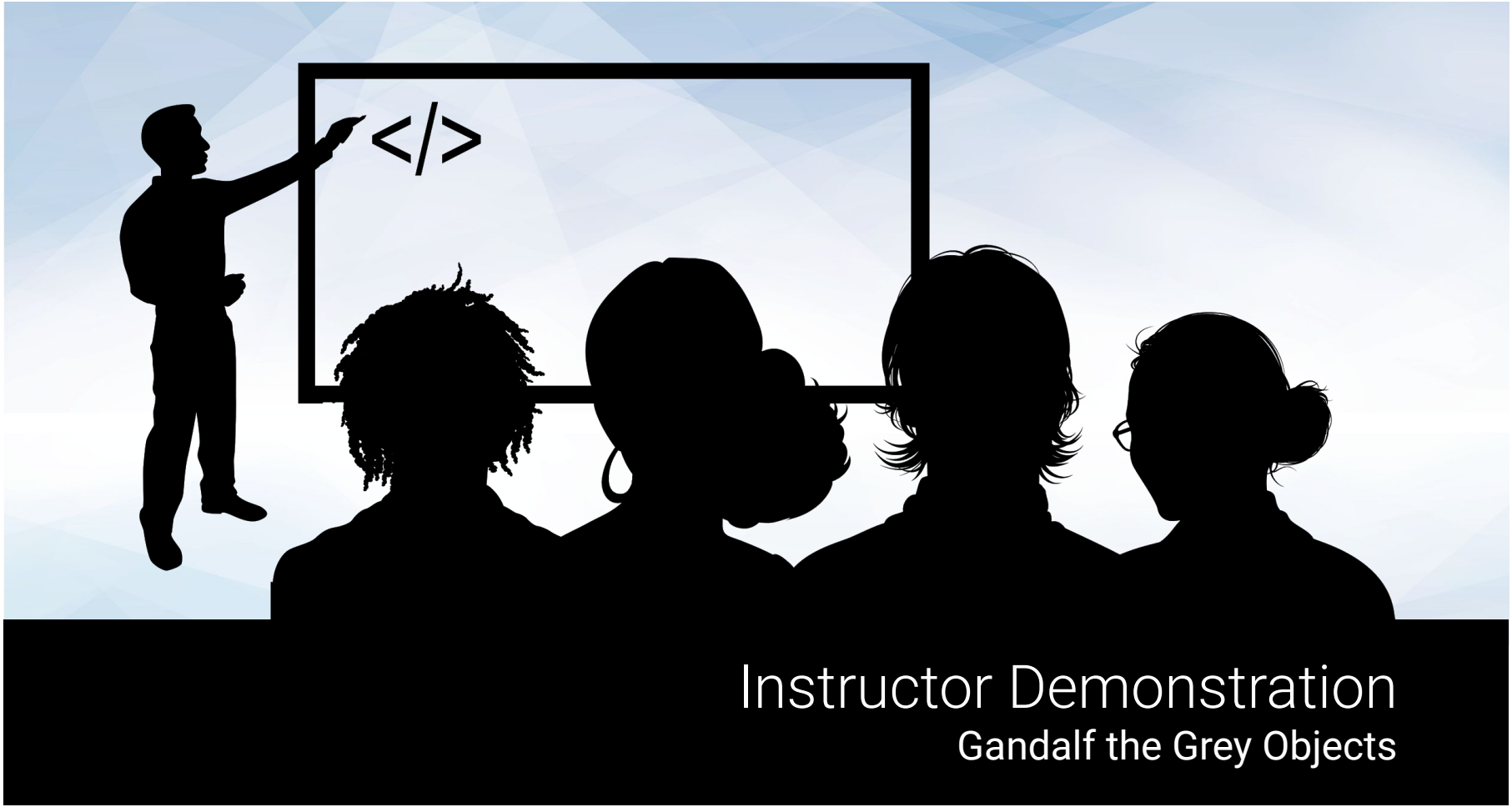
Joan of Arc (Bad Arrays)

Associated Data ==/== Arrays

Relating two separate arrays is not fun.

```
var joanOfArcInfoParts = ["Real Name", "Grew Up Where", "Known For", "Scars", "Symbolism"];


var joanOfArcInfoValues = ["Jehanne la Pucelle.", "Domremy, a village in northeastern France.",
  "Peasant girl, daughter of a farmer, who rose to become Commander of the French army.",
  "Took an arrow to the shoulder and a crossbow bolt to the thigh while trying to liberate Paris.",
  "Stands for French unity and nationalism."];
```



Instructor Demonstration

Gandalf the Grey Objects

Gandalf: The Object

Gandalf's **properties** and **values** are associated in object form, making it easy to recall specific data.

```
var gandalf = {
  "real name": "Gandalf",
  "age (est)": 11000,
  "race": "Maia",
  "haveRetirementPlan": true,
  "aliases": [
    "Greyhame",
    "Stormcrow",
    "Mithrandir",
    "Gandalf the Grey",
    "Gandalf the White"
  ]
}

// Object properties can be accessed with "bracket notation"
alert("My name is " + gandalf["real name"]);

// Or with "dot notation" if the property has no spaces
if (gandalf.haveRetirementPlan) {

  // Or with a variable that matches the name of the property
  var ageProperty = "age (est)";
  var years = gandalf[ageProperty];
  alert("My 401k has been gathering interest for " + years + " years!");
}
```

Objects Visualized

This is Gandalf. According to code, Gandalf is an **object**.

var gandalf	=	{

“real name”	:	“Gandalf”	,

“age (est)”	:	11000	,

“race”	:	“Maia”

}

Objects Visualized

These are Gandalf's **properties** (like descriptors).

var gandalf	=	{

“real name”	:	“Gandalf”	,
“age (est)”	:	11000	,
“race”	:	“Maia”	

}

Objects Visualized

These are the **values** of Gandalf's properties.

var gandalf	=	{

"real name"	:	"Gandalf"	,
"age (est)"	:	11000	,
"race"	:	"Maia"	

}

Objects Visualized

Thus: `gandalf["race"] = "Maia"`

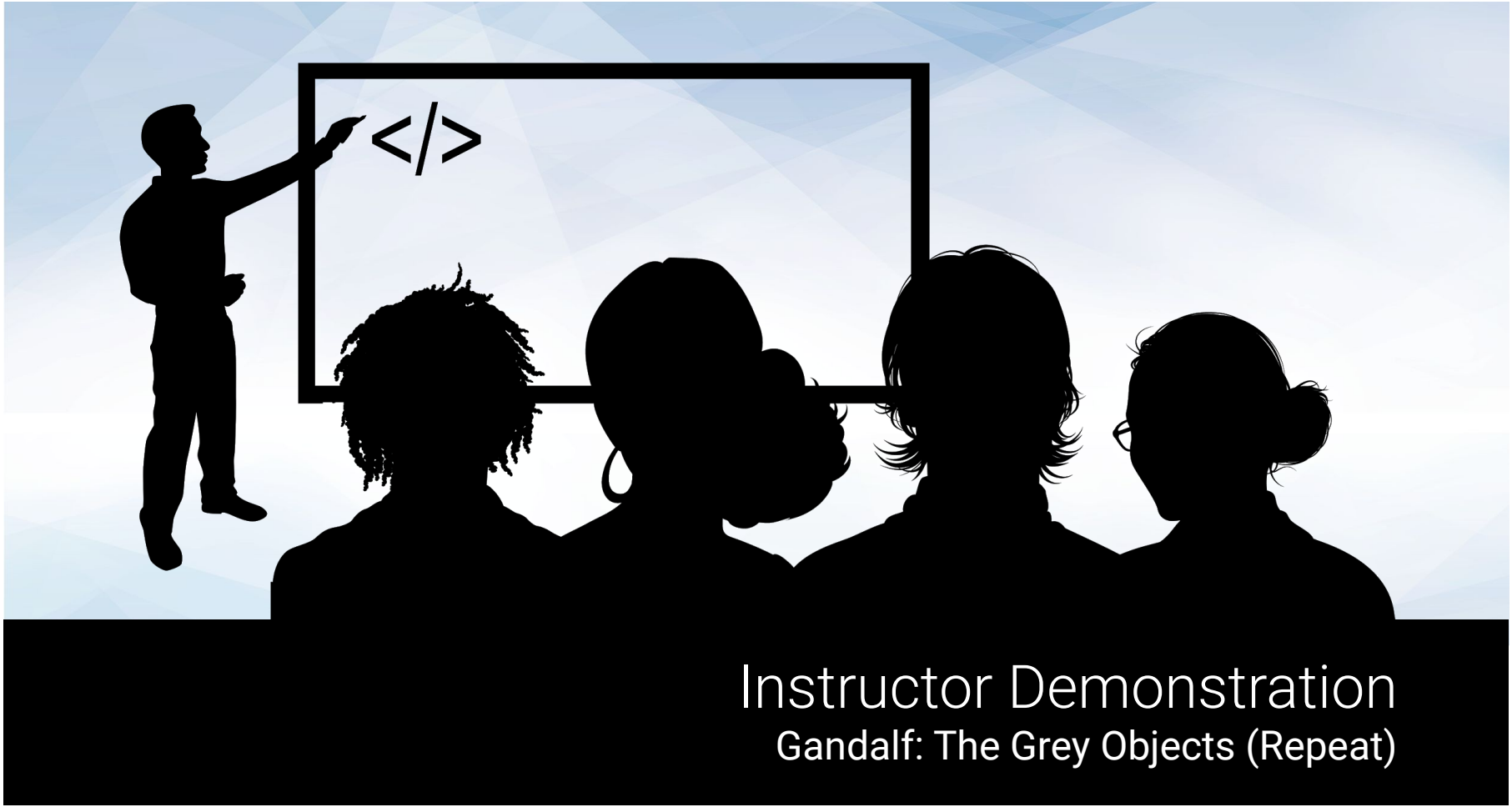
var gandalf	=	{

"real name"	:	"Gandalf"	,

"age (est)"	:	11000	,

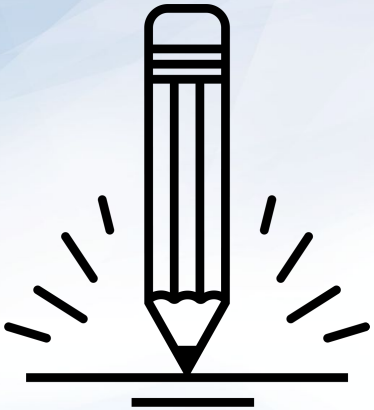
"race"	:	"Maia"

}



Instructor Demonstration

Gandalf: The Grey Objects (Repeat)



Group Activity (2 people)**:**
Basic Objects

Suggested Time:
10 minutes

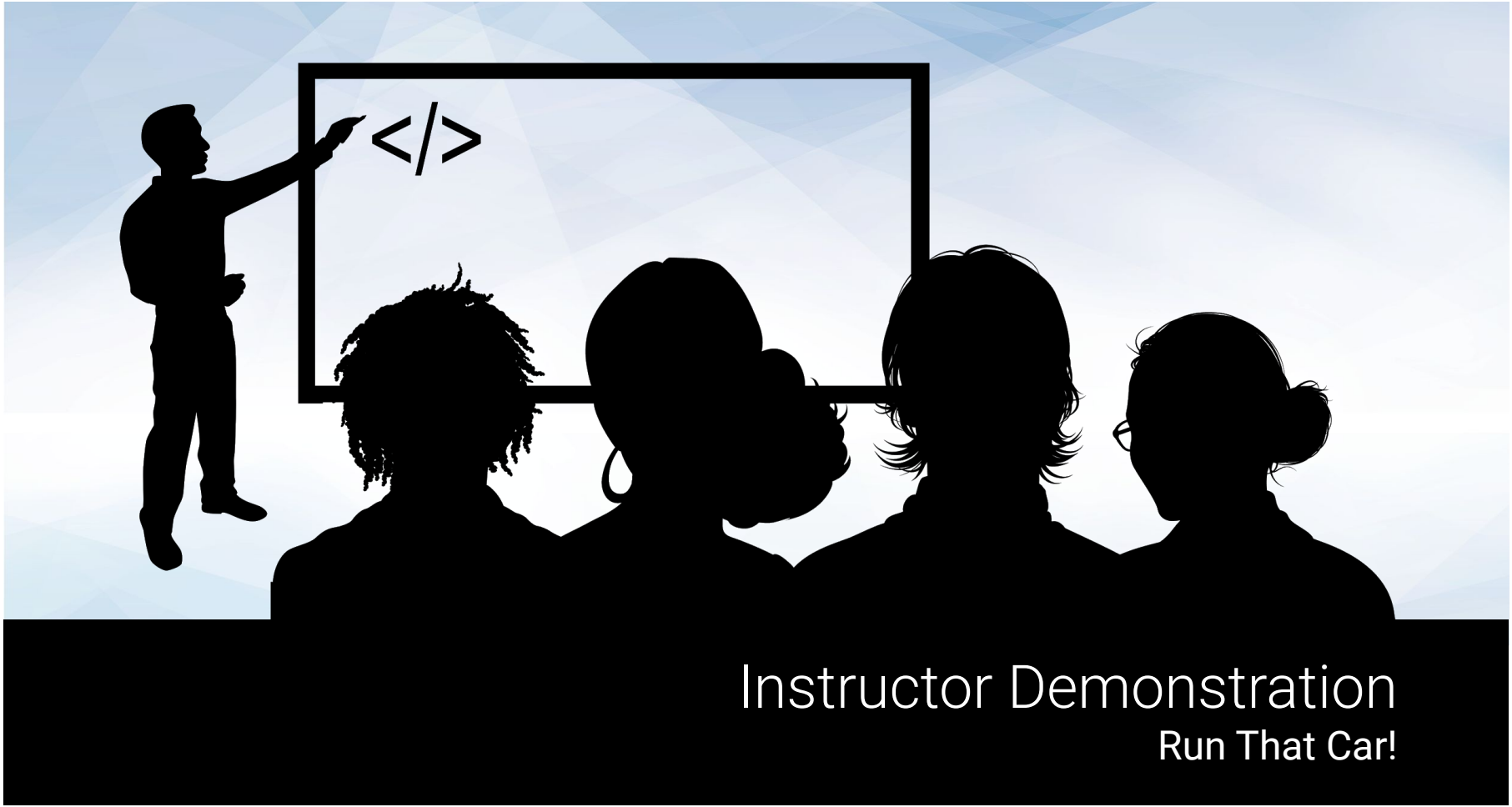
Group Activity: Basic Objects

With a partner, spend the next few moments studying the code.

Then, write code below each comment to log the relevant information about the provided `car` object.

Bonus: If you finish early, create a brand new object of your own. Slack out a snippet of the code to the class when you are done. Be Creative!

Suggested Time: 10 minutes



Instructor Demonstration

Run That Car!

Challenge: Run That Car!

Suggested Time:
15 minutes

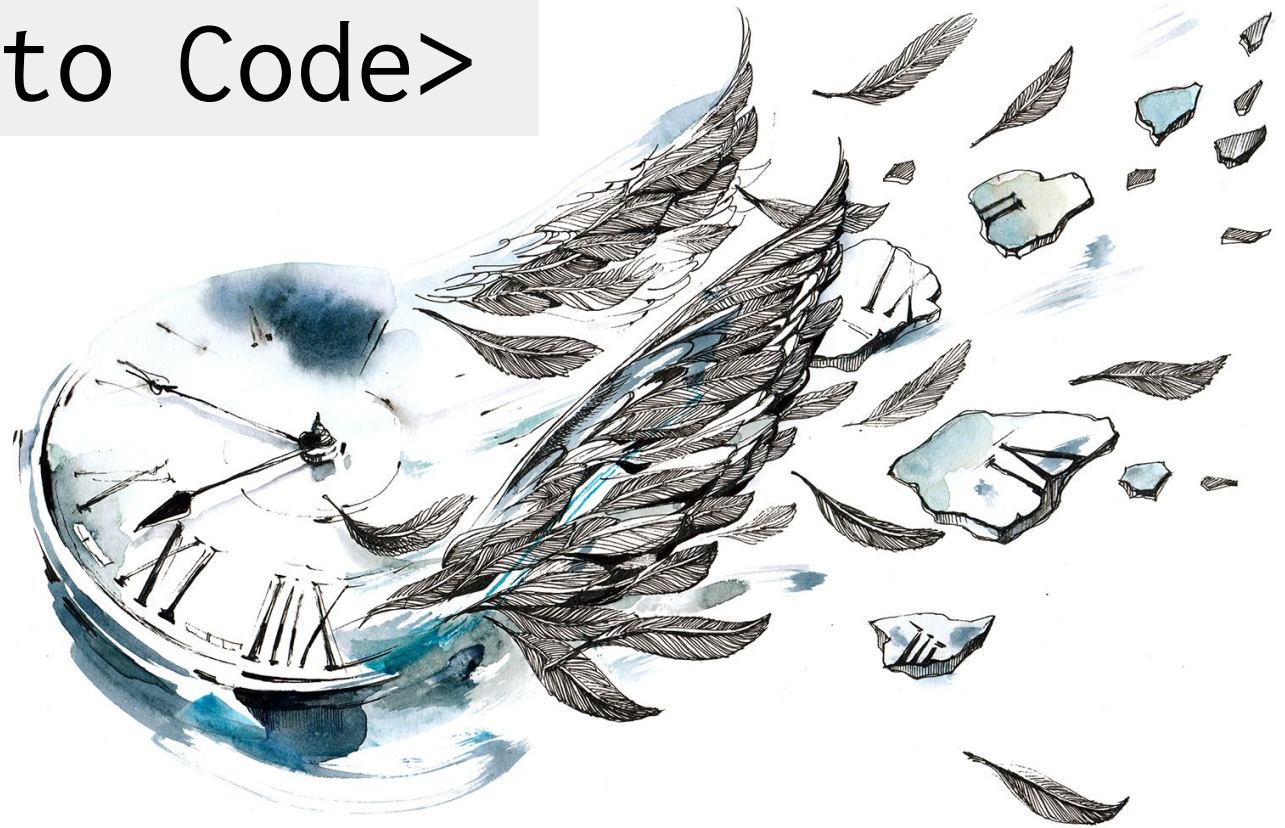
Challenge: Run That Car!

Using the code from the previous activity as a starting point, create a complete application such that:

- Users can enter keyboard input (letters).
- Each of the car's methods are assigned to a key.
- When the user presses a key, it calls the appropriate function.
- These letters also trigger a global function called `rewriteStats()` that logs the car's make, model, color, mileage, and `isWorking` status to the console.

Suggested Time: 15 minutes

<Time to Code>

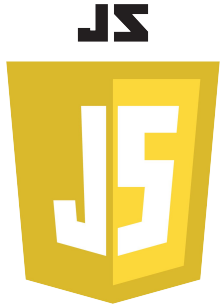


Take a Break!

Introduction to the DOM

What are the three building blocks of the web?

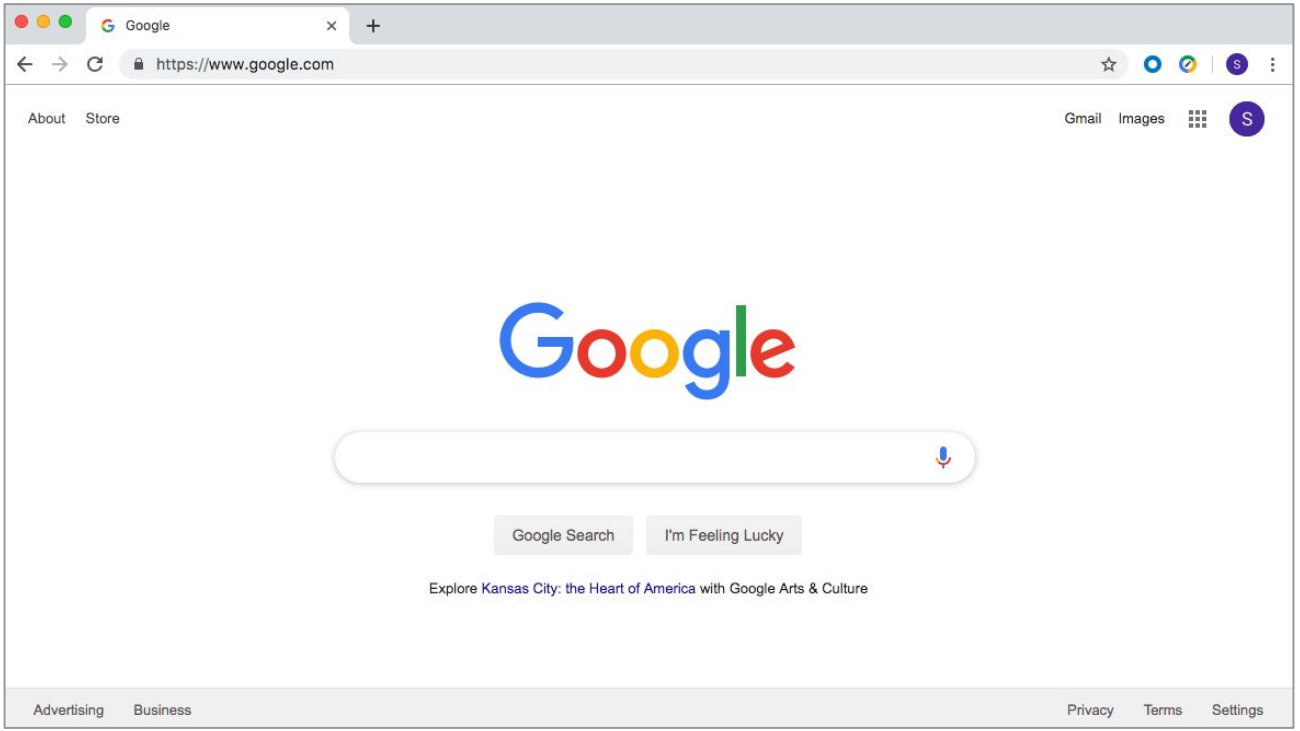
Building Blocks of the Web

HTML	CSS	JavaScript
Used to write content. 	Used to format content. 	Used to create dynamic web applications that take in user inputs, change what's displayed to users, animate elements, and much more. 

How (or where) do we connect all three?

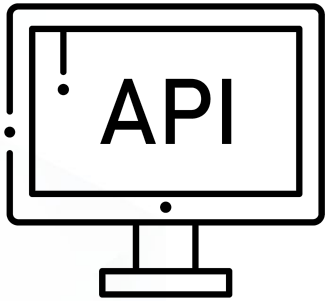
They Are Connected in the Web Browser

The browser brings together HTML, CSS, and JavaScript to create interactive webpages and applications.



What is a web browser?

A **web browser**, or **browser**, is a program used to access information on the World Wide Web. Every webpage, image, and video on the web can be accessed via a specific Unified Resource Link (URL). This lets browsers retrieve these resources from a web server and display them on a user's device.

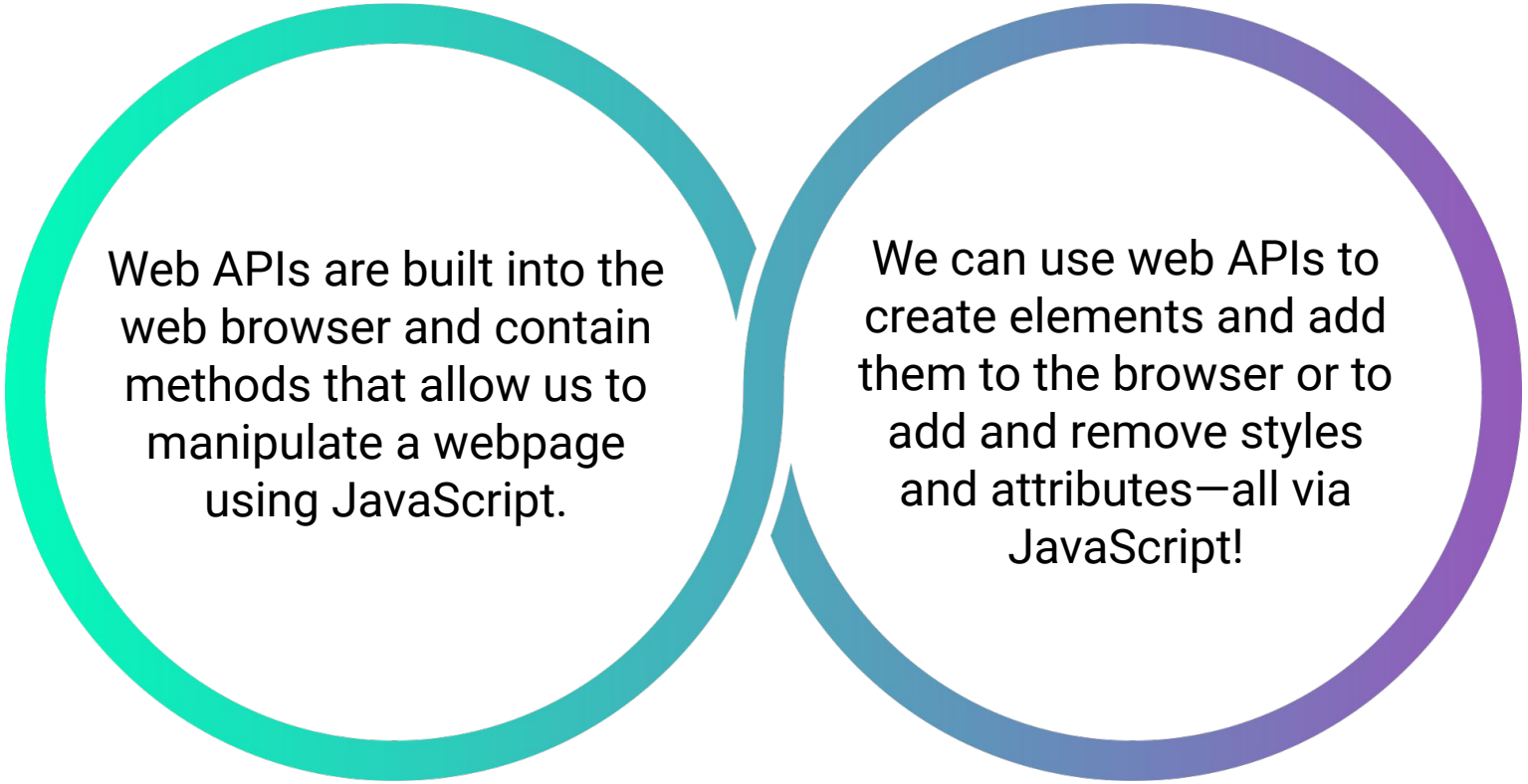


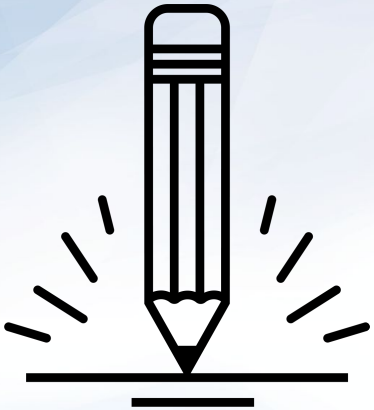
What is an application programming interface (API)?

In web development, an **API** is a set of code features (methods, properties, events, and URLs) that developers can use in their apps to interact with components of a user's web browser, data sets, hardware/software on a user’s computer, or third-party software and services.

What are web APIs?

Web APIs


Web APIs are built into the web browser and contain methods that allow us to manipulate a webpage using JavaScript.
We can use web APIs to create elements and add them to the browser or to add and remove styles and attributes—all via JavaScript!



Activity: This Window

See instructions in `34-WindowObject` in the class repo.

In this activity, you will use `console.log(this)` and dig around inside the returned object, answering some questions along the way.

Suggested Time:
10 minutes

Activity: This Window

Instructions

- First open the provided `index.html` file in the browser and navigate to the console.
- What is logged?

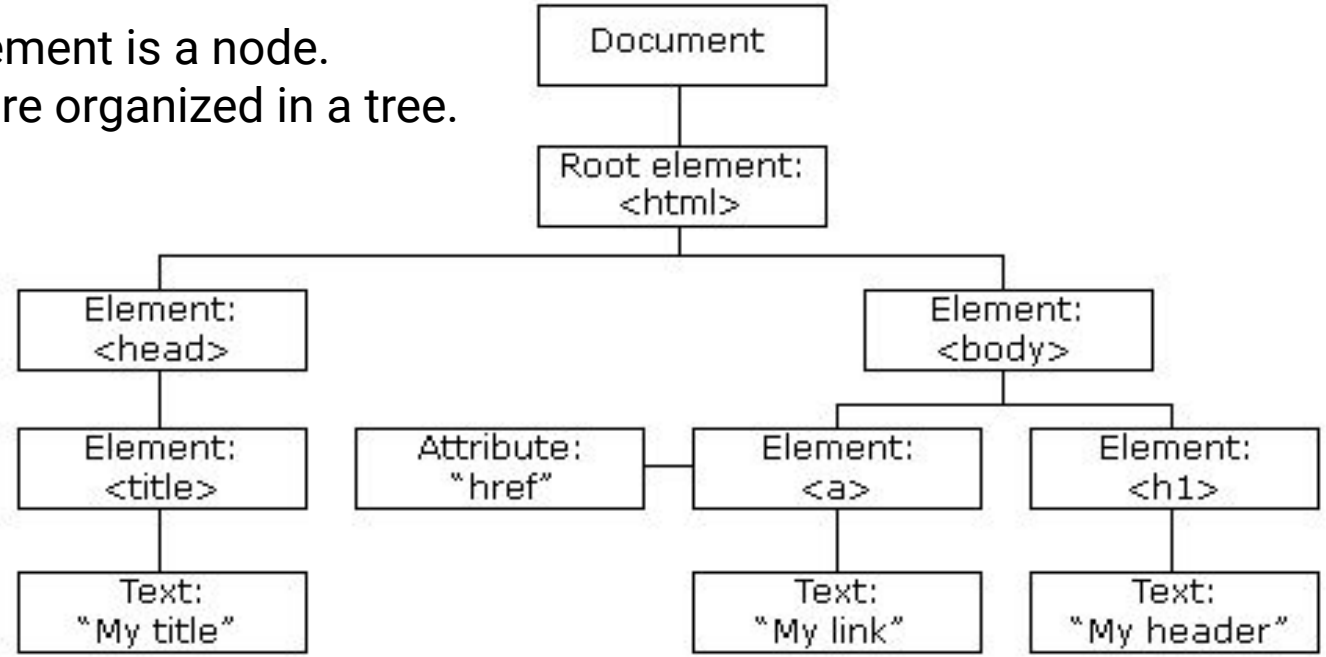
  The `window` object. In this use case, `this` refers to the window. The `window` is an object representation of an open window in a browser.
- Click in the `window` object and begin looking at the numerous properties and methods it contains.
- Make your way down to `document` and click in it.
- Spend some time looking through the properties and methods in `window.document`.

What is `window.document`?

The Document Object Model (DOM)

The DOM is an object-oriented representation of HTML (i.e., the HTML document modeled as JavaScript objects).

Each element is a node.
Nodes are organized in a tree.

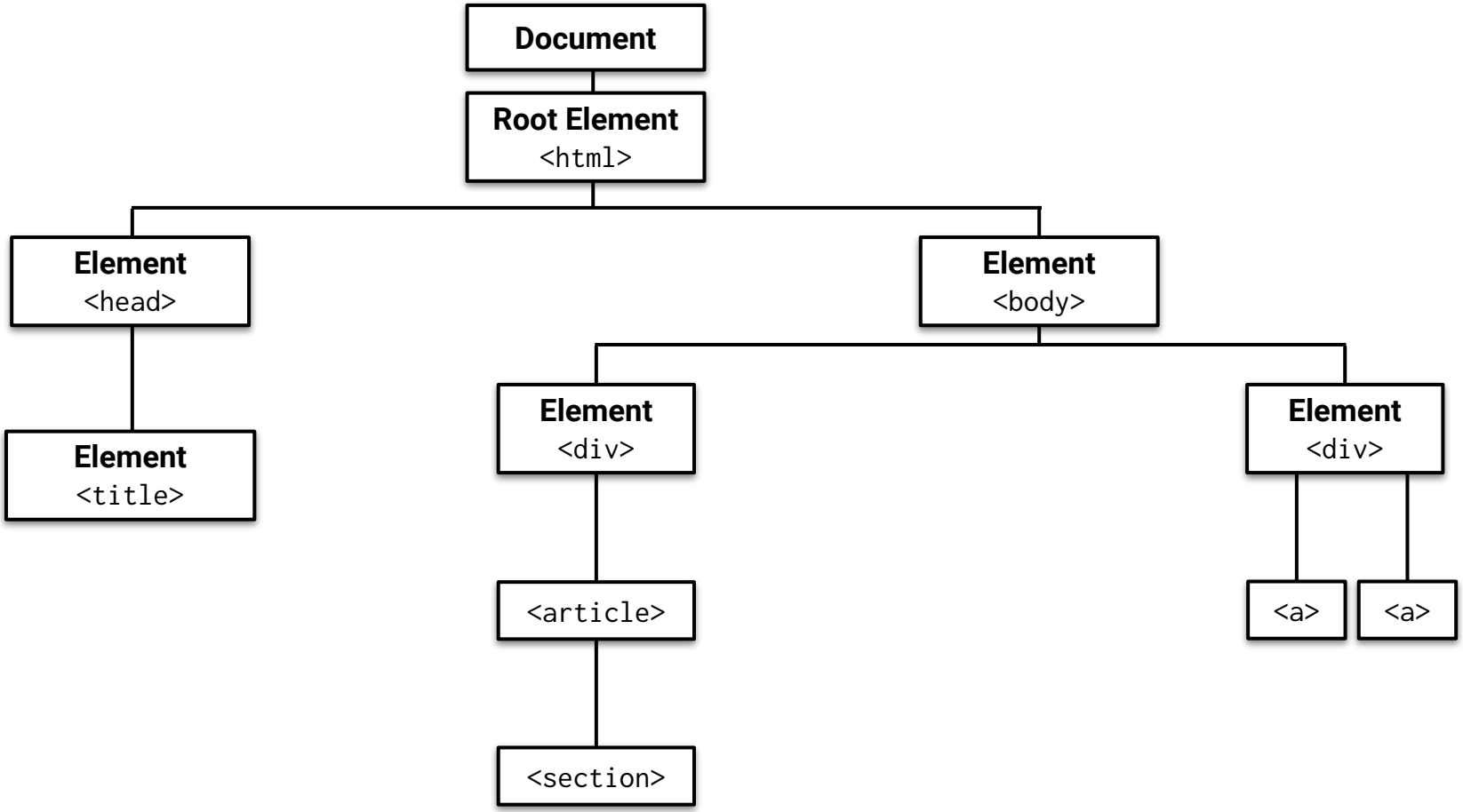


What Is the Node Tree of This HTML?

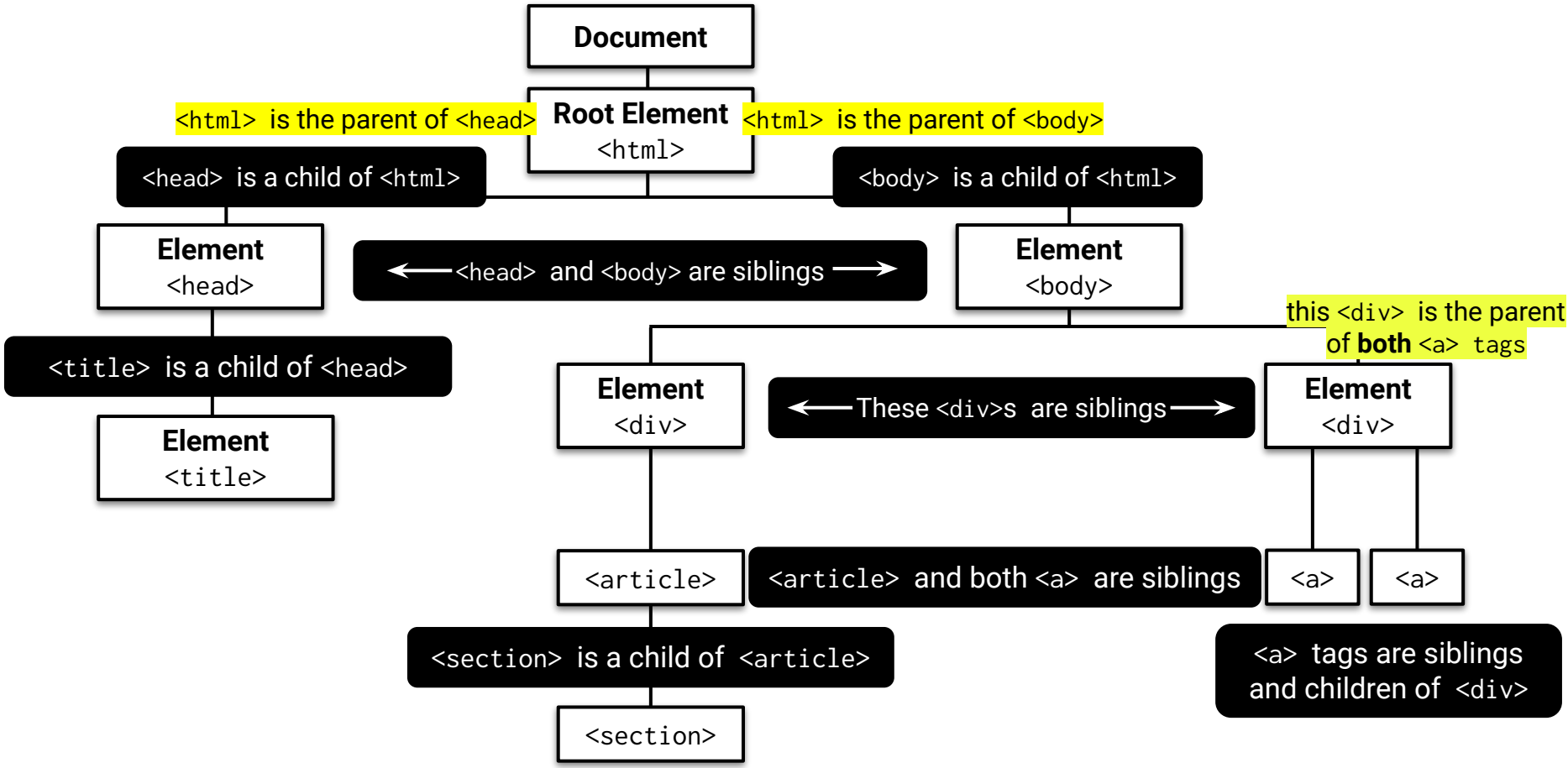
```
<!DOCTYPE html>
<html lang="en">
   <head>
      <title>Document</title>
   </head>
   <body>
      <div>Main div
         <article>
            <section>

            </section>
         </article>
      </div>
      <div>
         <a href="myImg"></a>
         <a href="secondImg"></a>
      </div>
   </body>
</html>
```

What Are the Parent, Child, and Sibling Nodes?



Node Relationships: Parents, Children, and Siblings



What is traversing the DOM?

DOM Traversal

Navigate to the MDN DOM Docs. Open the Chrome Dev Tools and enter the following commands one by one.

```
console.log(document.body);

console.log(document.body.children);

console.log(document.body.children[3]);

console.log(document.body.children[3].childNodes[7]);

console.log(document.body.children[3].childNodes[7].style.fontSize = "20px");
```

When using the `style` method, properties with two words (such as font-size) become a single word and camelCased. Font-size becomes fontSize.

Here is one more example of `.style`:

```
console.log(document.body.children[3].childNodes[7].parentElement.style.color = "red");
```

Our Goal Today

Navigate to the deployed Speed Reader app.