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4/17/2024

Interoperability

Infou-0762-01F

Spring 2024

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API Specifications Document (ASD) for Weather API’s

Introduction:

This API specifications Document (ASD) provides detailed information about integrating three public weather APIs into a custom API project. Each API serves a unique purpose, and understanding their specifications is crucial for successful integration.

API Selection:

The goal for this project is to create a custom weather app that aggregates data from three different weather websites: OpenWeatherMap, Weatherbit, and AccuWeather. This API will deliver real-time weather information, forecasts, and location specific data to users or applications.

1. **OpenweatherMap API:**

* **API Name:** OpenWeatherMap
* **Provider:** OpenweatherMap
* **Purpose:** Provides current weather data, forecasts, and historical weather information. One call is API 3.0 that covers minute-by-minute forecasts, hourly forecasts for 48 hours and daily forecasts for 8 days.
* **Endpoints:**
* Current weather: /data/2.5/weather
* Forecasts:/data/2.5/forecasts
* Parameters: Latitude, longitude, API key, units (imperial metric)
* Response Format: JSON, XML, and HTML (Data can be retrieved from any geographical coordinate, climate forecasting, and historical data.)
* Authentication: API key (provided during registration.) Account sign- up required as a starting point for the one call API 3.0
* Rate Limits: Varies based on individualized/company subscription plan.
* **API Documentation:** For all products found here are examples, API calls, responses, and parameter details.
* **API Call Code Snippet:**

def get\_weather\_data(api\_key, location):

url=

f “https://api.openweathermap.org/data/2.5/weather?q={location}&appid={api\_key}’

response = requests.get(url)

if response.status\_code== 200:

return response.json()

else:

return None

1. **Weatherbit API**:

* **API Name**: Weatherbit
* **Provider**: Weatherbit
* **Purpose**: Retrieve real-time weather observations from thousands of live weather stations worldwide using current weather API. The ability to get severe weather alerts API from local meteorological agencies from various nations. Another API offering is current air quality. Here observations range from major pollutants to pollen levels for the US and Europe. A third offering is historical weather API’s.

on Weatherbit. Historical data can be retrieved daily for any location worldwide. This also includes fields like min/max temperature, precipitation, UV index, and wind speed. Users can obtain sub-hourly historical weather.

* **Endpoints**
  + Current weather: / v2.0 / current
* **Parameters:** Latitude, longitude, API key
* **Response Format:** Json
* **API Call Code Snippet:**

#Weatherbit = requests. get(url1).json()

Location = requests. get(f ‘http://ip-api.com/json/{ip}’).json()

* **Authentication:** API keys authenticate requests. API documentation here is referred to as Swagger UI documentation examples and usage guidelines.
* **Rate Limits:** Getting users started is simple by signing up for an account to obtain a key. Limit varies depending on subscription.

1. **AccuWeather API:**

* **API Name: AccuWeather**
* **Provider: AccuWeather**
* **Purpose:** Provides daily forecasts, severe weather alerts for specific conditions, and location information(latitude, longitude, time zone). Daily indices, for example air quality.
* **API Call Code Snippet:**

#accuweather = requests.get(url3).json()

Print(accuweather)

Temp = accuweather [‘main’] [‘temp’ ]

Print(temp)

* **Endpoints :**
* Location search: /locations /v1 /search. Access weather data based on specific points of interest (POI) like airports or stadiums.
* Daily forecast: /forecasts /v1/daily /1day / {location key}
* **Parameters:** City name, API key
* **Authentication:** API key. Upon signing up in the developer portal is where a key can be obtained.
* **Rate Limits:** Varies based on subscription plan. API usage structure is important in understanding the API requests, handling responses, and authentication.

Unique Features**:**

* **OpenWeatherMap**: Historical weather data and extensive global coverage.
* **Weatherbit**: Real-time weather updates and detailed weather appropriations.
* **AccuWeather:** Severe weather alerts and location-specific forecasts.