Assignment 4

(Use JavaScript to access and update HTML elements)

(Total: 100 points)

Learning Objectives

- Understand DOM tree
- Understand how JavaScript can access and modify content and HTML markup, and how to access and modify attributes.
- Get familiar with DOM objects, properties, and methods.
- Hands-on practice on using DOM queries in JavaScript to access HTML elements, and modify the content, and attributes on DOM tree for a web page.
- Knowing how to use property and methods in general.
- Knowing how to read and validate user inputs from web page.
- Knowing how to use if/else, and loops in JavaScript

Complete your assignment

Download the zip file named "**CS381_A4.zip**" and then unzip the zip file. In the unzipped folder (by default with name "CS381_A4"), you will find two files: **bmi.html** and **bmi.css**. Complete the Body Mass Index (BMI) Calculation App by adding HTML code and embedded JS code in the "bmi.html" to allow users to input height and weight on the web page, and then display BMI on the web page. The Body Mass Index (BMI) estimates human body fat based on the individual's weight and height with

$$BMI = \frac{703 \times w}{h^2}$$

where w = weight (in pounds), and h = height (in inches).

Follow the steps below to complete this assignment:

Step 1. [20 points] Open bmi.html in a text editor (e.g., Notepad++, visual studio code). Following the structure of the html document, to draw a DOM tree that represents the structure of the html document without considering the changes made by JavaScript code part. The DOM tree should include all four main types of DOM nodes: document, element, attribute, and text nodes.
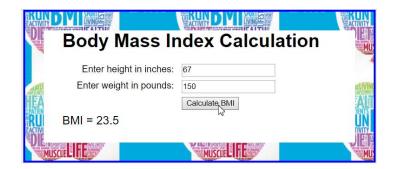(Note: You may draw the DOM tree by hand and take a picture of it and then upload that picture to the assignment dropbox if this is a more convince way for you to complete this step.)
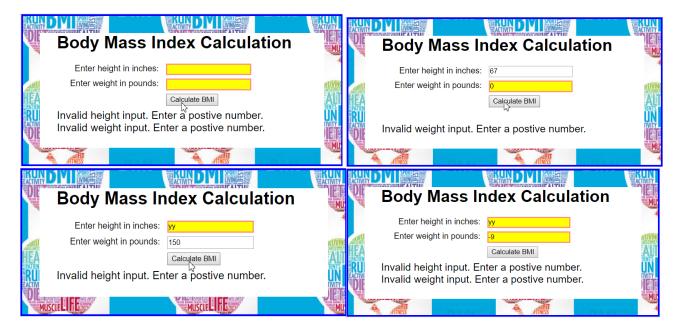

Step 2. [30 points] Add embedded js code in "bmi.html" so that when the "Calculate" button is clicked, the script should read inputted height and weight from the web page, and then compute BMI, and then display the computed value (with one decimal place) as the text in the <div> element on the web page.

For example, as shown below, enter 67 in height input box and 150 in weight input box, and then press the Calculate BMI button, then BMI = 23.5 will be displayed on the web page.

Step 3. [30 points] In embedded JavaScript code that you add in "**bmi.html**", after reading in the inputted data, **the inputted data should be validated to make sure user enters <u>positive numerical values</u> for height and weight**. If neither height input nor weight input is valid, your JS code should display an appropriate error message in the <div> element that is also used for displaying BMI (as show in the following figure). Meanwhile, your JS code should highlight the input box (as shown in the following figures) where the input is invalid by adding a class="error" attribute to the input box.

Step 4. [15 points] Test and debug your program (you may use the developer tool in browsers help you) to make sure there is no syntax and logical errors. If there are some errors that you cannot figure out, please write a notes in your program or leave a message in your dropbox.
The data files (CS381_A4.zip) needed for this assignment can be found in the Assignment-4 dropbox in Canvas course site.

Submit your assignment [5 points]
- After you complete, please **save and zip** the "CS381_A4" folder that including the html file as well as the css file, and then rename and submit the zipped file "**A4_yourLastNameFirstName.zip**", to the assignment drop box named **Assignment-4**.

Note: If your computer does not have the ability to "zip" (i.e., compress or uncompress) files, download and use a free zip program such as 7-Zip (http://www.7-zip.org/)