Homework Assignment 1

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1. Functions and Return Values

These functions are given here:

```
function f(x) {
    console.log('Hallo World');
    return g(x) + h(x) + q(x) + 2;
}

function g(x) {
    console.log('calling g …');
    return 2*x + 4;
}

function h(x) {
    return q(x) + 4;
    return 5;
}

function q(x) {
    var y = 3;
    console.log('y is ' + y);
    return 2 + x;
}
```

1. What is the value of q(6)?

2. What is the value of h(8) ?

3. What is the value of f(12) ?

NOTE: Do not compile this. Use your mind and a pencil to solve this.

2. Syntax

1. Whats wrong in this code? Please correct it! Try without compiling!

```
var hallo = foo;

function sayHello( {
    console.log('Hallo World);
}

function countThe7 (array) {
    var numSevens = 0;
    for(var i=0; i<array.lenth; i = i++) {
        if( array[i] = 7 ) {
            theSevens++;
        }
    }
return numSeven;
}

sayHello();
console.log countThe7( array = [1,4,7,3,7,1,7,0,-1,7] );
```

2. Syntax

2. Again, whats wrong in this code? Please correct it! Try without compiling!

```
var fruits = ['Apple', 'Ba na na, 'Mango'; 'Grapefruit'];

fruits['0'] = 'Lemon';
fruits.Banana = 'Melon';

for(var i=0; i<10; i++) {
    fruits[i] = 'Pickle';
}

var 'fullrandom' = {
    123: 456;
    'hallo': 'world',
    cars: [ 'bmw'; 'porsche'; 'tesla', peugeot ];
}

fullrandom.123 = 789;
var key = 'halloooooo';
fullrandom[key] = ('woooooooorld');;
```

3. Arrays

1. Create an array with some years where persons were born

2. Create an empty array (just [])

3. Use a loop to fill the array with the ages of the persons

4. Use another loop to log into the console whether each person is of full age (18 or older), as well as their age

5. Finally, create a function called printFullAge which receives the array of years as an argument, executes the steps 2., 3. and 4. and returns an array of true/false boolean values: true if the person is of full age (>= 18 years) and false if not (< 18 years)

6. Call the function with two different arrays and store the results in two variables: full_1 and full_2

Example input: [1965, 2008, 1992]

Example output: [true, false, true]

Hint: you can use a loop not only to read from an array, like y[i], but also to set values in an array, like y[i] = ... You can also use the specific array methods.

4. Arrays and Nested Loops

Create a function numberTable() with 2 parameters: **rows** and **columns**.

1. numberTable(rows, columns) should return an array with length of **rows**. In each item of the array there should be another array with length of **columns** and all items should be 0; Use a for-loop to create the array.

Example:

numberTable(3, 4) would return

[[0, 0, 0, 0], [0, 0, 0, 0], [0, 0, 0, 0]]

2. Modify the code so that instead of all items of the inner arrays being 0,

they should have an ascending number from 0 to **columns**.

Example:

numberTable(3, 4) would return

[[1, 2, 3, 4], [1, 2, 3, 4], [1, 2, 3, 4]];

3. Modify the code so that numberTable(3, 4) would return

[[1, 2, 3, 4], [5, 6, 7, 8], [9, 10, 11, 12]];

5. Explanations

Try to explain in your own words.

- What is a variable? Explain with 5 data types.
- What is an array and how is it different from a variable?
- What is an object and how is it different from an array?
- What are conditional statements and what are they used for?
- What is a for loop and what is the difference to a while-loop?
- What is a function?
- What is a parameter?
- What is a function's return value?