**Frontend Advanced**

**Module I – Challenges**

**Challenge - Hello World**

The goal of this Challenge is to get an environment set up and working.

1. Create a folder in which to work.
2. Create a new HTML file in a text editor. Call it index.html.
3. Create a JavaScript file in a text editor. Call it main.js.
4. Put an alert in the script file, like this: alert('Hello world');`
5. Use a script tag to link the JavaScript file into the HTML file
6. Open the HTML file in a browser. See the alert?
7. Extend the code so it pops up two alerts.

**Challenge - Weeks in a lifetime**

Given three variables -

const daysInYear = 365.25;

const daysInWeek = 7;

const yearsInLifetime = 80;

Calculate the average number of weeks in a human lifetime.

**Challenge - String Concatenation**

1. Create a variable called greeting. Store the value 'hello' in it.
2. Create a variable called name. Store the value 'world' in it.
3. Use your variables to alert "hello world".
4. Use a custom function to change the output to "he110 w0r1d"
5. Use a couple more functions to reverse the result. A coding device! Write the reverse decoder.

**Challenge - Conditional logic**

Create a little program that tells you if it's the morning, afternoon or night. You can get the hour of the day with new Date().getHours():

**Challenge - A Sandwich Calculator**

Write a function called sandwich calculator. This should accept one value: bread

The function should return the total number of possible sandwiches based on the number of breads available. I need 2 breads to make one sandwich, so if there are 10 breads, it should return 5. Test your function with console.log.

Extend your function so it accepts two values, bread and cheese.

It takes two breads and one cheese to make a sandwich. The function should return the total number of possible sandwiches, so if there are breads, but only 1 cheese, it should return 1.

**Challenge - Guess the output**

For each of the following, try to work out what the output will be. Run the code in the browser console to check your answer.

1.

var a = 12;

(function() {

console.log(a);

})();

2.

var a = 5;

(function() {

var a = 12;

console.log(a);

})();

3.

var a = 10;

var x = (function() {

var a = 12;

return (function() {

console.log(a);

});

})();

x();

4.

var a = 10;

var x = (function() {

var y = function() {

var a = 12;

};

return function() {

console.log(a);

}

})();

x();

5.

var a = 10;

var x = (function() {

(function() {

a = 12; // <<< look carefully at this line.

})();

return (function() {

console.log(a);

});

})();

x();

6.

var a = 10;

(function() {

var a = 15;

window.x = function() {

console.log(a);

}

})();

x();

**Challenge - Iterate with a for loop**

Assume I have an array of products in my shop, like this:

products = ['Cats', 'Cheese', 'Spanners', 'Lemons', 'Candyfloss'];

Use a for loop to iterate over this and console.log the products.

Extension - Use a functional loop

Repeat the above Challenge, but use a functional loop.

**Challenge – Cook My Pizza**

Create an array of pizza toppings, like this:

var toppings = ['Cheese', 'Ham', 'Bits', 'Tomatoes'];

Now write a function that we can call like this:

makePizza(toppings);

This function should return a string of the form:

*"A tasty pizza with Cheese and Ham and Bits and Tomatoes"*

**Challenge - Capitalise Every Element**

Write a short function to capitalise every element of the array.

You must use the Array#map function and the String#uppercase function.

**Challenge - Constructor Functions**

Make me a little car. The car should have a latitude and longitude attributes. It should have goNorth, goSouth, goEast and goWest functions. It should have a toString method that prints the current location.

Now go for a drive.

**Prototypical inheritance Challenge**

Create a Vehicle constructor to be a parent of the Car. Move your functions and attributes up into the vehicle.

Now create a new Car, it should still be able to drive.

Add a new method to the car, so we can change the oil.

Now make a bike object which also inherits from Vehicle and instantiate it.

**Object.create**

Re-implement your car using object.create. Be sure to keep you old version around somewhere.

**Challenge - greaterThan(n)**

Write a function greaterThan, which takes one argument, a number, and returns a function that represents a test. When this returned function is called with a single number as argument, it returns a boolean: true if the given number is greater than the number that was used to create the test function, and false otherwise.

**Challenge – Split the bill**

Write a function named splitBill that takes three arguments: the total amount of the bill, the number of people splitting the bill, and the percent tip to be included, and returns the amount that each person needs to leave for the bill.

Modify the function so that it rounds each person’s amount up to the nearest whole Rupee.

**Challenge – Rock, Paper, Scissors**

Write a program that plays Rock, Paper, Scissors better than random against a human. Try to exploit that humans are very bad at generating random numbers.