**Introduction to Ajax**

**(Asynchronous JavaScript and XML)**

**ITC 250/CPET 499 Web Systems**

Oct. 16, 2014

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Ajax (Asynchronous JavaScript and XML)

* Use JavaScript and XML fro creating dynamic web applications
* Use client-side scripting to make web applications more responsive
* The Ajax component that manages interaction with the server is usually implemented with JavaScript’s XMLHttpRequest object.
* The server side processing can be implemented using any server-side technology, such as PHP, ASP.NET and JavaSever Faces

Traditional Web Applications

* Request 1 (page 1 form) => Process request (server) => Generate response (server; page 2 form) => Page loading on client side
* Request 2 (page 2 form) => Process request (server) => Generate response (server; page 3 form) => Page reloading on client side

Ajax Web Applications (Rich Internet Applications)

* Request object (call back functions) => Process request 1 => Generate response (data, partial page update on the page; async response processing at client side) =>
* Request object (call back functions) => Process request 2 => Generate response (data, partial page update)

XMLHttpRequest Level 1, W3C Working Draft 30 January 2014, <http://www.w3.org/TR/XMLHttpRequest/>

The XMLHttpRequest object is an API for fetching resources.

* It supports any text based format, including XML.
* It can be used to make request over both HTTP and HTTPs.

Some simple code to do something with data from an XML document fetched over the network:

**function processData(data) {**

**// taking care of data**

**}**

**function handler() {**

**if(this.readyState == this.DONE) {**

**if(this.status == 200 &&**

**this.responseXML != null &&**

**this.responseXML.getElementById('test').textContent) {**

**// success!**

**processData(this.responseXML.getElementById('test').textContent);**

**return;**

**}**

**// something went wrong**

**processData(null);**

**}**

**}**

**var client = new XMLHttpRequest();**

**client.onreadystatechange = handler;**

**client.open("GET", "unicorn.xml");**

**client.send();**

If you just want to log a message to the server:

**function log(message) {**

**var client = new XMLHttpRequest();**

**client.open("POST", "/log");**

**client.setRequestHeader("Content-Type", "text/plain;charset=UTF-8");**

**client.send(message);**

**}**

Or if you want to check the status of a document on the server:

**function fetchStatus(address) {**

**var client = new XMLHttpRequest();**

**client.onreadystatechange = function() {**

**// in case of network errors this might not give reliable results**

**if(this.readyState == this.DONE)**

**returnStatus(this.status);**

**}**

**client.open("HEAD", address);**

client.send();

}

Interface XMLHttpRequest

* Constructor
* Garbage Collection
* Event Handlers
  + onloadstart
  + onprogress
  + onabort
  + onerror
  + onload
  + ontimeout
  + onloadend
  + onreadystatechange
* States
  + UNSENT (numeric value 0)
  + OPENED (numeric value 1)
  + HEADERS\_RECEIVED (numeric value 2)
  + LOADING (numeric value 3)
  + DONE (numeric value 4)
* Request – methods and attributes
  + open()
  + setRequestHeader()
  + send()
  + Infrastructure for the send() method
  + abort()
  + timeout
  + withCredentilas
  + upload
* Response – methods and attributes
  + getResponseHeader()
  + getAllResponseHeaders()
  + overrideMimeType()
  + status
  + statusText
  + responseType
  + response
  + responseText
  + responseXML
* Event Summary
  + readystatechange
  + readyState
  + responseText
  + responseXML
  + status
  + statusText

Interface FormData