

**COMMERCE AND BUSINESS ADMINISTRATION**  
**CSIS 1280: MULTIMEDIA WEB DEVELOPMENT**  
**Assignment 3**

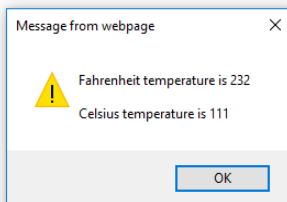
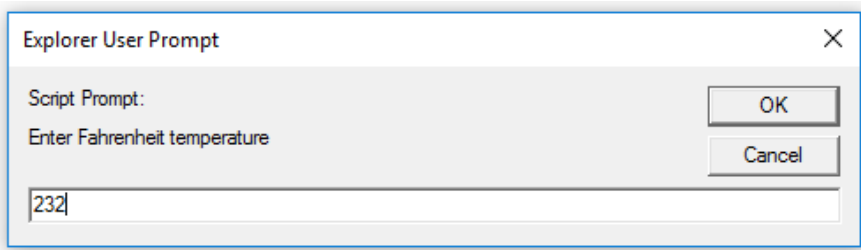
**Due date: March 30, 2021**  
**(4% towards your Final Grade)**  
**Total Marks: 80**

**Instruction:** Please place all the JavaScript code in one external file “solution.js”. Marks will be deducted for any extra embedded <script> tag in the body part.

**Question 1:** Write a function that will calculate the amount that should be paid as a tip for a restaurant bill. The tip will be 20 percent of the total bill. **(10 Marks)**

**Question 2:** Create a function called *changeColor()* that will be called when the user presses one of two buttons. The first button will contain the text “Press here for a light yellow background”. The second button will contain the text “Press here for a light green background”. The function will take one parameter, a color. Its function is to change the background color of the current document. **(10 Marks)**

**Question 3:** Create an application that converts Fahrenheit temperatures to Celsius temperatures by using the prompt() and alert() methods. The prompt dialog box should look like this: **(10 Marks)**



**Question 4:** Write a JavaScript program to find the most frequent item of an array. **(10 Marks)**  
Example1: If the array is [44, “red”, 55, 33, 44, “red”, 11, 44, “blue”, “apple”, “music”, 44, “umbrella”]  
Output should show that 44 appears 4 times.  
Example2: If the array is [“red”, 34, “red”, 55, 34, “red”, 11, 34, “blue”, “apple”, “music”, 34, “red”]  
Output should show red appears 4 times.

[Note: In case of Example 2, both “red” and 34 appear 4 times. But the element that appears first is displayed in the output.]

**Question 5:** Create a mouse rollover effect using images of your choice. Use onmouseover, onmouseout, onmouseenter and onmouseleave effects. **(10 Marks)**

**Question 6:** Create a list of news headlines in a select box. Also create an array of newsItems. When a user clicks a headline in the select box, the associated news will display in a <textarea> element. Use onchange event handler attribute with select box. Each item in the selection list should display a news headline. Clicking on a headline assigns an array element for the associated news article to the <textarea> element. **(10 Marks)**

Use `document.getElementsByName("headline")[0].selectedIndex` to fetch the index of the selected headline. Then, use this index to access the corresponding news from the newsItems array.

**Question 7:** Calculate the roots of the quadratic equation for user-entered integer values for  $a$ ,  $b$ , and  $c$ . The quadratic equation is a polynomial of this form where  $a$  must be nonzero by definition: **(20 Marks)**

$$ax^2+bx+c$$

The formula for finding  $x$ 's roots is: 
$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Use number controls for the  $a$ ,  $b$ , and  $c$  user inputs. After the Calculate roots button is clicked, if there's valid input, generate a solution message below the button. In displaying the roots, use this table:

Situation	Output Message
$b^2 < 4ac$	Solution: $x$ 's roots are imaginary
$b^2 = 4ac$	Solution: $x = \text{single-root}$
$b^2 > 4ac$	Solution: $x = \text{first-root}$ , $x = \text{second-root}$

Make sure that  $a$ ,  $b$ , and  $c$  are integers between  $-99$  and  $+99$  and make sure that  $a$  is nonzero. Also, when focus is on a number control, display a red border if the number control's value is a noninteger or outside of the range  $-99$  to  $+99$ . If the user enters 0 in the  $a$  number control, there is no need to display a red border around the number control (use `style.borderColor = "red"` with the appropriate object). After the **Calculate roots** button is clicked, if there's invalid input, erase any previous solution message and display an error message dialog that specifies which value(s) is invalid.

### Question 1

Enter the Bill Amount:

Tip on \$1000 is: \$200.00

### Question 2

### Question 3

Converting temperature from degrees Fahrenheit to degrees Celsius (use prompt and alert)

### Question 4

Enter the element and click Add to add it to the array:

The Array is: [ 34 67 12 90 54 34 23 12 89 34 12 ]

The element 34 appears 3 times.

### Question 5

Mouse Rollover Effect



### Question 6

COVID-19 case confirmed at Warman Community School  
Coronavirus: Hamilton reported 74 new COVID - 19 cases on the weekend, 5 deaths  
Montreal volunteers give out meals and care packages to the homeless community  
JLake Louise RCMP issuing \$1,000 fines for breaking COVID-19 rules

The spirit of giving is coming a little earlier this year as volunteers gather at Place Émilie-Gamelin in Montreal on Sunday to distribute food to the homeless.

### Question 7

#### Quadratic Equation Roots Calculator

Find the roots of a polynomial equation of the following form:

$$ax^2 + bx + c = 0$$

$a$ ,  $b$ , and  $c$  must be integers between -99 and +99, and  $a$  must be non-zero.

$a$ :   $b$ :   $c$ :

Solution:  $x = -0.618, x = 1.618$

## Submission:

- Your submission should be a **single zip file** named **lastname\_StudentID** that contains your work.
- You need to submit your assignment through the Blackboard community by the due date. NO LATE SUBMISSION will be allowed.

*Note: The assignment is to be completed individually. Any form of cheating or sharing of work may have serious consequences.*