# CMPT 661 Web Development - Fall 2017
# Homework 2 - JavaScript Asynchronous Programming
Due date: midnight Wed 8 Nov 2017

## Objective

The objective of this homework is to practice JavaScript particularly asynchronous programming using Callbacks, Promises and async/await.

In this homework you will implement an application that allows users to ask different kind of queries about countries by querying the following JSON files:

- https://cmpt661f17.github.io/data/countries.json
- https://cmpt661f17.github.io/data/countries-literacy.json
- https://cmpt661f17.github.io/data/world-universities.json

## Requirements

You are requested to design and build a World Explorer JavaScript App that deliver the following functionality:

1. Create countryRepository.js module to implement the methods shown in the able below.
   Create countryRepository.spec.js file to test the methods implemented in the Country Repository.

The Country Repository class should have the following methods:

| | |
|---|---|
| getCountries | This function returns the countryCode and the country name of all countries. |
| getCountryLiteracy | Accepts countryCode as input and returns a country literacy details as json object including countryCode, country, femaleLiteracyRate, maleLiteracyRate. |
| getUniversitiesCount | Accepts countryCode as input and returns the number of universities. |
| getCountry | Accepts countryCode as input and returns the country details as json object. The country data should be retrieved from countries.json. The returned country object should also have the following:<br>countryCode, name, capital, region, subregion, population, currency, femaleLiteracyRate, maleLiteracyRate, universitiesCount.<br>(Note that currency should be the 1st currency in currencies) |
| getNeighboursLiteracy | Takes as input a countryCode and returns neighboring countries and their literacy rates. The returned list of countries should be sorted based on the average literacy rate. |
| getRegionLiteracy | Takes as input a region and returns all the countries in that region (e.g., Asia). Sort the list based on the femaleLiteracyRate. |

| | |
|---|---|
| getTop5LowestLiteracy | Get the top 5 countries with the lowest literacy rate. Return countryCode, country, femaleLiteracyRate, maleLiteracyRate. |
| getTop5UniversitiesCount | Get the top 5 countries with the highest number of universities. Return countryCode, country, universitiesCount. |

You should use async/await (or promises) and other JavaScript features such as arrow functions, array functions (.map, .reduce, .filter, .splice, .sort…), spread operator, object literals, and classes wherever required.

2. Unit test your implementation using Mocha and Chai
3. Provide a Web user interface to make the following functionality accessible via the Web:
   - Allow the user to select a country to display its details
   - Allow the user to select a region (e.g., Asia) to get the countries and female and male literacy rates.
   - Allow the user to get the top 5 countries with lowest literacy rates.

| **Deliverable** | **Model functions needed** | **To do tasks** |
|---|---|---|
| **Country page**<br>Allows selecting a country to display its details. | getCountries | When the *country* page is requested the countries drop-down should be filled on the server-side using the data returned by getCountries. |
| | getCountry | When the user selects a particular country then the page should asynchronously get the country details and the neighbors literacy and display them beneath the countries dropdown.<br>To do so you need to have a Web API that return the results of calling getCoutry and another that return the results of getNeighboursLiteracy. |
| | getNeighboursLiteracy | |
| **Web API**<br>(just return json, UI is optional) | getRegionLiteracy | Web API takes as input a region (e.g., Asia) and calls getRegionLiteracy to returns all the countries in that region and their literacy (in json format, UI is optional) |
| | getTop5LowestLiteracy | Calls getTop5LowestLiteracy to get the top 5 countries with the lowest literacy rate. |
| | getTop5UniversitiesCount | Calls getTop5UniversitiesCount to get the top 5 countries with the highest number of universities. |

You are required to complete the ***Hw2-TestingDoc-Grading-Sheet.docx*** and save it inside **Hw2-JavaScript** subfolder. Sync your repository to push your work to Github.