Programming for AI

Abdul Haseeb

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

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

Now…

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

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
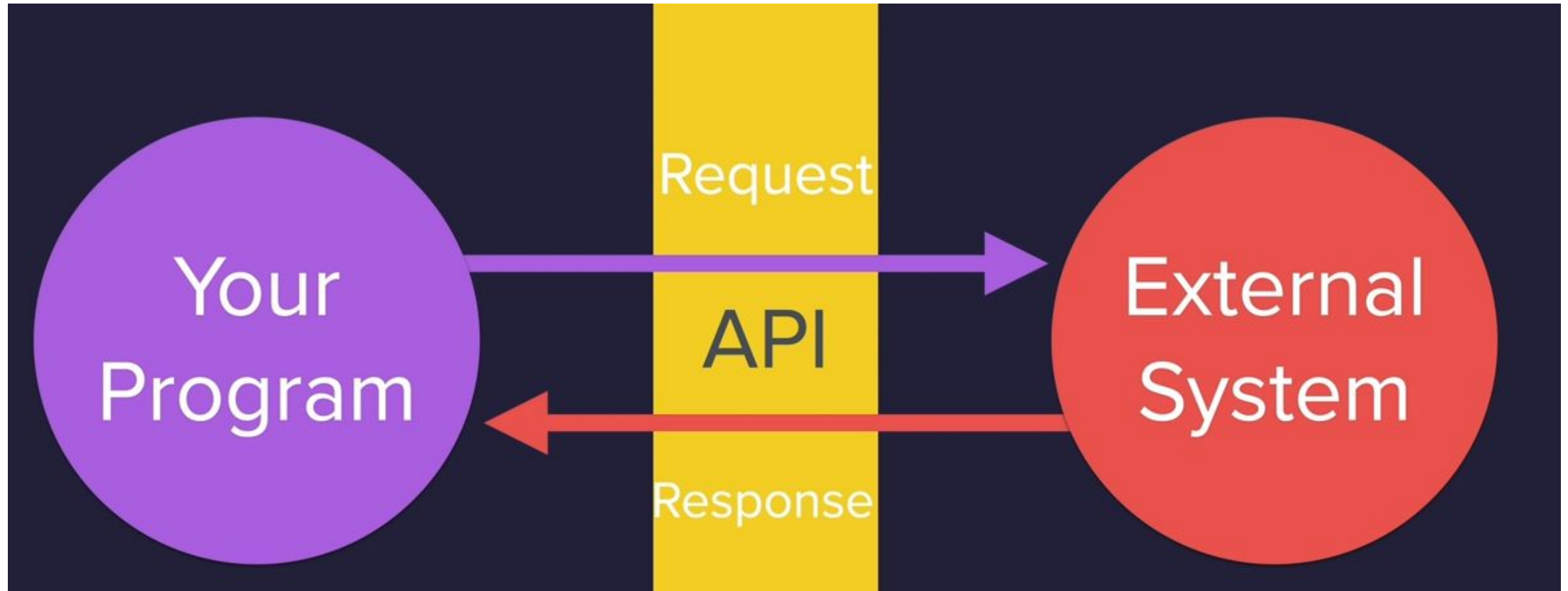
Yahoo Weather API for your apps

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.

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

Menu is an interface between us and the resturant

MENU

🍰 Cake

🥪 Sandwich

🍵 Tea

☕ Coffee
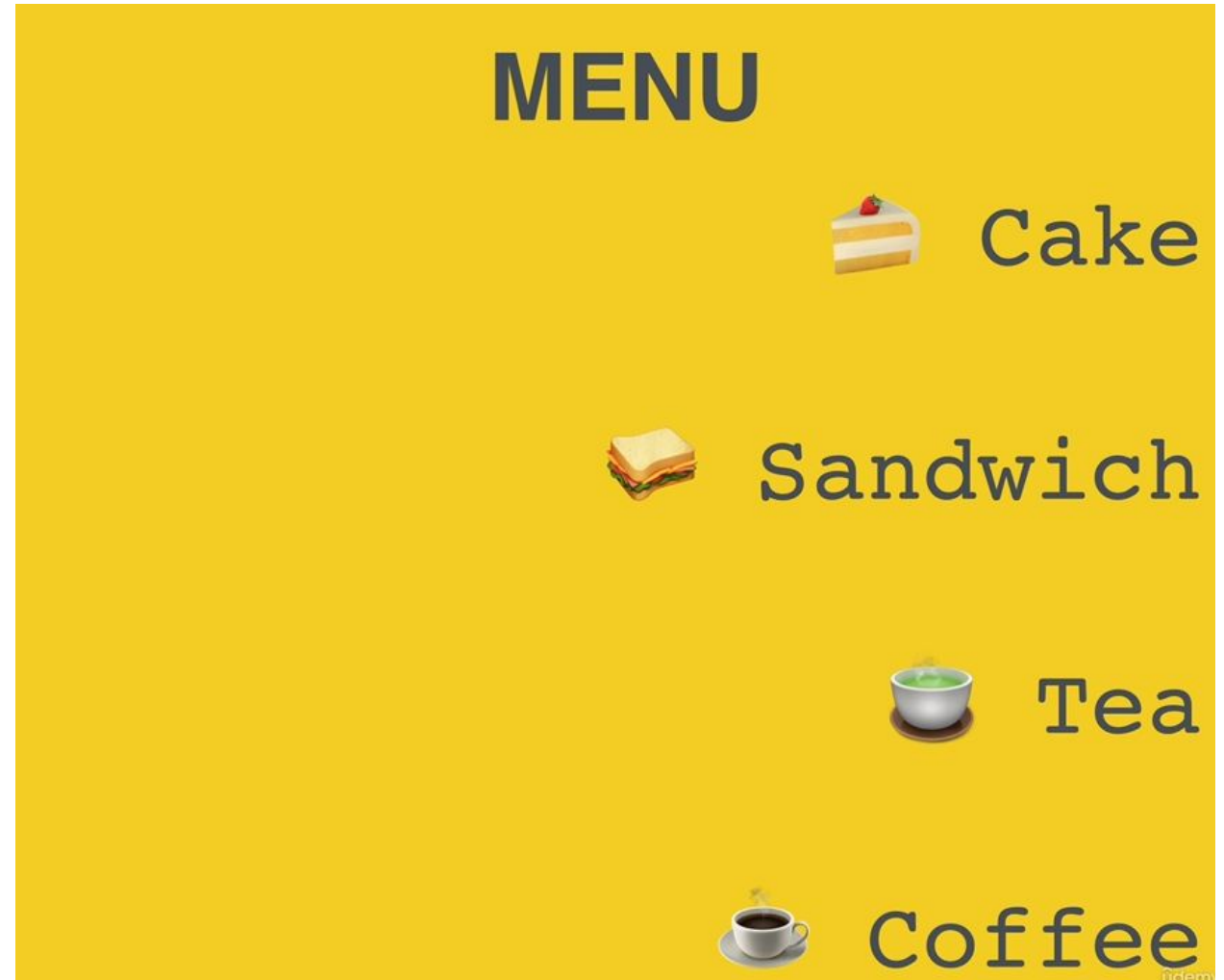
Essentially API is a Menu

- Its all of the things which you can do to interact with the external system
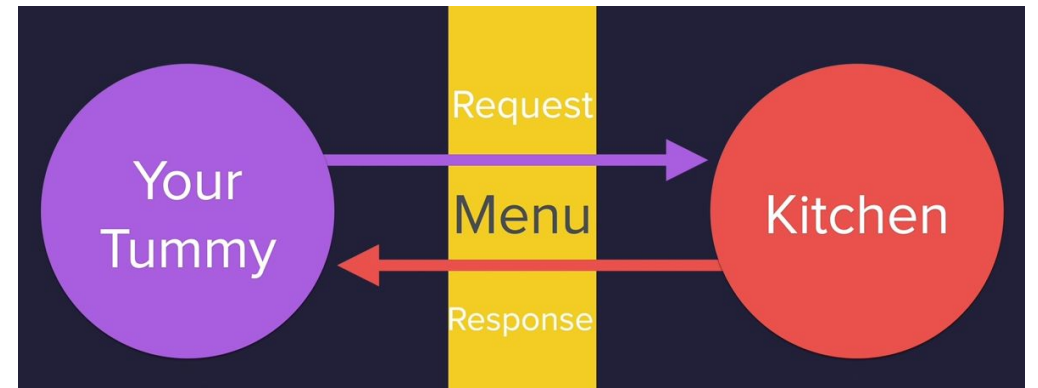
API End point is like a location

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
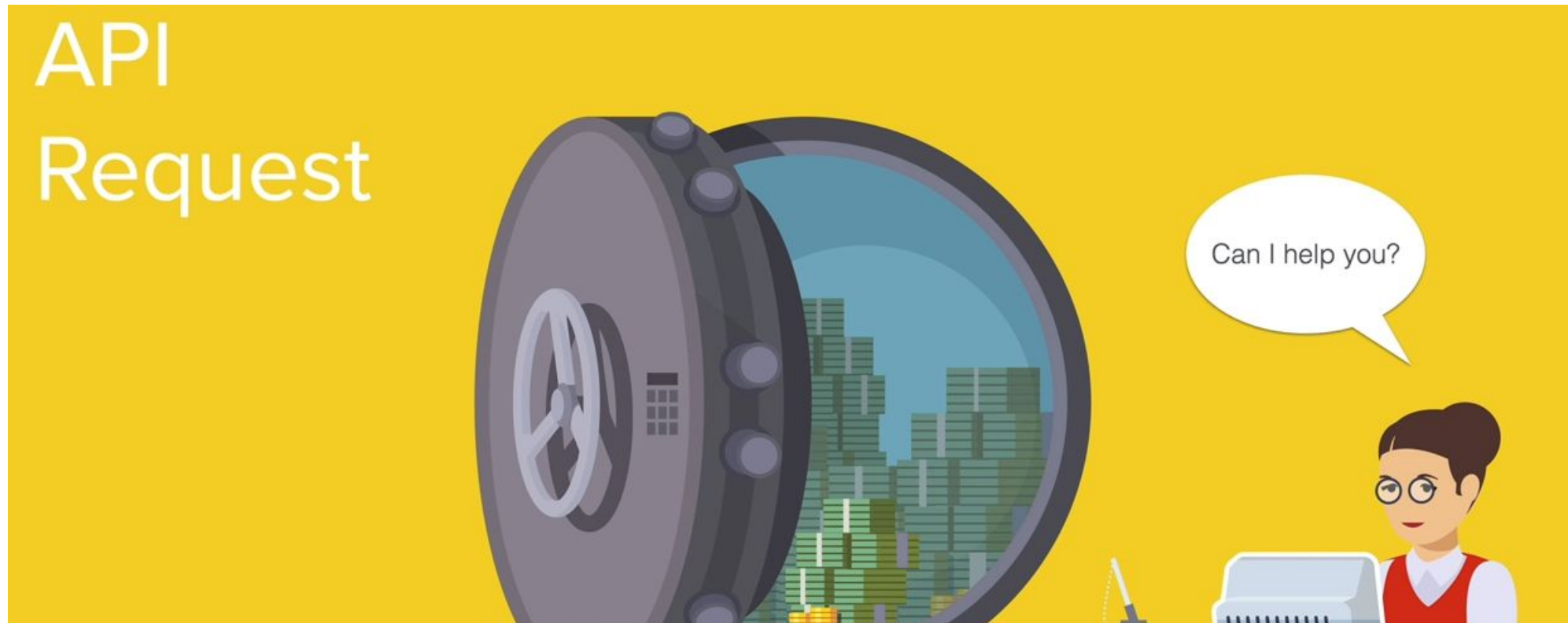
API Request

One of the famous API
http://api.open-notify.org/iss-now.json
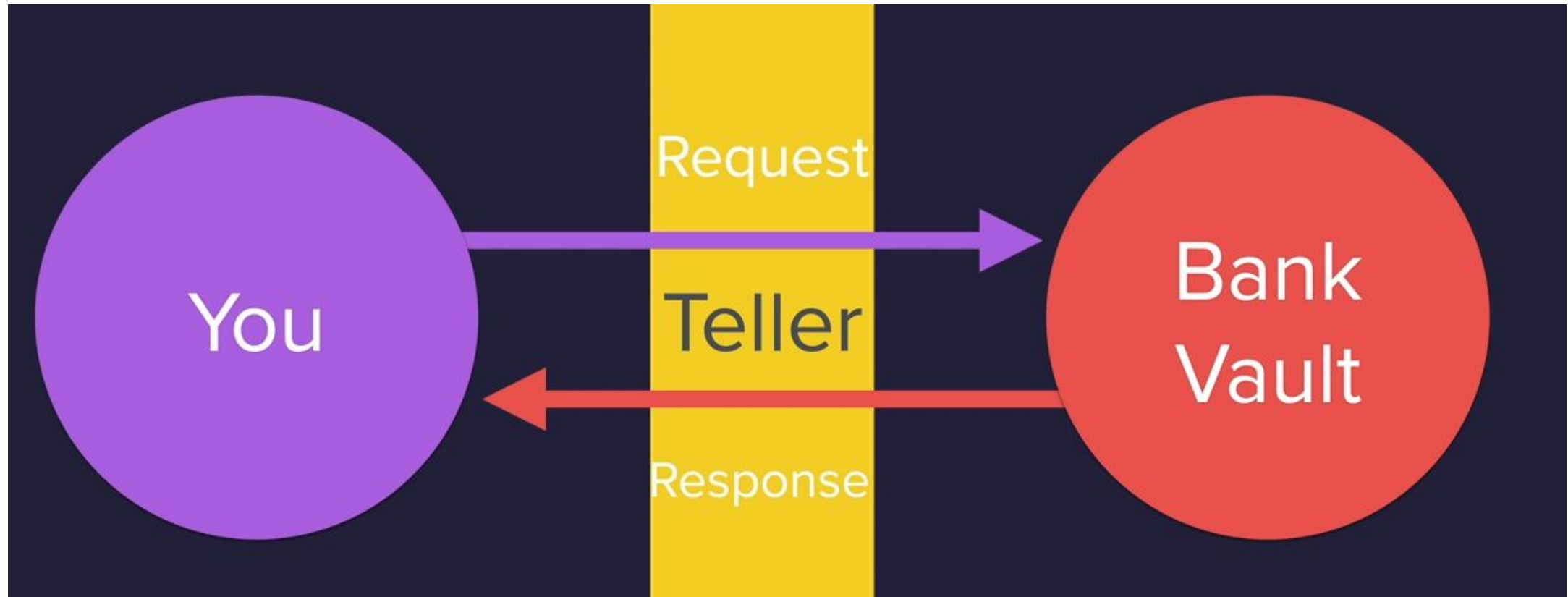
International Space Station Current Location

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
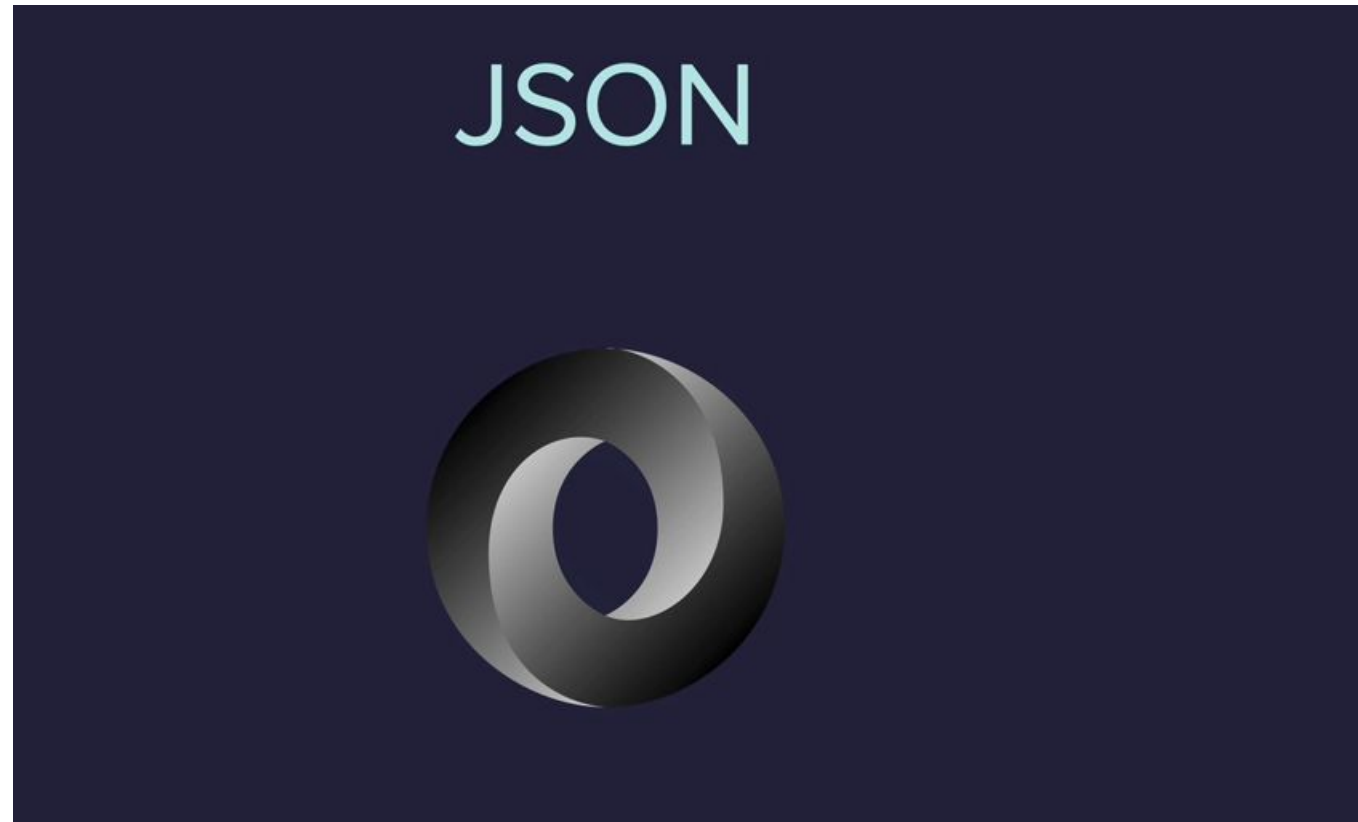
Python code to connect our python program to iss API

```python
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
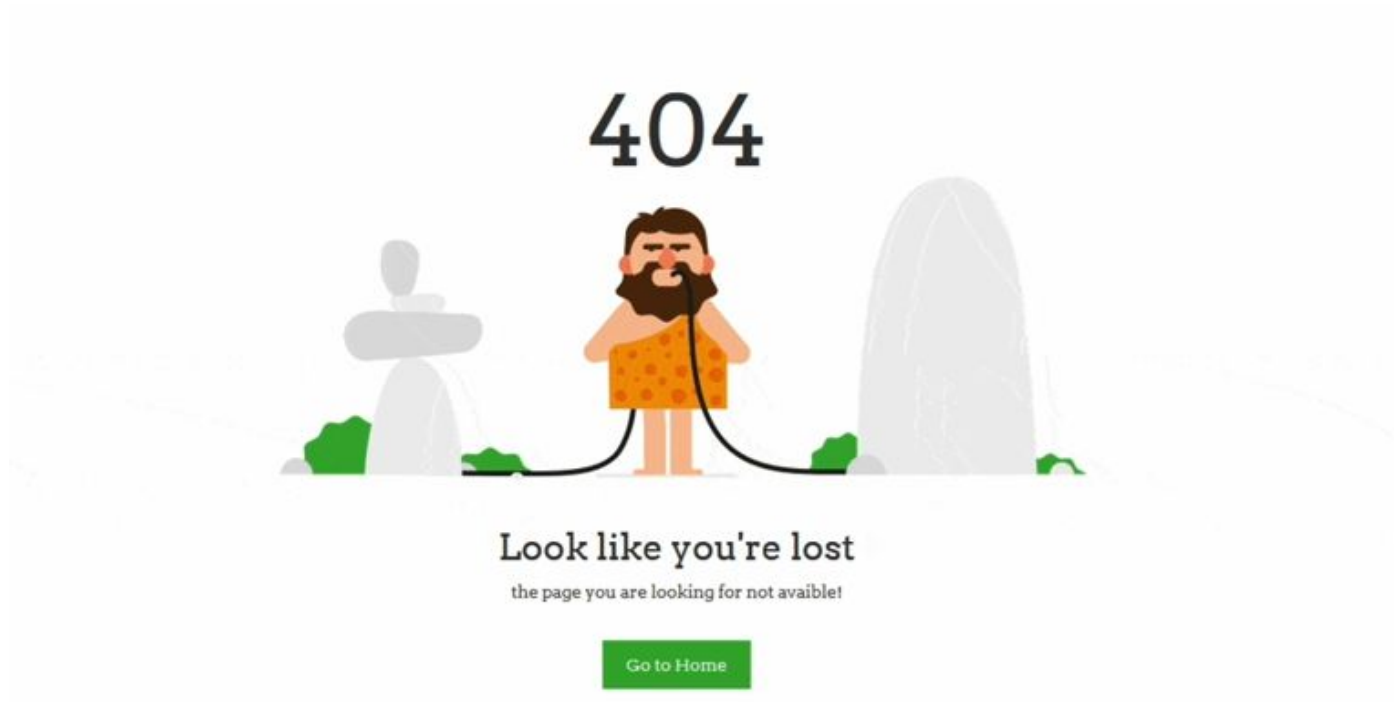
First digit of the response code is very much informative

1XX: Hold On
2XX: Here You Go
3XX: Go Away
4XX: You Screwed Up
5XX: I Screwed Up

Success

```python
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

```python
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

1×× Informational
100 Continue
101 Switching Protocols
102 Processing

2×× 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

3×× Redirection
300 Multiple Choices
301 Moved Permanently
302 Found
303 See Other

Using request module to generate an exception

```python
import requests

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

Working around with response

```python
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

☼ Sunrise Sunset   Enter a location   🔍 Search   Explore   Calendar

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?

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

Latlong.net

Right code…

```python
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

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