EECS 428 / ECE 578
DATA VISUALIZATION
Spring 2016

ASSIGNMENT 1

Due Date: <u>Sunday, March 20th, 2015, 23:59</u>
(10 Points)

Assignment Submission: *Turn in your assignment by the due date through LMS. Prepare and upload **one zip file** that should have **one subdirectory for each part of the assignment** (PartA & PartB). Name the zip file as <your first name>_<your last name>_ assignment1. See individual questions for what you should return.*

You can and encouraged to discuss HTML, CSS, SVG, JavaScript and D3 with each other. ***However, all work in questions (implementation) must be your own; you must neither copy from nor provide assistance to anybody else (including online resources). If you need guidance for any question, talk to the instructor or TA.***

PART A: *JavaScript Warm-Up*

Before starting solving the following exercises, you are encouraged to go through this basic tutorial from Mozilla Developer Network MDN. This network provides an elegant documentation for JavaScript. It will be helpful for you as you learn JavaScript in case you are new to the JavaScript.

QUESTION 1

Divisible. Write a JavaScript function that accepts an integer number (N) as a parameter and, by using console.log, prints all numbers from 1 to N, with these exceptions:

- For the numbers divisible by 2 (even), print "Even" instead of the number
- For the numbers that are divisible by 3even if it is an even number, print "Bingo!"

For example, for N=6, print to the console:

1

Even

Bingo!

Even

5

Bingo!

Name your function *isDiv*. The signature of the function is:
        isDiv(N);

QUESTION 2

upperFirst. Write a JavaScript function that accepts a string as a parameter and converts the first letter of each word of the string to the upper case.

Name your function *upperFirst*. The signature of the function is:
        upperFirst(string);

QUESTION 3

Reverse String. Write a JavaScript function that accepts a string as a parameter and prints the characters of the string in the opposite order to the console.

Name your function *reverseString*. The signature of the function is:
        reverseString (string);

QUESTION 4

Palindrome. Write a JavaScript function that accepts a string as a parameter, checks whether the string is palindrome and returns true or false. A string is palindrome if its forward and backward reading is same. For example, the following strings are palindrome.

"Eye"

"Race car"

"Was it a car or a cat I saw"

Name your function *isPalindrome*. The signature of the function is:

        isPalindrome(string);

QUESTION 5

Histogram. Write a function that takes an array as a parameter, counts the occurrences of the list items and prints the top 3 items that occur the most in the array.

Example:

Input array: ['a', 'e', 1, 'a', 'e', 'a', 'b', 3, 'c', 'a', 'c', 5, 'd', 'e', 'b', 7, 'e', 'c', 'e']
Output:

e 5

a 4

c 3

Name your function *hist*. The signature of the function is:

hist(array);

IMPORTANT. Please return in PartA directory:

- A *single* JavaScript file that includes functions for all 5 questions. Name it *<your first name>_<your last name>_assignment1_partA*.js. The content of the file should look like:

```
function isDiv(N){

// your code here

}
function upperFirst(string){

// your code here

}
function reverseString(string){

// your code here

}
function isPalindrome(string){

// your code here

}
function hist(array){

// your code here

}
```

PART B: *Web-based cash register*

Cash register design and implementation. In this question, you will use HTML and CSS (and SVG if you prefer) to design a cash register and JavaScript will enable you to implement the functionality. You are asked to build a simple web-based cash register, just like the one used in grocery stores. Refer to the figure below for a sample layout.

Your cash register will only support five items: Apple, Lemon, Carrot, Banana and Pear and their prices are $2, $4, $1, $3 and $5, respectively.

When the user presses reset button, the total amount is reset to zero.

The user first selects a number (how many of a particular item is sold) and then selects the item that is sold. As the user enters the number and selects item, the number and the item price should show up on screen as can be seen in the figure below. Additionally, when the user presses an item button, the color of button should change while the number and item price are shown on the screen.

Finally, the user presses + or − button. Subsequently, the cost of the item sold is added to or subtracted from the total amount and the color of the selected item changes back to the default color.
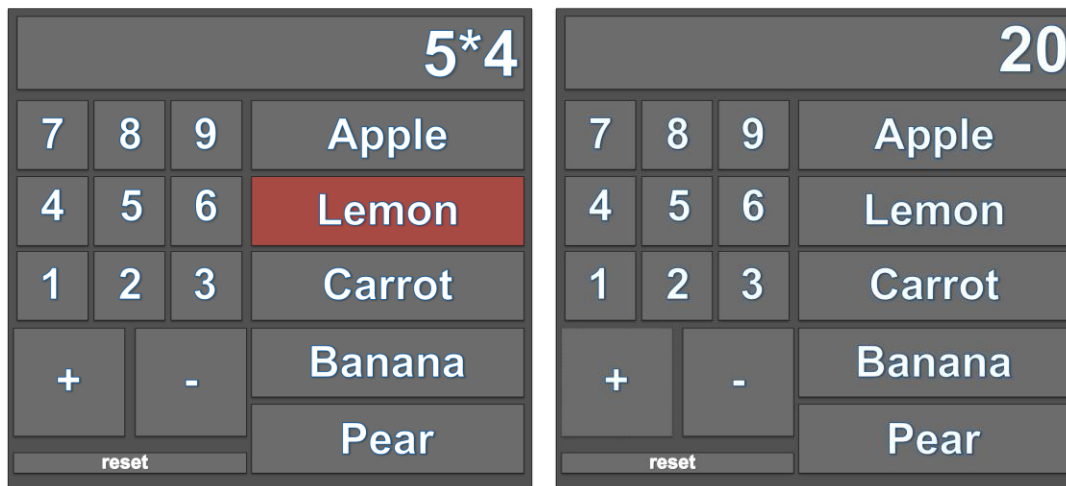
Notes:

- You are not obliged to produce the exact images shown in the illustrations above. In fact you are encouraged to use your creativity to create your own designs as long as it supports the intended functionality and the visually it is at least as appealing as our examples ☺

IMPORTANT. Please return in PartB directory:

- All your HTML, JavaScript and CSS files (you can have sub-directories under partB if you prefer). Your main HTML file should be named as ***index.html***. When we open *index.html* in our web browser (*Chrome* will be used for grading), your cash register and visuals should show up in the main page.