# Javascript Scope Exercises

**1. Determine what this Javascript code will print out (without running it):**

```
x = 1;
var a = 5;
var b = 10;
var c = function(a, b, c) {
      var x = 10;
      document.write(x);
      document.write(a);
      var f = function(a, b, c) {
            b = a;
            document.write(b);
            b = c;
            var x = 5;
      }
      f(a, b, c);
      document.write(b);
}
c(8,9,10);
document.write(b);
document.write(x);
```

10
8
8
9
10
1

**2. What is the difference between a method and function?**

- A function is a piece of code that is called by name. It can be passed data to operate on (i.e. the parameters) and can optionally return data.
- A method is a piece of code that is called by a name that is associated with an object.

**3. What does 'this' refer to when used in a Java method?**

'this' keyword in Java can be used inside the Method or constructor of Class. It works as a reference to the current Object, whose Method or constructor is being invoked.

**4. What does 'this' refer to when used in a JavaScript method?**

In a method, 'this' refers to the owner object.

**5. What does 'this' refer to when used in a JavaScript constructor function?**

In a constructor function 'this' does not have a value. It is a substitute for the new object. The value of 'this' will become the new object when a new object is created.

**6. Assume object x is the prototype for object y in Javascript. Object x has a method f() containing keyword 'this'. When f is called by x.f(), what does 'this' refer to?**

'This' refers to object x.

## 7. What is a free variable in JavaScript?

Free variables are simply the variables that are neither locally declared nor passed as parameter.

## 8. Create an object that has properties with name = "fred" and major="music" and a property that is a function that takes 2 numbers and returns the smallest of the two, or the square of the two if they are equal.

```
var Person = {
    name: "Fred",
    major: "music",
    getResult: function(num1, num2) {
        if (typeof num1 !== "number" || typeof num2 !== "number")
return;
        if (num1 === num2) return num1 * num2;
        if (num1 < num2) return num1;
        return num2;
    }
};
```

## 9. Write Javascript code for creating three Employee objects using the "new" keyword and a constructor function. Employee objects have the following fields: name, salary, position.

```
function Employee(name, salary, position) {
    this.name = name;
    this.salary = salary;
    this.position = position;
}
var emp1 = new Employee("Tim", 3000, "Staff");
var emp2 = new Employee("Bob", 4000, "Senior Staff");
var emp3 = new Employee("John", 6000, "Manager");
```

## 10. Write a Javascript function that takes any number of input arguments and returns the product of the arguments.

```
function product() {
    var result = 1;
    for (var i = 0; i < arguments.length; i++) {
        result *= arguments[i];
    }
    return result;
}
var calc = product(1, 2, 3, 4, 5); // 120
```

## 11. Write an arrow function that returns the maximum of its three input arguments.

```
var max = (a, b, c) => Math.max(a, b, c)
max(20, 5, 100); // 100
```