

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

**Due date: November 27, 2020  
(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 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)**

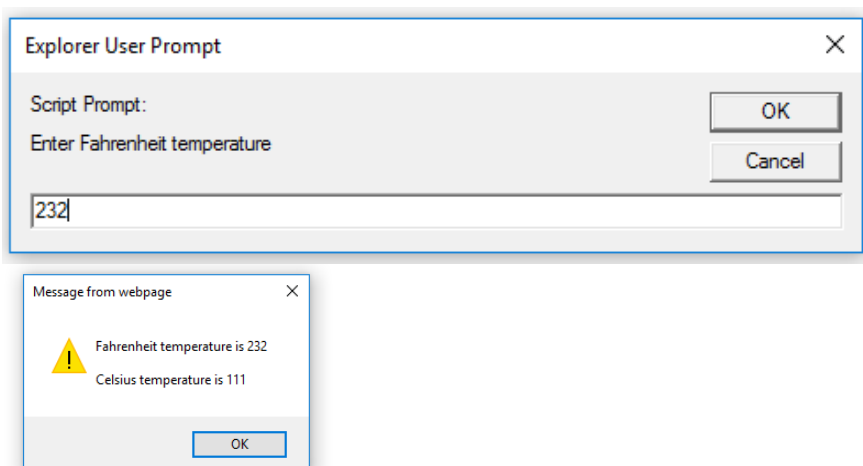
**Question 2:** Create a function called *changeColor()* that will be called when the user presses one of two buttons. The first button will contain the text “Press here for a light yellow background”. The second button will contain the text “Press here for a light green background”. The function will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

**Hint:** JavaScript style property is associated with HTML style attribute. The style property is an object that has properties for every CSS property. The following statement uses style property object’s backgroundColor property.

**document.body.style.backgroundColor = ‘lightyellow’**

The JavaScript backgroundColor property is associated with CSS’s background-color property. Notice how JavaScript uses camel case notation for the property names when there is a hyphen in the corresponding CSS property names. (e.g., font-size becomes fontSize in JavaScript and so on)

**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:** Convert number grades to letter grades (practice using if statements): The application should ask the user about the number grade. The user should enter a value from 0 through 100. The application then displays the letter grade for that number **(10 Marks)**

To derive the letter grade, you should use this table:

**A 88-100**  
**B 80-87**  
**C 68-79**  
**D 60-67**  
**F < 60**

**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 number grade from 0 through 100:

Number grade = 89 Letter grade = A

### 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.**