Client Side Programming Project I

PROG2700 Client Side Programming

Evaluation : 30% of final grade

Due Date : Apr 1

Assignment Description

We have spent the last few lessons developing single page applications that request and use external XML data. This data is available from all sorts of sources on the web via server side scripts (also known as Web APIs).

Your task for this project is to develop a web app that will fetch the current weather information for cities across Canada using a publicly open Web API called OpenWeatherMap.

The requirements are:

- The web app will consist of a single drop down menu of Canadian cities (city, province) for city selection to view corresponding weather data. This drop down menu is populated via a provided XML document called cities.xml (100 most populated cities in Canada). Feel free to add other cities to the XML document.
- When a city is selected the web app will fetch the weather data from the OpenWeatherMap Web API via XML data format (http://openweathermap.org/api). To use the OpenWeatherMap Web API you need to register for an API key. Once you have your key you can retrieve the weather data for any city using the following URL:

  ```
  http://api.openweathermap.org/data/2.5/weather?q=Halifax,CA&mode=xml&appid=[YOUR_API_KEY_HERE]
  ```

  Note that Halifax,CA is the city name and the country code for Canada; this will return the current weather information for Halifax in XML format. See https://openweathermap.org/current for more information.

  Get familiar with the OpenWeatherMap Web API by hitting the URL above (using your own API KEY) with a browser to see what is returned.
- The following weather data must be displayed with appropriate units of measurement for the selected city:
  - Current weather along with an icon

    The weather icons for both the current weather and the wind direction (described below) can be obtained via an open source CSS library called weather-icons (http://erikflowers.github.io/weather-icons/). This library is not distributed with npm, so you will need to download the library manually and add the weather-icon-wind-min.css / weather-icon-min.css files into your project. To display a weather icon in your web app you would use the following HTML (for example):

    ```
    <i class="wi wi-night-sleet"></i>
    ```

    But how do I display the correct icon for the *current* weather from the Web API? Perhaps it supports the OpenWeatherMap API – research it!
  - City and Province name
  - Sunrise and Sunset times

The Web API will return the date and time in UTC format. You will need to convert this to local date and time.

- Current / Low / High Temperatures

  The Web API will return the temperature in Kelvins. You will need to convert it to Celsius.
- Humidity
- Air Pressure
- Wind direction name (north, south, southwest, etc.) / wind type (light breeze) / speed and an icon indicating the wind direction (based off "code" field in XML)

  The Web API will return the wind speed in m/s. You will need to convert it to km/h.

- The initial loading of the web app must include a loading screen with an animated icon via Spin.js
- When a city is selected, the current weather data on the page must "grey out" until the new data is loaded – this indicates that the web app is currently fetching the selected city's data
- It is possible that a city in our drop down isn't supported by the Web API. Your application should display "City Not Found" instead of weather data if this is the case. Saint Jerome, Quebec is a good test case.
- The current city selection must be stored in a Cookie. When the web app is run again, the drop down menu and weather data will be of the last selected city. If no cookie exists then the first city in the drop down menu is selected by default.
- The web app interface must:
  - Provide good usability in terms of layout
  - Implement SASS and BEM Naming Convention
  - Be responsive via FlexBox.
- This web app must be coded using native JS (Vanilla JS) – no JQuery or other JS libraries are allowed to be implemented. However, you are free to use any custom class we developed during our lessons (Toolkit, CookieManager, etc.)
- According to the documentation, you need to provide the OpenWeatherMap Web API credit on your web app. Include a "Powered by OpenWeatherMap" link.
- Comments must be included in your code
- See in lab demonstration…

Requirements (Marks breakdown)

Client Side Programming Project I	
Web App Interface *BEM, SASS implemented / Responsive with FlexBox*	3
Populating city drop down menu	3
Displaying OpenWeatherMap Web API XML data on selected city	13
Web app loading screen / indicators *Loading screen with spinner on first load and greyed out text when selecting new city*	2
Last selected city saved and restored	3
Commenting	1
TOTAL MARK	25

Other Notes

- This project will be marked on the due date through a code review.