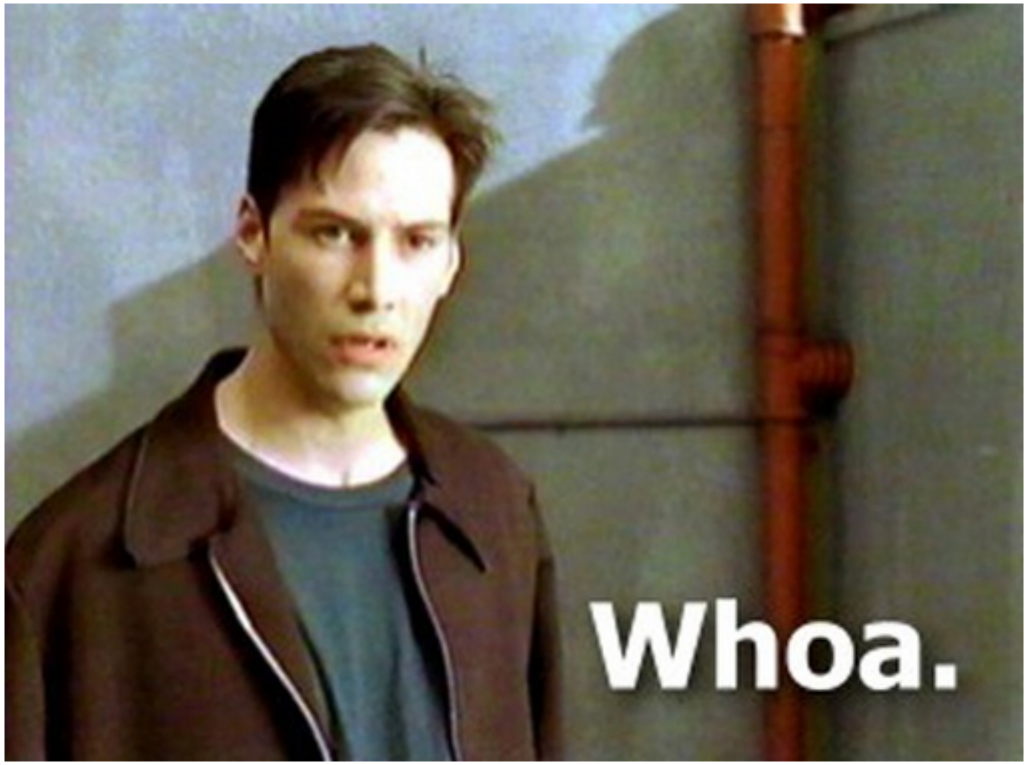
INFM 603: Information Technology and Organizational Context

Session 5: JavaScript – Functions and Objects

Jimmy Lin
The iSchool
University of Maryland

Wednesday, February 26, 2014



It’ll all make sense today…

Source: The Matrix

Programming… is a lot like cooking!

Source: Iron Chef America

Functions

- Reusable code for performing a computation
- A function…
  - Takes in one or more parameters (or arguments)
  - Executes some code
  - Optionally returns a value

Anatomy of Functions

name of the function

list of parameters

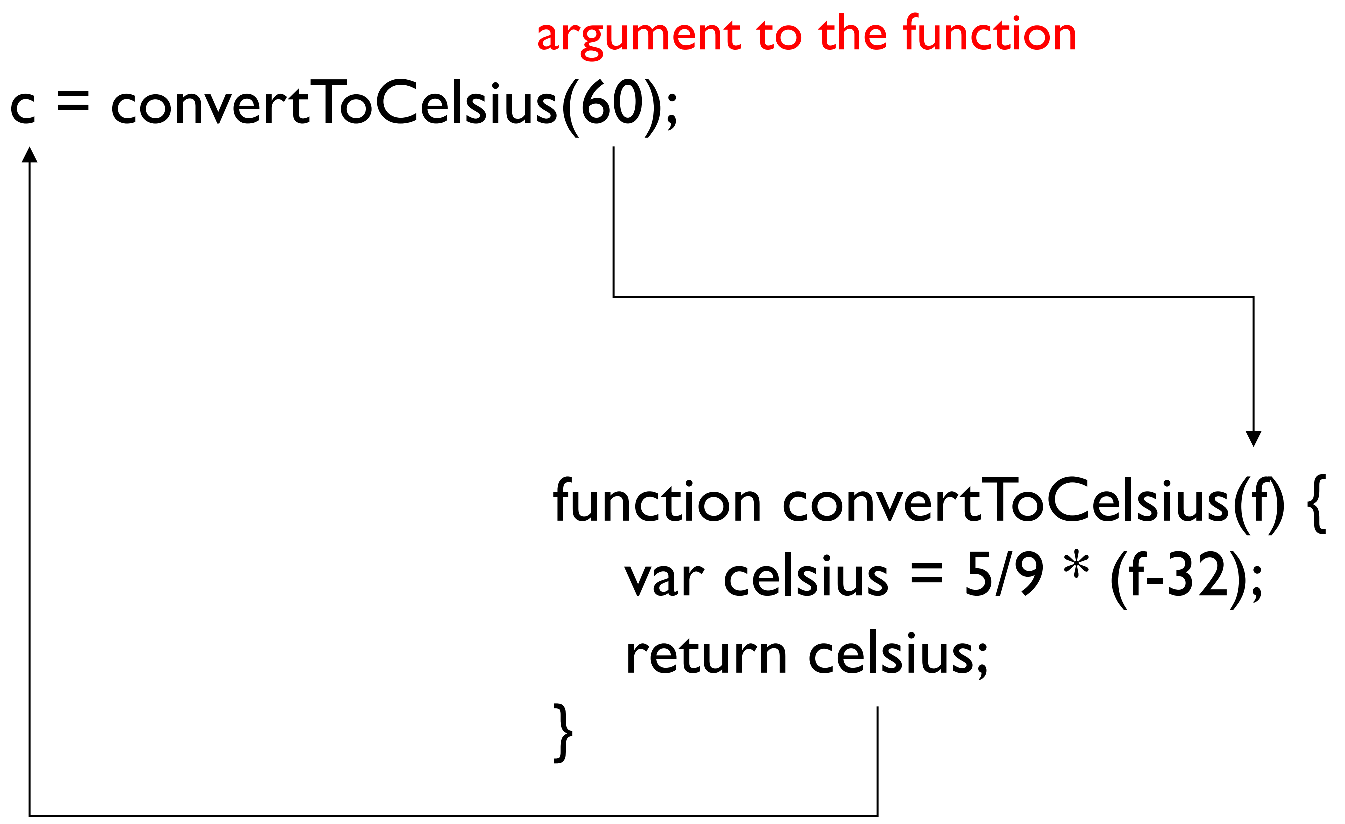
```
function convertToCelsius(f) {
    var celsius = 5/9 * (f-32);
    return celsius;
}
```

return value

```
function weirdAddition(a, b) {
    var result = a + b - 0.5;
    return result;
}
```

Using Functions

- Calling functions invokes the set of instructions it represents
  - Parameters to the function are specified between the parens
  - Multiple arguments are separated by commas



```
c = convertToCelsius(60);
```

```
function convertToCelsius(f) {
    var celsius = 5/9 * (f-32);
    return celsius;
}
```

More Examples

```
var r = weirdAddition(2, 4);

var a = 2;
var b = 3;
var s = weirdAddition(a, b);
```

```
function weirdAddition(a, b) {
    var result = a + b - 0.5;
    return result;
}
```

You’ve already been doing it!

- Built in functions:
  - prompt("enter some text", "default");
  - alert("message here");
- Message handlers!

Cooking analogy?

Objects

- It’s just a collection of properties!

```
var fido = {
  name: "Fido",
  weight: 40,
  breed: "Mixed",
  loves: ["walks", "fetching balls"]
};
```

Objects and Properties

- Access object properties using the “dot” notation

```
var w = fido.weight;
fido.breed = "Yellow Lab";
```

- Where have we seen this before?

Wine demo (Part 1)

Objects: Methods

- It's just a collection of properties!
- Objects can have functions also! (called methods)

```
var fido = {
  name: "Fido",
  weight: 40,
  breed: "Mixed",
  loves: ["walks", "fetching balls"],
  bark: function() {
    alert("Woof woof!");
  }
};
```

Calling a Method

- Invoke an object's method using the dot notation:

```
fido.bark();
```

- It's just like a function call!
- Where have you seen this before?
- What's "this"?

What's the point?

- Claim: every method can be rewritten as a ordinary function, and vice versa?
- Why have methods? What's the advantage of functions directly to objects?

Wine demo (Part 2)

Constructor!

- So far, building objects is a tedious process… that's where constructors come in:

```
function Dog(name, breed, weight) {
  this.name = name;
  this.breed = breed;
  this.weight = weight;
  this.bark = function() {
    if (this.weight > 25) {
      alert(this.name + " says Woof!");
    } else {
      alert(this.name + " says Yip!");
    }
  };
}
```

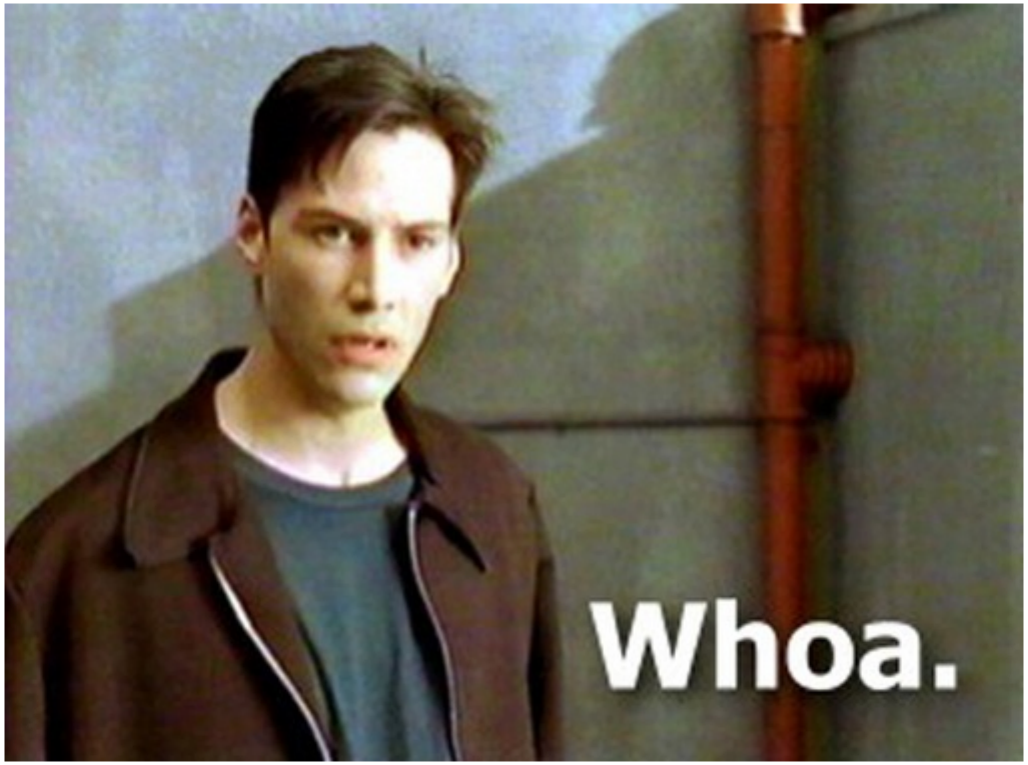
Using Constructors

- Invoke constructors using "new":

```
var fido = new Dog("Fido", "Mixed", 38);
var tiny = new Dog("Tiny", "Chawalla", 8);
var clifford = new Dog("Clifford", "Bloodhound", 65);

fido.bark();
tiny.bark();
clifford.bark();
```

Wine demo (Part 3)



It’ll all make sense today…

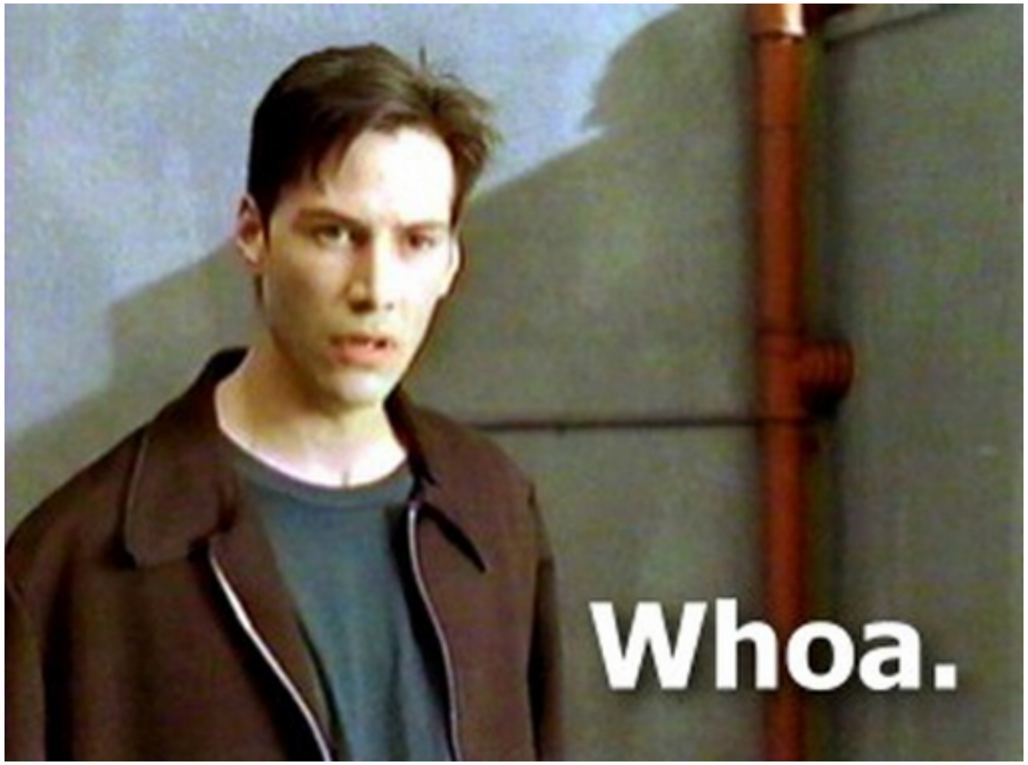
Source: The Matrix

Make sense now?

Source: The Matrix

Okay, you can relax now…

Source: Flickr http://www.flickr.com/photos/kitchenplan/6258898113/



(a bit) more of this…

Source: The Matrix

What happens if a function calls itself?

Source: Wikipedia

How do we find an element in a sorted list of elements?

How do we quantify the speed of various algorithms?

Sequential Search

Source: Wikipedia

Adresser
Adresser
eniro
Din vejviser på nettet - www.eniro.dk
Find it easy - www.eniro.dk
eniro

Binary Search

Source: Wikipedia

Algorithmic Complexity

- Linear vs. logarithmic algorithms
- Matters as data sizes increase!