**Programming Assignment 1  
A Weather Web Application**

Due on Wednesday October 19 before midnight  
Worth 8% of your final grade

**Description**

This project must be done individually. No copying is permitted. The goal of this project is to learn client-side web programming using JavaScript and AJAX. More specifically, you will create a Web application that displays information about the weather.

This project must be done individually. No copying is permitted. **Note: We will use a system for detecting software plagiarism, called**[**Moss**](http://theory.stanford.edu/~aiken/moss/)**, which is an automatic system for determining the similarity of programs.** That is, your program will be compared with the programs of the other students in class as well as with the programs submitted in previous years. This program will find similarities even if you rename variables, move code, change code structure, etc.

Note that, if you use a Search Engine to find similar programs on the web, we will find these programs too. So don't do it because you will get caught and you will get an F in the course (this is cheating). Don't look for code to use for your project on the web or from other students (current or past). Just do your project alone using the help given in this project description and from your instructor and GTA only.

**Platform**

You will do this project on your own PC/laptop. You need to install the [XAMPP](https://www.apachefriends.org/) web server, which includes the Apache http web server, PHP, MySQL (MariaDB), and PHPMyAdmin (these are the only components you need). It's about 125MBs (775MBs after installation) and can be installed on Windows, Linux, and OS X. The installation directory is \xampp for Windows, /opt/lampp for Linux, and /Applications/XAMPP for OS X. To start the server on Windows, you run \xampp\xampp-control.exe and you start the Apache web server. You may have to change the Security properties of this executable to Full Control for Users. If you get an error "Apache shutdown unexpectedly", read [this](http://w3guy.com/fix-xampp-error-apache-shutdown-unexpectedly/).

You will test the project on your PC/laptop using either the Chrome or Firefox browser. The project grading will be done on a Firefox browser. If you do not have Firefox installed, you can install it from <http://www.mozilla.org/en-US/>. Firefox comes with Web Developer Tools for debugging HTML and JavaScript.

**Setting up your project**

Download the project1 zip file project1.zip. Unzip it inside your web server document root directory (ie, inside the htdocs sub-directory in the XAMPP installation directory). On Linux, you may have to do this as the root user.

The project1 directory contains 3 files: proxy.php, weather.html, and weather.js. The proxy script proxy.php is used to avoid the cross-domain restriction when using Ajax. All the web service requests to openweathermap should go through this proxy. See the example in weather.js. Your project is to edit weather.html and weather.js as described in the description of the web application.

**Getting an access key from openweather**

You are going to use the Web Service REST API of the weather application [Operweathermap](http://www.openweathermap.org/" \t "_top) You first need to get an API access key from [Get an API Account at Openweathermap](http://openweathermap.org/api). The access key will allow you to send web service requests to OpenWeatherMap (maximum 1 request per second).

After you get the API key, you put it in weather.js and you test your setup on your web browser by using the URL address:  
<http://localhost/project1/weather.html>  
and by typing the name of your favorite city. This will display information about the city in JSON form.

**Documentation**

The following web pages contain various tutorials. Use them as a reference only. The class slides contain enough information on JavaScript and AJAX.

* [AJAX Tutorial](http://www.w3schools.com/ajax/default.asp)
* [Ajax](http://www.cs.rochester.edu/courses/210/spring2011/lectures/012/)
* [JavaScript Tutorial](http://www.w3schools.com/js/default.asp)
* [JavaScript](http://www.cs.rochester.edu/courses/210/spring2011/lectures/009/)

**Description of the Web Application**

Your project is to develop a web application to get information about a city, its temperature, humidity. You have to advise users about when to use a coat or bring an umbrella. etc. This application should be developed using plain JavaScript and Ajax. You should not use any JavaScript library, such as JQuery. The Ajax requests should return JSON, not XML. Note that everything should be done asynchronously and your web page should never be redrawn/refreshed completely. This means that the buttons or any other input element in your HTML forms must have JavaScript actions, and should not be regular HTTP requests.

Your application should have a text window where one can type the city name (eg, London). It should display the city name, its geo coordinates, time of sunset, sunrise, pressure, humidity, temperature, min temperature and max temperature, visibility, clouds.

You may assume that the person who uses this application will type the correct complete name of the city. So you don't have to check for errors.

Note that there is a lot of information returned by these web services. You don't need to use them all. Just use some of them.

**What to Submit**

Zip your project1 directory and upload it to BB. We do not accept email or hardcopy submissions.

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*Last modified: 8/30/2016 by Elizabeth D. Diaz*

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