

AJAX Intro

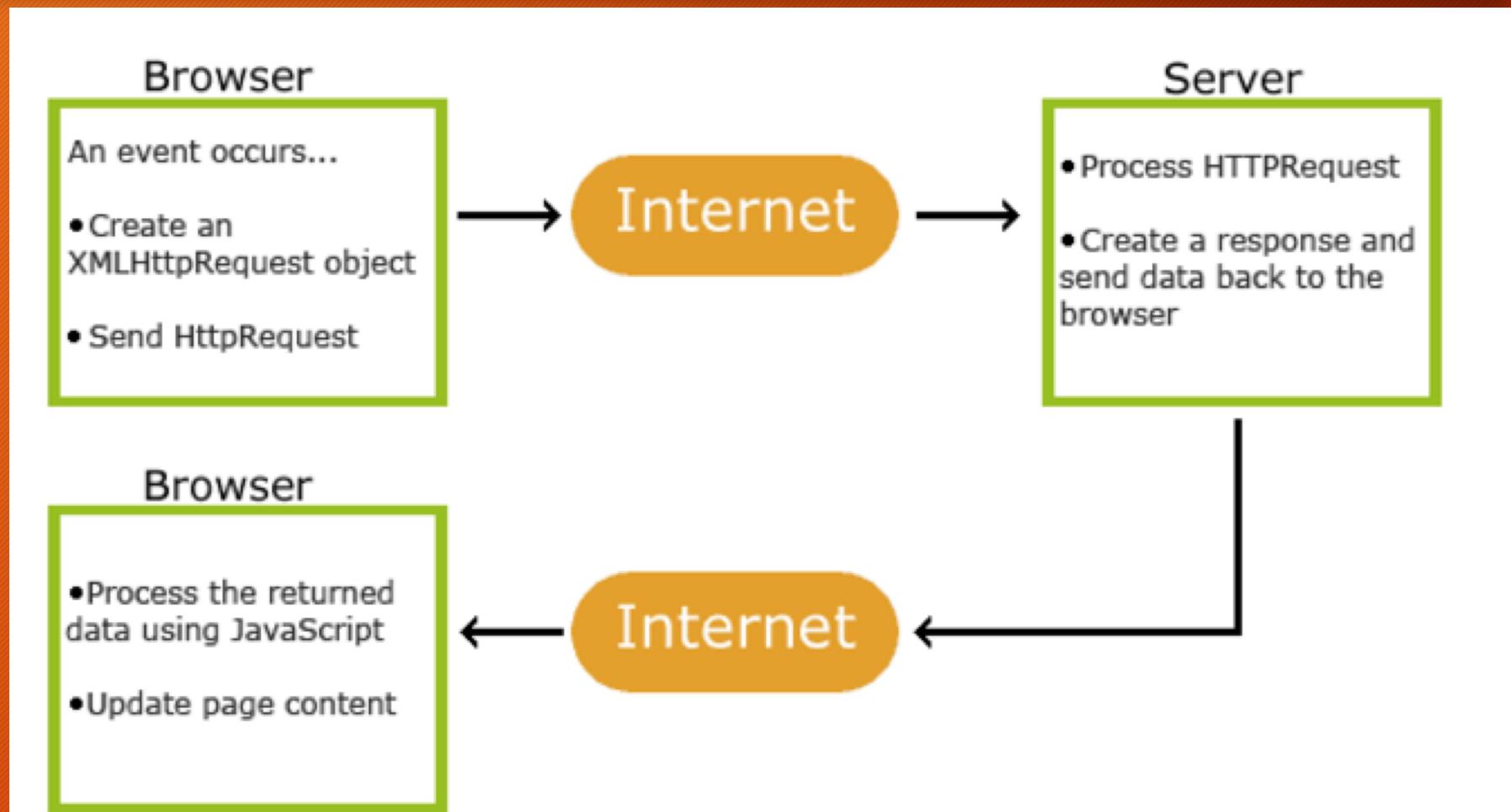
Why AJAX?

- AJAX is a developer's dream, because you can:
 - Update a webpage 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

What is AJAX?

- AJAX = Asynchronous JavaScript And XML
- AJAX is not a programming language !!!!!!!
- AJAX just uses a combination of:
 - A browser built-in XMLHttpRequest object (to request data from a webserver)
 - JavaScript and HTML DOM (to display or use the data)
- NOTE: 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
- AJAX allows web pages to be updated asynchronously by exchanging data with a web server behind the scenes
 - Means it's possible to update parts of web page, without reloading whole page

How AJAX Works



How AJAX Works (cont.)

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 webserver
4. The server processes the request
5. The server sends a response back to the webpage
6. The response is ready by JavaScript
7. Proper action (like page update) is performed by JavaScript

XMLHttpRequest Object Methods

- `new XMLHttpRequest()` -> Creates a new XMLHttpRequest object
- `getAllResponseHeaders()` -> Returns header information
- `getResponseHeader()` -> Returns specific header information
- `open(method, url, async, user, psw)` -> Specifies the request
 - method: the request type GET or POST
 - url: the file location
 - Async: true (asynchronous) or false (synchronous)
 - User and psw: optional
- `Send()` -> Sends the request to the server
 - Used for GET requests
- `Send(string)` -> Sends the request to the server
 - Used for POST requests
- `setRequestHeader()` -> Adds a key/value pair to the header to be sent

XMLHttpRequest Object Properties

- **Onreadystatechange**
 - Defines a function to be called when the readyState property changes
- **readyState** - Holds the status of the XMLHttpRequest
 - 0: request not initialized
 - 1: server connection established
 - 2: request received
 - 3: processing request
 - 4: request finished and response is ready
- **responseText** - returns the response data as a string
- **responseXML** - returns the response data as XML data
- **Status** - returns the status number of a request
 - Common codes:
 - 200: “OK”
 - 403: “Forbidden”
 - 404: “Not found”
 - For a complete list go to the Http Messages Reference: http://www.w3schools.com/tags/ref_httpmessages.asp

Asynchronous - True or False?

- To send the request asynchronously, the `async` parameter of the `open()` method has to be set to true
- Sending asynchronous request is a huge improvement for web developers
 - Many tasks performed on the server are very time consuming
 - Before AJAX, this operation could cause the application to hang or stop
- By sending asynchronously, the JavaScript does not have to wait for the server response, but can instead:
 - Execute other scripts while waiting for server response
 - Deal with the response when the response is ready
- Using `async = false` is not recommended, but for a few small requests this can be ok
 - Remember JavaScript will NOT continue to execute, until server response is ready
 - If the server is busy or slow, the app will hang or stop

What is XML?

- XML stands for Extensible Markup Language
- XML was designed to store and transport data
- XML was designed to be both human and machine readable

What is JSON?

- JSON: JavaScript Object Notation
- JSON is a syntax for storing and exchanging data
- JSON is an easier-to-use alternative to XML