Due Oct 14 by 11:59pm **Points** 100
Available Sep 24 at 12am - Oct 14 at 11:59pm 21 days

This assignment was locked Oct 14 at 11:59pm.

Module 3 Assignment

Purpose

Students will create an HTML page and utilize JavaScript to compute statistics on a set of values provided by the user.

Related Module Objectives

This assignment satisfies Module Objectives 1, 2, 3, 4, 5 and 6.

Possible Points

This assignment is worth a maximum of 100 points.

Important Notes

Students may refer to the following pages in case they forget how to perform the following tasks:

- Access the **Course Web Server**
- Viewing your **ePortfolio in a web browser**

Required Tools

Students will be required to use one or more of the following tools to earn a passing grade on the module assignment. Each of the tools listed below can be downloaded for free or already exist in the indicated

operating system.

- Web browser (Chrome or Firefox recommended)
- Basic text editor
  - Notepad++ (Windows)
  - TextEdit in plain-text mode (Mac OS)
  - pico or vi (Linux)
- Secure Shell (SSH) client
  - PuTTy (Windows)
  - ssh (Mac OS and Linux)
- File transfer tool (must support SFTP via SSH - **DO NOT USE FTP**)
  - WinSCP (Windows)
  - CyberDuck (Mac OS)
  - sftp (Linux)

Warnings

Students must complete this assignment without the assistance of third-party development tools or frameworks such as jQuery or Bootstrap. Assignments that appear to be the product of third-party development tools or frameworks (professor's discretion) will receive **0** points.

Directions

Review the requirements listed in the Assignment Requirements section
Create a website that meets all of the stated requirements
Complete the assignment before the due date (refer to the Course Schedule)
  - Note: Students will not submit anything to Canvas.

Assignment Requirements

Assignment Description

Students will create a statistical calculator web page using a combination of HTML, CSS and JavaScript. This web page will provide a form in which users can enter a series of numbers (5 to 20 values between 0 and 100) **separated** by spaces and display the results of eight (8) statistical calculations. Some **examples** are provided at the **end** of the assignment.

Preliminary Tasks

- Log onto the **Course Web Server**
- Create a folder called images in the **module3** folder
  - Store all of the pictures used in your web page for this assignment in the **images** folder
    - Use relative URLs to access the pictures
- For all the web pages created for this assignment
  - Hyperlinks to pages outside the web server (i.e., Wikipedia.org) should open the linked pages in a new browser **tab** or **window**
    - All other hyperlinks should open the linked pages in the same browser **tab** or **window**
- An automatic 10-point (10%) **penalty** will be assessed for a **disorganized** page.

Statistical Calculator Page (10 points)

Create a **Statistical Calculator** web page using the filename index.html in the **module3** folder.

- Give the page a descriptive title
- Display Statistical Calculator along the top of the page using an **<h2>** tag
  - One (1) **textarea** field
  - Note: The textarea field should be configured as required.
    - This control will accept the user input
  - Eight (8) **text** fields
  - Note 1: **All** text fields should be configured as readonly.
  - Note 2: The order of the text fields is not important as long as they are organized. Variance
    - Max
    - Mean
    - Median
    - Min
    - Mode
    - Standard Deviation
      - Can be abbreviated as Std Dev
    - Sum
    - Variance
  - Two (2) **buttons**
    - Reset
    - Submit
      - Note: The **reset** and **submit buttons** should be placed near the textarea control.
- At the bottom of the page, include one (1) additional hyperlink to your **ePortfolio**
  - Use a relative URL for the **ePortfolio** link

External CSS File (0 points)

Modify the site.css file located in the **public_html/css/** folder to control the presentation of the **Statistical Calculator** page.

- Have fun using CSS to format the form's controls, as well as the rest of the page

External JavaScript File (90 points)

Create an external **JavaScript** file with the filename script.js in the **module3** folder.

- Import the **script.js** file into the HTML page
- Add the following functions to the **script.js** file.
- Note 1: Use a global variable for the array of values.
- Note 2: ALL of the functions except **calcMode()** and **performStatistics()** MUST return a value to two (2) **decimal places**.
- Note 3: Students can use Excel to verify the output of their functions.
  - In **Excel**, use VAR.P and STDEV.P to calculate Variance and Standard Deviation
- Note 4: Only the **performStatistics()** function should interact directly with the **form** controls.
  - None of the other functions should contain statements like document.getElementById("sum")
- Note 5: DO NOT **duplicate** any code. If a function performs a required operation, call that function rather than duplicate the code within another function.
  - For example, the calcMean() function calculates the sum of the array values before calculating the mean value; therefore, call the calcSum() function rather than calculating the sum in the calcMean() function.
  - An automatic 10-point (10%) **penalty** will be assessed for ANY **duplicate** code.
    - In this context, **duplicate code** refers to exact same statements or exact same functionality
- Required functions
- Note: Click on the hyperlinks for information on how to perform the statistical calculations.

  - **calcMean()** **(http://www.mathsisfun.com/mean.html)**
  - **calcMedian()** **(http://www.mathsisfun.com/median.html)**
  - **calcMode()** **(http://www.mathsisfun.com/mode.html)**
    - The function **MUST** handle **bimodal** and **multimodal** conditions correctly
      - Separate the bimodal or multimodal values using **spaces**
  - **calcStdDev()** **(http://www.mathsisfun.com/data/standard-deviation.html)**
  - **calcSum()** **(http://www.mathsisfun.com/definitions/sum.html)**
  - **calcVariance()** **(http://www.mathsisfun.com/data/standard-deviation.html)**
  - **findMax()** **(http://www.mathsisfun.com/definitions/maximum.html)**
  - **findMin()** **(http://www.mathsisfun.com/definitions/minimum.html)**
  - performStatistics()
    - Input

        - None
    - Process
        - Create an array of the values entered in the textarea control
        - Call each of the eight (8) functions (in some order)
            - Calling the functions in the correct **logical order** will help reduce duplicate code
        - Store the value returned by each function in the **value** property of the respective control
            - Example: document.getElementById("sum").value=calcSum();
    - Output
        - Always return **false**
            - Otherwise, the web browser may display an error message

ePortfolio Page (0 points)

Update your **ePortfolio** web page (index.html) in the **public_html** folder.

- Create a hyperlink using the existing text Module 3 to open your **Statistical Calculator** page
    - Use a relative URL for the **Statistical Calculator** page link

Examples

Example #1

Entered Values: **5 3 10 0 3 2 10 3 7 8**

Max	Mean	Median	Min	Mode	Std Dev	Sum	Variance
10.00	5.10	4.00	0.00	3	3.30	51.00	10.89

Example #2

Entered Values: **42 80 78 59 76 76 41 30 80 51** (contains two pairs of values)

Max	Mean	Median	Min	Mode *	Std Dev	Sum	Variance
80.00	61.30	67.50	30.00	76 80	18.13	613.00	328.61

* Bimodal and multimodal values can be displayed in any order.