# Open Weather API

## Description

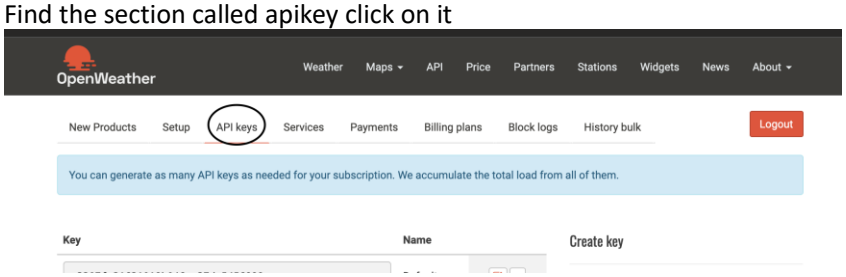
Open weather API is a free API that provide up to date weather information for cities around the globe. There are other guides online with either minimal details on the api or lack in information on Nodejs.

## Requirement

- Nodejs & npm
- Internet Connection
- Any library that can make HTTP/HTTPS request (Optional)
    - AJAX
    - Request
    - More …

## Steps

- Create an account with OpenWeather API from there you should create an api key that ties to your account
    1. Open the url https://openweathermap.org/
    2. Sign up a for an account by enter email and general information
    3. Login
    4. Find the section called apikey click on it




    5. Click: Create key name it “{anything}”
- In this example we are making use of the request library for the simplicity of the code, there are two ways to install the library (1 is prefer when there are lots of library being used)
    1. Create a package.json file inside a work directory and add the library you want to use into the dependencies field; Save the file; On the terminal, cd your way into the work directory and enter command npm install; a new directory will be created under the work directory

called node_module that is where all the libraries/dependencies downloaded are located.

```
➜  Guide ls
package.json
➜  Guide npm install

> ws@0.4.32 install /Users/Jackyx/Documents/SFU/Courses/semester-9/CMPT-433/Proj
ect/Guide/node_modules/ws
> (node-gyp rebuild 2> builderror.log) || (exit 0)

npm notice created a lockfile as package-lock.json. You should commit this file.
npm WARN test@0.0.1 No repository field.
npm WARN test@0.0.1 No license field.

added 63 packages from 79 contributors and audited 78 packages in 3.168s
found 6 vulnerabilities (3 low, 1 moderate, 2 high)
  run `npm audit fix` to fix them, or `npm audit` for details
➜  Guide ls
node_modules      package-lock.json package.json
➜  Guide
```

2. On command line, cd into work directory and enter the command npm i request and the library will be installed under the workdirectory/node_module/..

```
➜  Guide npm i request
npm WARN saveError ENOENT: no such file or directory, open '/Users/Jackyx/Docume
nts/SFU/Courses/semester-9/CMPT-433/Project/Guide/package.json'
npm notice created a lockfile as package-lock.json. You should commit this file.
npm WARN enoent ENOENT: no such file or directory, open '/Users/Jackyx/Documents
/SFU/Courses/semester-9/CMPT-433/Project/Guide/package.json'
npm WARN Guide No description
npm WARN Guide No repository field.
npm WARN Guide No README data
npm WARN Guide No license field.

+ request@2.88.0
added 48 packages from 59 contributors and audited 63 packages in 2.07s
found 0 vulnerabilities

➜  Guide ls
node_modules      package-lock.json
➜  Guide
```

- Create a file {filename}.js under work directory: utilize the provided sample code at later section
- Enter command `node {filename}.js` to get the output

## API Detail

The open weather api follows restful API standard which means client send out GET http/https request on the appropriate URL, a certain a json object will be send back as response

Exact URLs for GET requests

`http://api.openweathermap.org/data/2.5/weather?q={city name}`

- Enter city name as the parameter, which will return the weather of a city.
    - Sample:
        - `http://api.openweathermap.org/data/2.5/weather?q=london`
- This can be ambiguous since there are many cities of the same name around the globe

`http://api.openweathermap.org/data/2.5/weather?q={city name},{country code}`

- Like the previous one, but you get to enter the country city belongs to which can make the enter less ambiguous, but still suffer from cases where one country has multiple cities of the same name.
- Country code follows ISO 3166 country codes: list can be found https://en.wikipedia.org/wiki/List_of_ISO_3166_country_codes

- Sample:
    - http://api.openweathermap.org/data/2.5/weather?q=london,UK

http://api.openweathermap.org/data/2.5/weather?id={cityid}

- Provides the least ambiguous result out of all the api provided There is a one to one map for every single city that the api support and from there you can specify which city you want
- City id list can be downloaded form link:
    - http://bulk.openweathermap.org/sample/city.list.json.gz

http://api.openweathermap.org/data/2.5/weather?lat={lat}&lon={lon}

- use longitude and latitude as parameter for weather of general location.
- Date type for the two value can be float
- Sample:
    - http://api.openweathermap.org/data/2.5/weather?lat=35&lon=135.9

http://api.openweathermap.org/data/2.5/weather?zip={zip code},{country code}

- use zip code and country code as the parameter
- sample:
    - https://api.openweathermap.org/data/2.5/weather?zip=94040,us

ALL URL need to be followed By &appid={apikey that was generated} when making the GET request to the URL. This is for authentication.

Default temperature returned are in Kelvin, you can either does a manual conversion of the unit or specify the unit you want by adding &units={ Metric /Imperial } in the URL after apikey

## JSON Detail (from official doc with added comments)

- Detail JSON received from the API can be found here
- Notable detail missing from the documentation
    - Timezone Shift in seconds from UTC
        - this give you number of hours from UTC time convert to seconds
    - weather
        - list of all possible weather can be found here
    - time received are in milliseconds this came be converted into

## Sample package.json

```
{
  "name": "test",
  "version": "0.0.1",
```

```
  "description": "Ass3",
  "dependencies": {
    "mime": "~1.2.7",
    "socket.io": "~0.9.6",
    "request": "2.88.0"
  }
}
```

## Sample Code

```
// import the request library using the line
var request = require('request');

function httprequest(mkey,mcity){
  let url = 'http://api.openweathermap.org/data/2.5/weather?q='+mcity+'&appid='+ mkey

  request(url,function(err,response,body){
    if(err){
      console.log('error:', err)
    } else {
        // response by the api which is the body part
      console.log(JSON.parse(body))
    }
  })
}

Httprequest("apikey that you have","Vancouver,CA");
Httprequest("apikey that you have","Vancouver");
```

## Trouble Shooting

- Invalid API KEY error:
  - API key may take several minutes to start working,
- Invalid URL:
  - Double check the URL entered
  - There shouldn't be any space in the url
- Other error:
  - there is threshold on how many requests per minute you can make across all keys under the same account

## More Resource

- https://openweathermap.org/api
- https://www.youtube.com/watch?v=SXsaB9TUfkk