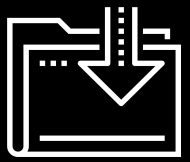
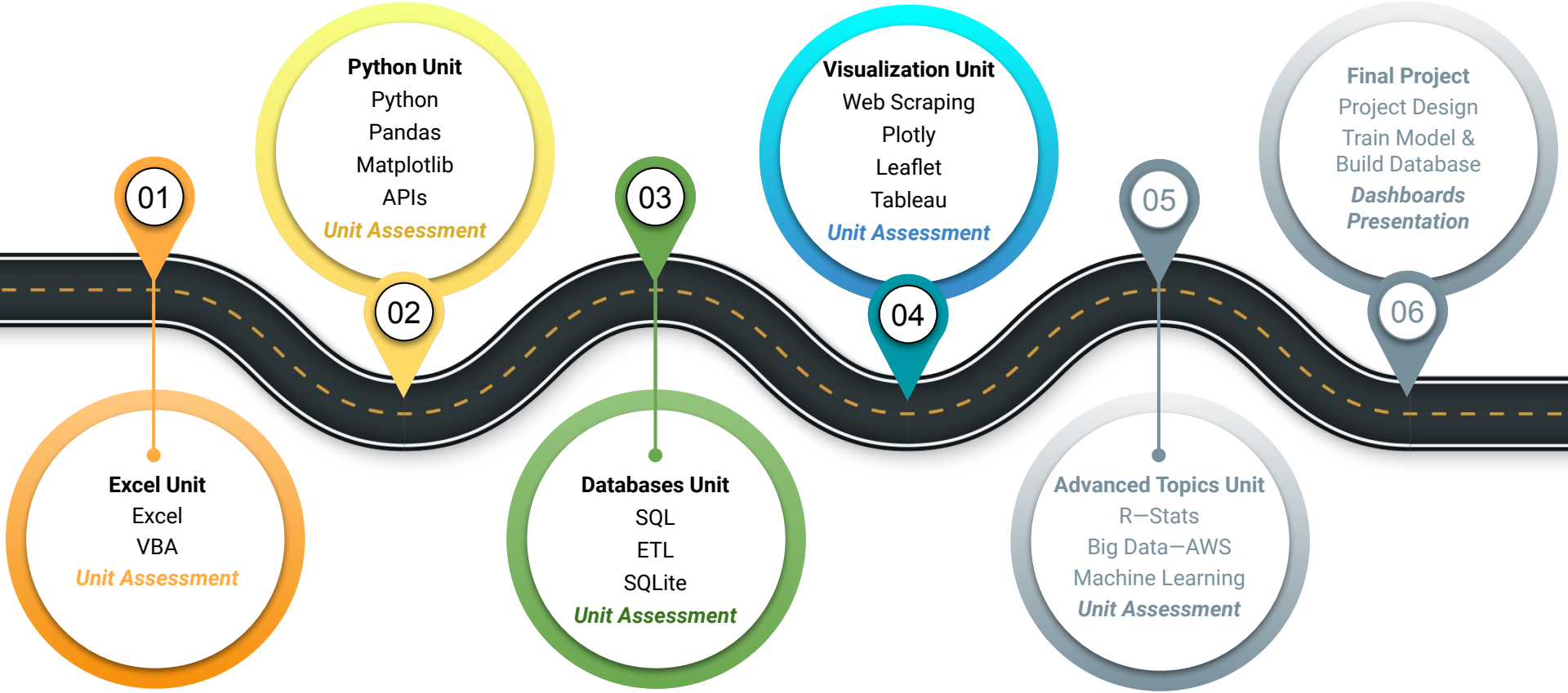
JavaScript Objects and DOM Manipulation

Data Boot Camp

Lesson 11.2



The Big Picture



Module 11

This Week: JavaScript Objects and DOM Manipulation

This Week: JavaScript Objects and DOM Manipulation

By the end of this week, you'll know how to:

- Create, update, and iterate over JavaScript Objects.
- Use forEach() and callback functions
- Use D3.js for basic DOM manipulation
- Populate and filter tables using static data structures
- Use D3.js to attach events to DOM elements
- Dynamically manipulate the DOM through events

This Week's Challenge

Using the skills learned throughout the week, create new search parameters and new JavaScript functions for UFO data to create an updated and dynamic webpage.

Module 11

Today’s Agenda

Today's Agenda

By completing today's activities, you'll learn the following skills:

01 Use forEach() and callback functions

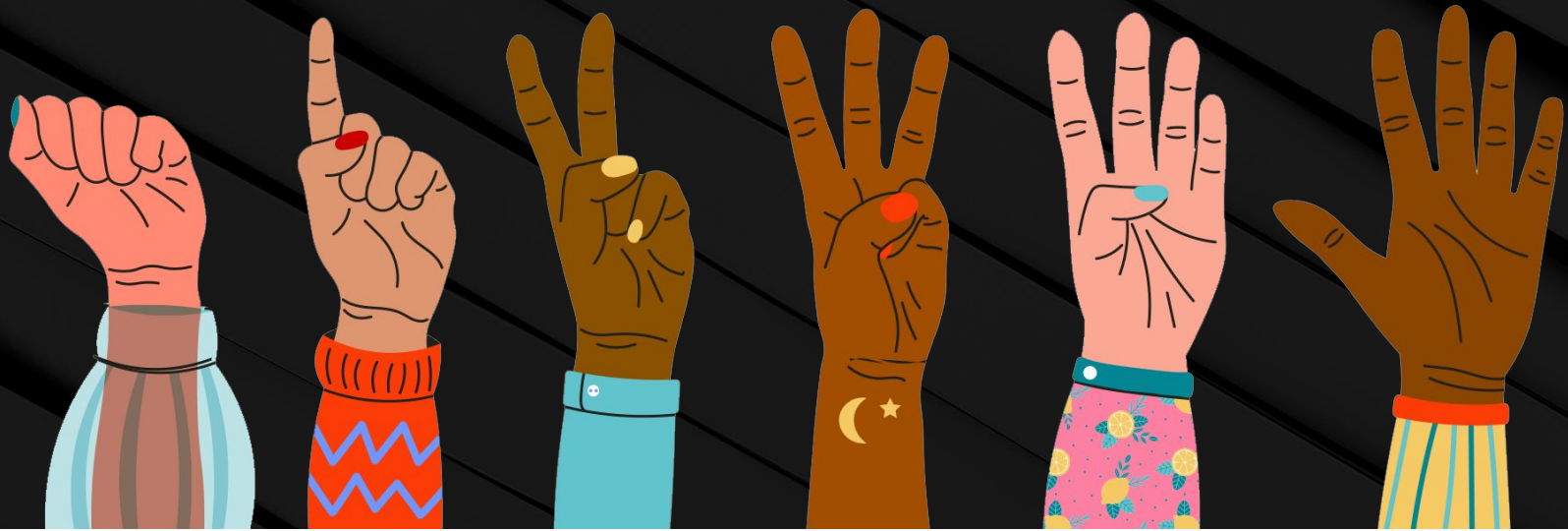
02 Create, update, and iterate over JavaScript objects

03 Attach and manipulate the DOM with D3.js

Make sure you've downloaded any relevant class files!

FIST TO FIVE:

How comfortable do you feel with this topic?



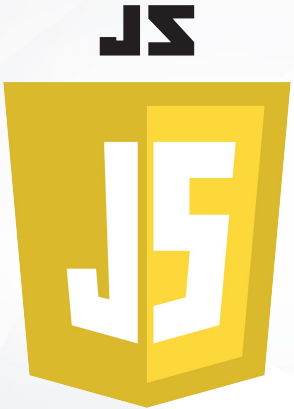
Time to Code

`forEach` and Callbacks

Suggested Time:

20 minutes


forEach
for loop



JavaScript often provides more than one way to perform an analysis task: for instance, `forEach` and `for` loops.

JavaScript Objects

What is JSON?

JSON is a syntax for storing and exchanging data.

What is JSON?

JSON is a syntax for storing and exchanging data.

J	Java
S	Script
O	Object
N	Notation

JSON

JSON is similar to a Python dictionary in many ways:

01

Information is organized in key and value pairings.

02

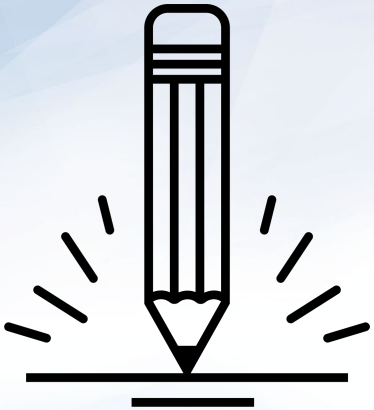
They are unordered.

03

key is used to access the value.

Instructor Demonstration

JavaScript Objects



Activity: Word Frequency Counter

In this activity, you will create a function in JavaScript that uses the `forEach()` method to count the number of occurrences of each word in a string.

Suggested Time:
15 Minutes

Instructions: Word Frequency Counter

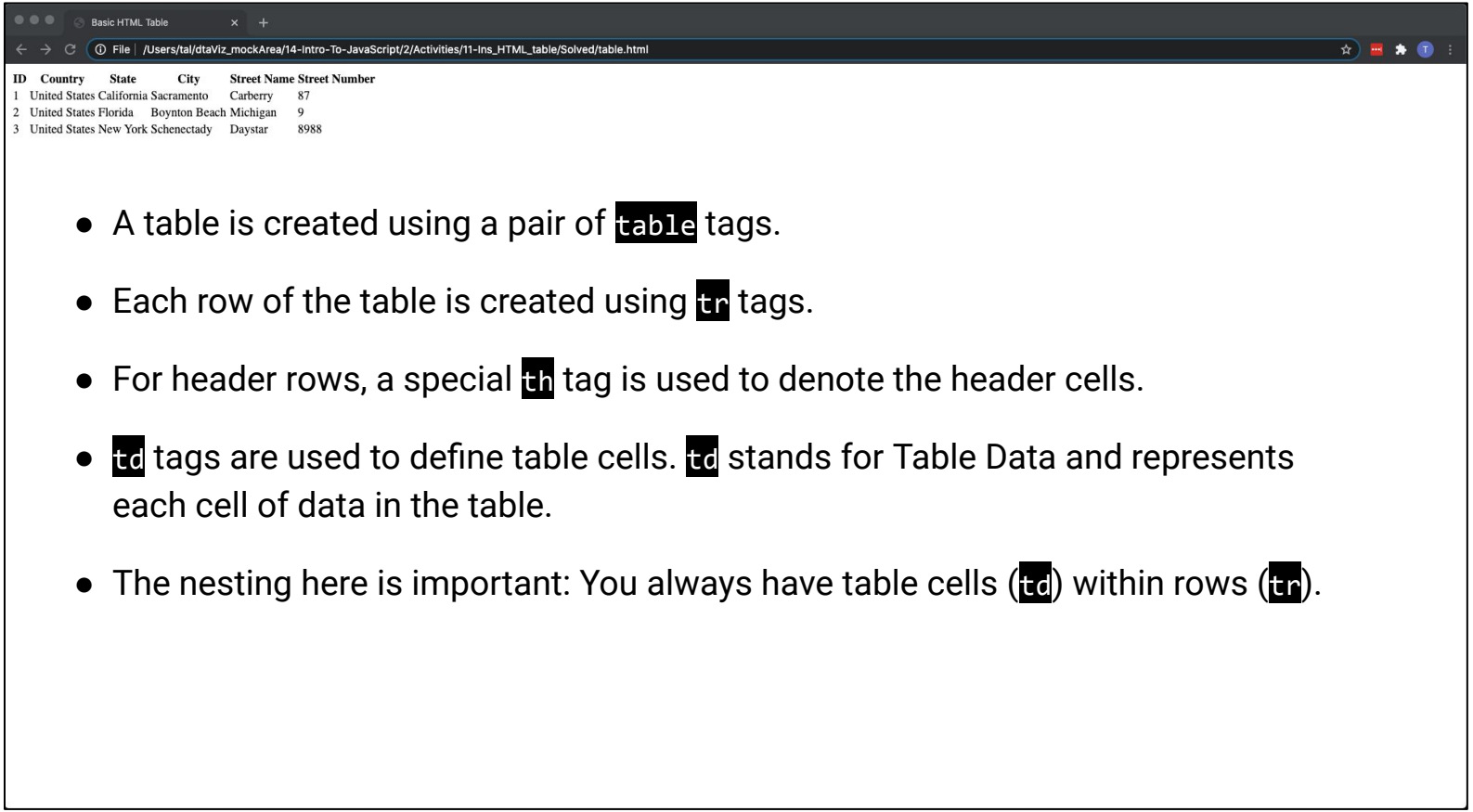
Instructions	Hints
Create a function in JavaScript that counts the number of occurrences of each word in a string.	• How would you split a string into an array of words? • Start the word frequency counter an empty object. • How would you determine whether a word already exists in the object?
The function should take in a string as its parameter.	
Use an object to hold word frequency in key-value pairs. For example, the following will be the frequency list for the string "***I yam what I yam and always will be what I yam***"	

```
{
  I: 3,
  always: 1,
  and: 1,
  be: 1,
  what: 2,
  will: 1,
  yam: 3,
}
```

Let’s Review

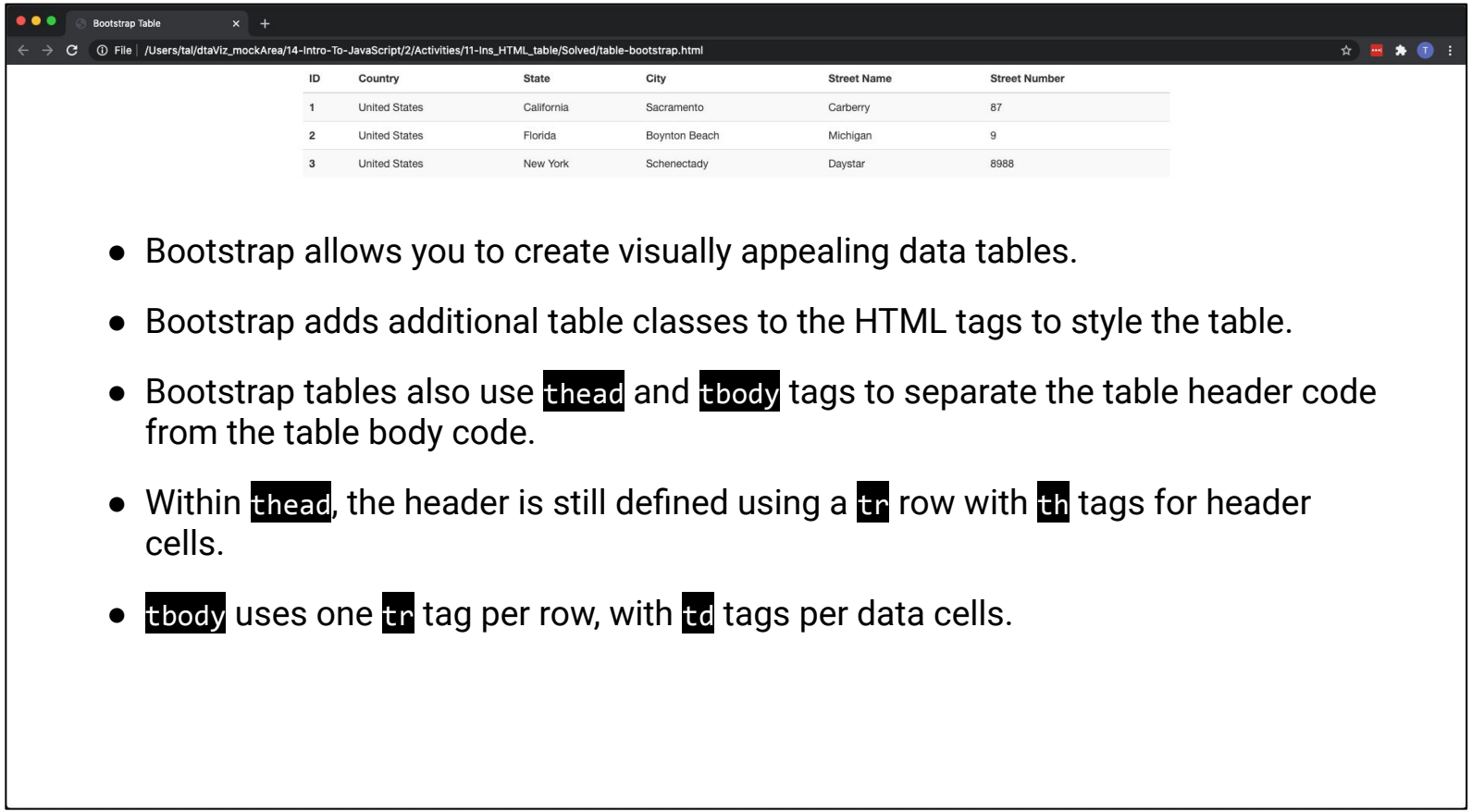
HTML Tables

HTML Tables



- A table is created using a pair of `table` tags.
- Each row of the table is created using `tr` tags.
- For header rows, a special `th` tag is used to denote the header cells.
- `td` tags are used to define table cells. `td` stands for Table Data and represents each cell of data in the table.
- The nesting here is important: You always have table cells (`td`) within rows (`tr`).

HTML Tables



- Bootstrap allows you to create visually appealing data tables.
- Bootstrap adds additional table classes to the HTML tags to style the table.
- Bootstrap tables also use `thead` and `tbody` tags to separate the table header code from the table body code.
- Within `thead`, the header is still defined using a `tr` row with `th` tags for header cells.
- `tbody` uses one `tr` tag per row, with `td` tags per data cells.

Instructor Demonstration

HTML Tables

D3 Table

Suggested Time:

20 minutes

Questions?

Event Listeners

What is an Event?

An **event** is an action by the user or the browser that JavaScript (listens) can detect and react to by executing code (interact HTML).

Event Types

There are several event types that are supported by the browser, including:

- `click`
- `change`
- `Keydown`
- `scroll`
- `pointerenter`
- `pointerleave`

D3 Event Listeners

Events have two main components:

01 **A target:** a reference to the object that dispatched the event.

02 **A handler:** a function that is executed in response to the event occurring.

```
function handleClick() {
  console.log("A button was clicked!");
  console.log(d3.event.target);
}
```

D3 Event Listeners

In D3, events are attached using the `.on()` function.

```
button.on("click", handleClick);
```

Alternatively, the click handler can be defined inline.

```
button.on("click", function() {
 console.log("Hi, a button was clicked!");
 console.log(d3.event.target);
});
```

D3 Event Listeners

They are just like functions that can execute code or call other functions.

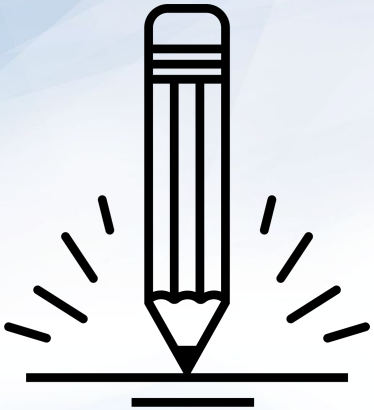
```
button.on("click", function() {
 d3.select(".giphy-me").html("<img src='https://gph.to/2Krfn0w'alt='giphy'>");
});
```

Input elements can trigger change events.

```
inputField.on("change", function() {
  var newText = d3.event.target.value;
  console.log(newText);
});
```

Instructor Demonstration

D3 Event Listeners



Activity: On Change

In this activity, you will use **D3** to reverse the input text and display it on the page.

Suggested Time:
15 Minutes

Instructions: On Change

Instructions	Bonus	Hints
Use d3 to select the input (`#text`) and output (`.output`) elements from the page.	Instead of reversing the string, try to calculate the number of characters in the string.	You may need to iterate through the object using `Object.entries` and `forEach`. 
Use d3 to attach an event listener to the input field. This event should call the `handleChange` function any time that the input text changes.		
Finally, complete the `handleChange` function to select the text from the input field and reverse the string. This function will use d3 to set the output element to the value of the reversed string.	Edit the `index.html` file to change the `h1` tag to an unordered list `ul`. Append each word: `count` as a `li` element.	

Let's Review

Questions?