GENERAL ASSEMBLY

JAVASCRIPT DEVELOPMENT

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HELLO!

1. Pull changes from the `svodnik/JS-SF-10-resources` repo to your computer
2. Open the `15-crud-firebase > starter-code` folder in your code editor

JAVASCRIPT DEVELOPMENT

INTRO TO CRUD AND FIREBASE

LEARNING OBJECTIVES

At the end of this class, you will be able to

- Explain what CRUD is.
- Explain the HTTP methods associated with CRUD.
- Implement Firebase in an application.
- Build a full-stack app with CRUD functionality.

AGENDA

- CRUD
- Firebase intro and setup
- Create
- Read
- Update
- Delete

WEEKLY OVERVIEW

WEEK 9	Closures & the module pattern / CRUD & Firebase
WEEK 10	Deploying your app / Final Project Lab
WEEK 11	Student-Instructor Choice / Final Project Presentations!

EXIT TICKET QUESTIONS

1. I don't know when to say "we need a module"
2. Should i do functional programming or object oriented?!
   Is JS more equipped/built out for functional or object oriented programming?

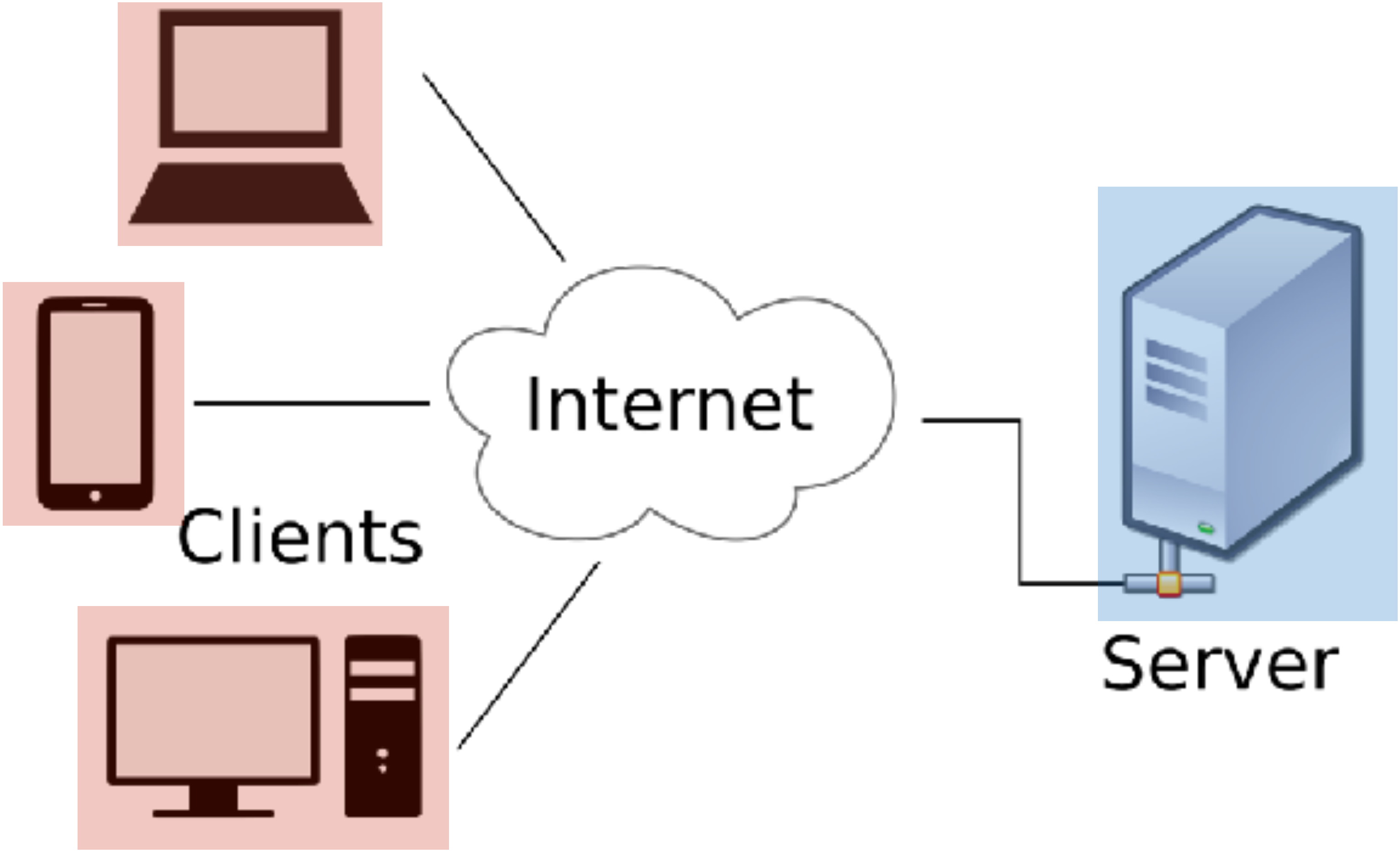
CRUD

What are some apps that allow you to create, read, update, and delete data?

Back-end review

Front end

- HTML
- CSS
- JS



Back end

- JS
- Python
- Ruby
- PHP
- …

CRUD

- Create
- Read
- Update
- Delete

CRUD and HTTP

CRUD action	HTTP verb
Create	`POST`
Read	`GET`
Update	`PATCH/PUT`
Delete	`DELETE`

EXERCISE — API METHODS

EXERCISE

KEY OBJECTIVE

- Identify API methods that let you implement CRUD functionality using a popular web service

TYPE OF EXERCISE

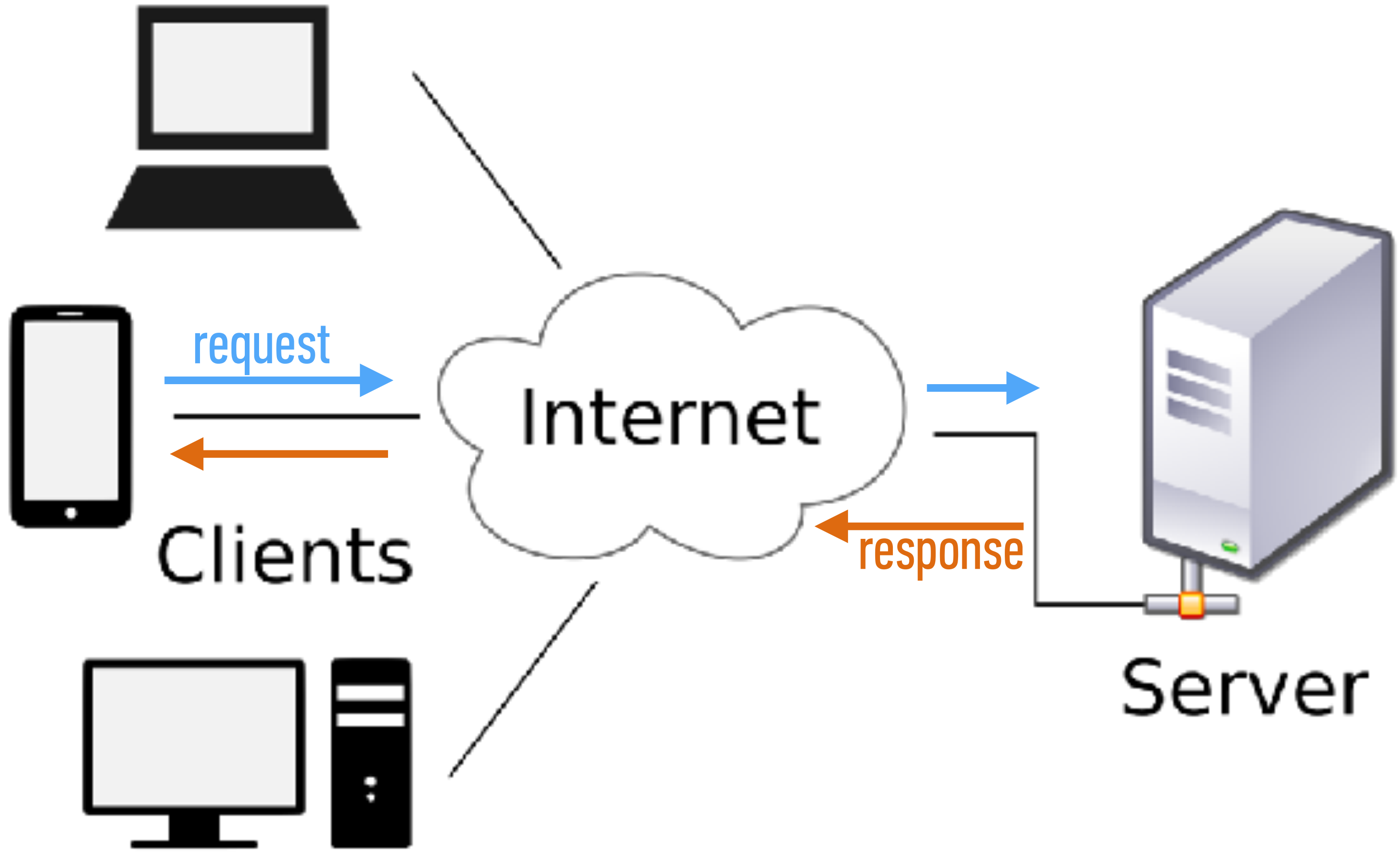
- Groups of 3

TIMING

5 min

1. Research your assigned API to see what HTTP methods a developer must use to perform at least one instance of create, read, update and delete. (If your API doesn't fully support CRUD, note any limitations.)
2. Further, define what exactly is being created, read, updated or deleted. For example, for Facebook what HTTP method on what endpoint must you ping in order to create a post in a feed?

THE CLIENT-SERVER MODEL WITH CRUD



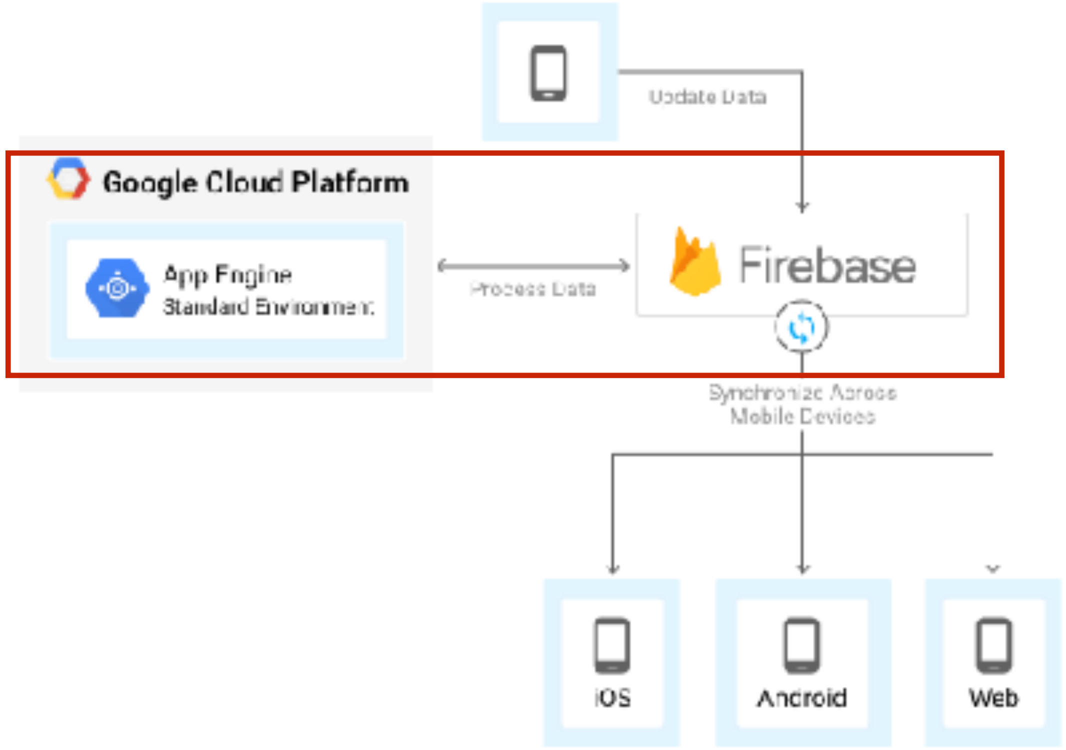
Stores HTML/CSS/JS code

- Accepts HTTP requests
- Generates HTTP responses

Stores database

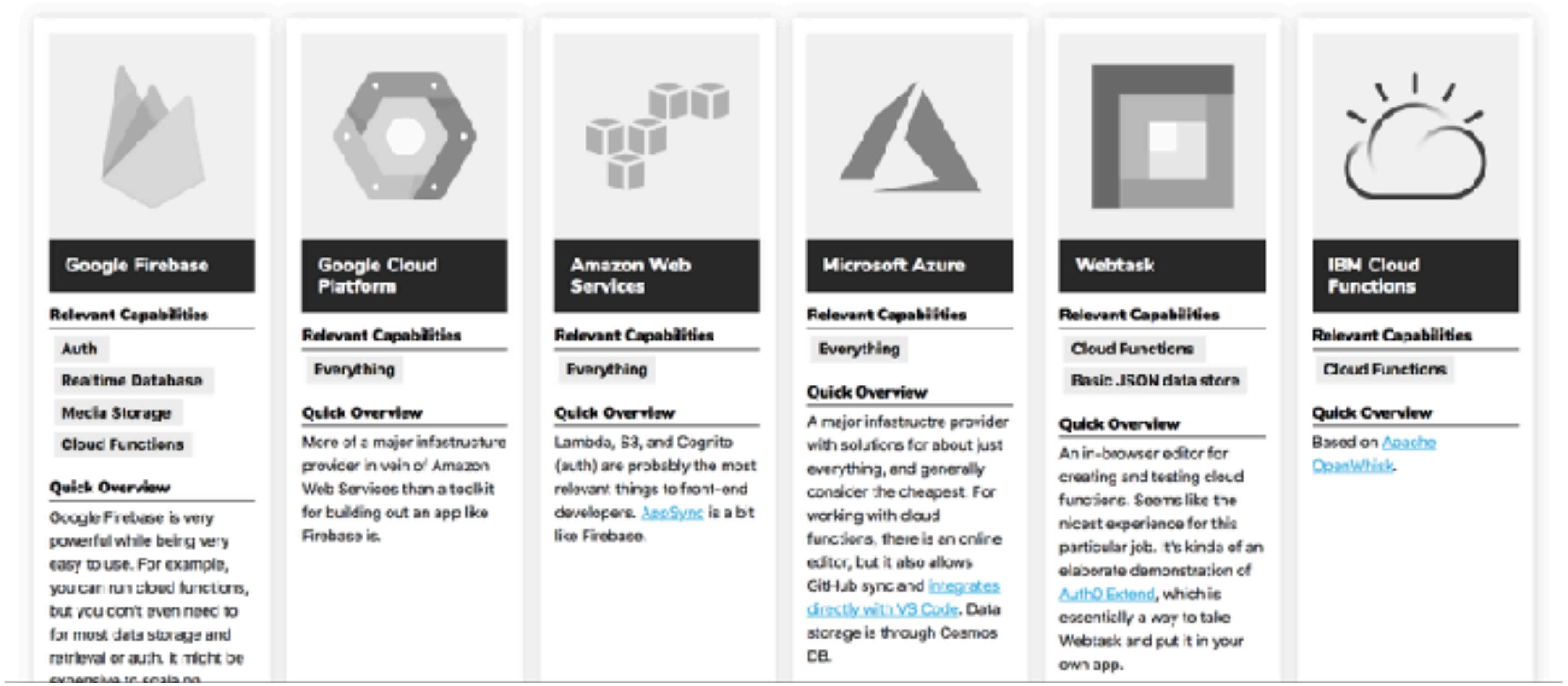
- Provides create access
- Provides read access
- Provides update access
- Provides delete access

FIREBASE



Back end

ALTERNATIVE “SERVERLESS” SERVICES



Google Firebase

Relevant Capabilities

- Auth
- Realtime Database
- Media Storage
- Cloud Functions

Quick Overview

Google Firebase is very powerful while being very easy to use. For example, you can run cloud functions, but you don't even need to for most data storage and retrieval or auth. It might be expensive to scale no

Google Cloud Platform

Relevant Capabilities

- Everything

Quick Overview

More of a major infastructure provider in vein of Amazon Web Services than a toolkit for building out an app like Firebase is.

Amazon Web Services

Relevant Capabilities

- Everything

Quick Overview

Lambda, S3, and Cognito (auth) are probably the most relevant things to front-end developers. AppSync is a bit like Firebase.

Microsoft Azure

Relevant Capabilities

- Everything

Quick Overview

A major infastructre provider with solutions for about just everything, and generally consider the cheapest. For working with cloud functions, there is an online editor, but it also allows GitHub sync and integrates directly with VS Code. Data storage is through Cosmos DB.

Webtask

Relevant Capabilities

- Cloud Functions
- Basic JSON data store

Quick Overview

An in-browser editor for creating and testing cloud functions. Seems like the nicest experiance for this particular job. It's kinda of an elaborate demonstration of Auth0 Extend, which is essentially a way to take Webtask and put it in your own app.

IBM Cloud Functions

Relevant Capabilities

- Cloud Functions

Quick Overview

Based on Apache OpenWhisk.

https://thepowerofserverless.info/services.html#major-providers

LAB — PLAN A CRUD APP

LAB

KEY OBJECTIVE

- Plan a full-stack app with full CRUD functionality

TYPE OF EXERCISE

- Solo or in pairs

TIMING

10 min

1. Come up with an idea for an app that implements CRUD. You'll build your app this week in class (this is not your final project). Your app must be able to Create, Read, Update and Delete data.
2. Build out your HTML, CSS, and JS files.
3. Add code generated from your Firebase project to your HTML and JS files.

CRUD and HTTP

CRUD action	HTTP verb	Firebase method
Create	`POST`	`push()`
Read	`GET`	`ref()`
Update	`PATCH`	`update()`
	`PUT`	`set()`
Delete	`DELETE`	`remove()`

LAB — IMPLEMENT CREATE FUNCTIONALITY

LAB

KEY OBJECTIVE

- Build the Create functionality of a full-stack app

TYPE OF EXERCISE

- Solo or in pairs

TIMING

20 min

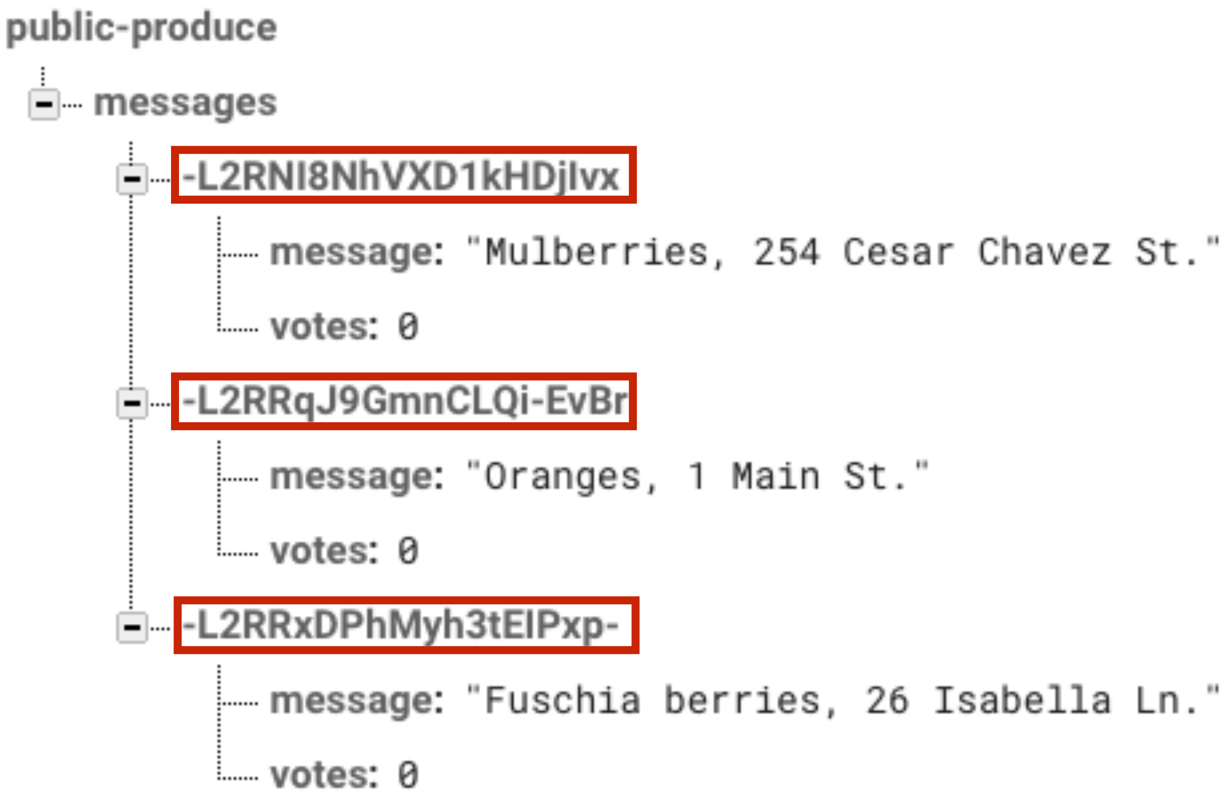
1. Create a form
2. Get user input
3. Create a section in your database for your data
4. Save your data to the database
5. Change security rules to allow access without authentication
6. View your data in the Firebase dashboard

ASSOCIATING DOM ELEMENTS WITH DATABASE RECORDS

HOW TO ASSOCIATE LIST ITEMS WITH DATABASE ENTRIES?

```
<ul class="message-board">
  <li>Mulberries, 254 Cesar Chavez St.</li>
  <li>Oranges, 1 Main St.</li>
  <li>Fuschia berries, 26 Isabella Ln.</li>
</ul>
```

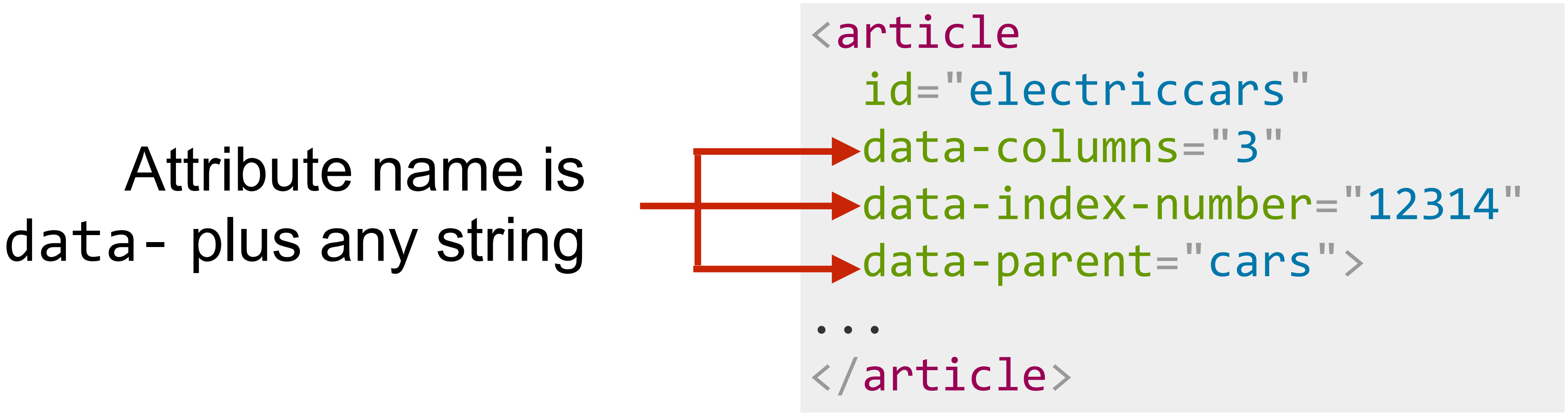
EACH RECORD SAVED IN FIREBASE HAS A UNIQUE ID



```
public-produce
  messages
    -L2RNI8NhVXD1kHDjlvx
      message: "Mulberries, 254 Cesar Chavez St."
      votes: 0
    -L2RRqJ9GmnCLQi-EvBr
      message: "Oranges, 1 Main St."
      votes: 0
    -L2RRxDPhMyh3tElPxp-
      message: "Fuschia berries, 26 Isabella Ln."
      votes: 0
```

HTML data ATTRIBUTE

Allows us to associate metadata with DOM elements

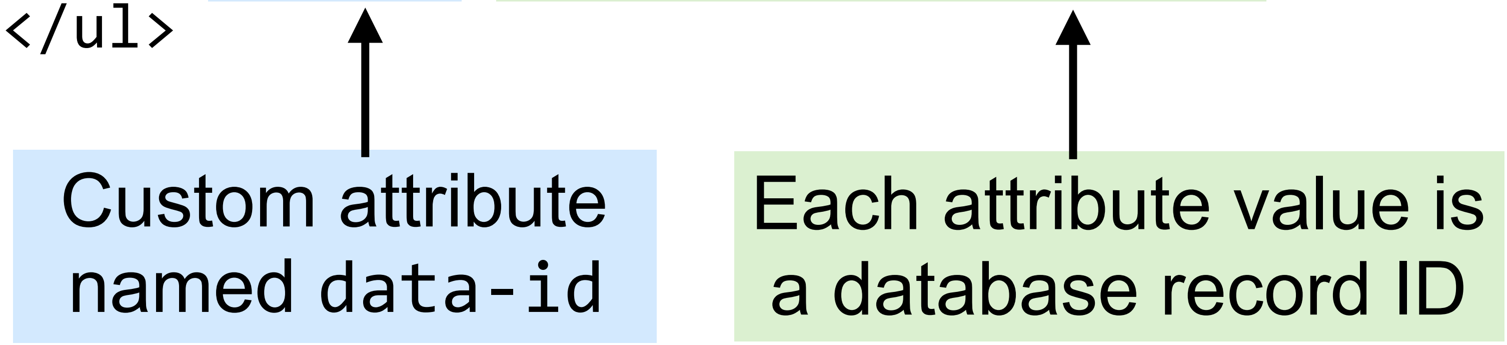


Attribute name is
data- plus any string

```
<article
  id="electriccars"
  data-columns="3"
  data-index-number="12314"
  data-parent="cars">
...
</article>
```

DOM WITH CUSTOM data-id ATTRIBUTES

```
<ul class="message-board">
  <li data-id="-L2RNI8NhVXD1kHDjIvx">Mulberries, 254 Cesar Chavez St.</li>
  <li data-id="-L2RRqJ9GmnCLQi-EvBr">Oranges, 1 Main St.</li>
  <li data-id="-L2RRxDPhMyh3tEIPxp-">Fuschia berries, 26 Isabella Ln.</li>
</ul>
```



Custom attribute named data-id

Each attribute value is a database record ID

LAB — IMPLEMENT READ FUNCTIONALITY

LAB

KEY OBJECTIVE

- Build the Read functionality of a full-stack app

TYPE OF EXERCISE

- Solo or in pairs

TIMING

20 min

1. Examine the API documentation at https://firebase.google.com/docs/reference/js/firebase.database.Reference
2. Listen for changes (use `.ref()` and `.on()`)
   - https://firebase.google.com/docs/reference/js/firebase.database.Reference#ref
   - https://firebase.google.com/docs/reference/js/firebase.database.Reference#on
3. Add returned data to your front end using DOM manipulation

LAB — IMPLEMENT UPDATE FUNCTIONALITY

LAB

KEY OBJECTIVE

- Build the Update functionality of a full-stack app

TYPE OF EXERCISE

- Solo or in pairs

TIMING

20 min

1. Examine the API documentation at
    - https://firebase.google.com/docs/reference/js/firebase.database.Reference#update
    - https://firebase.google.com/docs/reference/js/firebase.database.Reference#set
2. Create a function to make updates to the database
3. Add calls to your new function when data is changed in your app

LAB — IMPLEMENT DELETE FUNCTIONALITY

LAB

KEY OBJECTIVE

- Build the Delete functionality of a full-stack app

TYPE OF EXERCISE

- Solo or in pairs

TIMING

10 min

1. Examine the API documentation at https://firebase.google.com/docs/reference/js/firebase.database.Reference#remove
2. Create a function to delete records from the database
3. Add calls to your new function when data is deleted in your app

Exit Tickets!

(Class #15)

LEARNING OBJECTIVES - REVIEW

- Explain what CRUD is.
- Explain the HTTP methods associated with CRUD.
- Implement Firebase in an application.
- Build a full-stack app with CRUD functionality.

NEXT CLASS PREVIEW

Deploying your app

- Understand what hosting is.
- Identify a program’s needs in terms of host providers.
- Ensure backward compatibility by using Babel to transpile code.
- Deploy to a web host.

Q&A