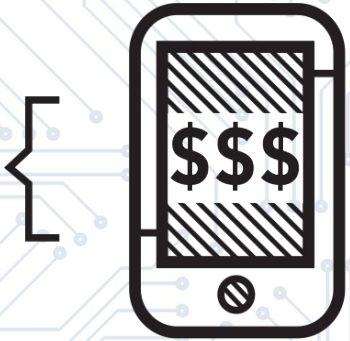


APIs

FinTech

Lesson 5.1

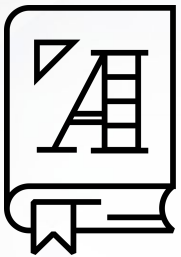
Class Objectives

By the end of today's class, you will be able to:

- Describe the client-server model.
- Read documentation and identify endpoints from a given API.
- Perform a GET request and view the JSON response using the Postman client.
- Interpret the JSON structure from a GET request response.
- Use the requests library to request JSON data from an API within Python.
- Parse a JSON response and print a selected field using Python.
- Query an API using URL Parameters with the requests library.

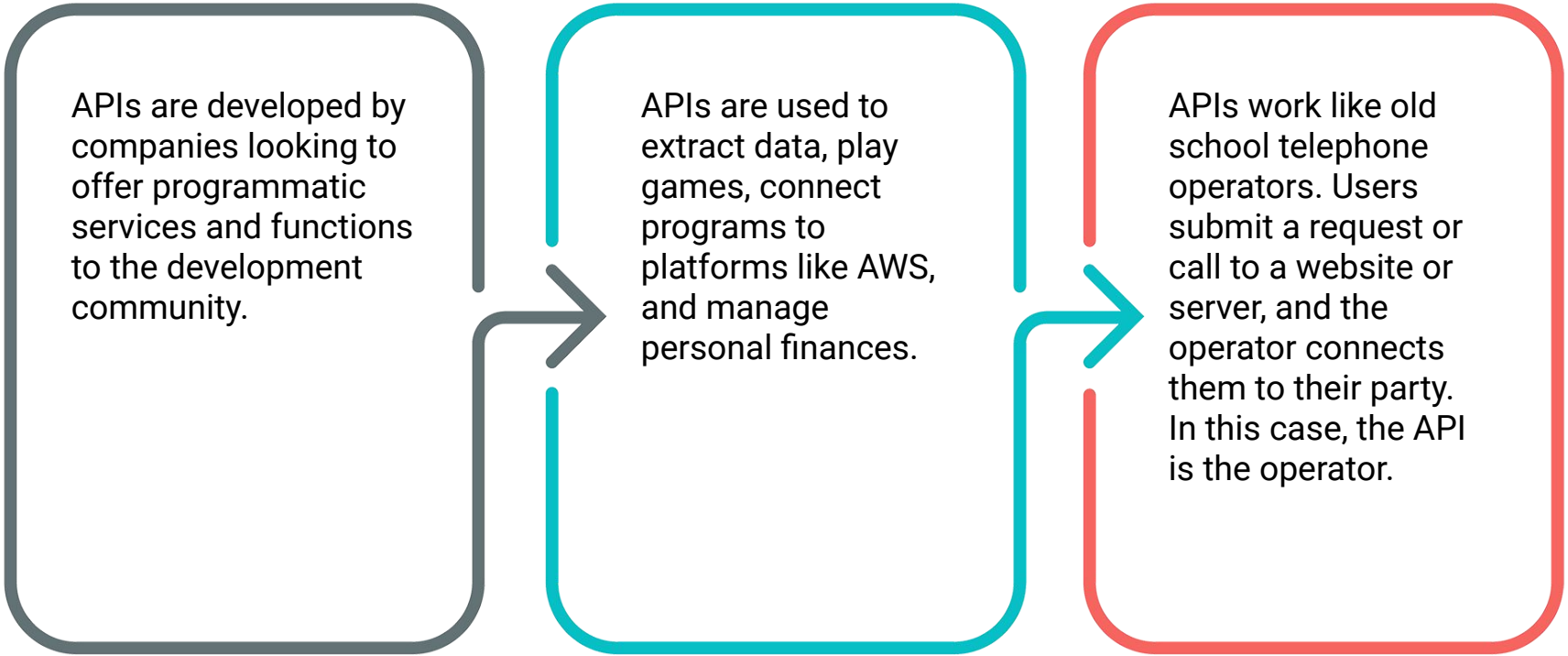
Disclaimer: The response and content of live data cannot be censored or predicted.

Introduction to APIs



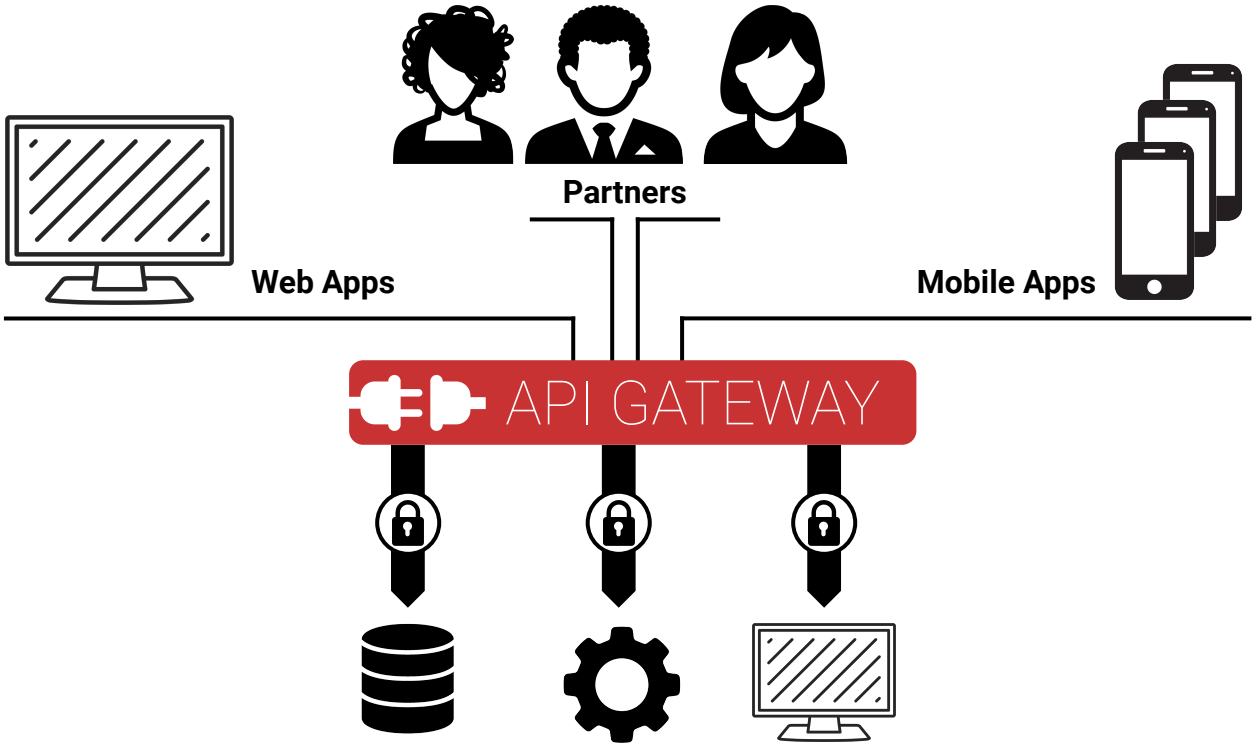
Application Programming Interfaces (APIs) are a set of functions packaged together that provide developers with a means of communicating with a server and integrating third-party software and technology into new applications.

Application Programming Interfaces (APIs)



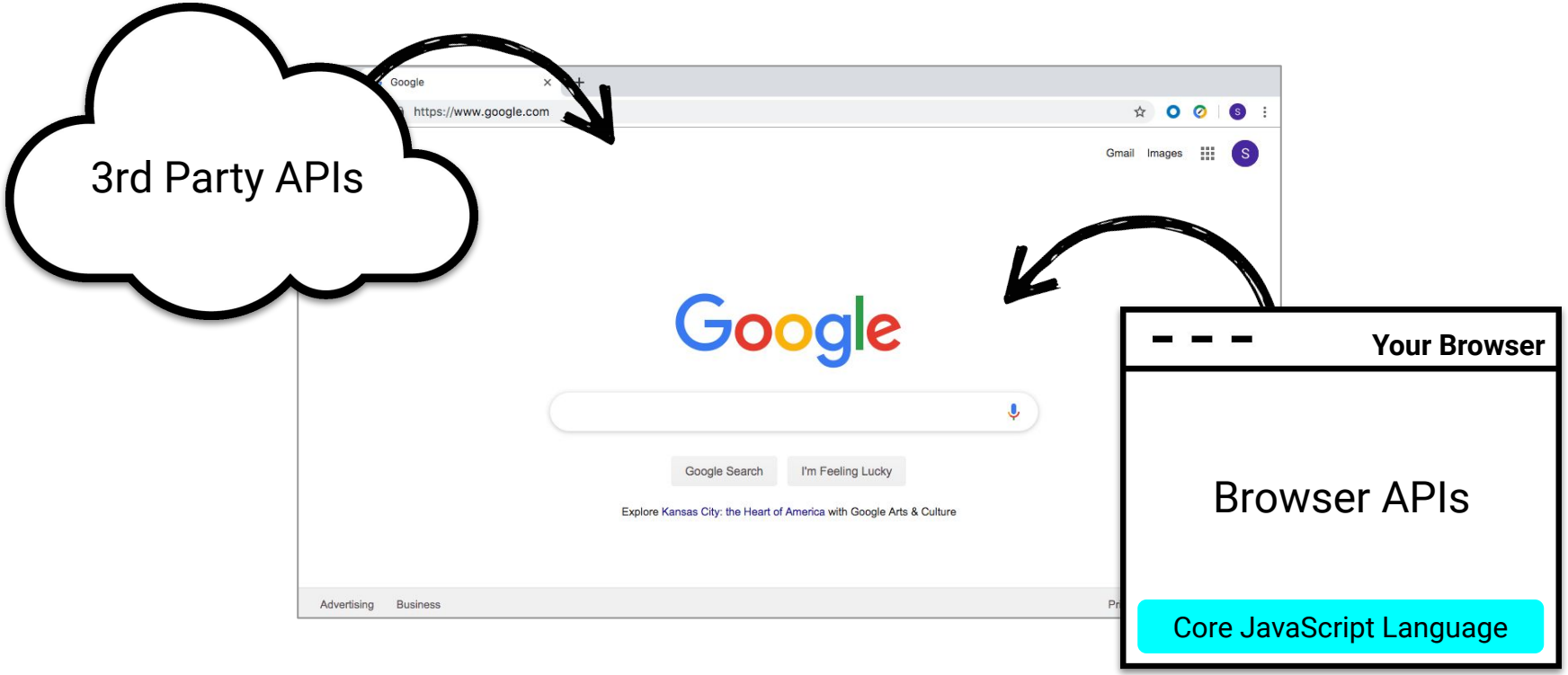
API Recap

In software development APIs are often the bridge between different components



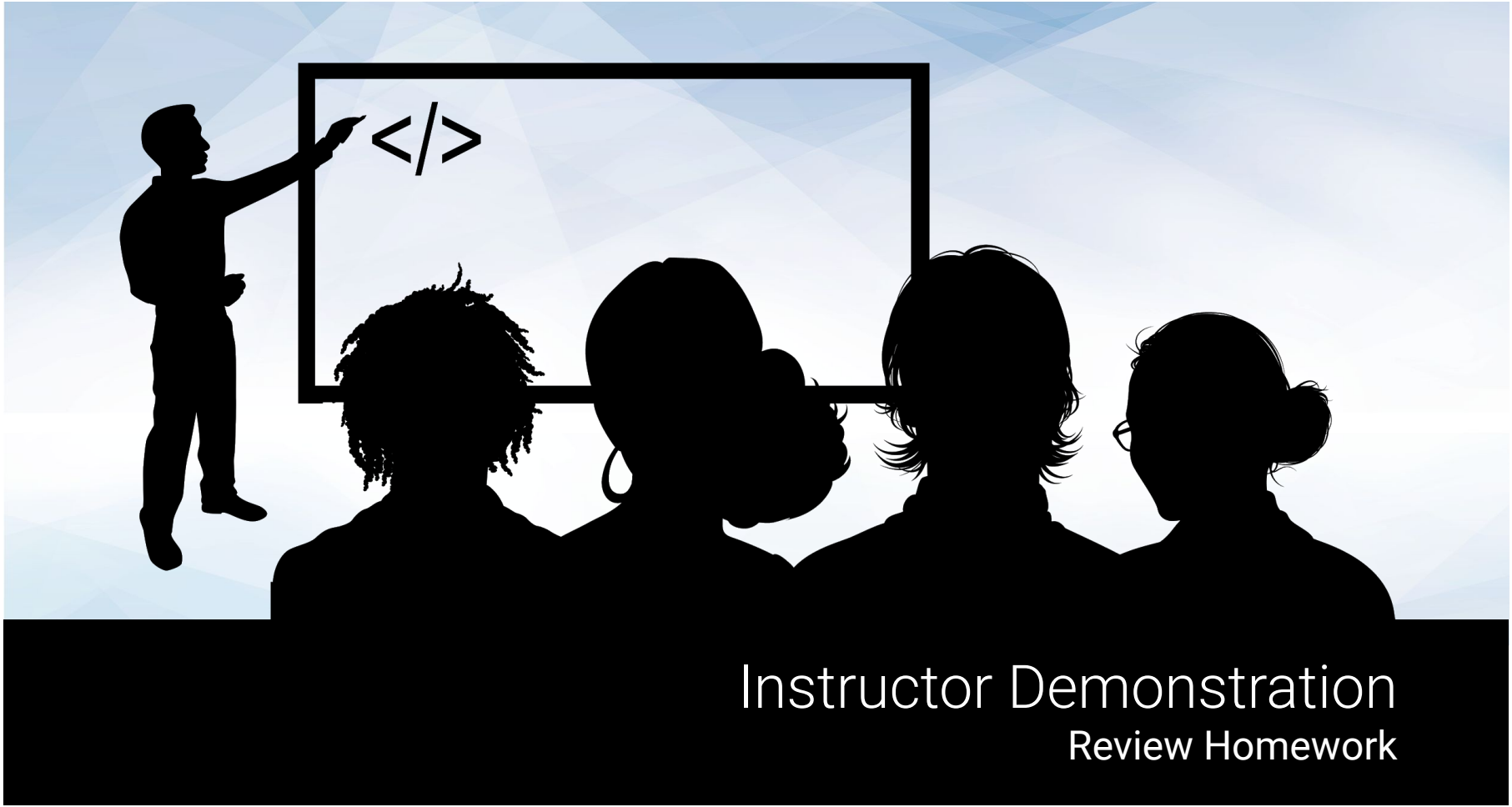
API Recap

In software development, APIs are often the bridge between different components.



Quandl

Quandl is a data mart of financial data. Quandl collects data from various sources, consolidates the data, and then makes it available to users. Quandl is a great product to use to extract financial data to calculate ROI, risk-to-reward ratio, etc. Quandl's data can be accessed by users via their API. The API supports multiple programming languages, including Python.



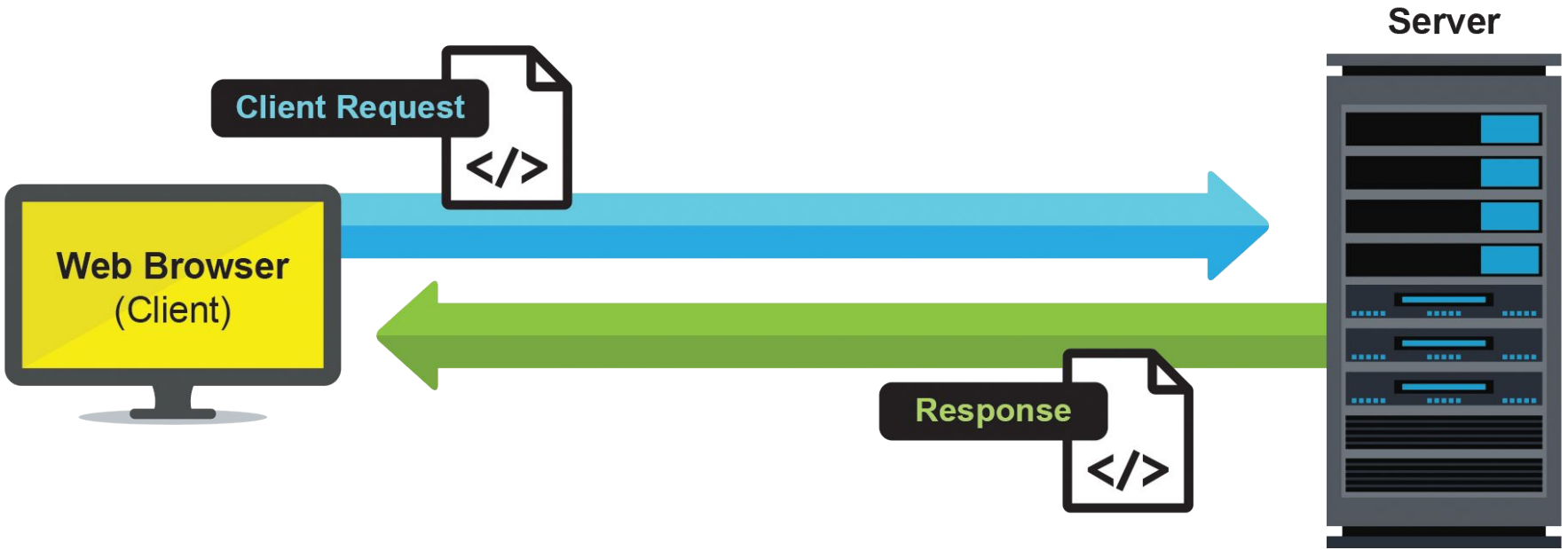
Instructor Demonstration

Review Homework

Client-Server Model

Client-Server Model

The Client-Server Model is a structure that outlines the relationship and flow of communication between two components: a client and a server.



The Client-Server Model

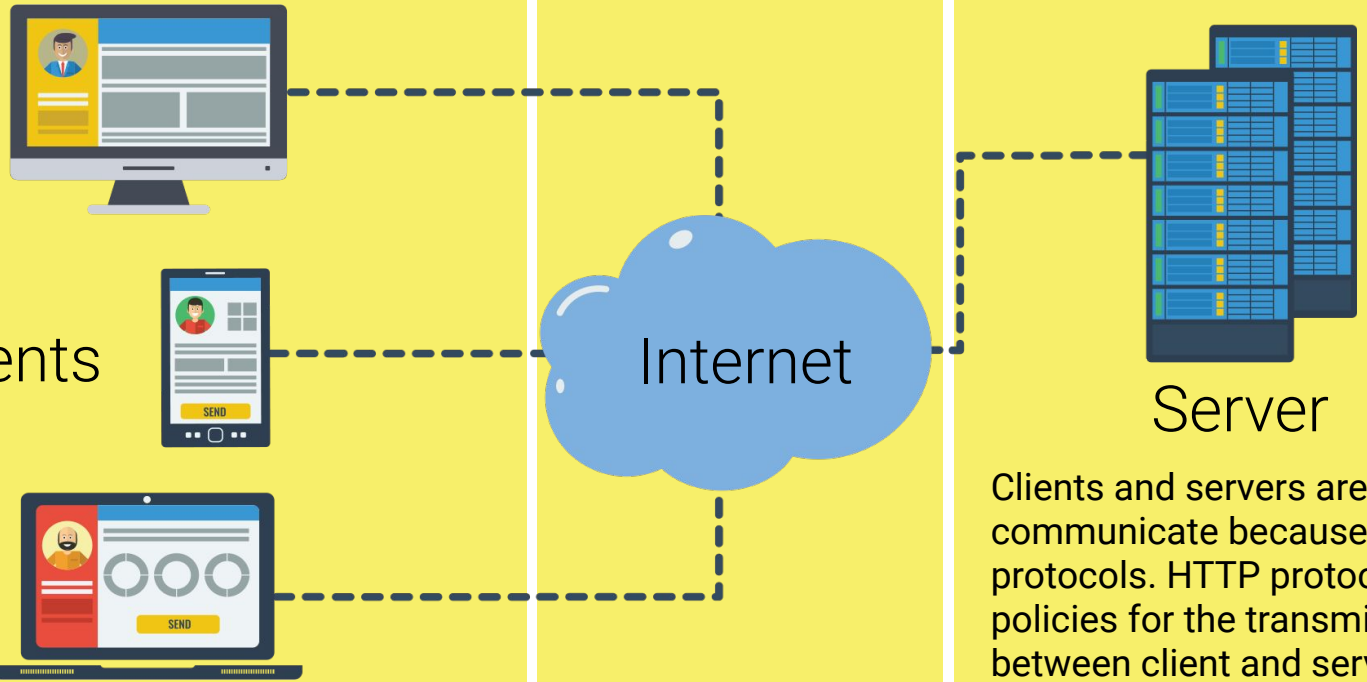
A client is any tool or application that is used to connect to or communicate with a server. Example **clients** include:

Web browsers

Mobile devices

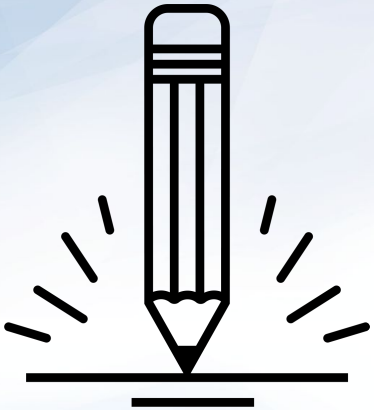
Command-line interfaces

The Client-Server Model



Clients submit requests to servers and then wait for a response from the server.

Clients and servers are able to communicate because of HTTP protocols. HTTP protocols are policies for the transmission of data between client and server. HTTP protocols allow users to execute server functions and clients and servers to exchange data.



Activity: Eavesdropping on the Server

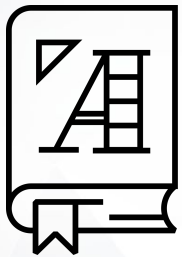
In this activity, you will surf the web with the browser's developer console open, visit websites like Facebook and Yahoo, and complete a Google search. You will read the standard output from the console to get a better idea of what data is sent between client and server as you navigate sites.

(Instructions sent via Slack.)

Suggested Time:
10 Minutes

Time’s Up! Let’s Review.

Postman



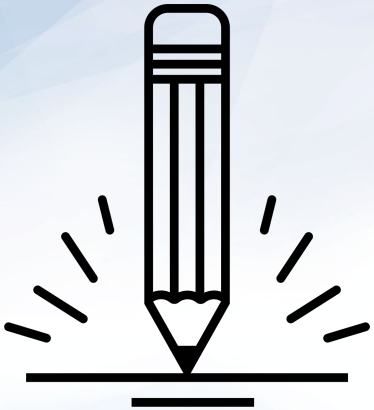
Postman is a service that provides users with a UI to submit and store API calls and requests.

POSTMAN

API requests have to be submitted in some type of development environment. Postman offers an API specific development environment that is free to users.

Postman is a great tool to use when onboarding onto a new API. All that is needed to execute an API with Postman is the request URL.

Because Postman is a development environment, users have the ability to save API requests, configure environments, and even create mock servers.

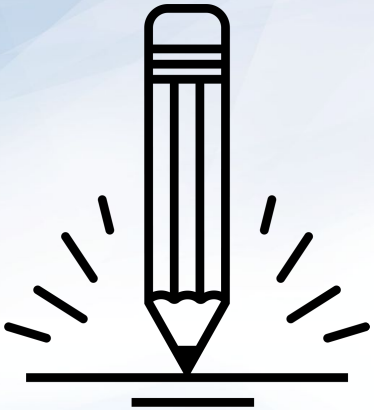


Activity: I Spy an API

In this activity, you will go through a list of FinTech APIs and test out their functionality using Postman. This will give you a better understanding of what Postman is and how it should be used, and it will expose you to one of the most common tools used in the FinTech industry.

(Instructions sent via Slack.)

Suggested Time:
15 Minutes



Activity: Parlez vous le JSON

In this activity, you will choose a sub-selection of the JSON output to decipher. You will then explain the sub-selection to a peer.

(Instructions sent via Slack.)

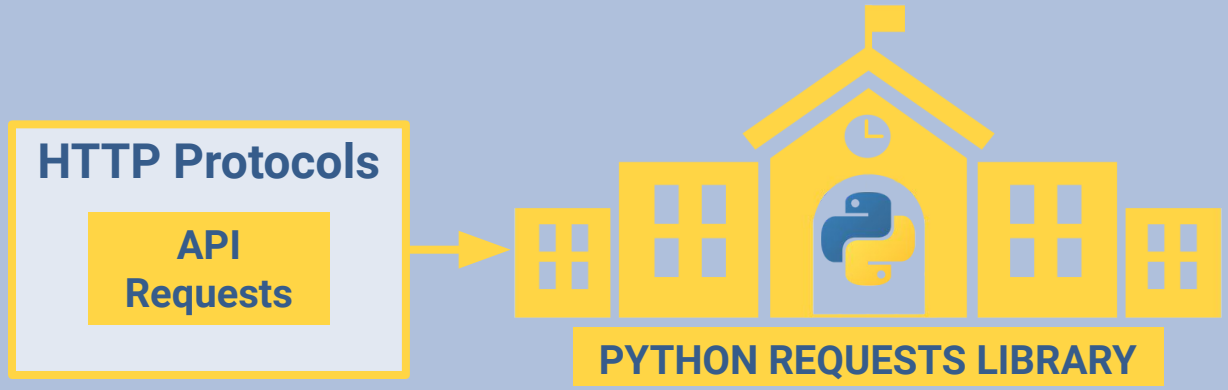
Suggested Time:
5 Minutes

Time’s Up! Let’s Review.

Python Requests

Python Requests

Python has a requests library that can be used to make API calls. The requests library works similar to Postman. It allows for developers to submit API requests using HTTP protocols.



The requests library allows developers to use Python like glue, connecting their Python code with multiple third party APIs. This allows developers to create programs that are an amalgamation of multiple technologies!

Python Requests

The requests library has its own functions, such as `GET` and `POST`. These can be used to execute API calls programmatically with Python.

The difference between Python's request library and Postman is that **developers can use Python objects (variables, data structures) to make APIs interact with one another** when they normally wouldn't. This allows developers to:

- Pass the output of one API as input to another API
- Utilize conditionals
- Leverage loops

Python Requests

Each type of request serves a different purpose.

GET

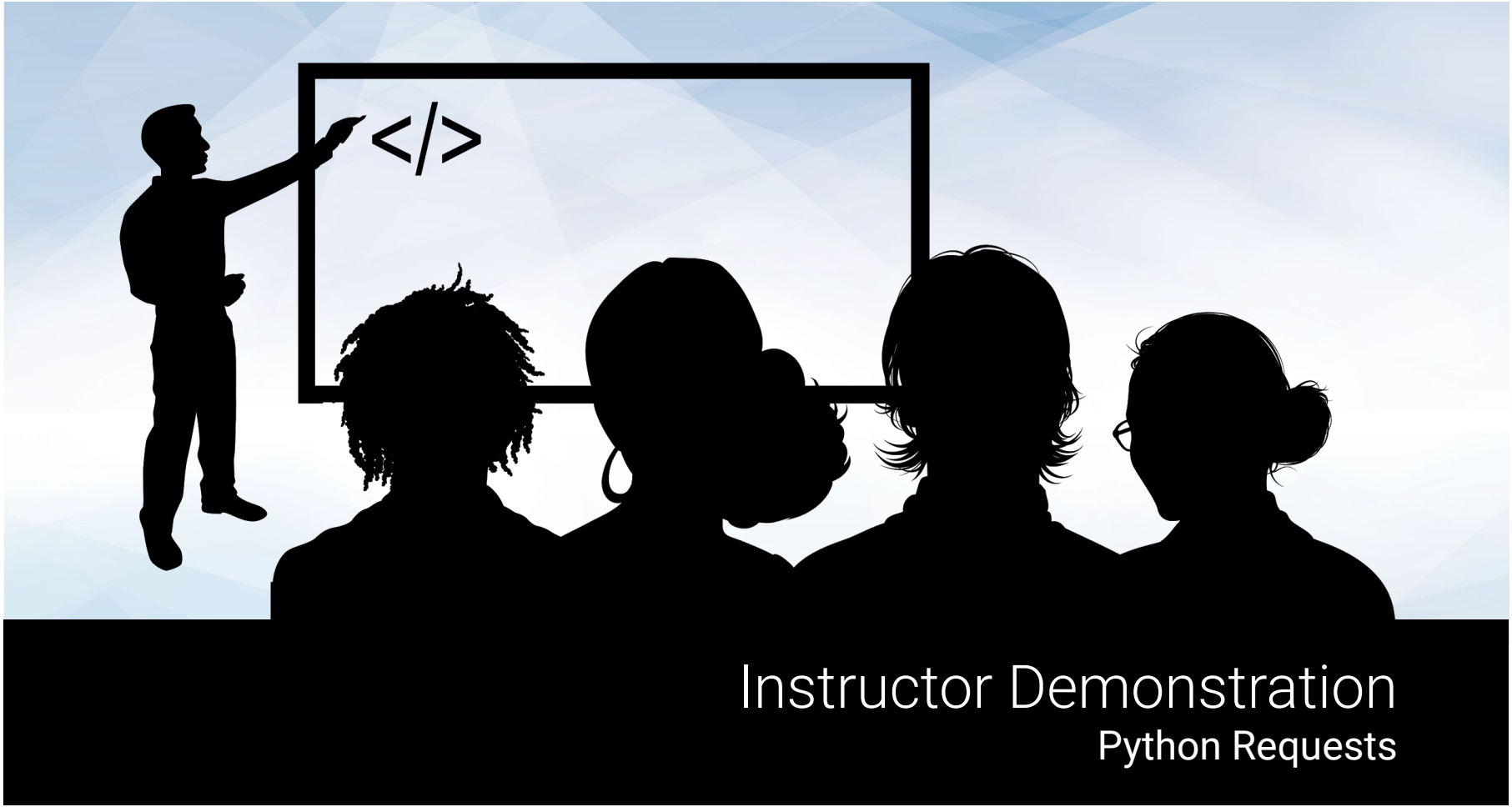
`GET` requests are used to extract/acquire data from a server

POST

`POST` requests are used to push new or updated data to the server

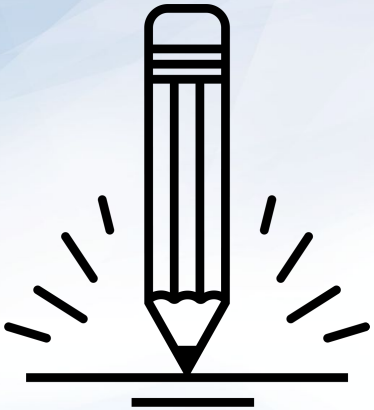
PUT

`PUT` requests are used to overwrite content on the server



Instructor Demonstration

Python Requests

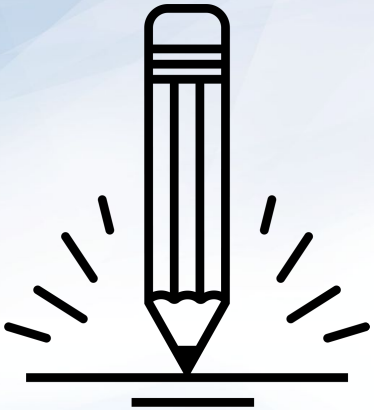


Activity: Ice Breakers On Request

In this activity, you will be given a list of request URLs to execute using the Python requests library. You will also receive the opportunity to put your JSON knowledge to use by interpreting JSON output.

(Instructions sent via Slack.)

Suggested Time:
20 Minutes



Activity: Engagement

In this activity, you will reveal an interesting fact or joke you discovered while working with APIs.

Suggested Time:
15 Minutes

Time’s Up! Let’s Review.

Countdown timer

15:00

(with alarm)

URL Parameters

URL Parameters

URL parameters serve as a means of configuring and changing API functionality.

Parameters can be specified in one of two ways. Parameters can follow / forward slashes or be specified by parameter name and then by parameter value.

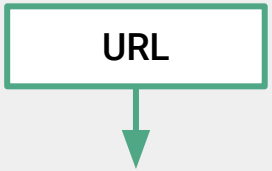
Parameter provided after /

```
http://numbersapi.com/42
```

Parameter provided using parameter name and value

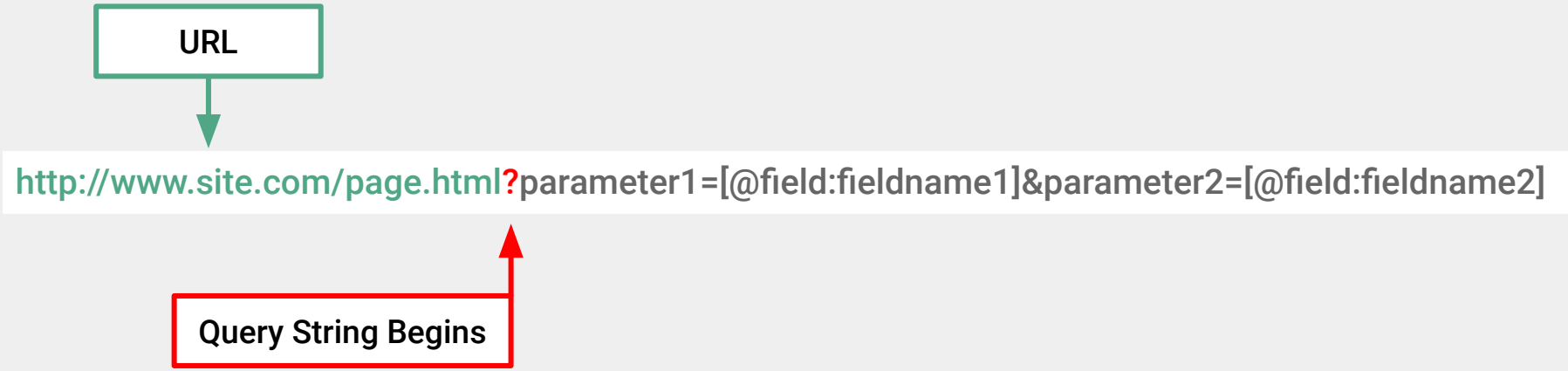
```
http://numbersapi.com/random?min=10?json
```

URL Parameters

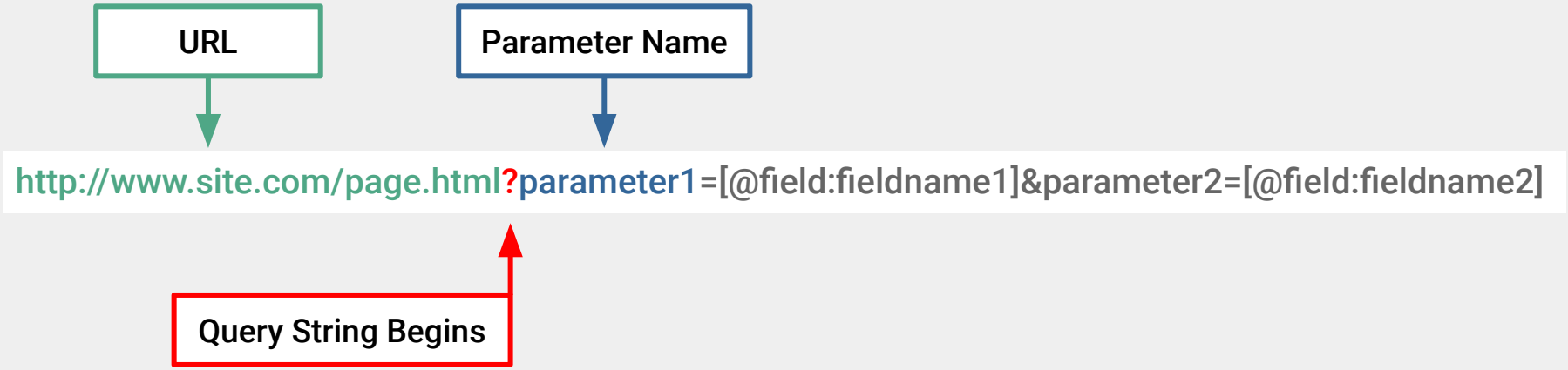


http://www.site.com/page.html?parameter1=[@field:fieldname1]&parameter2=[@field:fieldname2]

URL Parameters



URL Parameters



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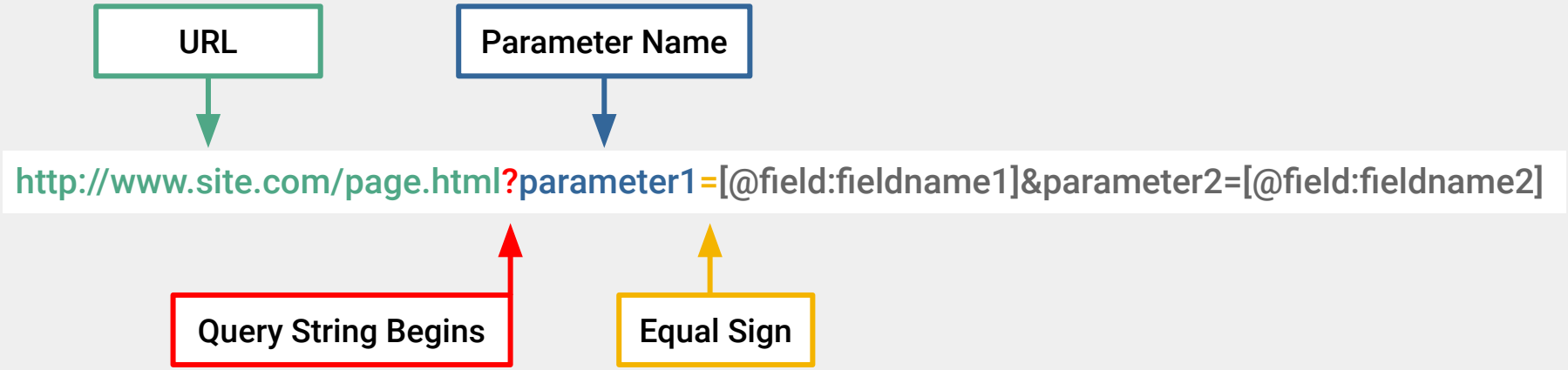
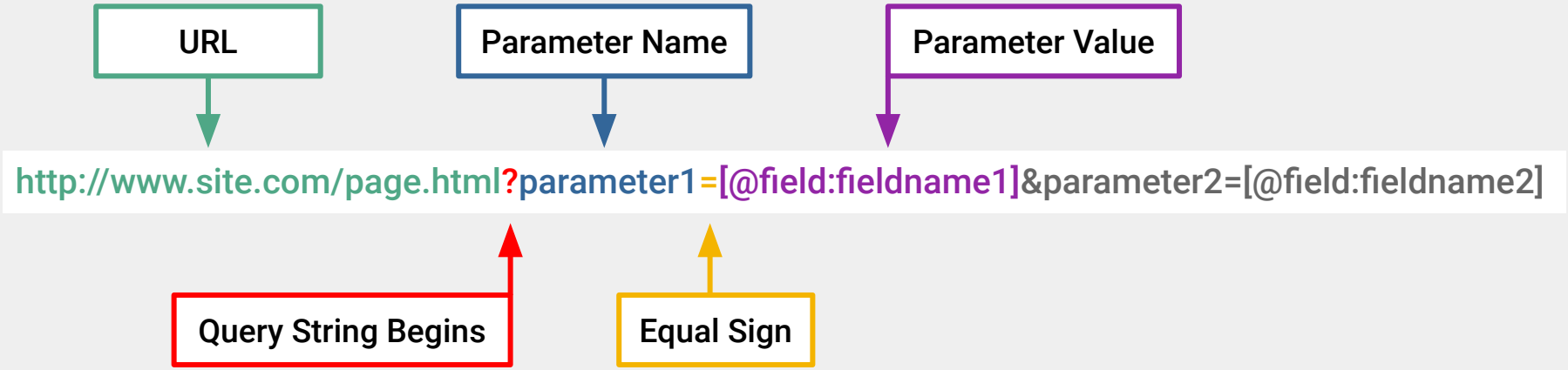


URL Parameters



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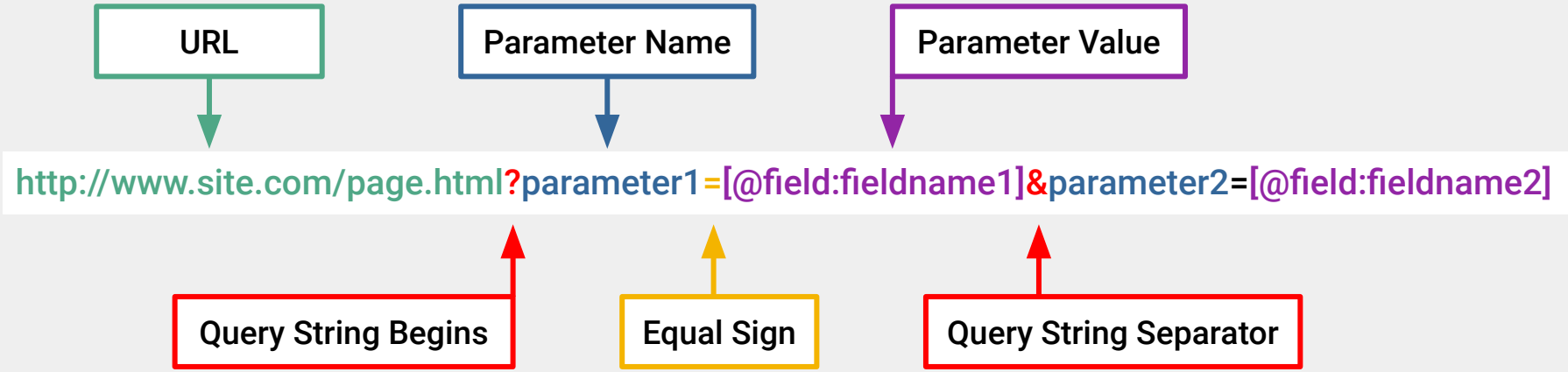
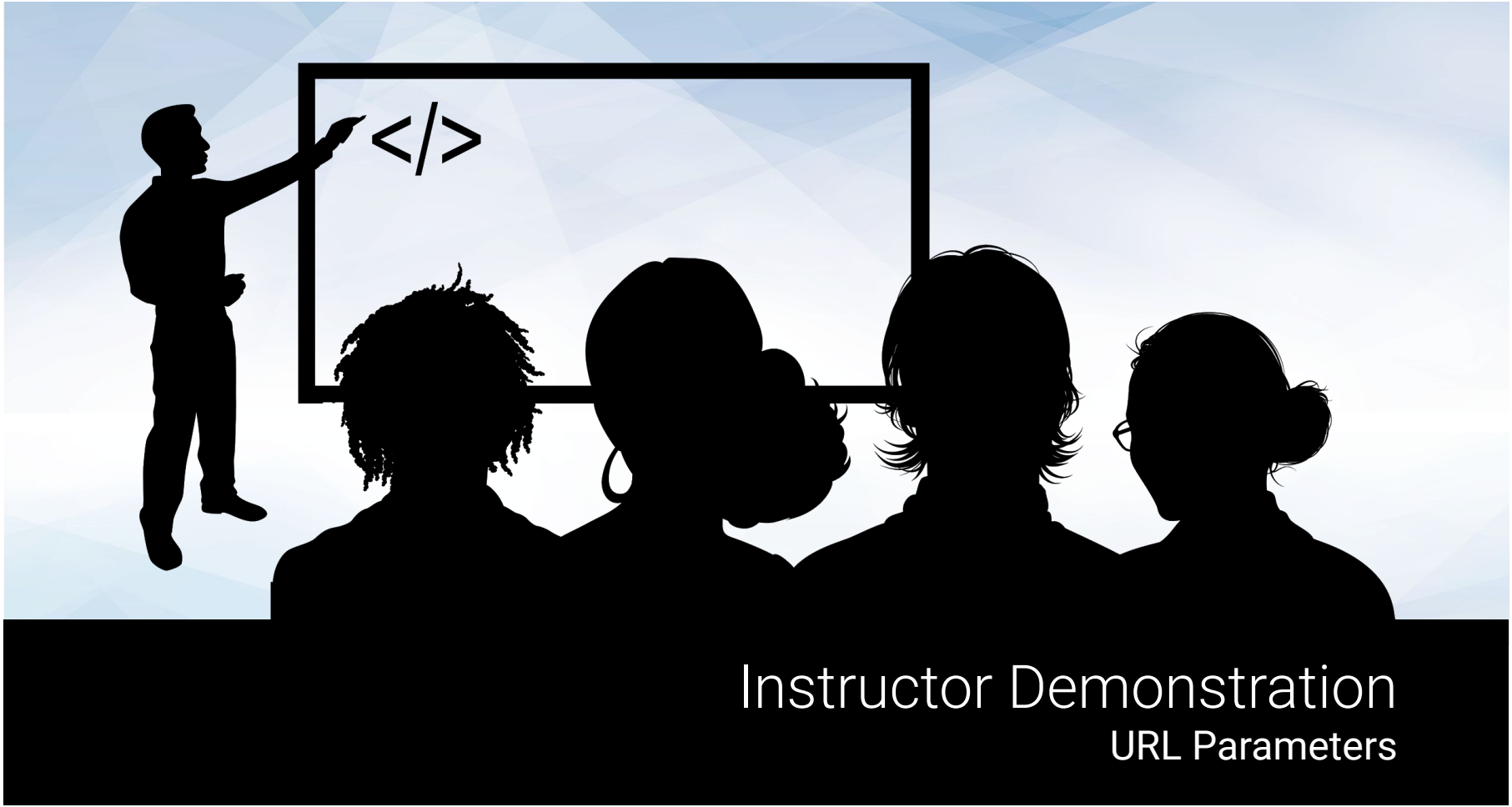




Instructor Demonstration

URL Parameters

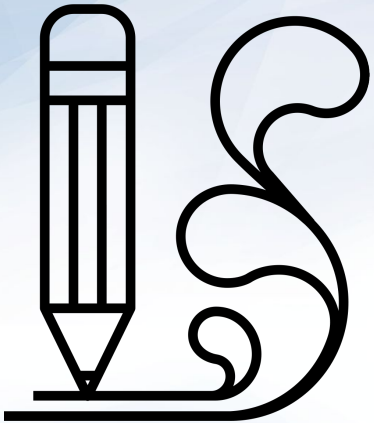
Activity: House of Requests

In this activity, you will play a game of Blackjack using the Deck of Cards API. You can play the game against a classmate or imaginary dealer.

(Instructions sent via Slack.)

Suggested Time:
25 Minutes

Time’s Up! Let’s Review.



Homework: Sign Up for APIs

Sign up for these APIs before coming to the next class; you will use them in Lesson 5.2.

(Links sent via Slack.)

Due Date:
Next Class

Questions


The End