CS 50 Supersection

Week 10: JavaScript, Ajax

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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

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

JavaScript Syntax – Functions

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

JavaScript Syntax – Functions

```javascript
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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