**Name:**_________Qixiang Liu___________________________________

# Eloquent JavaScript

## EECS 368 sp'18 Chapters 5 & 6 (Higher Order & Objects)

Due: Friday 23th Feb, 10am (start of class)

**Instructions**: Read Chapter 5, and Chapter 6 of Eloquent JavaScript THIRD EDITION (**http://eloquentjavascript.net/3rd_edition/**) and complete the exercises listed below and submit your answers on **Blackboard.**
Just a reminder to take the time to understand **all** the code throughout the readings or things in class probably won't make sense and you'll fall behind. You're in charge of your own education.

1. By signing (or e-signing) below, you attest that you have read all sections of this reading assignment.
   Qixiang Liu
2. List *at least* **3** quotes from the reading that you thought were particularly meaningful. For example, one of mine is: "There are those who will say *terrible* things about the JavaScript language. Many of these things are true." --(Introduction, Eloquent JS)
   a. A large program is a costly program, and not just because of the time it takes to build.
   b. Size almost always involves complexity, and complexity confuses program.
   c. There will be times when reading this book will feel terribly frustrating.

3.
   a. At the end of Chapter 5:
      i. *Disclaimer: You may wish to read chapter 6 before completing this problem since it introduces instanceof*
      Complete the **Flattening** exercise. Note that your flatten function must flatten arrays of arbitrary depth and contents. Example:
      ```
      flatten([1,2,[[false,'a',{}],["sally"],true],[[[[5,4],4,7]]]])
      //[1, 2, false, "a", {…}, "sally", true, 5, 4, 4, 7]
      ```
      Hint: (`arr instanceof Array`) returns `true` or `false` depending on if arr is an array object or not. Remember you must use `reduce`.
      ii. Choose at least of one the remaining exercises (**Your own loop, Everything, Dominant Writing Direction**) to complete.
   b. At the end of Chapter 6:
      i. do at least one of the exercises.

Note that any time an exercise lists something as extra(or similarly worded), you must complete as part of the exercise.
There is a sandbox to run javascript code directly on eloquentjavascript.net (http://eloquentjavascript.net/code/). Submit which problems you do and *your* code for them.

Deep Flatten:

```
        let arrays =[1,2,[[false,'a',{}],["sally"],true],[[[[5,4],4,7]]]];
//console.log(arrays.reduce((prev,curr)=>prev.concat(curr)));
const flatten = arr => arr.reduce(
 (prev, curr) => prev.concat(curr instanceof Array ? flatten(curr) : curr), []
);
arrays = flatten(arrays);
console.log(arrays);
// Your code here.
// → [1, 2, 3, 4, 5, 6]
```

```
// → [1, 2, 3, 4, 5, 6]
```

a. Your own loop:

```
function loop(n,compare,test,action){
        while(compare(n)){
          action(n);
            n=test(n);
  }
}
loop(3, n => n > 0, n => n - 1, console.log);
```

b. A vector type:

```
function Vector(x,y) {//constructor
 this.x = x;
 this.y = y;
}

Vector.prototype.plus = function(vector) {
 return new Vector(this.x + vector.x, this.y + vector.y);
};

Vector.prototype.minus = function(vector) {
 return new Vector(this.x - vector.x, this.y - vector.y);
};

Object.defineProperty(Vector.prototype, "length", {
 get: function() {
   return Math.sqrt(Math.pow(this.x, 2) + Math.pow(this.y, 2));
 }
});

// Tests
console.log(new Vector(1, 2).plus(new Vector(2, 3)));
// → Vector{x: 3, y: 5}
console.log(new Vector(1, 2).minus(new Vector(2, 3)));
// → Vector{x: -1, y: -1}
console.log(new Vector(3, 4).length);
// → 5
```

4. Since this is a draft edition, try to catch any errors you find and report them (if not already reported). This book is made available for free; the least we could do is help make it better! Summarize any errors you find (it’s okay if you don’t find any, but indicate so)

    a. Some codes cannot run. Some codes lack parenthesis.