AJAX
[Advanced Javascript And XML]

Introduction

- Asynchronous JavaScript And XML (AJAX) is a web technologies like HTML, CSS, JavaScript and XML for creating better, faster and more interactive web.

- Examples of websites using AJAX technology:
  - Google
  - Google Maps
  - GMail

Advantages

- Websites using AJAX provide rich user experience.
- Websites using AJAX provide faster response.
- There is no need to wait for the response from the server after sending a request.
- Reload only part of a webpage without reloading the entire web page.
- Reduces load on the server.

AJAX Process

1. A user generates an event like clicking a button etc., which invokes the associated event handler.
2. In the event handler, a special *XMLHttpReuest* object is created. This object is configured with parameters like the name of the callback function.
3. The *XMLHttpRequest* object makes an asynchronous HTTP request to the server for a certain resource.
4. The resource will be a server side script which will be processed by the server.

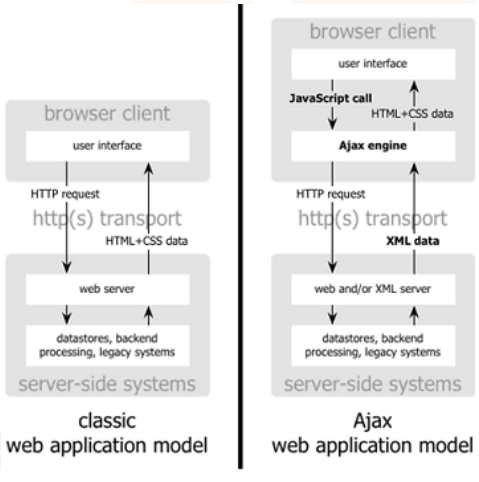
AJAX Process (cont…)

5. The server-side script returns the data, typically as an XML document, to the original client-side page that made the request.

6. The *XMLHttpRequest* object receives the XML data and invokes the callback function with this data.

7. A JavaScript callback function catches the data, process it, and updates the HTML DOM representing the page with the new data.

Asynchronous Communication



Creating XMLHttpRequest Object

For browsers other than IE:

xmlHttp = new XMLHttpRequest();

For IE:

xmlHttp = new ActiveXObject("Microsoft.XMLHTTP");
Or
xmlHttp = new ActiveXObject("Msxml2.XMLHTTP");

Specifying a Handler

- A handler (function) must be specified for processing the response sent by the server.
- The response handler is specified using the *onreadystatechange* property.

```
function handler()
{
        //code
}
xmlHttp.onreadystatechange = handler;
```

AJAX *readyState* Property

The HTTP request can be in any one of the following states:

State	Value	Description
Un-initialized	0	After creating *XMLHttpRequest* object, but before calling the *open()* method
Connection established	1	After calling the *open()* method, but before calling the *send()* method
Request sent	2	After calling the *send()* method
Processing	3	After calling the *send()* method but before getting the response
Completed and response is ready	4	After the request is processed and the response is completely received from the server

AJAX *readyState* Property (cont…)

- The state can be identified by the *readyState* property.
- Every time the state changes, the function indicated by the *onreadystatechange* property gets executed.

XMLHttpRequest Object Properties

Properties	Description
readyState	Identifies the states of HTTP request
status	Contains the HTTP response code (200 for "OK" and 404 for "Not Found")
statusText	Returns the HTTP response status as a string
onreadystatechange	Indicates the method which will be called every time the state changes
responseText	Holds the response data from the server as a string
responseXml	Holds the response data from server as an XML document, which can be parsed and processed using W3C DOM methods and properties

Sending Information

- Sending a HTTP request to a server involves two steps:
  - Opening a connection
  - Sending the request

For opening a connection:

open(method, URL, async)

For sending request:

xmlHttp.send(null); [For GET method]
xmlHttp.send("key=value"); [For POST method]