

Intro to APIs

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WHO AM I?

Master's student in Computer Science at Clemson

Wanted to 'do computer stuff' ever since elementary school

Hopeful frontend developer, working at CCIT, previously intern and co-op

Airsoft, anime, cars, cooking, D&D, music





01

WHAT IS AN API

Definition,
How they work,
How to use.

02

REST APIs

The basics of the
most common API.

03

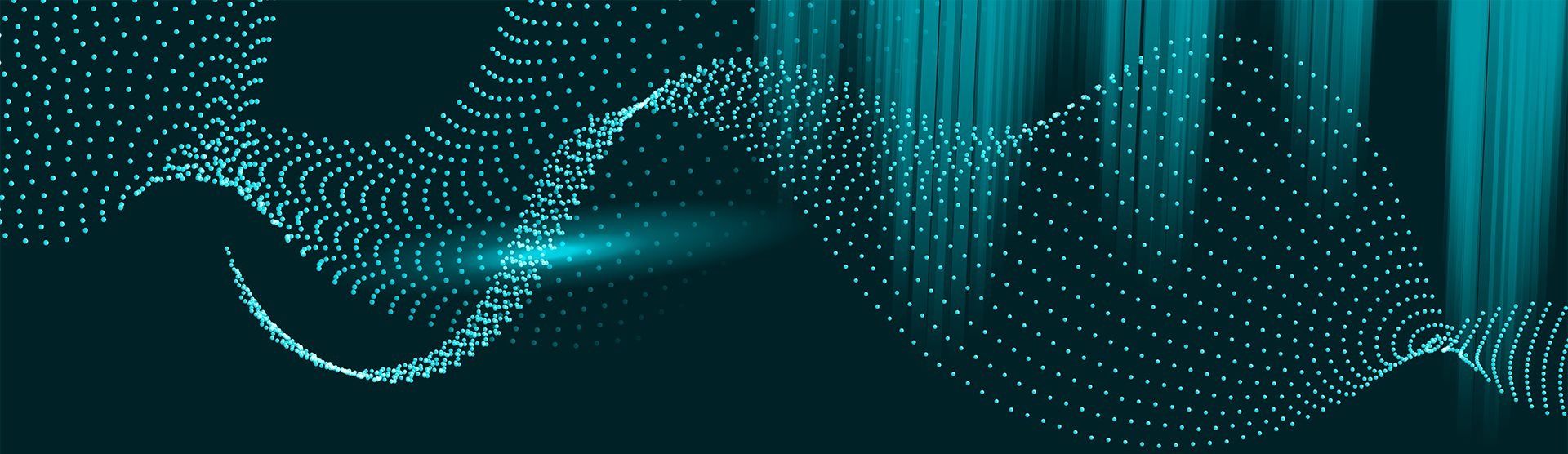
EXAMPLES

What using an API
looks like in code.

04

LIVE DEMO

What could possibly
go wrong?



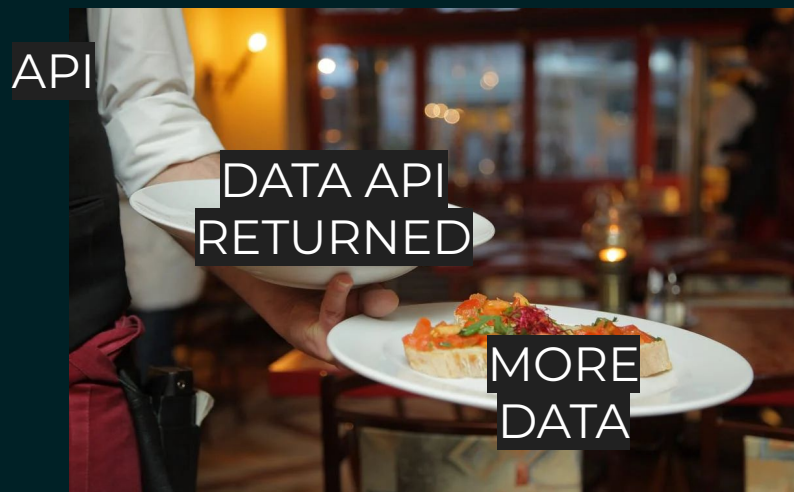
01 | **What is an API?**

Application Programming Interface

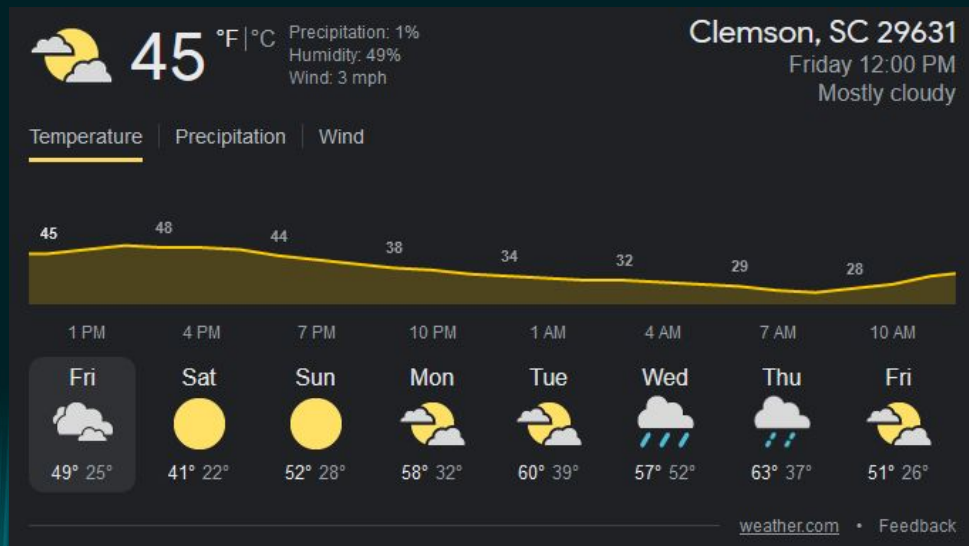


**Allows two pieces of
software to communicate
with each other**





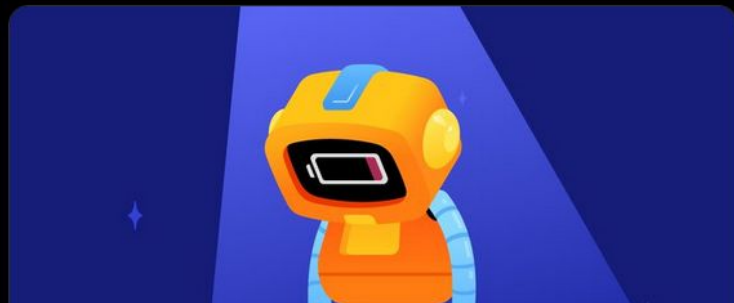
APIs are ubiquitous



Discord

@discord

We are currently investigating a widespread API outage and are working to resolve this ASAP. More details on our status page: dis.gd/status



Sign up for free to start listening.

Sign up with Facebook



Sign up with Google

Express Checkout

PayPal Checkout

Pay Later

Why use an API?

- Easily access or manipulate data from another service
- Loosely coupled systems → Easy maintenance
- Security
- More agile



How to use an API?

1. Pick an API
2. Obtain an API key
3. Read documentation, make sure you know how to use the API
4. Test the API with Postman or equivalent
5. Implement in code



Types of APIs

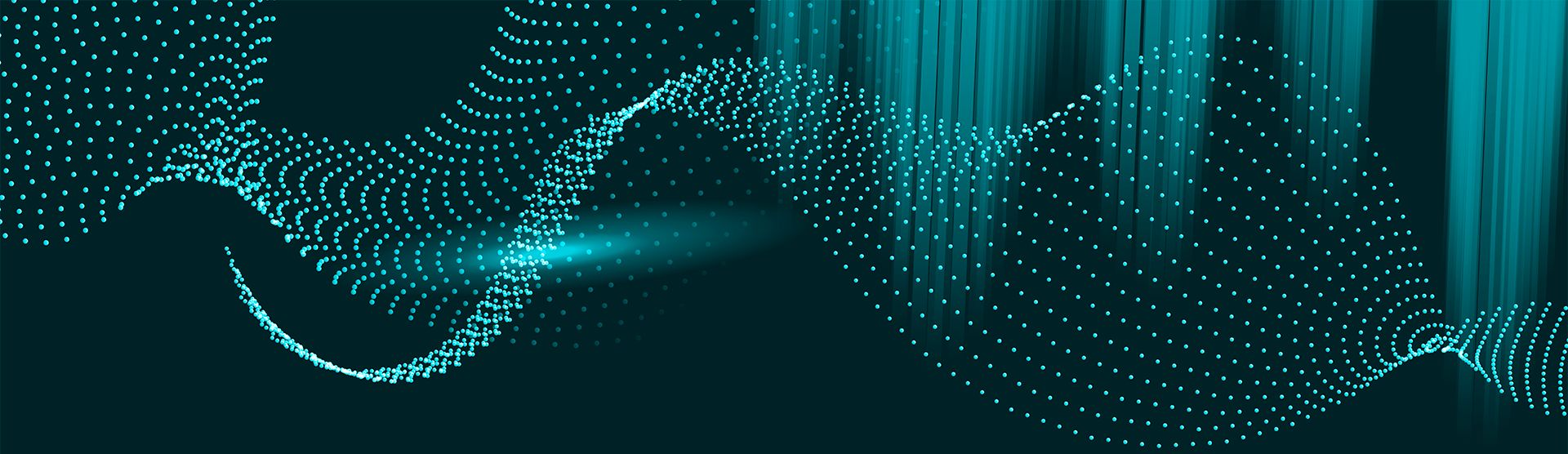
- REST API
 - REpresentational State Transfer
 - Uniform, simple interface
 - Stateless
- SOAP API
 - Simple Object Access Protocol
 - Slower but more reliable
 - Stricter usage



Types of APIs

- GraphQL API
 - Graph Query Language
 - Similar to REST
 - Query exactly what we want
- Webhooks
 - Automated, event-based
 - Check for data changes





02

REST APIs

HEADERS & BODY

```
▶ GET https://developer.mozilla.org/en-US/docs/Web/HTTP/Headers

Status 200 OK ⓘ
Version HTTP/2
Transferred 28.92 KB (212.18 KB size)

▼ Response Headers (1.923 KB) Raw
ⓘ age: 85841
ⓘ cache-control: max-age=86400, public
ⓘ content-encoding: br
ⓘ content-security-policy: default-src 'self'; script-src 'report-sample' 'self' *.speedcurve.com 'sha256-q7cJjDqNO2e1LSUltv1LhvnYN7yJXgGO7b6h9xkL1o=' www.google-analytics.com/analytics.js 'sha256-JEt9NmC3BP88wxuTZm9aKNu87vEgGmKW1zzy/vb1KPs=' polyfill.io/v2/polyfill.min.js assets.codepen.io production-assets.codepen.io; script-src-elem 'report-sample' 'self' *.speedcurve.com 'sha256-q7cJjDqNO2e1LSUltv1LhvnYN7yJXgGO7b6h9xkL1o=' www.google-analytics.com/analytics.js 'sha256-JEt9NmC3BP88wxuTZm9aKNu87vEgGmKW1zzy/vb1KPs=' polyfill.io/v2/polyfill.min.js.s.mdn.mozilla.net mdn.github.io yari-demos.prod.mdn.mozit.cloud mdn.mozillademos.org yari-demos.stage.mdn.mozit.cloud jsfiddle.net www.youtube-nocookie.com codepen.io; img-src 'self' *.githubusercontent.com *.googleusercontent.com lux.speedcurve.com mdn.mozillademos.org media.prod.mdn.mozit.cloud media.stage.mdn.mozit.cloud interactive-examples.mdn.mozilla.net wikipedia.org www.google-analytics.com www.gstatic.com; manifest-src 'self'; media-src 'self' archive.org videos.cdn.mozilla.net; worker-src 'none';
ⓘ content-type: text/html; charset=utf-8
ⓘ date: Fri, 28 Jan 2022 02:32:56 GMT
ⓘ etag: W/"0d8da890db078e57149d76a807f26257"
ⓘ last-modified: Fri, 28 Jan 2022 02:00:19 GMT
ⓘ server: AmazonS3
ⓘ strict-transport-security: max-age=63072000
ⓘ vary: Accept-Encoding
ⓘ via: 1.1 829a59987d0f31d24bf9d630fbc655e.cloudfront.net (CloudFront)
x-amz-cf-id: qf2c3RQ6d-KqrOzCpwwT2O8IOsHlzeooqBtV8WdbKPfU8_QluXXmA==
x-amz-cf-pop: MIA3-P2
x-cache: Hit from cloudfront
ⓘ x-content-type-options: nosniff
X-Firefox-Spdy: h2
ⓘ x-frame-options: DENY
ⓘ x-xss-protection: 1; mode=block
```

Header - metadata

- API method
- HTTP response code
- Body type accepted

Body - meat and potatoes

- JSON
- XML

COMMON METHODS

GET - Read a specific resource (data) or a collection of resources

POST - Create new resource

PUT - Update the entirety of an existing resource, usually

PATCH - Update part of an existing resource

DELETE - Remove resource

RESPONSE CODES

1xx - Information

2xx - Success

- 200 - Request successful
- 201 - Resource created

3xx - Redirect

- 301 - Resource moved to new URI (location)

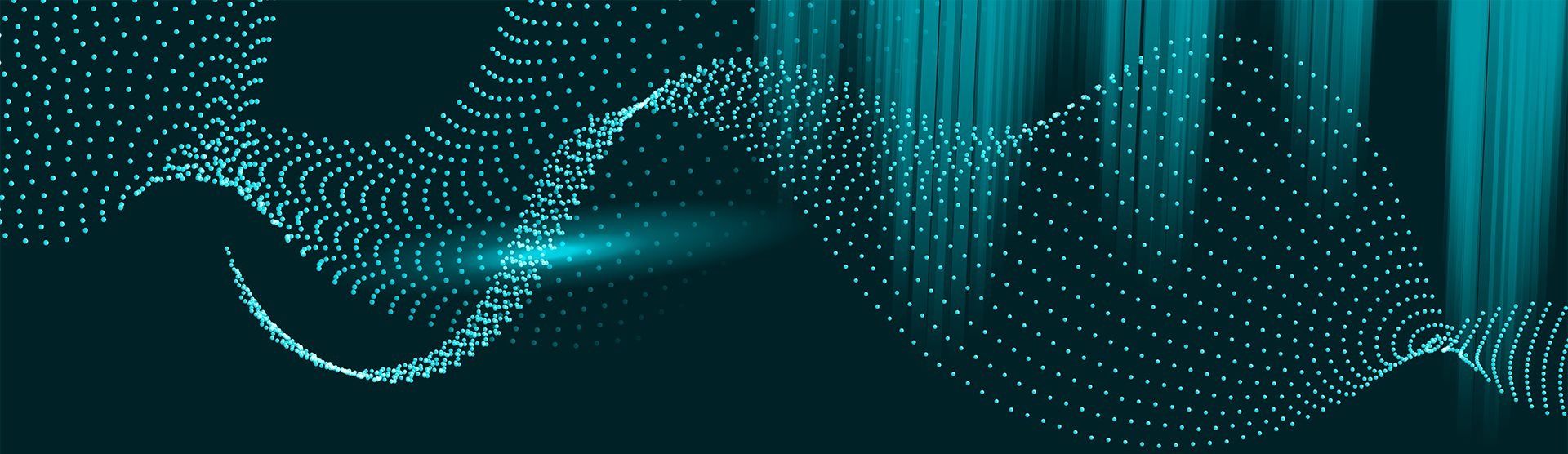
4xx - Client Error

- 401 - Unauthorized access
- 404 - Resource not found

5xx - Server Error

- 502 - Bad gateway





03

Examples

Python

Requests

```
python -m pip install requests
```

Docs: <https://docs.python-requests.org/en/latest/>

Python

```
import requests

r = requests.get(
    'http://api.weatherapi.com/v1/current.json?
    key=your_key&q=your_query' )

print(r.json())
```

JavaScript

Fetch API

Native to every browser except IE

Docs: https://developer.mozilla.org/en-US/docs/Web/API/Fetch_API/Using_Fetch

JavaScript

```
fetch('http://api.weatherapi.com/v1/current.json?  
      key=your_key&q=your_query')  
  .then(response => response.json())  
  .then(data => console.log(data));
```



04 | **Demonstration**

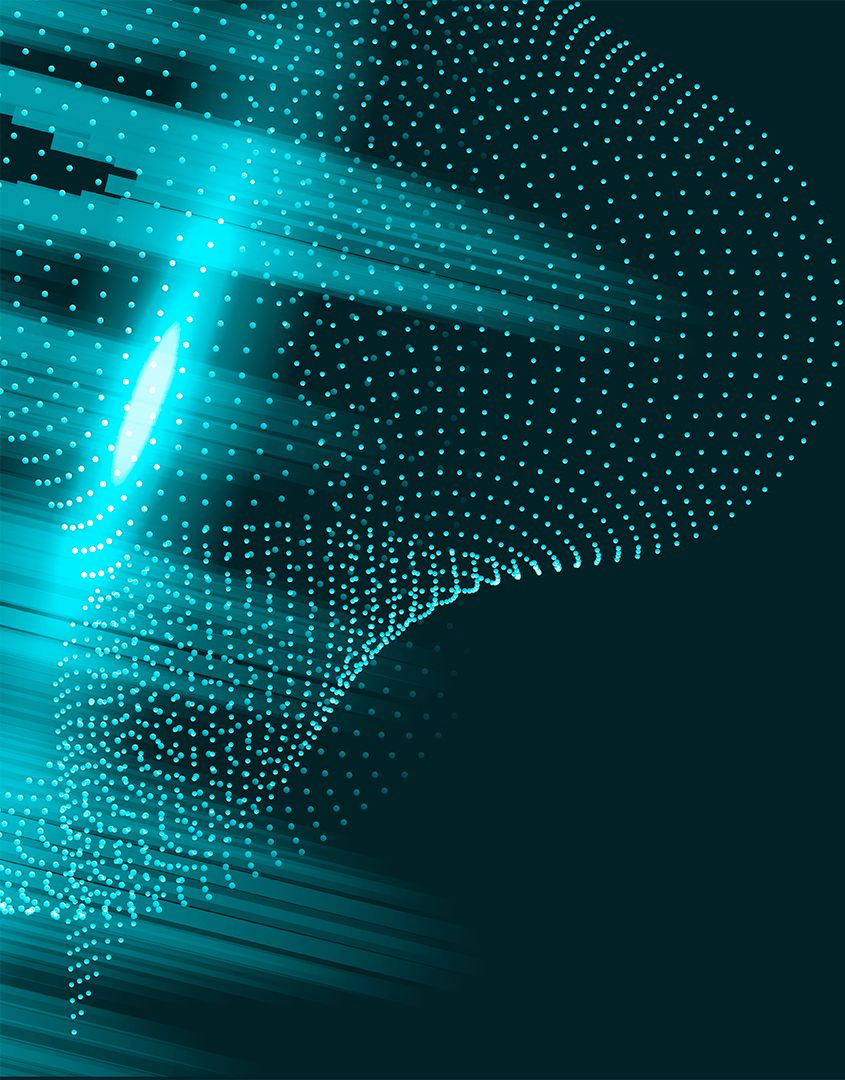
PREREQUISITES

Postman: <https://www.postman.com/>

- I recommend the desktop client, but the web app should work.

WeatherAPI: <https://www.weatherapi.com/>

- Create free account and copy your API key from:
<https://www.weatherapi.com/my/>



**HERE
WE GO**