Lecture 1

Objective: Review and practice introductory JavaScript topics. This will ensure that we are comfortable with coding more advanced topics. We are aiming to complete exercises for the following topics today.

* Debugging using google chrome (30 min)
* Practice with exercise (90 min)
  + Adding JavaScript to HTML
  + Syntax and Variables
  + Data Types
  + Operators
  + Arrays
  + Loops
  + Conditions
  + Built in JavaScript objects
  + Functions
* Two 10 min breaks (one at 7pm and one at 8 pm)

**Tools**

We will be using the following tools for JavaScript developed. If you are more comfortable using other tools, please continue to use your tool of choice

***Editors***

1. Notepad++

Browser

1. Google chrome

Debugging

1. Google Chrome debugger
   1. Suggested reading : <https://developers.google.com/web/tools/chrome-devtools/javascript/reference>

**Exercises: See how many of these you can get done.**

1. Declare a variable firstname and initialize it with the value 'Lata'.
2. Declare a variable flower and assign it the value 'rose'. Declare a second variable tree and assign it the value 'maple'.
3. Write a program that prints ‘Hello World’ to the screen.
4. Write a program that asks the user for their name and greets them with their name.
5. Modify the previous program such that only the users Alice and Bob are greeted with their names.
6. Write a program that asks the user for a number n and prints the sum of the numbers 1 to n
7. Modify the previous program such that only multiples of three or five are considered in the sum, e.g. 3, 5, 6, 9, 10, 12, 15 for n=17
8. Write a program that asks the user for a number n and gives them the possibility to choose between computing the sum and computing the product of 1,…,n.
9. Declare a variable hello. Assign a function to it returning 'Hello world!'.
10. Define two functions. The first function a should return 'Hello a!' and the second function b should return 'Hello b!'.
11. Write a program that prints a multiplication table for numbers up to 12.
12. Write a program that prints all prime numbers. (Note: if your programming language does not support arbitrary size numbers, printing all primes up to the largest number you can easily represent is fine too.)
13. Write a guessing game where the user has to guess a secret number. After every guess the program tells the user whether their number was too large or too small. At the end the number of tries needed should be printed. It counts only as one try if they input the same number multiple times consecutively.
14. Write a function that returns the largest element in a list.
15. Write function that reverses a list, preferably in place.
16. Write a function that checks whether an element occurs in a list.
17. Write a function that returns the elements on odd positions in a list.
18. Write a function that computes the running total of a list.
19. Write a function that tests whether a string is a palindrome.
20. Write three functions that compute the sum of the numbers in a list: using a for-loop, a while-loop
21. Write a function that concatenates two lists. [a,b,c], [1,2,3] → [a,b,c,1,2,3]
22. Write a function that combines two lists by alternatingly taking elements, e.g. [a,b,c], [1,2,3] → [a,1,b,2,c,3].
23. Write a function that takes a number and returns a list of its digits. So for 2342 it should return [2,3,4,2].
24. Write a function hypotenuse that calculates the length of the hypotenuse of a right triangle. The length of the two legs is passed to the function. Tip: In a right triangle the Pythagorean theorem is valid. If a and b are the lengths of the two legs and c is the length of the hypotenuse, the following is true: a² + b² = c². Since 3² + 4² = 5² applies, hypotenuse(3, 4) should return 5.
25. Write a function dice that returns like a dice a random number between 1 and 6.
26. Write a function equals that checks two values for strict equality. If the two values are equal, the string 'EQUAL' should be returned. If they are unequal, you should get 'UNEQUAL'. The call equals(1, 1) should return 'EQUAL', the call equals(1, 2) should return 'UNEQUAL'.
27. Write a function addWithSurcharge that adds two amounts with surcharge. For each amount less than or equal to 10, the surcharge is 1. For each amount greater than 10, the surcharge is 2. The call addWithSurcharge(5, 15) should return 23.
28. Write a function addWithSurcharge that adds two amounts with surcharge. For each amount less than or equal to 10, the surcharge is 1. For each amount greater than 10 and less than or equal to 20, the surcharge is 2. For each amount greater than 20, the surcharge is 3. The call addWithSurcharge(10, 30) should return 44.
29. Write a function toArray that takes 2 values and returns these values in an array.toArray(5, 9) should return the array [5, 9].
30. Write a function getFirstElement that takes an array and returns the first element of the array. getFirstElement([1, 2]) should return 1.
31. Write a function setFirstElement that takes an array and an arbitrary variable. The variable should be inserted as the first element in the array. The array should be returned. setFirstElement([1, 2], 3) should return [3, 2].