Desarrollo de Aplicaciones en Red

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Web Applications

Content

- ***History***
- ***Http***
- ***CGI***
- ***Web Tiers***

History (1)

- ***ARPANet***
- ***Email, Ftp, IRC, news***
- ***Explosive growth for protocol HTTP and the HTML → Bernes-Lee***
  - **The grew of application**
    - Portals, commerce, repositories, business
  - **The grew of technology**
    - Software and Hardware
  - **The user participation and contribution**

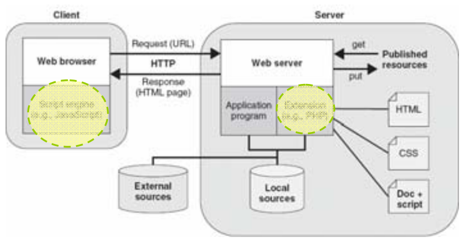
History (2)

- ***Early 90th the first graphical browser was Mosaic, developed by the National Center for Supercomputing Application NCSA by Marc Andreessen.***
- ***The browser is based in the Client/Server principle applied to Internet***
  - **Request (client)**
  - **Response (server)**
- ***Up to 2007 it was estimated that the Web was composed by more than 10 billion nodes***

History (3)

- ***HTML (Hyper Text Markup Language)***
  - **Tags to format the presentation of a document, it also has content.**
  - **V. Bush 1945 → links**
  - **CSS cascading style sheet used to establish presentation**
- ***XML (Extensible Markup Language) a recommendation from the W3C for a general purpose markup language***
  - **XML is a subset from the SGML (Standard Generalized Markup Language) used for sharing information**
  - **DTD (document type definition) and XSD (XML Schema Definition)**
- ***Scripting languages***
  - **Adding dynamics to Web pages and interaction**

Synchronous communication



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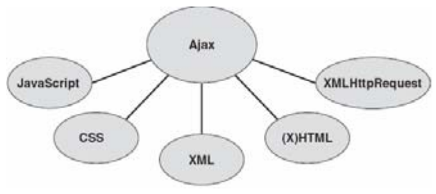
Asynchronous communication



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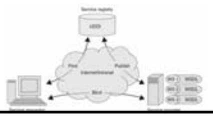
History (4)

- ***Based in XML there are many services as example we have Web Service an RSS***
- ***Web service extend the Client/Server paradigm by let them registry their service***
  - **Open standards are involved:**
    - SOAP (simple object access protocol)
    - UDDI (universal description, discovery and integration)
    - WSDL (Web service description languages)



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History (6)

- ***Web feeds and RSS are based in the idea of subscription***
- ***The feeds are based in XML RSS format, Really Simple Syndication.***
- ***Through RSS client can get information***

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History (7)

- ***The user vision has changed into the Web participation, using it has a medium for communication, socialization, discussion, business, etc.***
- ***Blogs and Wikis***
  - **Blogging activity →** www.slashdot.org
  - **Blogs are one of the modern forms of writing on the Web**
  - **A second are Wikis, which are collection of pages that allow its users edit the contents.**
    - Wiki stand from a Hawaiian word wikiwiki which means fast
    - So let's think in a fast way of collaborative communication
    - htpp://c2.com/cgi/wiki?WikiEngines

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History (8)

- ***Social Networks***
  - **MySpace**
  - **Flickr**
  - **Youtube**

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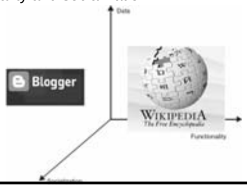
Web 2.0

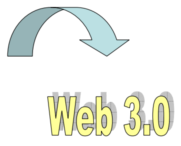
- “Web 2.0 is *not* a new invention of some clever business people, but it is the most recent consequence and result of a development that started more than ten years ago”. Vossen, Hagemann
- The Web 2.0 term was first used in O’Reilly media conference in 2004. Tim O’Reilly gives an explanation in:
  - *http://radar.oreilly.com/archives/2006/12/web_20_compact.html*
- Data, functionality and socialization



History (9)

- ***Berners-Lee original vision***

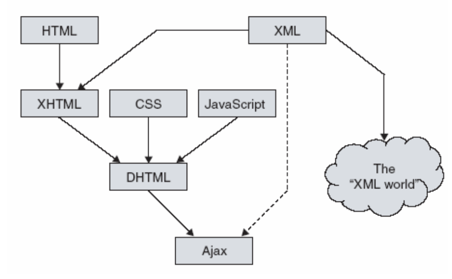
CERN
This document
Hypertext
Hypermedia
Linked information
ENQUIRE
DIVISION
Tim Berners-Lee



Resume

Web	Technologies and Applications	Period
Web 1.0	•HTML •GIF •Web Browsers	1994 to 1997
Web 1.5	•DHTML •ASP •CSS	1997 to 2000
Web 2.0	•RSS-Feed •MySpace •Lynx •Meta Browsers	2003 up to day

Evolution Web languages



Client/Server

Task

What does the WWW Server do?

- ***Web Server process the request from clients.***
- ***Return a the response to the request (page, image, sound) or error 404***

What does the Client do?

- *The Web browser let's request to servers.*
- *The Web browser was the key for arising the wwW*
- *The browser code a request*
- *The browser render the response following HTML*

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HTTP

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HTTP (1)

- *The Hyper Text Transfer Protocol HTTP is an specification by the W3C and the IETF described in RTF 2616*
- *HTTP/1.1 is the most common version today, but 1.0 is still used*
- *Different request can be made:*
  - GET, POST, HEAD, PUT, DELETE,OPTIONS, and TRACE.

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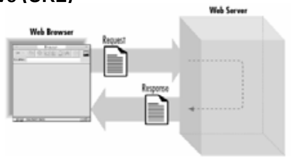
HTTP (2)

- *HTTP uses TCP to establish a transmission*
- *The request:*
  - **Defines the HTTP method (action to be done (get, post))**
  - **The page to retrieve (URL)**
  - **Parameters**
- *The response:*
  - **A status code**
  - **Content-type**
  - **The content**



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HTTP Headers

- **The first line of the header has a unique format and special meaning. It is called a request line in requests and a status line in replies.**
- **The remainder lines contain name-value pairs. The name and value are separated by a colon (:) and any combination of spaces and/or tabs. These lines are called header fields.**
- **Some header fields may have multiple values. This can be represented by having multiple header fields contain the same field name and different values or by including all the values in the header field separated by a comma (,).**
- **Field names are not case-sensitive; e.g., Content-Type is the same as Content-type.**
- **Header fields don't have to appear in any special order.**
- **Every line in the header must be terminated by a carriage return and line feed sequence, which is often abbreviated as CRLF and represented as \015\012 in Perl on ASCII systems.**
- **The header must be separated from the content by a blank line. In other words, the last header line must end with two CRLFs.**

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The request line

Method	Description
GET	Asks the server for the given resource
HEAD	Used in the same cases that a GET is used but it only returns HTTP headers and no content
POST	Asks the server to modify information stored on the server
PUT	Asks the server to create or replace a resource on the server
DELETE	Asks the server to delete a resource on the server
CONNECT	Used to allow secure SSL connections to tunnel through HTTP connections
OPTIONS	Asks the server to list the request methods available for the given resource
TRACE	Asks the server to echo back the request headers as it received them

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Common Http request headers

Header	Description
Host	Specifies the target hostname
Content-Length	Specifies the length (in bytes) of the request content
Content-Type	Specifies the media type of the request
Authentication	Specifies the username and password of the user requesting the resource
User-Agent	Specifies the name, version, and platform of the client
Referer	Specifies the URL that referred the user to the current resource
Cookie	Returns a name/value pair set by the server on a previous response

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Status line

- ***The first line of the header is the status line, which includes the protocol and version just as in HTTP requests. This string is followed by a space and the three-digit status code, as well as a text version of the status.***
  - ***1xx*** *These status codes were introduced for HTTP 1.1 and used at a low level during HTTP transactions. You won't use 100-series status codes in CGI scripts.*
  - ***2xx*** *200-series status codes indicate that all is well with the request.*
  - *3xx* *300-series status codes generally indicate some form of redirection. The request was valid, but the browser should find the content of its response elsewhere.*
  - *4xx* *400-series status codes indicate that there was an error and the server is blaming the browser for doing something wrong.*
  - *5xx* *500-series status codes also indicate there was an error, but in this case the server is admitting that it or a CGI script running on the server is the culprit.*

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Server Headers

Header	Description
Content-Base	Specifies the base URL for resolving all relative URLs within the document
Content-Length	Specifies the length (in bytes) of the body
Content-Type	Specifies the media type of the body
Date	Specifies the date and time when the response was sent
ETag	Specifies an entity tag for the requested resource
Last-Modified	Specifies the date and time when the requested resource was last modified
Location	Specifies the new location for the resource
Server	Specifies the name and version of the web server
Set-Cookie	Specifies a name-value pair that the browser should provide with future requests
WWW-Authenticate	Specifies the authorization scheme and realm

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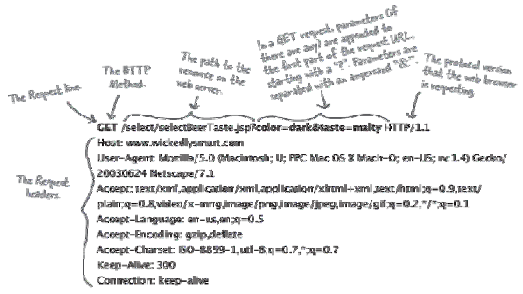
GET



```
GET /select/selectBeerTaste.jsp?color=dark&taste=malty HTTP/1.1
Host: www.wickedlysmart.com
User-Agent: Mozilla/5.0 (Macintosh; U; PPC Mac OS X Mach-O; en-US; rv:1.4) Gecko/
20030624 Netscape/7.1
Accept: text/xml,application/xml,application/xhtml+xml,text/html;q=0.9,text/
plain;q=0.8,video/x-mng,image/png,image/jpeg,image/gif;q=0.2,*/*;q=0.1
Accept-Language: en-us,en;q=0.5
Accept-Encoding: gzip,deflate
Accept-Charset: ISO-8859-1,utf-8;q=0.7,*;q=0.7
Keep-Alive: 300
Connection: keep-alive
```

The Request line.
The HTTP Method.
The path to the resource on the web server.
In a GET request, parameters (if there are any) are appended to the first part of the request URL, starting with a "?". Parameters are separated with an ampersand "&".
The protocol version that the web browser is requesting.
The Request headers.

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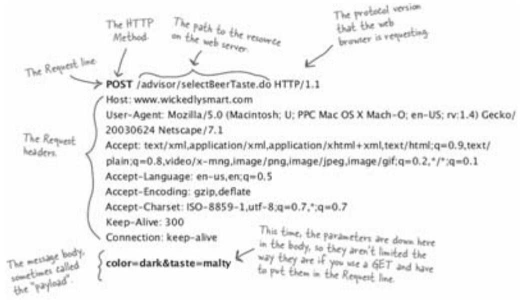
Post



```
POST /advisor/selectBeerTaste.do HTTP/1.1
Host: www.wickedlysmart.com
User-Agent: Mozilla/5.0 (Macintosh; U; PPC Mac OS X Mach-O; en-US; rv:1.4) Gecko/
20030624 Netscape/7.1
Accept: text/xml,application/xml,application/xhtml+xml,text/html;q=0.9,text/
plain;q=0.8,video/x-mng,image/png,image/jpeg,image/gif;q=0.2,*/*;q=0.1
Accept-Language: en-us,en;q=0.5
Accept-Encoding: gzip,deflate
Accept-Charset: ISO-8859-1,utf-8;q=0.7,*;q=0.7
Keep-Alive: 300
Connection: keep-alive

color=dark&taste=malty
```

The HTTP Method.
The path to the resource on the web server.
The protocol version that the web browser is requesting
The Request line
The Request headers.
The message body, sometimes called the "payload".
This time, the parameters are down here in the body, so they aren't limited the way they are if you use a GET and have to put them in the Request line.

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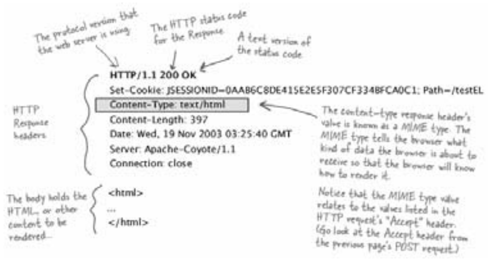
HTTP Response



```
HTTP/1.1 200 OK
Set-Cookie: JSESSIONID=0AAB6C8DE415E2E5F307CF334BFCA0C1; Path=/testEL
Content-Type: text/html
Content-Length: 397
Date: Wed, 19 Nov 2003 03:25:40 GMT
Server: Apache-Coyote/1.1
Connection: close

<html>
...
</html>
```

The protocol version that the web server is using
The HTTP status code for the Response
A text version of the status code
HTTP Response headers
The content-type response header's value is known as a MIME type. The MIME type tells the browser what kind of data the browser is about to receive so that the browser will know how to render it.
The body holds the HTML, or other content to be rendered.
Notice that the MIME type value relates to the values listed in the HTTP request's "Accept" header. (Go look at the Accept header from the previous page's POST request.)

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Conditional request

- ***Request***

  GET script_yahoo_2.0.0-b2.js HTTP/1.1
  Host: us.js2.yimg.com
  User-Agent: Mozilla/5.0 (...) Gecko/20061206 Firefox/1.5.0.9
  Accept-Encoding: gzip,deflate
  If-Modified-Since: Wed, 22 Feb 2006 04:15:54 GMT
- ***Response***

  HTTP/1.1 304 Not Modified
  Content-Type: application/x-javascript
  Last-Modified: Wed, 22 Feb 2006 04:15:54 GMT

Expires response

- Removing need to ask for an update version:

  HTTP/1.1 200 OK
  Content-Type: application/x-javascript
  Last-Modified: Wed, 22 Feb 2006 04:15:54 GMT
  Expires: Wed, 05 Oct 2016 19:16:20 GMT
- ***In that way this date is used for the browser cache***

Keep-Alive

- ***As we saw HTTP use TCP to establish a connection, in early implementations of HTTP it request a socket for each new connection.***
- ***Persistent connection was introduced to solve the problem of requesting new socket connections trough making many request on the same connection:***
- ***Request:***

  GET script_yahoo_2.0.0-b2.js HTTP/1.1
  Host: us.js2.yimg.com
  User-Agent: Mozilla/5.0 (...) Gecko/20061206 Firefox/1.5.0.9
  Accept-Encoding: gzip,deflate
  Connection: keep-alive
- ***Response:***

  HTTP/1.1 200 OK
  Content-Type: application/x-javascript
  Last-Modified: Wed, 22 Feb 2006 04:15:54 GMT
  Connection: keep-alive

Reference

- ***Web 2.0 from concepts to creativity, Morgan Kaufmann***
- ***CGI programming with Perl, 2do Ed, O'Reilly***
- ***The book of CGI, Prentice Hall***
- ***High Performance Web Site, O'Reilly***
- ***Head First Servlets and JSP, O'Reilly***