Intro to Ajax

CSE 264

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What is Ajax?

A Trojan War Hero?

A Household Cleaner?

What is Ajax?

- A new technology for developing web applications?

Actually, no.

What is Ajax?

- Ajax =

  Asynchronous **J**avaScript **A**nd **X**ML

… a combination of technologies and techniques that have been around for a while.

Name coined by Jesse James Garrett in 2005.

What is it for?

Ajax allows you to create RIA (Rich Internet Applications) by breaking out of the full page HTTP Request-Response cycle.

Compare a typical web site with a stand alone GUI app (eg. NetBeans).

How does it work?

- Use JavaScript
- Independent connection to server app
- Make HTTP requests (asynchronously)
- Get back results (encoded in XML/JSON)
- Use to update DOM (and therefore the presentation)

Levels of Use: Examples

- Minor
  - Filling dropdowns based on other user input.
- Major
  - Gmail
  - Google Maps

How to Code

- “By hand”
- Use a framework
  - jQuery
  - Prototype
  - script.aculo.us

XMLHttpRequest Object

Properties:

onreadystatechange

Callback function/event handler; the function assigned to this property is called whenever readyState changes.

readyState

Number;

0 means uninitialized, open( ) has not yet been called;

1 means loading, send( ) has not been called;

2 means loaded, send( ) has been called, and headers/status are available;

3 means interactive, responseText holds partial data;

4 means completed.

Properties (continued)

responseText

string; the plain text of the response.

responseXML

DOM Document object; an XML return value.

status

Response status code, such as 200 (Okay) or 404 (Not Found).

statusText

string; the text associated with the HTTP response status.

Methods

abort( )

void; cancels the HTTP request.

getAllResponseHeaders( )

string; returns all of the response headers in a preformatted string.

getResponseHeader(string header)

string; returns the value of the specified header.

open(string method, string url, bool asynch)

void; prepares the HTTP request and specifies whether it is asynchronous or not.

Methods (continued)

send(string data)

void; sends the HTTP request.

setRequestHeader(string header, string value)

void; sets a request header (after calling open)

Data Exchange Format

- HTTP GET Parameters / Ad Hoc
- XML
- JSON

HTTP GET Parameters / Ad Hoc

- Pass data to server as HTTP parameters using GET method.
- Use Ad Hoc formatting for response
  - Ex. : separated string.
- Small amounts of data, simple structure

XML

- The X in Ajax/ XMLHttpRequest
- Use POST method.
- Pass to send().
- Use XML parser on the server.
- Set contentType to text/xml on server.
- Get DOM object from responseXML.
- Use DOM objects/methods to parse response on client.

JSON

- JavaScript Object Notation
- Subset of JavaScript
- Use POST method. / Pass to send()
- Use parser to parse on server.
- Set contentType to application/json on server.
- Get string from responseText on client
- Use eval() to convert to JavaScript object.

XML vs. JSON

- Largely a matter of preference.
- Lightweight?
- JSON seems a little easier to use.
- XML more standard. Use for large/complex structured data.