

Week 4: Wednesday

Data Literacy

Application Programming Interfaces (APIs)

What is an API?

- **API** stands for Application Programming Interface
- A way for one computer to access the functionality of a service or application on another computer.
- A set of rules that allows one software application to interact with another.

Why use an API?

- **Access to data:** APIs allow you to access data from other services or applications.
- **Automation:** APIs allow you to automate tasks that would otherwise be manual.
- **Integration:** APIs allow you to integrate different services or applications.

API for our purposes: Access Databases

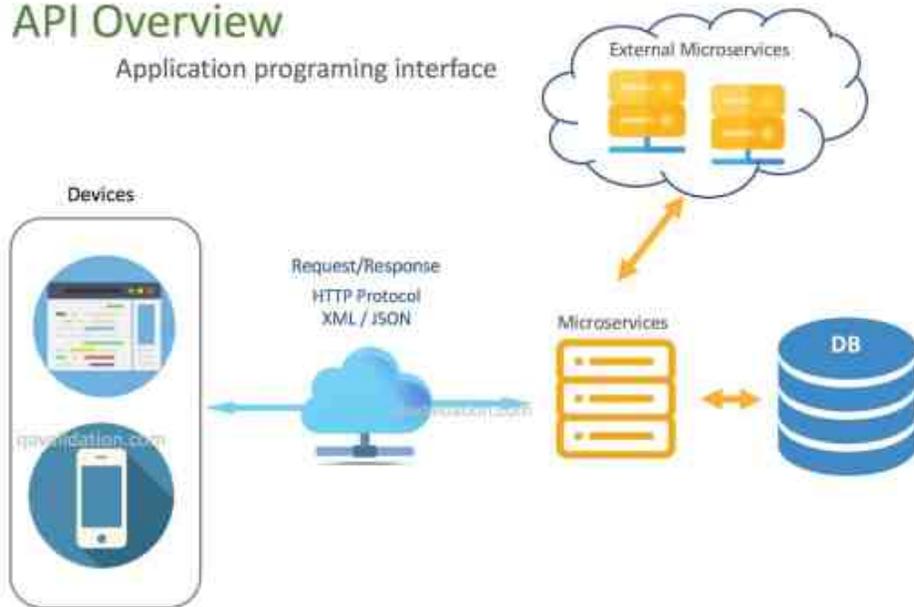
- Databases run on servers and are not directly accessible from the web.
- Databases have their own language.
- The web has its own language.
- The API is a translator between the language of the web and the language of the database.

Server/Cloud Architecture

- **Client:** User's computer or device.
- **Server:** Computer hosting the database / API.
 - **API:** accessible through the port (doorway) 8443 (or other).
 - **Database:** accessible through the port 5432 (or other).

API Overview

Application programming interface

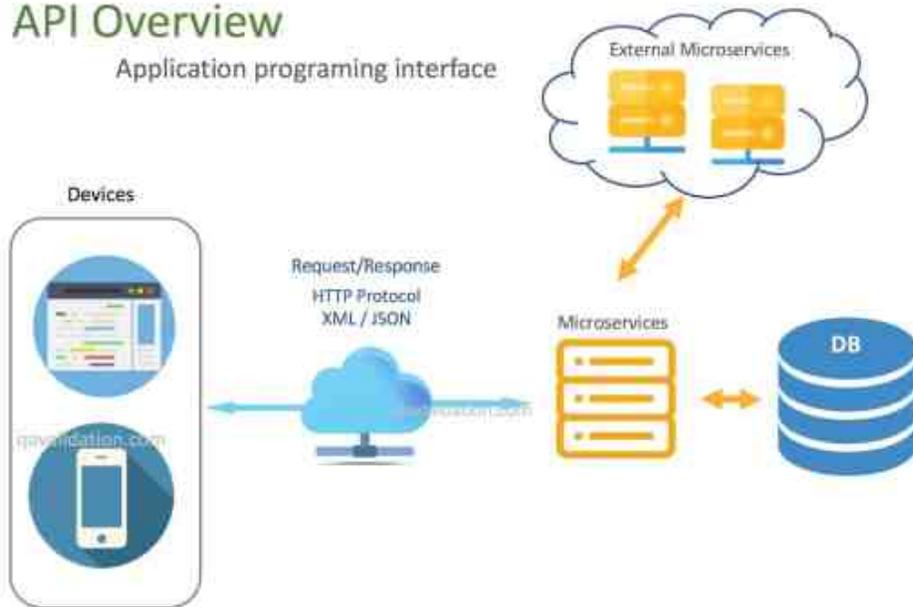


Server/Cloud Architecture, cont.

- API accepts a route and/or query parameters in a URL.
 - What are query parameters? (I'll show you in a moment.)
- Query parameters communicate what to get from database.
- API responds with info from database.

API Overview

Application programming interface



URL & Parameters

- `www.example.com/api/v1/data?param1=value1¶m2=value2`
- **base URL:** `www.example.com/`
- **route/path:** `api/v1/data`
- **?:** start of query parameters
- **query parameters:** `param1=value1¶m2=value2`
 - **param:** key
 - **value:** value
 - **&:** separator between parameters

URL & Parameters, cont.

[Data USA API example...click me!](#)

Accessing APIs

- All information on the web is accessible.
- Some information is documented and open.
- Documented APIs are easier to access.

- Undocumented APIs can be accessed via web scraping.
- Ethical Considerations

Combining Database Information

- Think about voter history data: <https://www.ncsbe.gov/results-data/voter-history-data>
- Historical voting place data <https://www.ncsbe.gov/results-data/polling-place-data>
- county geographic lines data: <https://data2.nhgis.org/main>
- This took me about 10 minutes to find.

For Friday

- Find an online database or API that you would like to access (related to your domain).
- Some are protected, that's okay.
 - If protected, read the documentation to see how to access the data.
- It should be related to your domain somehow.

For Friday, cont.

- In class on Friday, your domain group will compare and contrast the APIs you found.
- You will present on the API (or group of APIs if they could be combined somehow) you chose is most useful for your domain.
 - If they could be combined, how so?
 - What makes it/them particularly useful?
 - What was the criteria you used to come to that conclusion?