Lab Week 3 – JavaScript (JS) exercises.

Here's some JavaScript code examples for you to try out and get your JavaScript coding back on track. You can use your existing browser or anything like codepen, js bin, plunker etc as a JS editor. Here's a blank template if you want to run them in a web page. Just put your code in the script.js file for each exercise (remember to save with a different name each solution).

```
<!DOCTYPE html>
<html>

 <head>
  <link rel="stylesheet" href="style.css">
  <script src="script.js"></script>
 </head>

 <body>
  <h1>Hello World!</h1>
 </body>
</html>
```

1. a) Write a JS program to count the number of vowels in a string.

b) Set up an array of the following musical instruments: e.g

bongo drums.
guitar
flute
double bass
xylophone
piano

Now modify your program to remove the vowels from each of the musical instruments. You should display the before and after versions of each instrument on the console.

Hint: If you do both parts together it can be easier to display the answers.

2. In JavaScript, when you want to create a string of text that also includes the values of different variables, you have to keep closing the string, then use a +sign followed by the variable name, follow it with another +, and then re-open the string—and you have to do this for every single variable.

Write a function, insertVars, to help with this problem. There will be at least two arguments. The first is the string in which to insert various values, and the second, third, and so on, are the values to be inserted, as follows:

- string The string in which to insert values
- value1 A value to insert in string
- value2 As value1(etc…)

How You Might Use It.
To insert values into a string using insertVars( ), you call it up in the following manner:

```
string = insertVars('The product of #1 and #2 is #3', three, 7, answer);
```

```
}
var three = 3, six = 6;
var area = three * six;
console.log( insertVars( 'Area of rectangle: #1 by #2 is #3', three, six, area ) );
Area of rectangle: 3 by 6 is 18                                    VM112:10
```

3. Write a program that asks the user to enter the radius of a circle and then computes and displays the circles area and circumference. Use the formula Area = πr^2 & Circumference = $2\pi r$

Where r is radius and π is the constant PI : 3.14159

4. Write a JavaScript program to find the area of a triangle where lengths of the three of its sides are 5, 6, 7. Hint: check out Heron's Formula.

5. Write a JavaScript program to find how many December 25th's are on a Saturday or a Sunday between years 2017 and 2030. Hint: use Date object and its methods.

6. Write a JavaScript program to convert temperatures to and from Celsius, Fahrenheit.
[Formula : c/5 = (f-32)/9 [where c = temperature in Celsius and f = temperature in Fahrenheit]
Expected Output :
60°C is 140 °F
45°F is 7.222222222222222°C

7. Write a JavaScript program to find the largest value in an array of integer values.

8. Write a JavaScript function that checks whether a passed string is palindrome or not?

9. Write a program that will calculate and print out bills for a water company. The water rates vary depending on whether the bill is for home use, commercial use or industrial use. A code of h is used for home use, c for commercial use and i for industrial use. Any other code should be treated as an error. The water rates are calculated as follows:
Code h: £5.00 plus £0.05 per gallon used
Code c: £100 for the first 400 gallons used and £0.25 for each gallon thereafter
Code i: £100 for the first 400 gallons used, £200 if usage exceeds 400 gallons but does not exceed 600 gallons and £500 if usage exceeds 600 gallons

Your program should prompt the user to type in an account number, the code and the gallons of water used. The output should show the account number and the amount due.

10. Coding the Soundex Algorithm. This algorithm swaps characters in user names with numbers using the following method.

The correct value can be found as follows:
Retain the first letter of the name and drop all other occurrences of a, e, i, o, u, y, h, w.
Replace consonants with digits as follows (after the first letter):

b, f, p, v → 1
c, g, j, k, q, s, x, z → 2
d, t → 3
l → 4
m, n → 5
r → 6

If two or more letters with the same number are adjacent in the original name (before step 1), only retain the first letter; also two letters with the same number separated by 'h' or 'w' are coded as a single number, whereas such letters separated by a vowel are coded twice. This rule also applies to the first letter.

If you have too few letters in your word that you can't assign three numbers, append with zeros until there are three numbers. If you have more than 3 letters, just retain the first 3 numbers.

Using this algorithm, both "Robert" and "Rupert" return the same string "R163" while "Rubin" yields "R150". "Ashcraft" and "Ashcroft" both yield "A261" and not "A226" (the chars 's' and 'c' in the name would receive a single number of 2 and not 22 since an 'h' lies in between them). "Tymczak" yields "T522" not "T520" (the chars 'z' and 'k' in the name are coded as 2 twice since a vowel lies in between them). "Pfister" yields "P236" not "P123" (the first two letters have the same number and are coded once as 'P').

That’s all Folks!