

Week 10
CS50 — Fall, 2008
Week of November 23, 2008

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JavaScript
JavaScript is a scripting language that developed alongside HTML during the browser wars between Microsoft and Netscape Navigator. Though its name implies some relationship to Java, the JavaScript reflects only the business relationship between Sun and Netscape. Sun owned the trade

CS 50 Supersection

Week 10: JavaScript, Ajax

Keito Uchiyama

Topics

- JavaScript
 - Key language features (syntax)
 - The DOM
- Ajax
 - XMLHttpRequest

Where to place JavaScript

- `<script>` tags – in `<head>`, `<body>`
- CDATA sections
- Including external JavaScript

JavaScript Syntax - Variables

- Global variables:

```
cs = 50;
```

- Local variables:

```
var cs = 50;
```

JavaScript Syntax - Arrays

- Initializing arrays:

```
tfs = [];
```

```
tfs = new Array();
```

```
tfs = [ 1, "two", function() { return 3; } ];
```

- Referencing arrays:

```
tfs[2]
```

- Iterating through arrays:

```
for (var i in tfs) {
```

```
    //Similar to PHP's foreach construct
```

```
    alert("Oh, I found a " + tfs[i] + "!");
```

```
}
```

JavaScript Syntax – Switch Statements

```
switch (somevar) {  
  case 'hello':  
    document.write("0, hello");  
    break;  
  case 42:  
    alert("I like!");  
    break;  
  default:  
    alert("Variable is " + somevar);  
}
```

JavaScript Syntax – Functions

```
function myFunc() {  
    alert('Hello world!');  
    return false;  
}
```

JavaScript Syntax – Functions

```
function myFunc(i) {  
    alert('Hello world!');  
    return function() {  
        var j = 2;  
        return (i + j);  
    }  
}
```


JavaScript Syntax - Objects

- Initializing an object:

```
car = new Object();
```

- Referencing an object:

```
car.color = "red";
```

```
car["year"] = 2008;
```

```
car.makeSound = vroom;
```

- Functions:

```
car.makeSound() calls vroom()
```

Interacting with the browser

- XHTML event attributes: onclick, onfocus, onblur, onkeydown, onkeyup, onkeypress, etc.
- The Document Object Model

The Document Object Model

- Every element and attribute in an XHTML document is represented in a tree – the DOM.
- `getElementById()`
- `value`
- `innerHTML`
- `getElementsByTagName()`
- and much, much, more...

Ajax – Asynchronous JavaScript and XML

- Allows pages to "call home" (GET, POST) with JavaScript
- Dynamically updating content – no need to refresh anymore! (e.g. Gmail)
- Requests are asynchronous – they run in parallel with other things
- The XMLHttpRequest class

JavaScript Object Notation

```
{  
  "height": "40",  
  "weight": "50",  
  "bmi": 0.03125,  
  "date": "Mon, 24 Nov 2008 17:09:35 -0500"  
}
```

Anatomy of an Ajax request

To fire a request:

- Create XMLHttpRequest object
- Set the onreadystatechange event handler
- Open the request with the desired URL
- Send the request

In your onreadystatechange handler:

- Check the readyState
- Change the return value of the request
- Read responseText or responseXML

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