Session 3 exercises

Advanced JavaScript for Web Sites and Web Applications

Question 1

When the following code runs, what will be displayed in the console, and why?

```
var a = "hello";

if (true) {
    (function() {
        a = 1;
    }());
}

console.log(a);
```

Question 2

When the following code runs, what will be displayed in the console, and why?

```
function func1() {
    var a = 10;
    function func2() {
        var b = 4;
    }
    function func3() {
        var c = 17;
        if (typeof b !== "undefined") {
            c = 13;
        }
        console.log(c + a);
    }
    func2();
    func3(); // what does this display?
}

// Call the function
func1();
```

Question 3

When the following code runs, what will be displayed in the console, and why?

```
(function() {
    test = 5;
    if(false) {
        var test;
    } else{
        // do something here
    }
}());

console.log(test);
```

Question 4

When the following code runs, what will be displayed in the console, and why?

```
(function() {
    test = 5;
    if (false) {
        var test = 3;
    } else {
        console.log(addOne(test));
    }
    function addOne(value) {
        return value + 1;
    }
}());
```

Question 5

When the following code runs, what will be displayed in the console, and why?

```
(function() {
    test = 5;
    if (true) {
        var test = 3;
        console.log(addOne(test));
    }
    function addOne(value) {
        return value + 1;
    }
}());
```

Question 6a

Consider the following code. What will be displayed in the console, and why?

```
var fullname = "John";
var obj = {
    fullname: "Jane",
    prop: {
        fullname: "Tom",
        getName: function () {
            return this.fullname;
        }
    }
};
var test = obj.prop.getName;

// What does the console display?
console.log(obj.prop.getName());
console.log(test());
```

Question 6b

Download the `workshop3.zip` file from Moodle and extract it to your workspace.
In `workshop3.js`, use `bind()` to amend the code from the Question 6a so that:

- The `test()` function returns the value: *Tom*.
- A new function is created from `getName` (test2) which will return the value: *Jane*.

Hint: It is all about which object you bind the method to!

Question 7

In `workshop3.js`, define an object called `Calc` that has a `total` property set to the value `0`.
You should also define these *methods* within the object:

- `add(number)`: Accepts a number as an argument and adds it to the `total` property of the object
- `subtract(number)`: Accepts a number as an argument and subtracts it from the `total` property of the object.
- `increment()`: Accepts no arguments, simply adds 1 to the `total` property
- `decrement()`: Accepts no arguments, simply subtracts 1 from the `total` proprty
- `getTotal()`: Accepts no arguments, returns the current value of the `total` property

Notes:

- The methods will not return the result of their respective operation. They will all return *this* to allow for chaining, except for the `getTotal` method which should return an actual value.
- Each of the methods operate on the object's `total` property. In other words, the value of `total` will change each time you call a method. When you call the `getTotal` method, the value it returns will be the cumulative result of all othe methods that had been called up to that point.

Test your code with these chained method calls:

```
// Chain some methods
result1 = calc.increment().add(10).getTotal();
console.log(result1); // 11

// reset total
calc.total = 0;

// Chain some methods
result2 = calc.add(7).subtract(3).getTotal();
console.log(result2); // 4

// reset total
calc.total = 0;

// Chain some methods
result3 = calc.increment().decrement().getTotal();
console.log(result3); // 0
```

Note, chaining methods in this manner is not always appropriate as it can make the code difficult to read/follow.

However, when the code involves a sequence of *steps* to reach it's result, as in the `Calc` example, chained methods can actually enhance code readability.

Look up *fluent interfaces* for more information about this technique and when it should be used.