

Programming for AI

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BS(AI)-IV

Application Programming Interface

- On web there are lots of websites that carry a whole bunch of data



Yahoo weather can make you updated about current weather in different cities

The screenshot shows the Yahoo! weather interface. At the top, there's a search bar and a user profile for 'Angela' with a mail icon. The main section displays the current weather as 'Cloudy' with a temperature of 62°F (18.3°C). The forecast shows a high of 65°F and a low of 53°F. A 'Get the App' button is visible. On the left, there's a 'My Locations' section with a list of cities: New York, Los Angeles, Chicago, Houston, Philadelphia, San Francisco, Mexico City, Tokyo, Sao Paulo, London, Paris, and Venice. The 'Forecast' section shows a table of weather data for the next few days. The 'Details' section provides more information about the current conditions, including 'Feels like', 'Humidity', 'Visibility', and 'UV Index'. The 'Sun & Moon' section shows the current phase of the moon as 'Waning Crescent'.

Current Weather: Cloudy, 62°F (18.3°C), High: 65°F, Low: 53°F

Forecast:

Day	Icon	High/Low
Wednesday	Cloudy	65° / 53°
Thursday	Cloudy	71° / 58°
Friday	Cloudy	78° / 58°
Saturday	Partly Cloudy	73° / 56°
Sunday	Partly Cloudy	71° / 57°
Monday	Partly Cloudy	69° / 55°
Tuesday	Partly Cloudy	70° / 54°

Details:

- Feels like: 61°
- Humidity: 70%
- Visibility: 10.00 miles
- UV Index: 2 (Low)







Sun & Moon: Waning Crescent

You can head over to coinbase to see market value of different cryptocurrency

coinbase Prices Products Company Earn crypto [Get \\$181+](#) Sign in [Get started](#)

In the last 24 hours
Market is up **0.80%**

24h All assets

#	Name	Price	Change	Market Cap	Trade
1	 Bitcoin BTC	£7,305.90	+0.04%	£134.7B	Trade
2	 Ethereum ETH	£189.67	-0.12%	£21.2B	Trade
3	 Tether USDT	£0.79	-0.65%	£7.3B	
4	 XRP XRP	£0.16	+0.25%	£7.0B	Trade
5	 Bitcoin Cash BCH	£181.06	-0.44%	£3.3B	Trade
6	 Cardano ADA	£0.10	+4.17%	£2.7B	

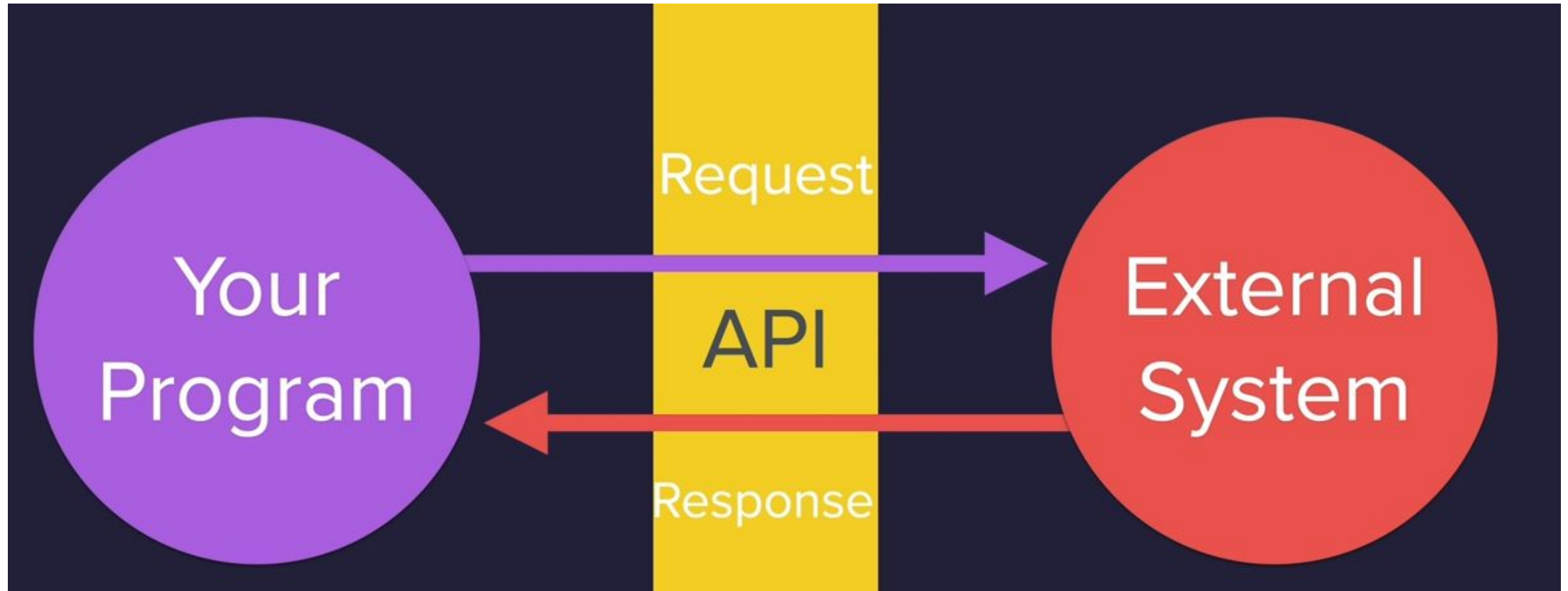
Now...

- What if we wanted to use their data in our own programmes

That is where API's come into play

An Application Programming Interface (API)
is a set of commands, functions, protocols,
and objects
that programmers can use to
create software or interact with an external
system.

API is a barrier, follow external system's rules to get the required data





Yahoo Weather API for your apps

Get up-to-date weather information for any location, including 10-day forecast, wind, atmosphere, astronomy conditions, and more. You can lookup weather by location (city name) or lat/long.

Terms of Use

The above feeds are provided free of charge for use by individuals and non-profit organizations for personal, non-commercial uses. We reserve all rights in and to the Yahoo logo, and your right to use the Yahoo logo is limited to providing attribution in connection with these RSS feeds. Yahoo also reserves the right to require you to cease distributing these feeds at any time for any reason. Usage of these feeds is subject to YDN terms of use. Your use of weather feeds is subject to the [Yahoo APIs Terms of Use](#).

Commercial Use

If you want to use weather API for commercial purpose, please [request an invite here](#).

COINBASE API

[Getting Started](#)[Libraries](#)[API Key Authentication](#)[Permissions](#)[Notifications](#)[Error Codes](#)

GUIDES

[Send and Receive BTC](#)[Buy and Sell BTC](#)[Price Data](#)

COINBASE CONNECT (OAUTH2)

[Introduction](#)[Integrating](#)[Mobile integration](#)[Permissions](#)[Two Factor Authentication](#)[Refresh tokens](#)[Security](#)

REFERENCE

[API Reference](#)[OAuth2 reference](#)[Client Libraries](#)

RESOURCES

[API Terms](#)[Licenses](#)[Stack Overflow](#)

WELCOME TO THE COINBASE DIGITAL API

Our API makes it easy to integrate bitcoin, bitcoin cash, litecoin and ethereum into both new and existing applications.

Coinbase's APIs enable a variety of capabilities; from simply gathering read-only data, to building something that's never been done before.

Capabilities:

- Generate bitcoin, bitcoin cash, litecoin and ethereum wallets and addresses
- Buy/sell and send/receive bitcoin, bitcoin cash, litecoin and ethereum
- Securely store bitcoin, bitcoin cash, litecoin and ethereum
- Retrieve real-time or historical price information
- Receive notifications when payments arrive

We offer a variety of client libraries and mobile SDKs.

Pick the right tools for your project

**Coinbase Connect (OAuth2)****Notifications**

You can't go in restaurant and directly access the items from the kitchen

WEBSITES

DATA

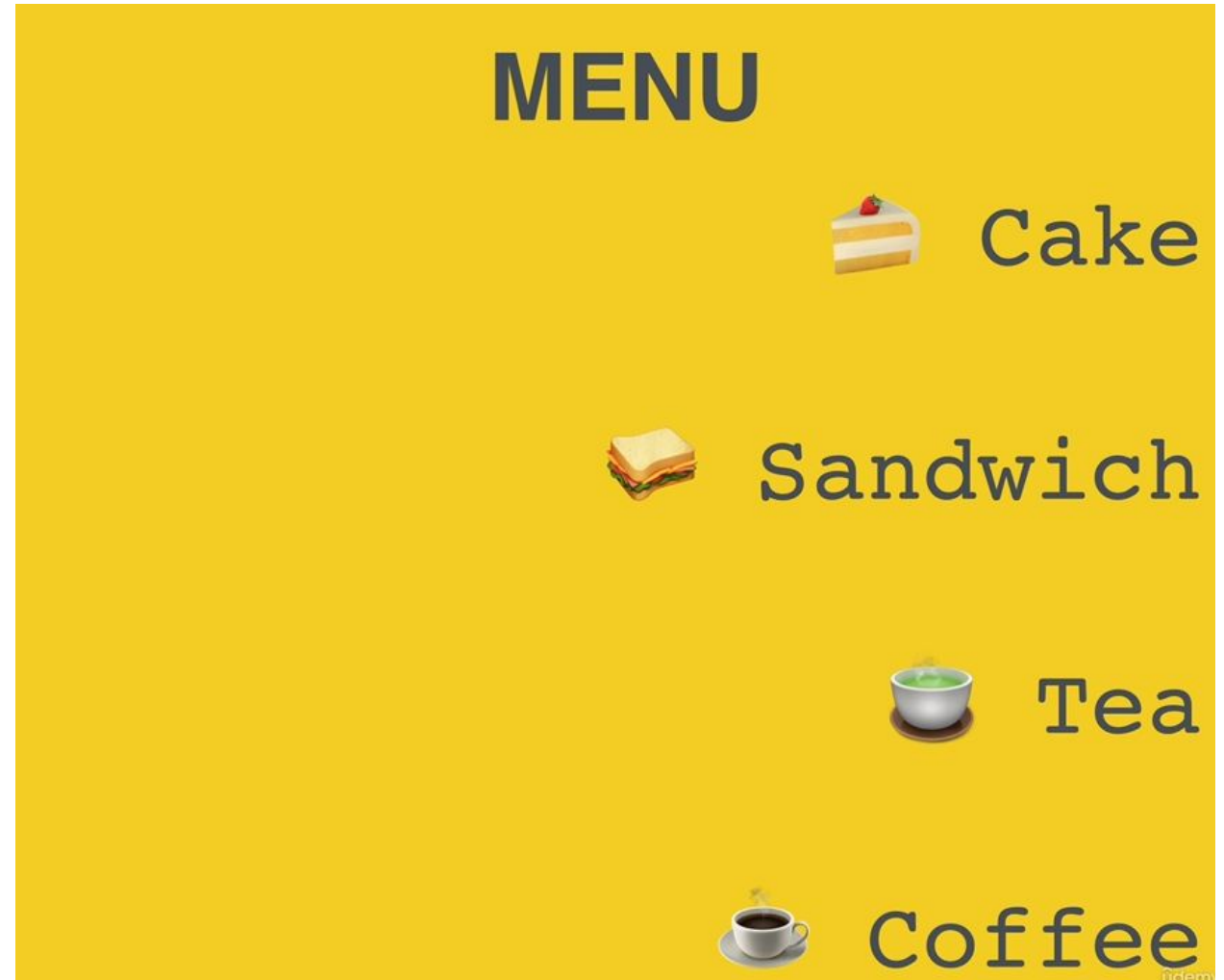
Restaurant



Kitchen

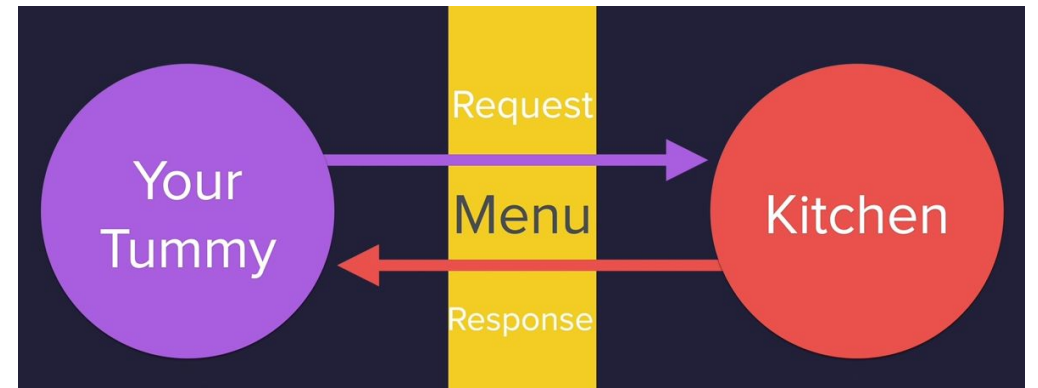


Menu is an
interface
between us and
the restaurant



Essentially API is a Menu

- Its all of the things which you can do to interact with the external system



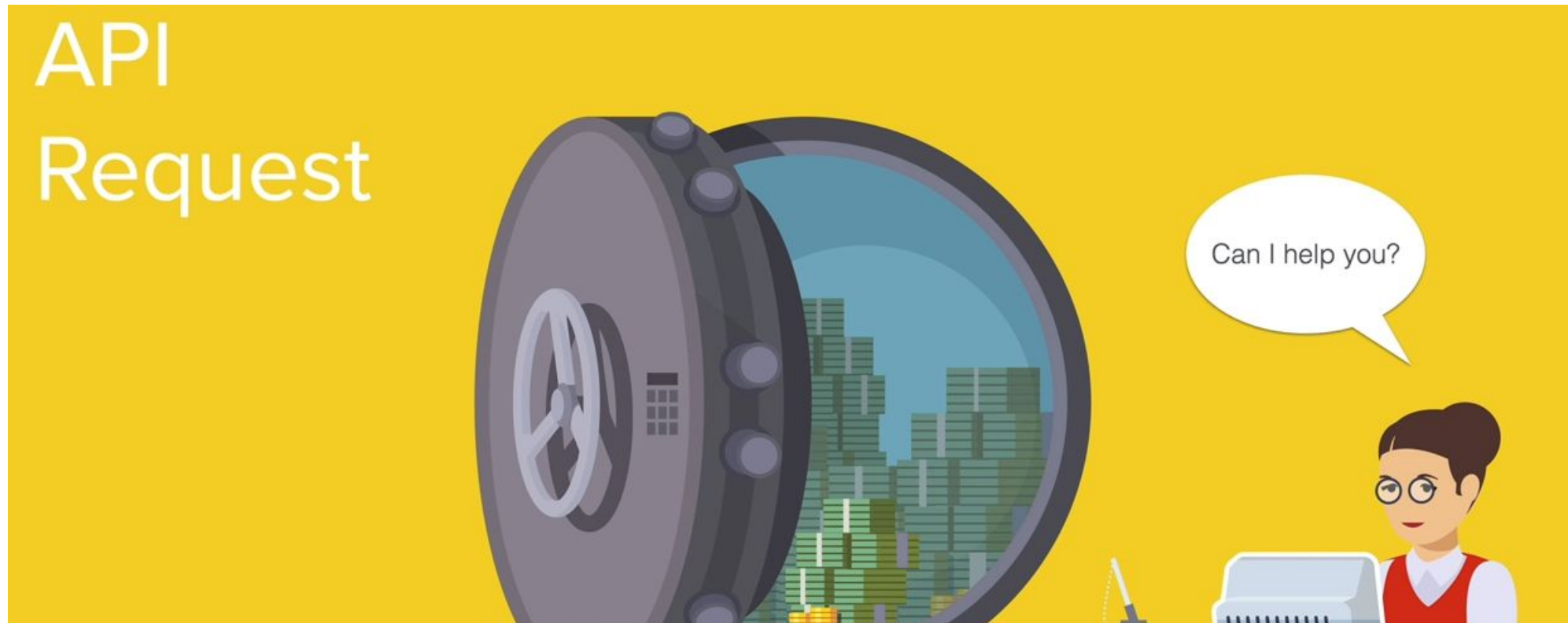
API End point is like a location



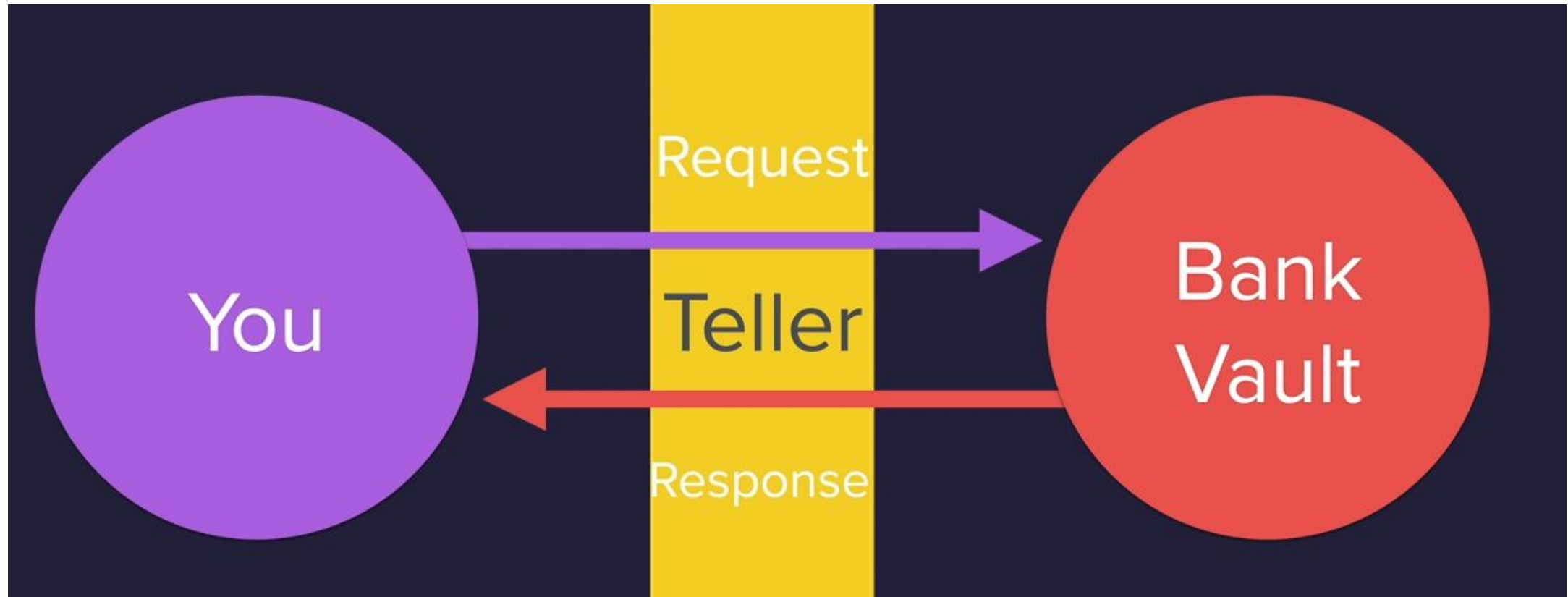
API End point

- You must know where the store is located from where you want to access the data.
- API End point is usually a URL, like in order to get data from coinbase we may use:
 - `api.coinbase.com`

API Request



API Request



One of the famous API

<http://api.open-notify.org/iss-now.json>

International Space Station Current Location

The **International Space Station** is moving at close to 28,000 km/h so its location changes really fast! Where is it right now?

Overview

This is a simple api to return the current location of the ISS. It returns the current latitude and longitude of the space station with a unix timestamp for the time the location was valid. This API takes no inputs.

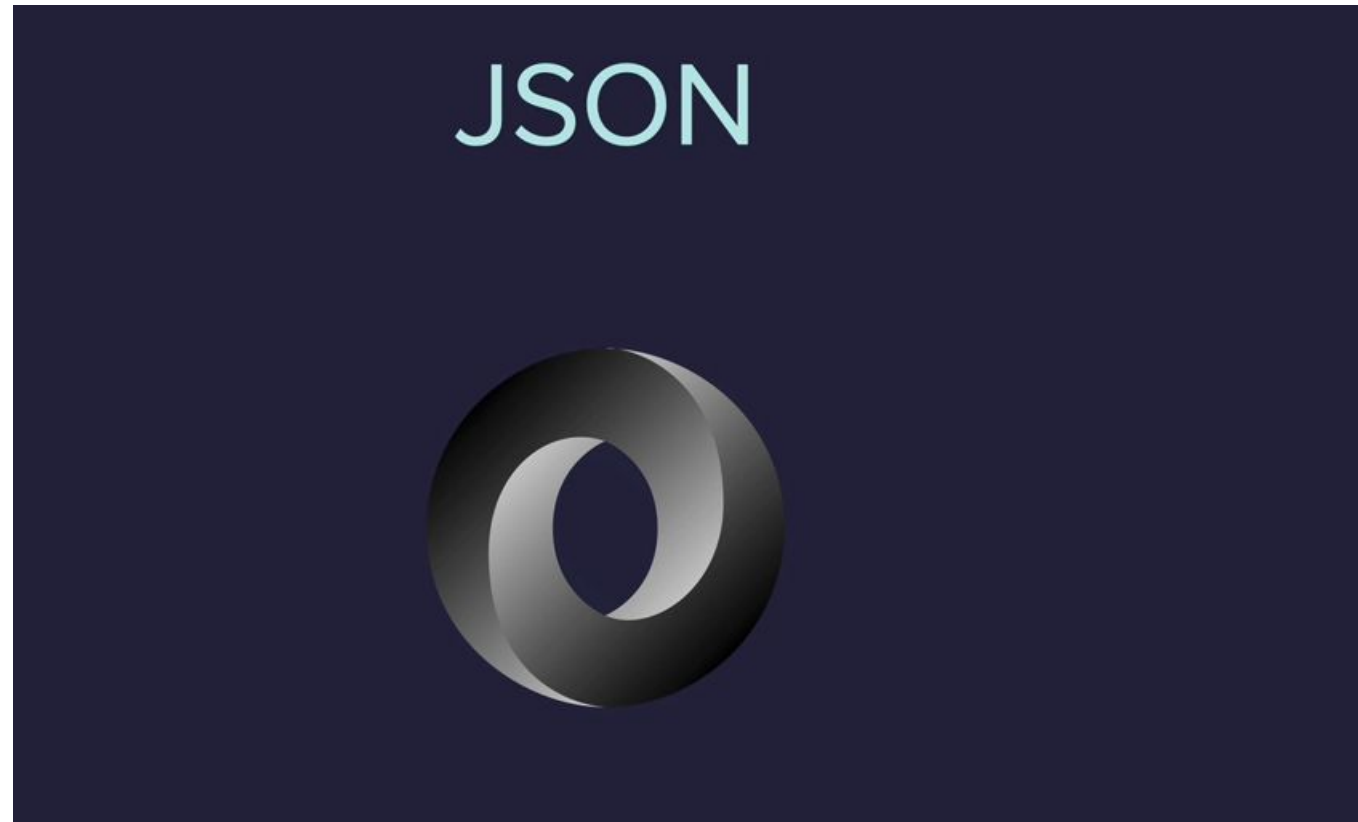
Output

JSON

<http://api.open-notify.org/iss-now.json>

```
{
  "message": "success",
  "timestamp": UNIX_TIME_STAMP,
  "iss_position": {
    "latitude": CURRENT_LATITUDE,
    "longitude": CURRENT_LONGITUDE
  }
}
```

Standard way of Transferring the data over internet



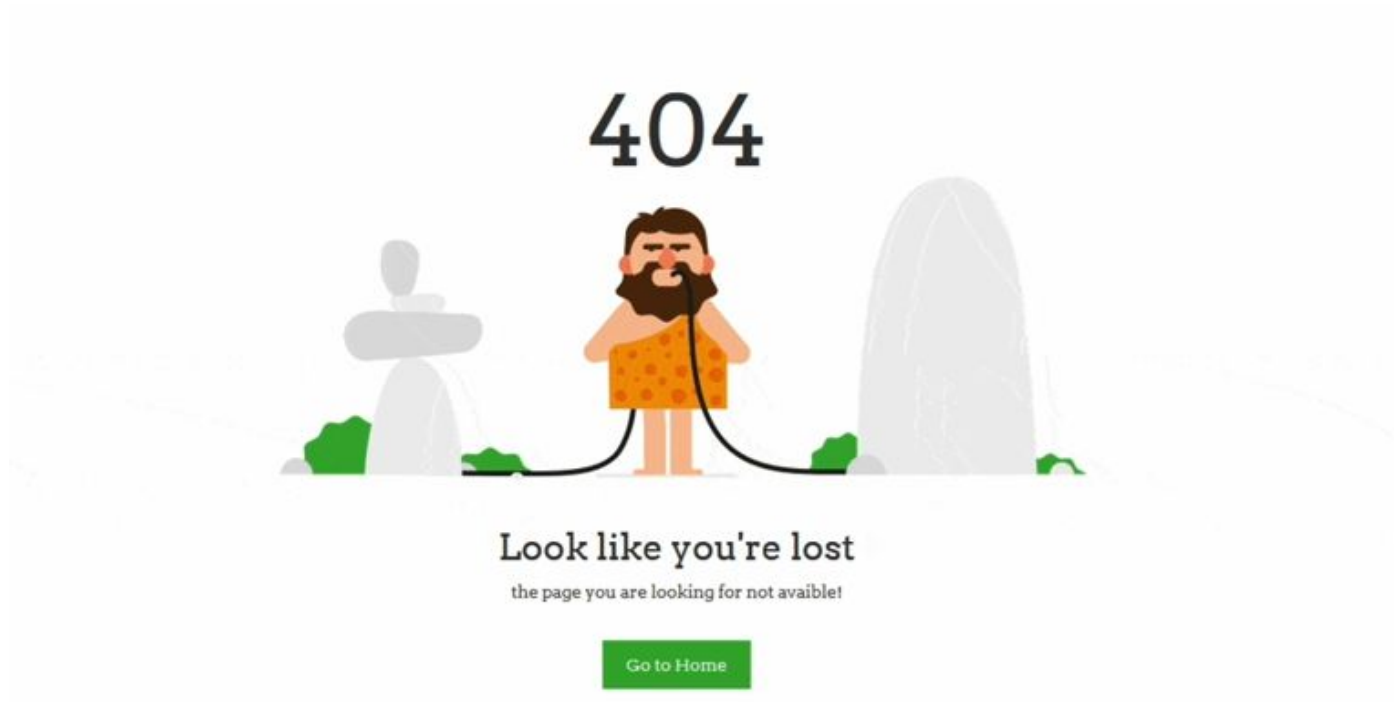
Python code to connect our python program to iss API

```
import requests

response = requests.get(url="http://api.open-notify.org/iss-now.json")
print(response)
```

Response codes

- Tell you whether your request was a success or a failure



First digit of the response code is very much informative

1XX: Hold On

2XX: Here You Go

3XX: Go Away

4XX: You Screwed Up

5XX: I Screwed Up

Success

```
import requests

response = requests.get(url="http://api.open-notify.org/iss-now.json")
print(response.status_code)
```

```
200
```

```
Process finished with exit code 0
```


Failure

```
import requests

response = requests.get(url="http://api.open-notify.org/is-now.json")
print(response.status_code)
```



invalid endpoint

```
404 Not found

Process finished with exit code 0
```

Working around with response codes

```
import requests

response = requests.get(url="http://api.open-notify.org/iss-now.json")
if response.status_code == 404:
    raise Exception("That resource does not exist.")
elif response.status_code == 401:
    raise Exception("You are not authorised to access this data.")
```

httpstatuses.com

httpstatuses.com

Sponsored by [Runscope](#) — API Monitoring & Testing

HTTP Status Codes

httpstatuses.com is an easy to reference database of HTTP Status Codes with their definitions and helpful code references all in one place. Visit an individual status code via <httpstatuses.com/code> or browse the list below.

@ Share on Twitter @ Add to Pinboard

1xx Informational

- 100** Continue
- 101** Switching Protocols
- 102** Processing

2xx Success

- 200** OK
- 201** Created
- 202** Accepted
- 203** Non-authoritative Information
- 204** No Content
- 205** Reset Content
- 206** Partial Content
- 207** Multi-Status
- 208** Already Reported
- 226** IM Used

3xx Redirection

- 300** Multiple Choices
- 301** Moved Permanently
- 302** Found
- 303** See Other

Using request module to generate an exception

```
import requests
💡
response = requests.get(url="http://api.open-notify.org/is-now.json")
response.raise_for_status()
```

Working around with response

```
import requests

response = requests.get(url="http://api.open-notify.org/iss-now.json")
response.raise_for_status()

data = response.json()

longitude = data["iss_position"]["longitude"]
latitude = data["iss_position"]["latitude"]

iss_position = (longitude, latitude)
print(iss_position)
```

Some API's may require parameters



Sunset and sunrise times API

We offer a **free API** that provides **sunset and sunrise times** for a given **latitude and longitude**.

Please note that **attribution is required** if you use our API. Check "Usage limits and attribution" section below for more information.

API documentation

Ours is a very simple REST api, you only have to do a GET request to <https://api.sunrise-sunset.org/json>.

Parameters

- **lat** (float): Latitude in decimal degrees. Required.
- **lng** (float): Longitude in decimal degrees. Required.
- **date** (string): Date in YYYY-MM-DD format. Also accepts [other date formats](#) and even [relative date formats](#). If not present, date defaults to current date. Optional.
- **callback** (string): Callback function name for JSONP response. Optional.
- **formatted** (integer): 0 or 1 (1 is default). Time values in response will be expressed following [ISO 8601](#) and day_length will be expressed in seconds. Optional.

Will this code raise an error?

```
reponse = requests.get("https://api.sunrise-sunset.org/json")  
reponse.raise_for_status()
```




Latlong.net

Place Name

Add the country code for better results. Ex: London, UK

Latitude

Longitude

For better accuracy please type Name Address City State Zipcode.

Right code...

```
MY_LAT = 51.507351
MY_LONG = -0.127758

parameters = {
    "lat": MY_LAT,
    "lng": MY_LONG,
}

reponse = requests.get("https://api.sunrise-sunset.org/json", params=parameters)
reponse.raise_for_status()
```

Printing the json

```
reponse = requests.get("https://api.sunrise-sunset.org/json", params=parameters)
reponse.raise_for_status()
data = reponse.json()
print(data)
```