Introduction to AJAX

Introduction

- AJAX = Asynchronous JavaScript and XML.
- AJAX is a technique for creating fast and dynamic web pages
- AJAX allows web pages to be updated asynchronously by exchanging small amounts of data with the server
- It is possible to update parts of a web page, without reloading the whole page.
- AJAX is based on internet standards, and uses a combination of:
  - XMLHttpRequest object (to retrieve data from a web server)
  - JavaScript/DOM (to display/use the data

Introduction

- Update a web page without reloading the page
- Request data from a server - after the page has loaded
- Receive data from a server - after the page has loaded
- Send data to a server - in the background

Introduction

- AJAX is a misleading name. AJAX applications might use XML to transport data, but it is equally common to transport data as plain text or JSON text.
- While Ajax started with XML, very few apps use it nowadays
  - Plain text (at times as html) and JSON is used instead

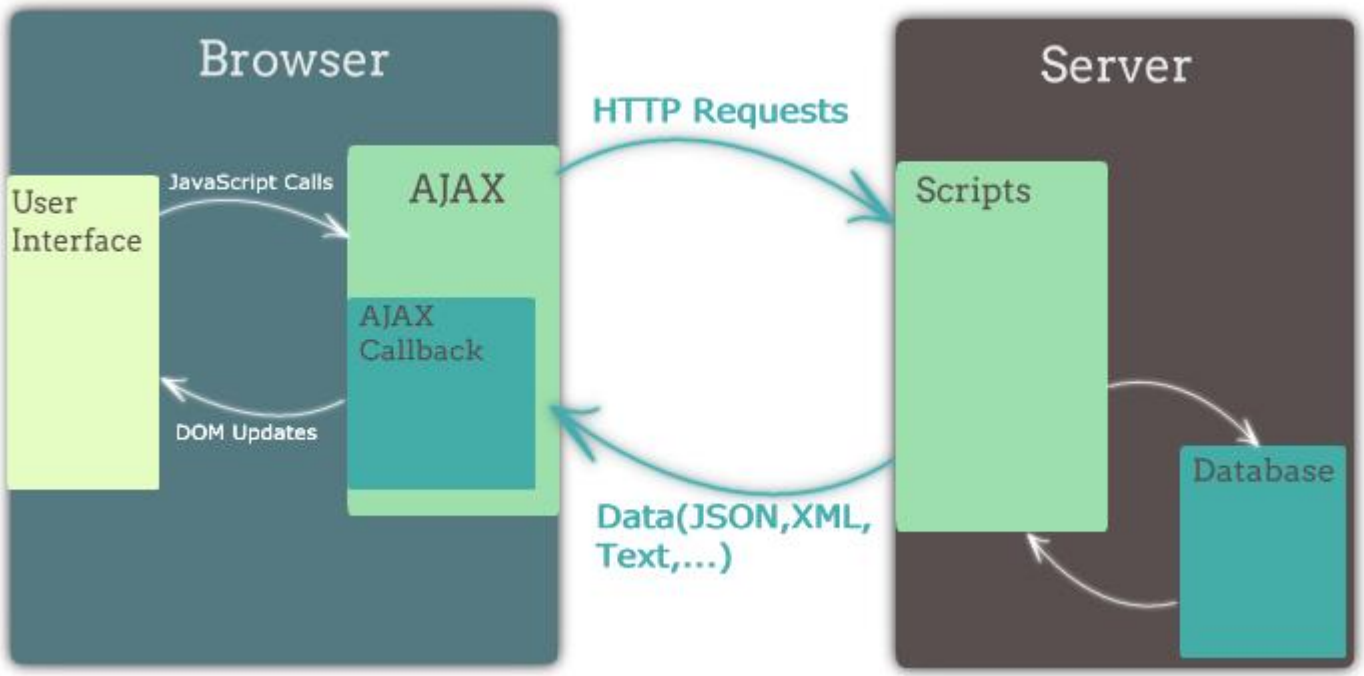
Synchronous execution

- Execution of one instruction at a time
- Can't start execution of another instruction until the first instruction finished its execution

Asynchronous execution

- Execution of more than one instruction at a time
- Asynchronous instruction returns right away !
- The actual execution is done in a separate thread or process

AJAX Work model



Courtesy: http://javascript-coder.com/

AJAX implementation

- 1. An event occurs in a web page (the page is loaded, a button is clicked)
- 2. An XMLHttpRequest object is created by JavaScript
- 3. The XMLHttpRequest object sends a request to a web server
- 4. The server processes the request
- 5. The server sends a response back to the web page
- 6. The response is read by JavaScript
- 7. Proper action (like page update) is performed by JavaScript

AJAX implementation..

- The XMLHttpRequest object is used to exchange data with a server behind the scenes
- *variable* = new XMLHttpRequest();
- Old versions of Internet Explorer (IE5 and IE6) use an ActiveX Object:
- *variable* = new ActiveXObject("Microsoft.XMLHTTP");
- var xhttp;
  if (window.XMLHttpRequest) {
  xhttp = new XMLHttpRequest();
  } else {
  // code for IE6, IE5
  xhttp = new ActiveXObject("Microsoft.XMLHTTP");
  }

AJAX implementation..

- we use the open() and send() methods of the XMLHttpRequest object:
- xhttp.open("GET", "ajax_info.txt", true);
  xhttp.send();
- open(method, url, async) Specifies the type of request
- method: the type of request: GET or POST
- url: the server (file) location
- async: true (asynchronous) or false (synchronous)
- send() Sends the request to the server (used for GET)
- send(string) Sends the request to the server (used for POST)

- xhttp.open("GET", "demo_get2.asp?fname=Henry&lname=Ford", true);
  xhttp.send();
- xhttp.open("POST", "ajax_test.asp", true);
  xhttp.setRequestHeader("Content-type", "application/x-www-form-urlencoded");
  xhttp.send("fname=Henry&lname=Ford");

onreadystatechange event

- The onreadystatechange event is triggered every time the readyState changes.
- The readyState property holds the status of the XMLHttpRequest.
- readyState: Holds the status of the XMLHttpRequest. Changes from 0 to 4:
  - 0: request not initialized
  - 1: server connection established
  - 2: request received
  - 3: processing request
  - 4: request finished and response is ready
- status 200: "OK"
  404: Page not found