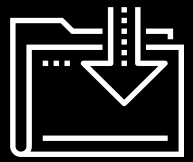
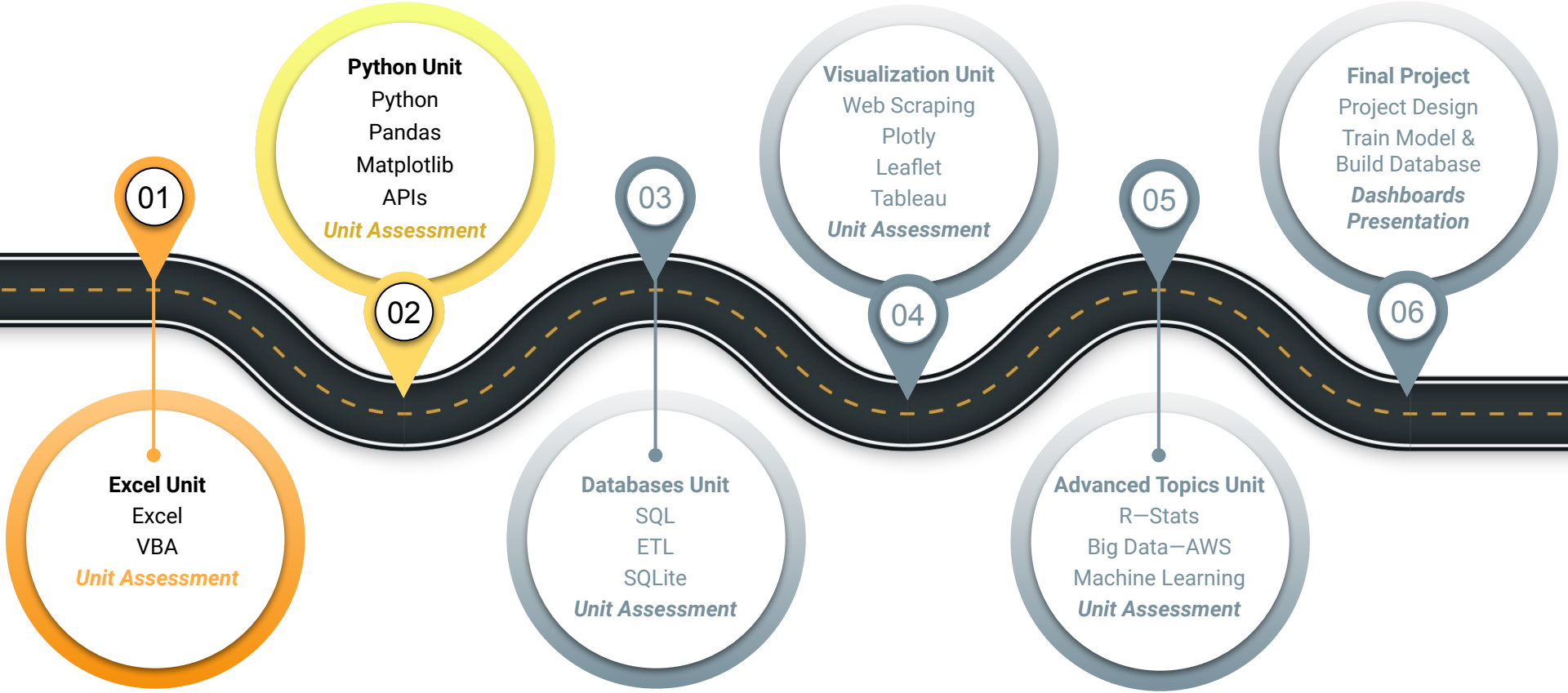
# Python APIs

Data Boot Camp

Lesson 6.1



# The Big Picture



# Pro Tip:

If you see useful links and resources being shared in Slack, be sure to save them somewhere that you can access them later on!

Module 6

# This Week: Python APIs

# This Week: Python APIs

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

- Perform tasks and write functions using new Python libraries and modules
- Retrieve and use data from an API "get" request to a server
- Retrieve and store values from a JSON array
- Use `try-except` blocks to resolve errors
- Create scatter plots using the Matplotlib library, and apply styles and features to a plot
- Perform linear regression, and add regression lines to scatter plots
- Create heatmaps and add markers using the Google Maps API

# This Week's Challenge

Using the skills learned this week, add features to an existing weather application to allow users to enter input statements to filter data, create travel itineraries, and more.

# Career Connection

How will you use this module's content in your career?

Module 6

# How to Succeed This Week

# Quick Tip for Success

Keep these tips in mind:

01

All of the API documentation we use will be different, since these APIs are built by different teams.

Adjusting is part of the learning process!

02

When you get an error, read it carefully! It'll often tell you exactly what's breaking and where.

If it's not clear, google the error message's key phrases for guidance!

Module 6

# Today’s Agenda

# Today's Agenda

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

01 API calls

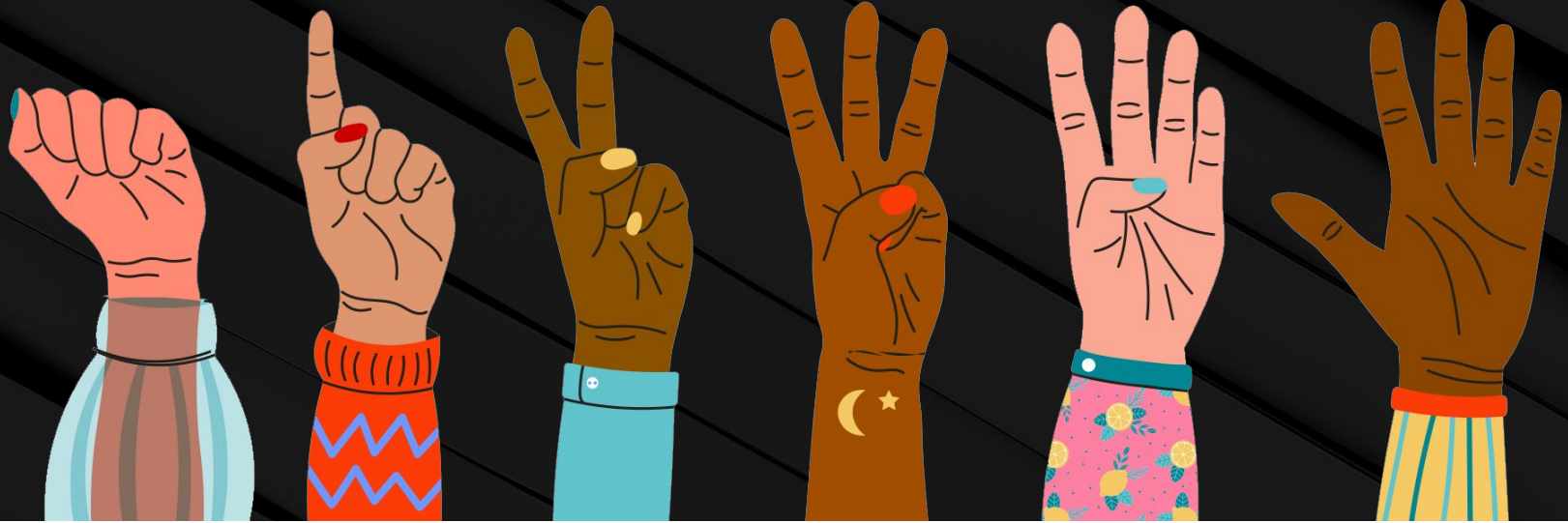
02 Traversing through JSON Objects

03 Handling errors through try-except blocks

**Make sure you've downloaded any relevant class files!**

# FIST TO FIVE:

How comfortable do you feel with this topic?



# Intro to Requests

# There Are Two Components to Our API Request

## `requests.get(url)`

Sends a GET request to the URL passed as a parameter.

```
# Dependencies
import requests
import json
```

```
# URL for GET requests to retrieve vehicle data
url = "https://api.spacexdata.com/v2/launchpads"
```

```
# Print the response object to the console
print(requests.get(url))
```

## `.json()`

- A call to convert the response object into a JSON format.
- `json.dumps()` is a method used to "pretty print" the response.

```
# Pretty Print the output of the JSON
response = requests.get(url).json()
print(json.dumps(response, indent=4, sort_keys=True))
```


```
[
    {
        "details": "SpaceX primary Falcon 9 launch pad, where all east coast Falcon 9s launch
ed prior to the AMOS-6 anomaly. Initially used to launch Titan rockets for Lockheed Martin. H
eavily damaged by the AMOS-6 anomaly with repairs expected to be complete by late summer 201
7.",
        "full_name": "Cape Canaveral Air Force Station Space Launch Complex 40",
        "id": "ccafs_slc_40",
        "location": {
            "latitude": 28.5618571,
            "longitude": -80.577366,
            "name": "Cape Canaveral",
            "region": "Florida"
        },
        "status": "under construction",
        "vehicles_launched": "falcon 9"
    },
    {
        "details": "SpaceX new launch site currently under construction to help keep up with
the Falcon 9 and Heavy manifests. Expected to be completed in late 2018. Initially will be li
```

# Instructor Demonstration

## Intro to Requests

# Questions?

# Instructor Demonstration

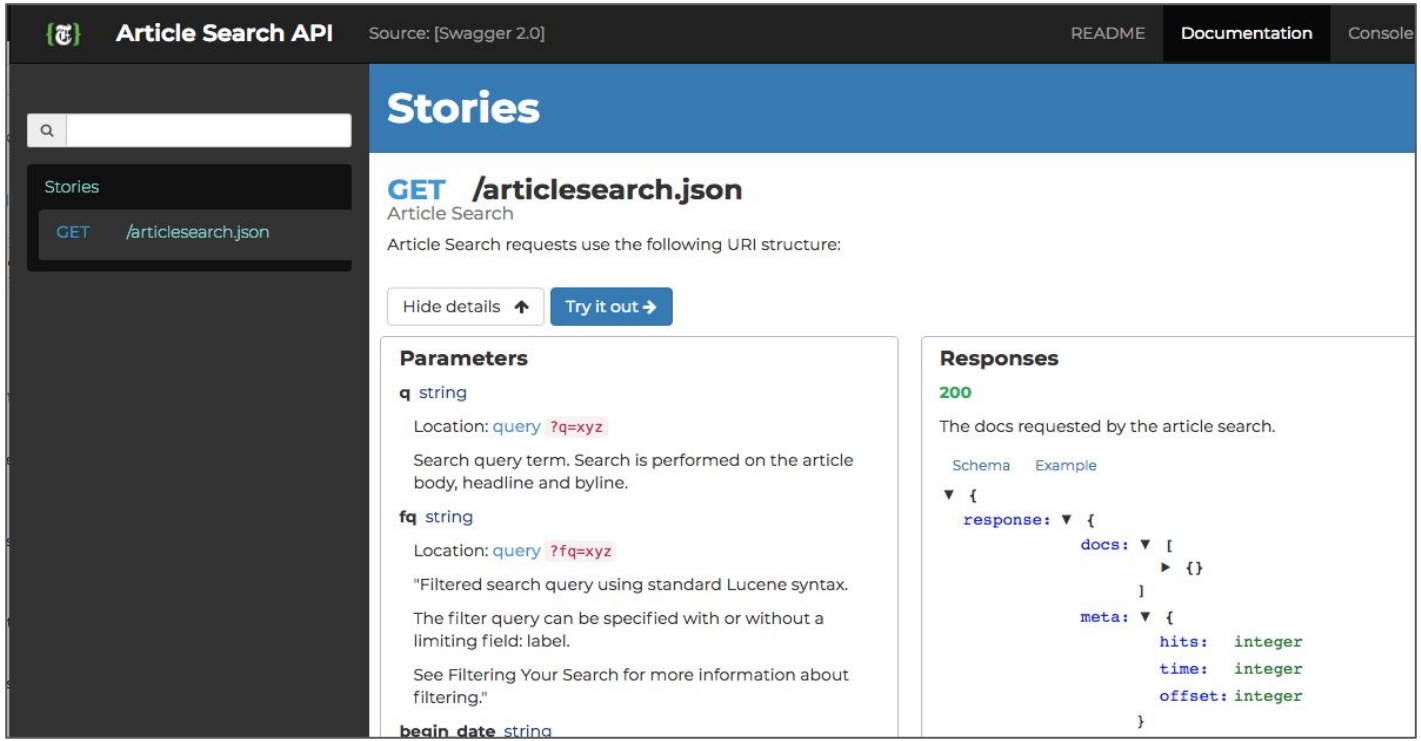
## NYT API

# NYT API Signup

This API requires a sign-up.

Fill out the form here: https://developer.nytimes.com/signup

# NYT API Documentation



# NYT API Sign-up

When using API keys, be sure to store them in a `config.py` file.

Add the config file to a `.gitignore` file so that API keys don't get added to a public repo.

# JSON Traversal and Error Handling

# Activity: JSON Traversal

In this activity, you will load in a JSON response file from YouTube and retrieve information related to the video by traversing the JSON.

Suggested Time:

15 minutes

# Time’s Up! Let’s Review.

# Exception Handling

# What would happen if an application tried to look up a key that doesn’t exist within a dictionary?

# Exception Handling

If a simple key lookup is performed, such as `data["temp"]`, and the `"temp"` key doesn't exist, Python will throw an exception and terminate the program.

This behavior makes sense in a basic application or script because the program may have incorrect/missing inputs.

```
try:
   print(data[“temp”])
except KeyError:
       print("Oops! That key does not exist!")
```

Missing values are very common.

In these cases, our applications and scripts that use API calls are at risk of terminating prematurely.

**Exception handling** is the process of responding to the occurrence of exceptions.

Thankfully, Python has built-in tools to resolve these errors.

# Instructor Demonstration

## Exception Error

# Activity: API Call Exceptions

In this activity, you will make API calls and implement `try-except` blocks to narrow down a list of fictional characters to include only characters from Star Wars.

Suggested Time:

15 minutes

# Time’s Up! Let’s Review.

# What would happen if every character found in the API call was from Star Wars?

The `'except'` block would not need to be run, since no error would have been triggered.

# Instructor Demonstration

## OpenWeatherMap API

# Questions?

# Activity: Weather in Burundi

In this activity, you will be working with the OpenWeather API to create an application that provides the user with the current temperature in the largest city in Burundi.

Suggested Time:

20 minutes

# Time's Up! Let's Review.

# How can we get the temperature in both Fahrenheit *and* Celsius?

# There Are Two Components to Our API Request

How can we get the temperature in both Fahrenheit and Celsius?

01

We create a list of units and loop through them while making a different API for each one and storing the results in a list.

02

Then, we can access the list to print the results.

# Questions?