CPSC 1045 – LAB #1

Objective(s):

1. Learn JavaScript basics
    a. Values, Types, Operators
    b. Expressions and Statements
2. Create a webapp using HTML/JavaScript
    a. Use Values, Types and Operators in your page
    b. Use Expressions and Statements in your page
    c. Use buttons, built-in functions, and HTML element access (document.getElementID) in your page

Resource(s):

- http://www.w3schools.com/html/default.asp
- Web Browser and a computing device (campus or personal)
- Lecture and Lab notes
- Prior Labs and Worksheets
- **Download CPSC-1045-Lab-1-Demo.html, and run/test it to get ideas for this lab**
- **Built-In Functions**
    - Use Math.pow(x,y) – x to the power of y – to calculate exponentiation
      http://www.w3schools.com/jsref/jsref_pow.asp
    - someNumber.toFixed(x) – this will set the decimal places
      http://www.w3schools.com/jsref/jsref_tofixed.asp
      http://www.w3schools.com/js/js_number_methods.asp
    - Number(stringVariable/stringValue) – to convert a string to a number
      http://www.w3schools.com/jsref/jsref_number.asp
    - someNumber.toString() – to convert a number to string, as necessary
      http://www.w3schools.com/jsref/jsref_tostring_number.asp
    - window.print()
      http://www.w3schools.com/jsref/met_win_print.asp
- <input> elements
  http://www.w3schools.com/tags/tag_input.asp
- document.getElementById – Javascript code to access an HTML element
  http://www.w3schools.com/jsref/met_document_getelementbyid.asp

Grading Scheme:

- Tasks I, II, III and IV - **25 Points**
- Task V – **75 Points**
    - 15 Points for webpage
    - 20 Points for correct Loan Amount calculation
    - 20 Points for correct Monthly Payment calculation
    - 20 Points for correct Total Interest Paid calculation

Assigned Task(s):

I. Values, Types, Operators **(10 Points)**

a. Complete the follow table **(3 Points)**

Unary Operators (3)									
Binary Operators	Arithmetic (5)								
	Comparison (8)								
	Logic (2)								
Ternary Operator (1)									

b. Complete the following table **(2 Points)**

Special Numbers			
Undefined Values			

c. Complete the following table **(5 Points)**

JavaScript Statement	What is the output?
console.log(typeof 5);	
console.log(-(15-2));	
console.log(5 > 2);	
console.log("abc" <= "abd");	
console.log(NaN == NaN);	
console.log(null || true);	
console.log("10" – 5);	
console.log("8" + 8);	
console.log(true == 0);	
console.log("5" == 5); console.log("5" === 5);	

II. Expressions **(5 Points)**

a. Evaluate the following expressions **(3 Points)**

1 + 1 == 2 && 10 * 10 > 50	
6 * 6 + 7 * 7 – 3 * 7 + 3 + 5 + " <- answer"	
"Hello World!" === "Hello" + " World!"	

b. Parenthesize the following expressions based on the JS precedence **(2 Points)**

1 + 1 == 2 && 10 * 10 > 50	
6 * 6 + 7 * 7 – 3 * 7 + 3 + 5 + " <- answer"	

III. Statements **(3 Points)**

a. Define a variable called interest, and initialize it to 0.0 with two statements.
b. Define a variable called inputString, and with the initial value of "abcdefghij" with one statement.
c. Define three variables, length, height, width, and initialize each variable to 8.0 with one statement.

IV. Expressions and Statements **(2 Points)**

a. Evaluate the following – what is the final value of x **(1 Point)**

var x = 5, y = 7;
 	
x = 8 * 8 – 8;
y = x * 2 % 5;
x = y - 10 % 8 * x;	

b. Evaluate the following – what is the final value of x **(1 Point)**

var x = 8, y = 9, z = 10;
 	
x = Math.max(y, z, 100);
y = Math.min(x, y, z);
z = "World";
x = "Hello" + z;	

V. Create a webapp using HTML/JavaScript **(75 Points)**

Your webapp will calculate the monthly payment amount as well as total interest paid for a car loan. The following is a popular formula used for calculating the monthly payment amount:

$$\frac{P\left(r/12\right)}{\left(1-\left(1+r/12\right)^{-m}\right)}$$

P is the loan amount
r is the interest rate – **example 5.99% would be entered as 0.0599**
m is the total months of the loan

With car loans, a down payment may be required, and you may have a car to sell (trade-in). Both of these will reduce the amount of the loan amount. You webapp will determine the loan amount after deducting from the sales price of the car the down payment and trade-in value:

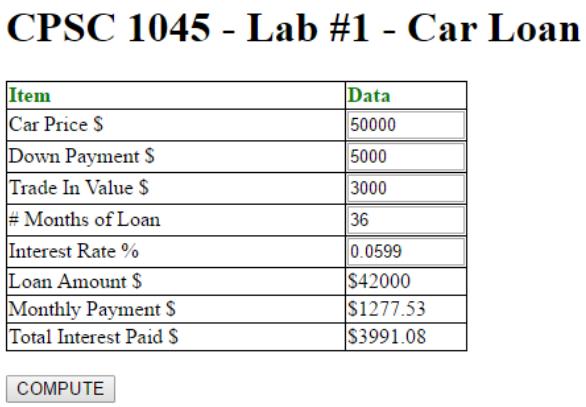
$$P = SP - DP - TI$$

P is the loan amount
SP is the sales price of the car
DP is the down payment
TI is the trade-in value

Once you have calculated the loan amount above, and used this to calculate the monthly payment amount, you can calculate the total interest paid for the loan:

TIP = m*MP - P	P is the loan amount m is the total months of the loan MP is the monthly payment amount

Your page should look similar to the following:



CPSC 1045 - Lab #1 - Car Loan

Item	Data
Car Price $	50000
Down Payment $	5000
Trade In Value $	3000
# Months of Loan	36
Interest Rate %	0.0599
Loan Amount $	$42000
Monthly Payment $	$1277.53
Total Interest Paid $	$3991.08

COMPUTE

When the COMPUTE button is pressed, your webapp will call a function (see Lab #1 Demo) named computeFunction. In this function, you will compute the loan amount, monthly payment, and total interest paid for the loan. Test your webapp using the same values used in the screenshot above to verify your webapp is working properly.

Deliverable(s):

Submit one zipped file called **FirstName-LastName-SID-LAB1.zip** to D2L under the folder called **Lab #1**. This zip file will contain the following files:

FirstName-LastName-SID- LAB1.docx

This document will contain your answers to Parts I, II, III, and IV above.

FirstName-LastName-SID- LAB1.HTML

This document will contain the Webapp from Part V above.

Note – replace SID in filenames above with your 9 digit student ID number – starts with "10".

Due Date:

<u>See D2L. No late submissions accepted/graded.</u>