Lab 4: List of Countries by Continent

How it works

For this lab, you need to create a Web page that displays a list of countries in each continent. The countries of all seven continents are stored in a local JSON file named *countries.json*. The Web page filters data by the continent. When a user selects a continent from the selection list, the Web page displays all countries of the selected continent. The following screenshot displays the output when Antarctica is selected. Try the complete application at https://i211.sitehost.iu.edu/. This Web application is very similar to the CD catalog application you finished in class. The new feature in this lab is filtering by continent, which can be achieved with conditional statements. Refer to the CD catalog application when you are working on this lab.

List of Countries By Continents

Please select a continent from the dropdown list to view the list of countries.

Antarctica

Name	Capital	Currency	Language	Area Code
Antarctica				672
Bouvet Island		NOK	no,nb,nn	47
South Georgia and the South Sandwich Islands	King Edward Point	GBP	en	500
Heard Island and McDonald Islands		AUD	en	61
French Southern Territories	Port-aux-Français	EUR	fr	262

About the SELECT object and the OPTIONS collection

The DOM **select** object represents an HTML <select> element, which creates a dropdown list (also called selection list). A selection list often contains multiple options. Options are automatically indexed according to their order in the HTML code. When a user selects a different option, a **change** event gets triggered, and the index of the current selected option is stored in the attribute called **selectedIndex** and the value of the selected option is stored in the **value** attribute.

All the options of a select list are stored in a collection called **options**. Each option has two important attributes: **value** and **text**.

Please study this example on how to determine the value and text of the selected option: https://i211.sitehost.iu.edu/codelab/?unit02/examples/2-07/index.html

Please refer to the following Web pages for the **Select** object and the **options** collection:
https://www.w3schools.com/jsref/dom_obj_select.asp and
https://www.w3schools.com/jsref/coll_select_options.asp

Step-by-step instructions

1. Download data files from Canvas and extract the **Lab04** folder into **htdocs/I211** folder. Inside the folder, you should find the following files:
    - *styles.css*: the external CSS style sheet.
    - *countries.json*: this file stores countries of seven continents.
    - *continents.json*: this file stores the seven continents.
    - *loadJSONDoc.js*: This JavaScript file contains a function named **loadJSON**. The function loads a local JSON file and returns the string representation of JSON objects defined in the document.
    - *index.html*: The file contains a selection list of the continents, the header row of the list of countries, and the div block for the list of countries of a selected continent.
    - *main.js*: This file contains JavaScript code that does all the hard work. You need to complete the code.
2. Open all the files in PhpStorm. Carefully examine the code. The only file that needs to be modified is the *main.js* file. Run *index.html* and view the output in a browser.
3. For the *main.js*, complete the anonymous function registered with window's **onload** event. The function should do the following three things in sequences:
    - Create a selection list of the seven continents from an external json file. This is complete.
    - Load the local JSON file named *countries.json* by calling the **loadJSON** function, parse the return value into a JSON object, and store it in a local variable. You will later pass the variable as an argument when calling the **display** function.
    - Register the **onchange** event handler with the selection list so that when a different option is selected, the **display** method gets called. When calling the **display** function, you need to pass two arguments: the JSON object of all countries and the selected continent.
    - Complete the **display** function in *main.js.* For instructions, please see the next section.

About the display function

The function accepts two parameters: the JSON object of countries and the continent. It filters countries by the continent.

- Since the JSON document (the first parameter) contains many countries, you need to use a loop structure to iterate over all the countries. I recommend you use the **for … in** loop, but you may use any loop structures. You can refer to the code that creates the selection list for an example or visit https://www.w3schools.com/js/js_loop_forin.asp for more information.
- Information of each country is stored in an JSON object. One of the keys is "continent" and its values are two-letter abbreviation of continents, which match the values of the options in the

selection list. If the continent of the country matches the selected continent, you need to create a row for country name, capital, currency, language, and phone area code and append the row to the existing list of countries.

- Please note the values of a country's phone, currency, and languages are arrays. You can call the JavaScript function **join** to join values of an array and return a string. Please pass a comma plus a space as the separator when joining the array. For more information and examples, please visit https://www.w3schools.com/jsref/jsref_join.asp.
- The following HTML code shows the div structure to display information of a country. All the CSS code is provided to you in the CSS file.

```
<div class="row">
    <div>Name</div>
    <div>Capital</div>
    <div>Currency</div>
    <div>Language</div>
    <div>Area Code</div>
</div>
```

Code style guidelines:

1. Code style is as important as the code itself. Code style includes enough comments, adequate space between code blocks, and proper indentation, etc. Read details and view sample code from http://pear.php.net/manual/en/standards.php.
2. Please provide sufficient comments in your source code. Source code is a language for people, not just for computers. Comment as you go and don't wait for later. Ask yourself: "How will the next person know that?" Commenting code shows your professionalism, but also helps your grader understand your code.
3. Every class file should contain a header in this format:

   /*
   * Author: *your name*
   * Date: *today's date*
   * Name: *file name*
   * Description: *short paragraph that explains what the class is about*
   */
4. Indent your code. Leave enough space between code blocks. You can use the **Reformat Code** command (*Code* > *Reformat Code*) in PhpStorm to automatically format your code.

Turning in your lab

Your work will be evaluated on completeness and correctness. Thoroughly test your code before you turn it in. It is your responsibility to ensure you turn in the correct files. You will NOT receive any credit if you turn in the wrong files whether or not you've completed the lab.

1. Zip the entire **Lab04** folder and save it as *Lab04.zip*.
2. Upload the *Lab04.zip* file in Canvas before the lab's deadline.

Grading rubric

Your TAs will assess your lab according to the following grading rubric. You should very closely follow the instructions in this handout when working on the lab. Small deviations may be fine, but you should avoid large deviations. You will not receive credits if your deviation does not satisfy an item of the grading rubric. Whether a deviation is small or large and whether it satisfies the requirement are at your TAs' discretion. Here is the breakdown of the scoring:

Modifying main.js (15 points)

Activities	**Points**
Load JSON objects from *countries.json*	1
Complete the **display** function	12
Handle the **change** event of the selection list	2

Programming style (5 points)

Activities	**Points**
Comment your code: comments must be specific to your code	3
Use white spaces to separate code sections	1
Indent and line up code	1