JavaScript: The Good Parts vs. JavaScript: The Definitive Guide

For next class, read http://eloquentjavascript.net/ chapters 1-4.

C152 – Programming Language Paradigms
Prof. Tom Austin, Fall 2014

JavaScript

History of JavaScript

In 1995, Netscape hired
Brendan Eich to implement
Scheme within the web browser.

Brendan Eich

After a few meetings,
Scheme was deemed too weird…

In 10 days, he wrote the initial version of JavaScript
(then called Mocha) for Netscape 2.0 Beta.

JavaScript

- JavaScript looks superficially similar to languages like C++ and Java
- Primarily client-side programming (i.e. code running in your browser & your machine), but some server-side variants
  - JVM: Rhino & Nashorn
  - Node.js
- http://w3schools.com/js/default.asp

JavaScript is *multi-paradigm*:

- *Imperative*
- *Functional* – "Scheme in C's clothing"
- *Object-oriented* – Prototype-based

Imperative JavaScript

```javascript
function addList(list) {
  var i, sum=0;
  for (i=0; i<list.length; i++){
    sum += list[i];
  }
  return sum;
}
```

Functional JavaScript

```javascript
var addList = function(list) {
  if (list.length === 0) {
    return 0;
  }
  return list[0]
       + addList(list.slice(1));
}
```

Object-Oriented JavaScript

```
function Adder (amount) {
  this.amount = amount;
}
Adder.prototype.add = function(x){
  return this.amount + x;
}
var myAdder = new Adder(1);
var y = myAdder.add(7);
```

Extended JavaScript Examples

(in-class)

Introduction to Node.js

Node.js

- A JavaScript runtime and library designed for use outside the browser, based off of Google's V8 engine

- npm: package manager for Node.js

- http://nodejs.org/

myFile.txt

```
This is my file.
There are many like it,
but this one is mine.
```

File I/O in Node.js

```javascript
var fs = require('fs');
fs.readFile('myFile.txt',
function(err,data) {
    if (err) throw err;
    console.log(""+data);
});
console.log('all done');
```

Callback function

Resulting Output

```
all done
This is my file.
There are many like it,
but this one is mine.
```

Synchronous File IO in Node

```
var data = fs.readFileSync(
        './myFile.txt');
console.log(data.toString());
console.log('all done');
```

Lab: Intro to JavaScript

In today's lab, you will explore both the functional and object-oriented aspects of JavaScript.

See Canvas for details.