

MyCityApp

Name: Pooja Nadagouda

Application:

This application displays weather data and air quality data of a city. The user can should enter the city name, the application displays following attributes.

For weather data:

The application displays - Weather Type, Weather Description, Current Temperature, Min Temperature, Max Temperature, Atmospheric Pressure, Humidity, Wind Speed, Wind Direction.

For air quality:

The application displays – Overall Air Quality Index, Concentrations of harmful gases like Carbon-Dioxide, Nitrogen-Dioxide, Sulphur-Dioxide, Ozone, Particulate matter smaller than 10 micron and Particulate matter smaller than 2.5 micron.

Design:

The application is developed using Restful APIs, following references show the API documentation.

Air Quality API - <https://api-ninjas.com/api/airquality>

Weather API - <https://openweathermap.org/current#parameter>

The application is divided into 5 packages:

- **com.cloudcomputing.project.execute:** - Main.java
 - This is the point where the program execution begins. Validates if user has sent empty city name.
- **com.cloudcomputing.project.informationviewer:** CityInformationViewer.java
 - This class takes the city name input from user and sends it to the next layer i.e., informationprovider to process the weather and air quality data for the city name passed. On completion of processing, it displays the weather and air quality data if valid response is received else displays the corresponding error messages.
- **com.cloudcomputing.project.informationprovider:** CityInformationProvider.java, WeatherData.java, AirQualityData.java
 - The CityInformationProvider.java class sends the respective weather or air quality URI, API key, API token to the rest client. It receives json response from restclient or exception in case of authentication or invalid city name errors.
 - WeatherData parses the valid JSON response to weatherData object required for display, this is passed back to the informationviewer for display to the user.
 - AirQualityData parses the valid JSON response to AirQualityData object required for display, this is passed back to the informationviewer for display to the user
- **com.cloudcomputing.project.restclient:** RestClient.java
 - This class executes the HTTP verb - GET on the API's passed i.e., weather and air quality APIs. This creates a request URL and returns the JSON response from the REST services. If invalid API credentials given or invalid city name, then it throws an InvalidResourceException.
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- **cloudcomputing.project.exceptions:** InvalidResourceException.java
 - This class extends the Exception class. It displays the error message.

Usage:

This application can be used to see current weather data and air quality of any city globally.