Web Development

Day 8: Even More JavaScript

Loops, Objects & The DOM

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Icebreaker!

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Today's Schedule

Morning:

- JavaScript So Far...
- Loops
- Project: Todo List
- Objects
- Objects vs Arrays

Afternoon:

- Application Programming Interfaces
- Project: Pokedex
- JavaScript with HTML
- The Document Object Model

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JavaScript So Far

- Comments
- Variables
- Data Types
- Operating on Variables
- Template Literals
- Booleans
- Functions
- If Statements
- Arrays

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Loops

https://www.flocabulary.com/unit/coding-for-loops/

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For Loops

When you want to run something for a specific number of times, use a **for** loop.

```
for (var i = 0; i < 10; i++) {
    console.log("=^.^=");
}
```

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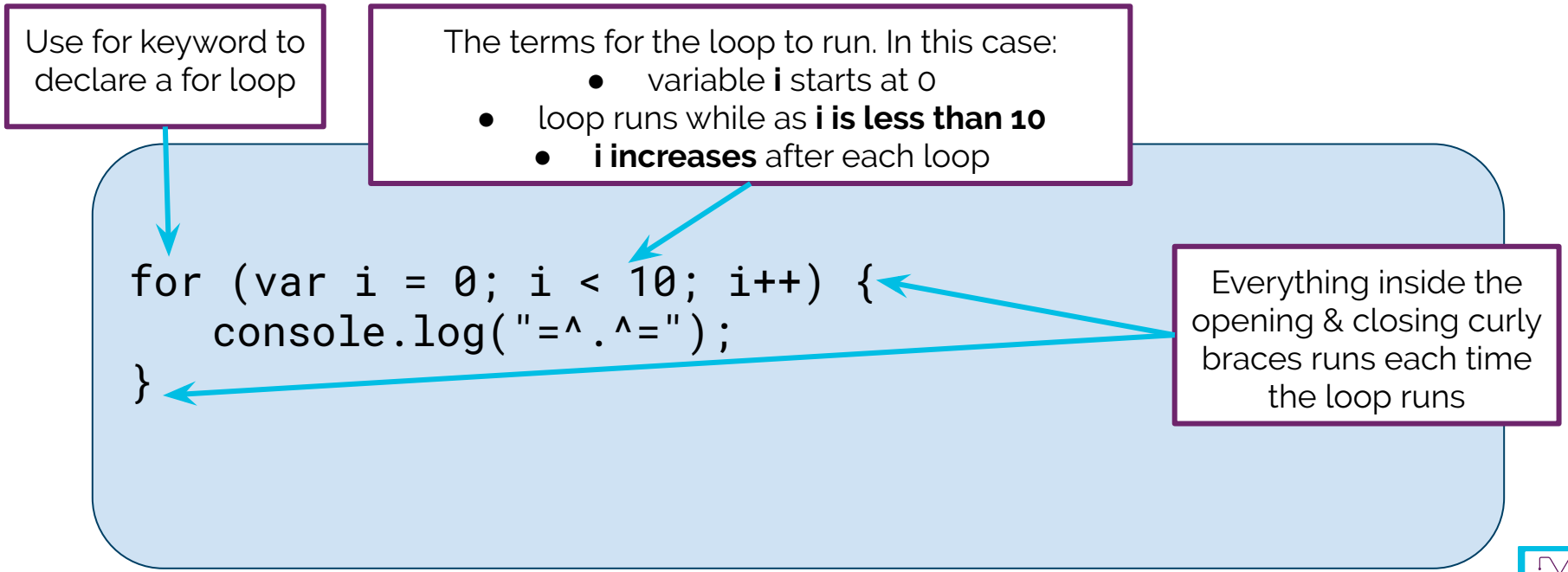
Anatomy of a For Loop



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Practice with For Loops

Work through the Day 8 “For Loops” exercises on JS Bin.

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For Loops

When might a for loop be useful?

While Loops

Sometimes you don't know how many times you need a statement to execute. You need it to run while a certain condition is true. Use a while loop:

```
while (hungry === true) {
    eatBurrito();
    hungry = false;
}
```

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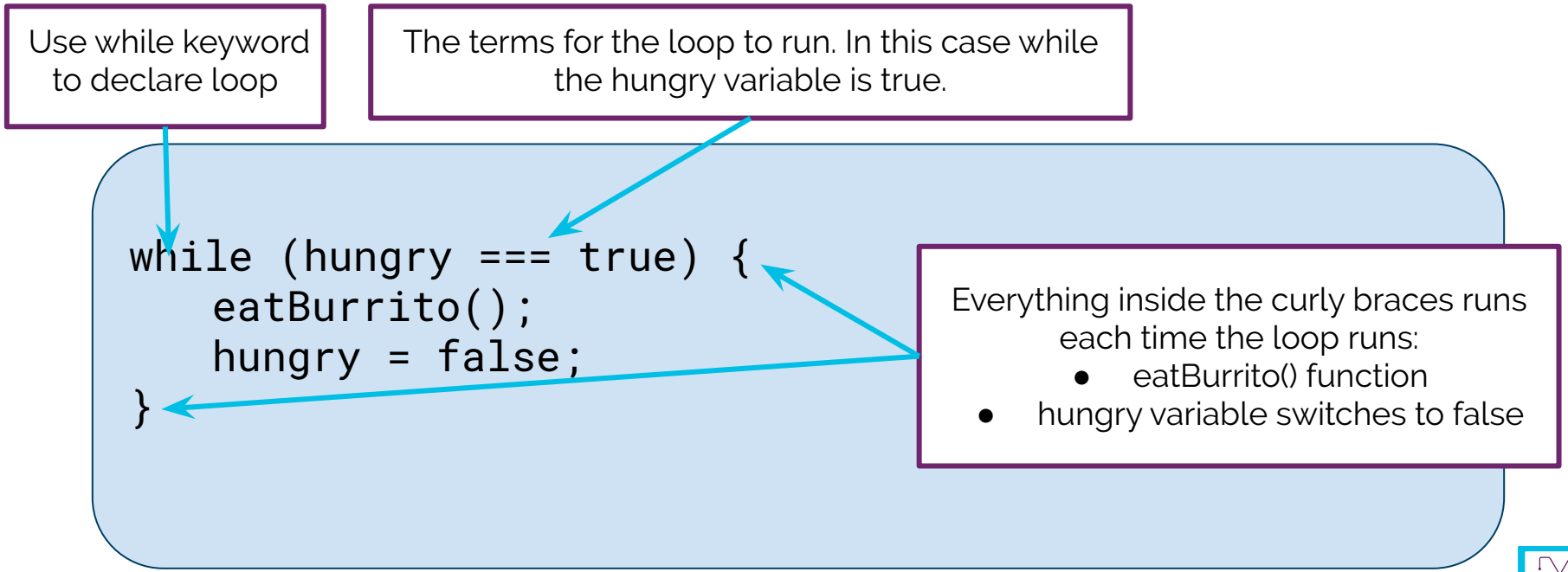
Anatomy of a While Loop



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While Loops

Sometimes the condition for a while loop always uses a comparison operator, like greater than, less than, or equal to.

```
while (hungryPeople > 0) {
    makeBurrito();
    hungryPeople--;
}
```

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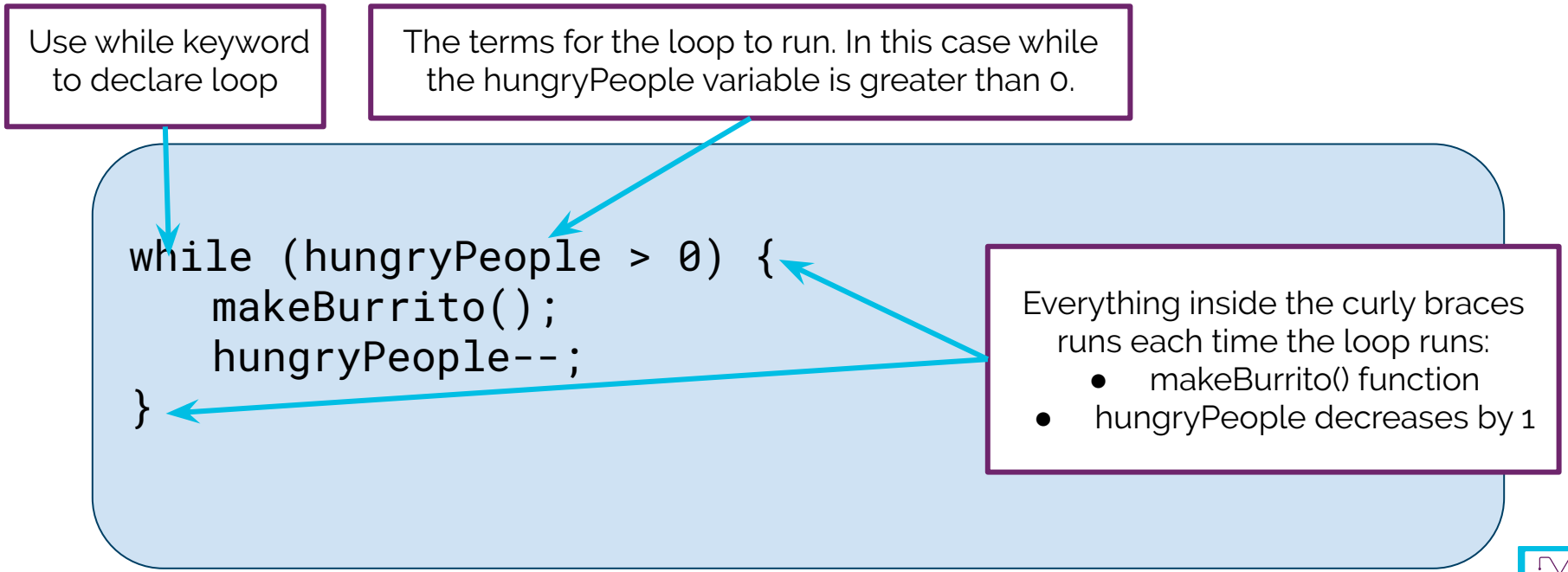
Anatomy of a While Loop



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Practice with While Loops

Work through the Day 8 “While Loops” exercises on JS Bin.

While Loops

When might a while loop be useful?

Project: Todo List

Open the “Todo List” starter code and fork the pen.

Just as before, we’ll read through the code together, starting with the HTML.

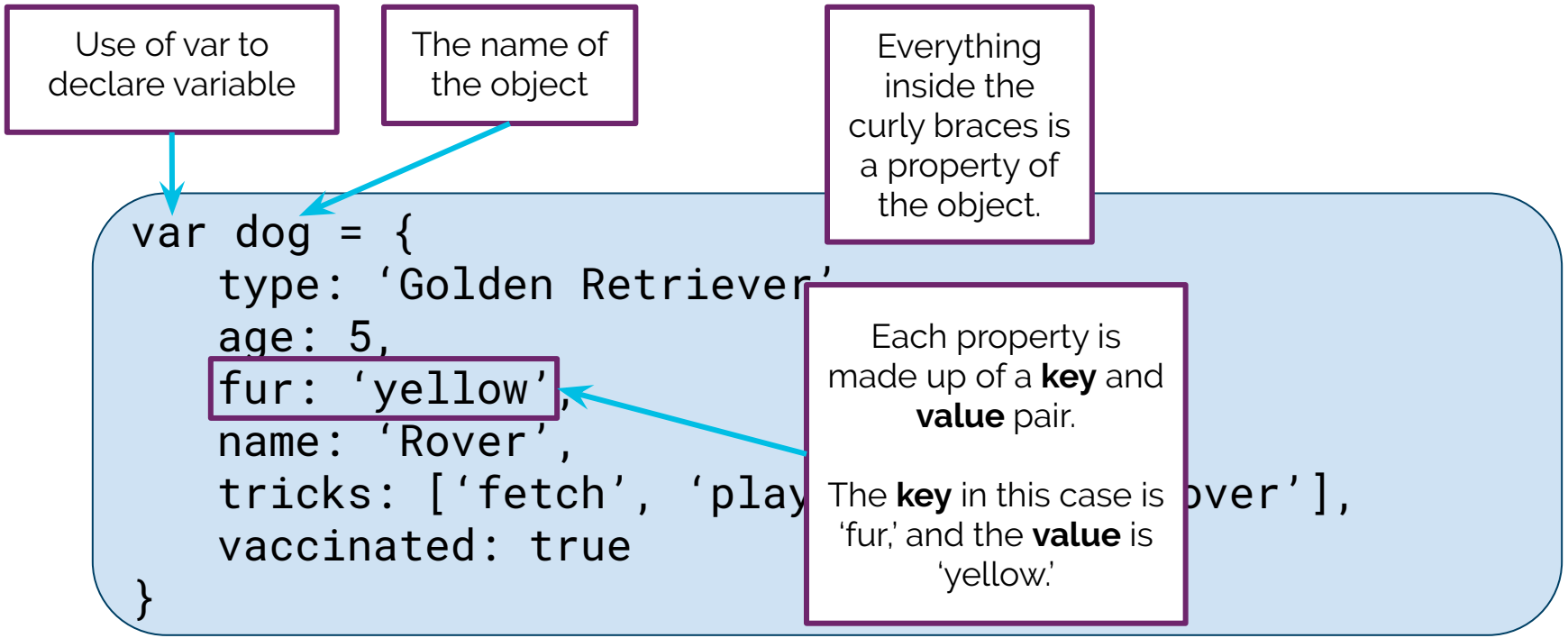
Objects

Sometimes you need to store data that's related but isn't the same as a list. An **object** is a collection of properties.

Think about a dog. A dog has the following properties:

- Type of dog
- Age
- Color of fur
- Owner
- Known tricks

Anatomy of an Object



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Storing Data in Objects

All data types can be stored as **values** inside an object. Notice we have 3 strings, a number, an array, and a Boolean stored as **values**.

```
var dog = {
    type: 'Golden Retriever',
    age: 5,
    fur: 'yellow',
    name: 'Rover',
    tricks: ['fetch', 'play dead', 'roll over'],
    vaccinated: true
}
```

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Accessing the Data in Objects

Data (values) inside objects can be accessed using the **keys**. In this example, the keys include type, age, fur, owner, tricks, and vaccinated.

```
var dog = {
    type: 'Golden Retriever',
    age: 5,
    fur: 'yellow',
    name: 'Rover',
    tricks: ['fetch', 'play dead', 'roll over'],
    vaccinated: true
}
```

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Accessing the Data in Objects

Values can be accessed using the **variable name**, **a period, and a key**. This is called **dot notation**.

```
var dog = {...}

dog.type; // returns ‘Golden Retriever’
dog.age; // returns 5
dog.tricks; // returns [‘fetch’, ‘play dead’, ‘roll over’]
```

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Accessing the Data in Objects

Values can also be accessed using **bracket notation**, using the **variable name, the key, and brackets.**

```
var dog = {...}

dog['type'];     // returns 'Golden Retriever'
dog['age'];      // returns 5
dog['tricks'];   // returns ['fetch', 'play dead',
'roll over']
```

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Accessing the Data in Objects

If you want to access an array that's stored inside an object, start with the variable and property, then add an index!

```
var dog = {...}

dog['tricks'];       // returns ['fetch', ...]
dog['tricks'][0];    // returns 'fetch'
dog.tricks[0];       // returns 'fetch'
```

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Adding Data to Objects

Add properties to an existing object by using dot or bracket notation by giving a **key** and setting it equal to the **value**.

```
var dog = {...}

// These do the same thing.
dog.owner = “Jane”;
dog[‘owner’] = “Jane”;
```

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Overwriting Data in Objects

You can also overwrite a property's value by reassigning it using the same bracket or dot notation.

```
var dog = {...}

dog.name = “Fido”;
dog[‘name’] = “Fido”;
```

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Deleting Data in Objects

You can also delete a property from an object using the delete keyword and the key.

```
var dog = {...}

delete dog.tricks;
delete dog['tricks'];
```

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Practice with Objects

Work through the Day 8 “Objects” exercises on JS Bin.

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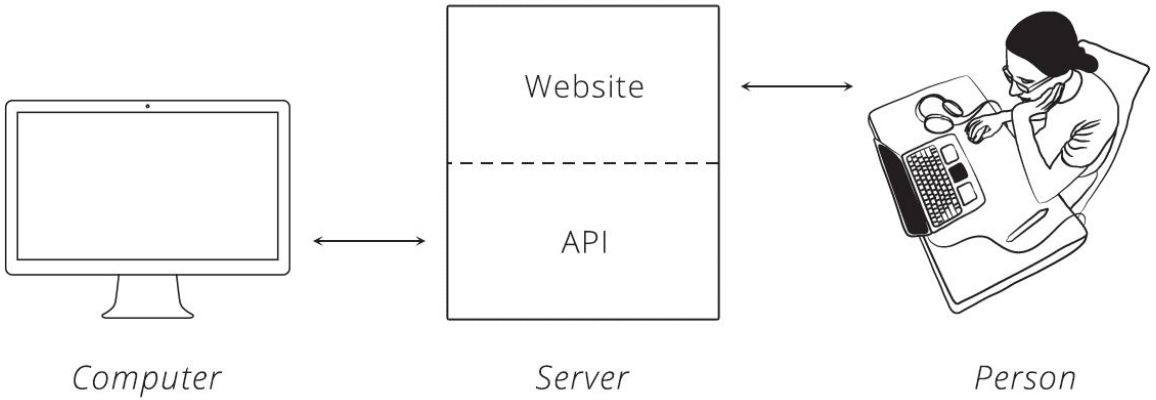
Arrays vs Objects

When would you want an object instead of an array?

APIs

Application Programming Interfaces are software that allows two programs to talk to one another. On the internet, APIs are what allow a server to return data to a user's web browser.



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JSON

Many web APIs return data in **JSON** format: JavaScript Object Notation. JSON looks like JavaScript but it is a separate language used to deliver data in a reliable format.

Javascript:

```
var student = {
    firstName: “Joe”,
    lastName: “Smith”
}
```

JSON:

```
{
    “firstName”: “Joe”,
    “lastName”: “Smith”
}
```

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Pokemon API

Project: Pokédex App

Open the “Pokédex App” starter code and fork the pen.

Just as before, we’ll read through the code together, starting with the HTML.

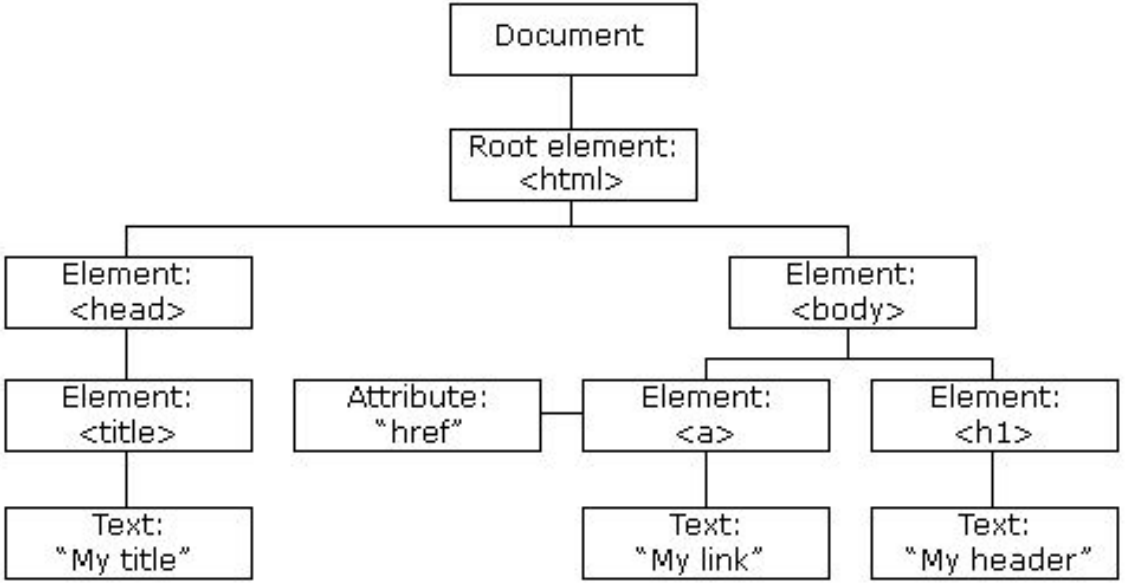
Using JS with HTML

JavaScript works with HTML using the **Document Object Model**.

The DOM defines how a document (the website, in this case) is structured and accessed.

The DOM changes with each web page, based on the HTML of the page.

The Document Object Model



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DOM Methods

You've already seen one DOM method regularly in the JS projects you've been working on:

```
document.getElementById(element);
```

Remember, methods are built-in functions that belong to specific objects and can only be used by those objects. This method can only be used by the **document** object.

Commonly Used DOM Methods

- document.getElementById(id)
- document.getElementsByTagName(name)
- document.createElement(name)
- parentNode.appendChild(node)
- element.innerHTML()
- element.setAttribute()
- element.getAttribute()
- element.addEventListener()
- window.onload()
- console.log()
- window.scrollTo()

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Running JS on HTML Page

Using buttons is a common way to execute JS functions, and it is easy to implement using the “onclick” attribute. You can also add any necessary arguments to the function, just like you would using a JS file.

```
<button onclick="myFunction()">
    Run a function
</button>
```

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Reflection

Write in your journal about how you feel or what you learned today.

Prompts:

- How are objects and arrays similar? How are they different?
- APIs are used all over the web to share data. Can you think of a site you use that uses them? How are they used?
- Did you experience any frustration today while learning about JavaScript? How did you deal with it?