



Weather Data Scraper Documentation

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Project Overview

The Weather Data Scraper is a Python application that fetches real-time weather information for any location using the WeatherAPI service. This simple yet effective tool provides current weather conditions including temperature, weather description, humidity, and last update time.

Features

- **Real-time Weather Data:** Fetches current weather conditions from WeatherAPI
- **Location Flexibility:** Works with any valid city name or location
- **Comprehensive Information:** Provides temperature, weather condition, humidity, and last update time
- **Error Handling:** Robust error handling for network issues and invalid locations
- **User-friendly Interface:** Simple command-line interface for easy interaction

Requirements

Dependencies

`import requests`

System Requirements

- Python 3.6 or higher
- Internet connection
- WeatherAPI account and API key

Installation

1. **Clone or download the project files**
2. **Install required dependencies:**
3. `pip install requests`
4. **Obtain a WeatherAPI key:**
 - Visit [WeatherAPI.com](https://weatherapi.com)
 - Sign up for a free account
 - Get your API key from the dashboard

Configuration

API Key Setup

The current code includes a hardcoded API key:

```
api_key = "03511b737b6943d8821100407250901"
```

⚠ **Security Note:** For production use, consider storing the API key in environment variables:

```
import os  
  
api_key = os.getenv('WEATHER_API_KEY')
```

Usage

Basic Usage

1. Run the Python script
2. Enter a location when prompted
3. View the weather information

Example

Enter the location: kozhikode

Weather Data for Kozhikode

Temperature: 34.2 °C

Condition: Sunny

Humidity: 39 g/m3

Last Updated: 2025-02-27 15:15

Code Structure

Main Function: `get_weather_data(location)`

Parameters:

- `location` (string): The name of the city or location

Returns:

- Dictionary containing weather data on success
- `None` on failure

Response Format:

```
{  
    "Temperature": "34.2 °C",
```

```
"Condition": "Sunny",  
"Humidity": "39 g/m3",  
"Last Updated": "2025-02-27 15:15"  
}
```

API Integration

Base URL: <http://api.weatherapi.com/v1/current.json>

Parameters:

- key: API key for authentication
- q: Location query (city name)
- aqi: Air quality index (set to 'no')

Error Handling

The application handles several types of errors:

1. **Invalid Location:** Returns a message if the city is not found
2. **HTTP Errors:** Displays HTTP status codes for debugging
3. **Network Errors:** Catches and displays connection issues
4. **API Response Errors:** Validates API response structure

API Response Structure

The WeatherAPI returns a JSON response with the following relevant fields:

```
{  
  "current": {  
    "temp_c": 34.2,  
    "condition": {  
      "text": "Sunny"  
    },  
    "humidity": 39,  
    "last_updated": "2025-02-27 15:15"  
  }  
}
```

Limitations

1. **Rate Limits:** Free WeatherAPI accounts have usage limits
2. **Internet Dependency:** Requires active internet connection
3. **Current Weather Only:** Only provides current weather, not forecasts
4. **Hardcoded API Key:** API key is embedded in the code (security consideration)

Possible Enhancements

Short-term Improvements

- Environment variable support for API key
- Additional weather parameters (wind speed, pressure, visibility)
- Temperature unit selection (Celsius/Fahrenheit)
- Weather forecast functionality

Long-term Features

- GUI interface using tkinter or PyQt
- Weather history tracking
- Multiple location support
- Weather alerts and notifications
- Data export functionality (CSV, JSON)

Troubleshooting

Common Issues

1. **"City not found" Error**
 - Check spelling of the location
 - Try using the full city name
 - Include country name if needed (e.g., "London, UK")
2. **HTTP Error Codes**
 - 401: Invalid API key
 - 403: API key quota exceeded
 - 400: Bad request (invalid parameters)
3. **Connection Errors**
 - Check internet connection
 - Verify firewall settings

- Try again after some time

Testing the API Key

You can test your API key by visiting:

http://api.weatherapi.com/v1/current.json?key=YOUR_API_KEY&q=London&aqi=no

License and Terms

This project uses the WeatherAPI service. Please ensure compliance with their terms of service:

- Free tier: 1 million calls per month
- Attribution may be required for free accounts
- Commercial use may require a paid plan

Support

For issues related to:

- **WeatherAPI:** Visit [WeatherAPI Documentation](#)
- **Python requests library:** Check the [requests documentation](#)

Version History

- **v1.0:** Initial release with basic weather fetching functionality
- Current implementation supports current weather data retrieval for any location