HTTP

Hypertext Transfer Protocol

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HTTP

- The Hypertext Transfer Protocol (HTTP) is an application protocol for distributed, collaborative, hypermedia information systems.
- HTTP is the foundation of data communication for the World Wide Web.
- Hypertext is structured text that uses logical links (hyperlinks a.k.a. URL) between nodes containing text.
- e.g.
  - http://www.ridgid.com
  - http://www.ridgidportal.com

C/S —> B/S

- Client and Server
  - Desktop/Mobile Application
- Browser and Server
  - Web
- Common “S”
  - Server(Services)

HTTP Request

- GET
  - Requests a representation of the specified resource.
- HEAD
  - Asks for the response identical to the one that would correspond to a GET request, but without the response body.
- POST
  - Requests that the server accept the entity enclosed in the request as a new subordinate of the web resource identified by the URI.
- PUT
  - Requests that the enclosed entity be stored under the supplied URI.

Demo

Request fields

Header field name	Description	Example	Status
Accept	Content-Types that are acceptable for the response. See Content negotiation.	Accept: text/plain	Permanent
Accept-Charset	Character sets that are acceptable	Accept-Charset: utf-8	Permanent
Accept-Encoding	List of acceptable encodings. See HTTP compression.	Accept-Encoding: gzip, deflate	Permanent
Accept-Language	List of acceptable human languages for response. See Content negotiation.	Accept-Language: en-US	Permanent
Accept-Datetime	Acceptable version in time	Accept-Datetime: Thu, 31 May 2007 20:35:00 GMT	Provisional
Authorization	Authentication credentials for HTTP authentication	Authorization: Basic QWxhZGRpbjpvcGVuIHNlc2FtZQ==	Permanent
Cache-Control	Used to specify directives that *must* be obeyed by all caching mechanisms along the request-response	Cache-Control: no-cache	Permanent
Connection	Control options for the current connection and list of hop-by-hop request fields[8]	Connection: keep-alive Connection: Upgrade	Permanent
Cookie	An HTTP cookie previously sent by the server with `Set-Cookie` (below)	Cookie: $Version=1; Skin=new;	Permanent: standard
Content-Length	The length of the request body in octets (8-bit bytes)	Content-Length: 348	Permanent
Content-MD5	A Base64-encoded binary MD5 sum of the content of the request body	Content-MD5: Q2hlY2sgSW50ZWdyaXR5IQ==	Permanent
Content-Type	The MIME type of the body of the request (used with POST and PUT requests)	Content-Type: application/x-www-form-urlencoded	Permanent
Date	The date and time that the message was sent (in "HTTP-date" format as defined by RFC 7231)	Date: Tue, 15 Nov 1994 08:12:31 GMT	Permanent

Response fields

Field name	Description	Example	Status
Access-Control-Allow-Origin	Specifying which web sites can participate in cross-origin resource sharing	Access-Control-Allow-Origin: *	Provisional
Accept-Patch	Specifies which patch document formats this server supports	Accept-Patch: text/example;charset=utf-8	Permanent
Accept-Ranges	What partial content range types this server supports	Accept-Ranges: bytes	Permanent
Age	The age the object has been in a proxy cache in seconds	Age: 12	Permanent
Allow	Valid actions for a specified resource. To be used for a *405 Method not allowed*	Allow: GET, HEAD	Permanent
Cache-Control	Tells all caching mechanisms from server to client whether they may cache this object. It is measured in seconds	Cache-Control: max-age=3600	Permanent
Connection	Control options for the current connection and list of hop-by-hop response fields[8]	Connection: close	Permanent
Content-Encoding	The type of encoding used on the data. See HTTP compression.	Content-Encoding: gzip	Permanent
Content-Language	The language the content is in	Content-Language: da	Permanent
Content-Length	The length of the response body in octets (8-bit bytes)	Content-Length: 348	Permanent
Content-Location	An alternate location for the returned data	Content-Location: /index.htm	Permanent

Request/Response

```
GET /index.html HTTP/1.1
Host: www.example.com
```

```
HTTP/1.1 200 OK
Date: Mon, 23 May 2005 22:38:34 GMT
Server: Apache/1.3.3.7 (Unix) (Red-Hat/Linux)
Last-Modified: Wed, 08 Jan 2003 23:11:55 GMT
ETag: "3f80f-1b6-3e1cb03b"
Content-Type: text/html; charset=UTF-8
Content-Length: 131
Accept-Ranges: bytes
Connection: close

<html>
<head>
  <title>An Example Page</title>
</head>
<body>
  Hello World, this is a very simple HTML document.
</body>
</html>
```

HTTP Status Codes

- 1xx Informational
  - e.g. 100 continue
- 2xx Success
  - e.g. 200 ok 204 No Content
- 3xx Redirection
  - e.g. 301 Moved Permanetly 307 Temporary Redirect
- 4xx Client Error
  - e.g. 400 bad request 404 Not Found 406 Not Acceptable
- 5xx Server Error
  - e.g. 500 Internal Server Error 502 Bad Gateway 503 Service Unavailable

Web Server

- Apache — Apache Software foundation
- IIS — Microsoft
- Nginx — ???
- Tomcat — Apache Software foundation
- JBoss — RedHat
- Weblogic — Oracle

DNS / IP

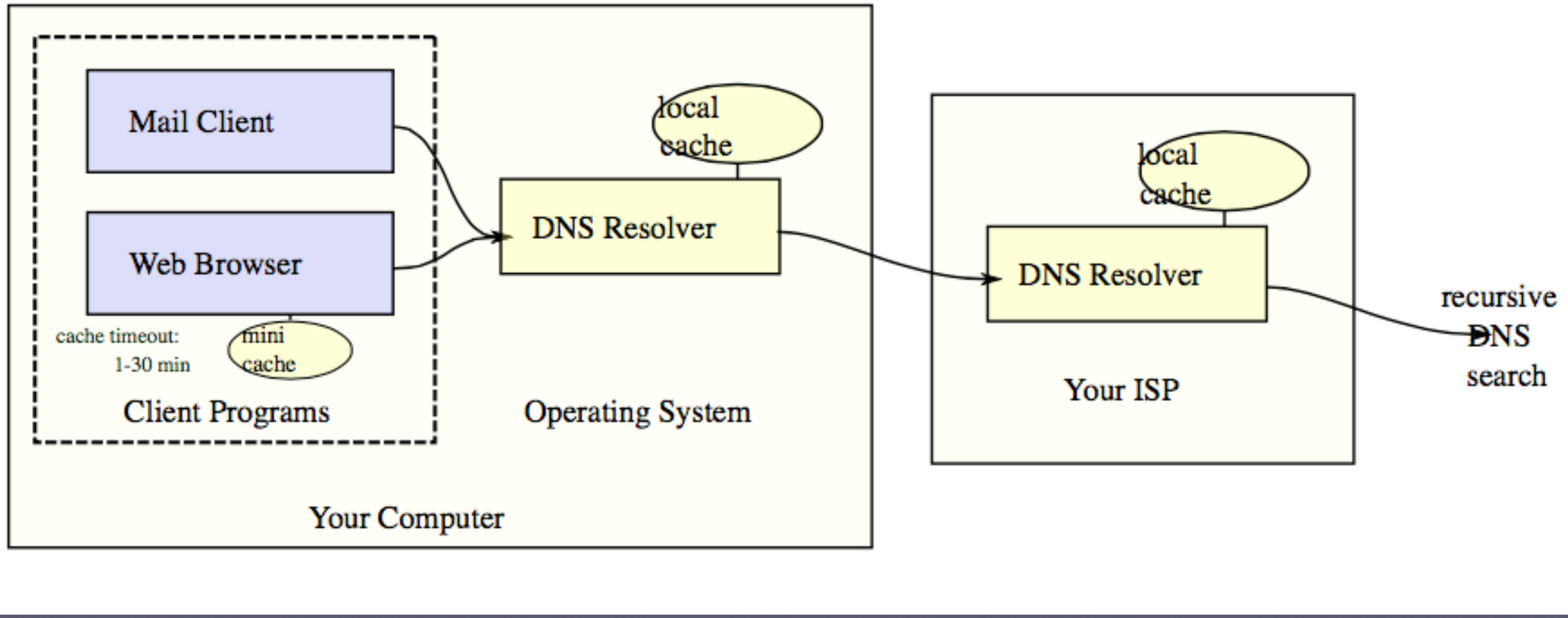
- DNS - is a hierarchical **Distributed Naming System** for **computers, services, or any resource** connected to the Internet or a private network.

- It associates various information with **domain names** assigned to each of the participating entities.

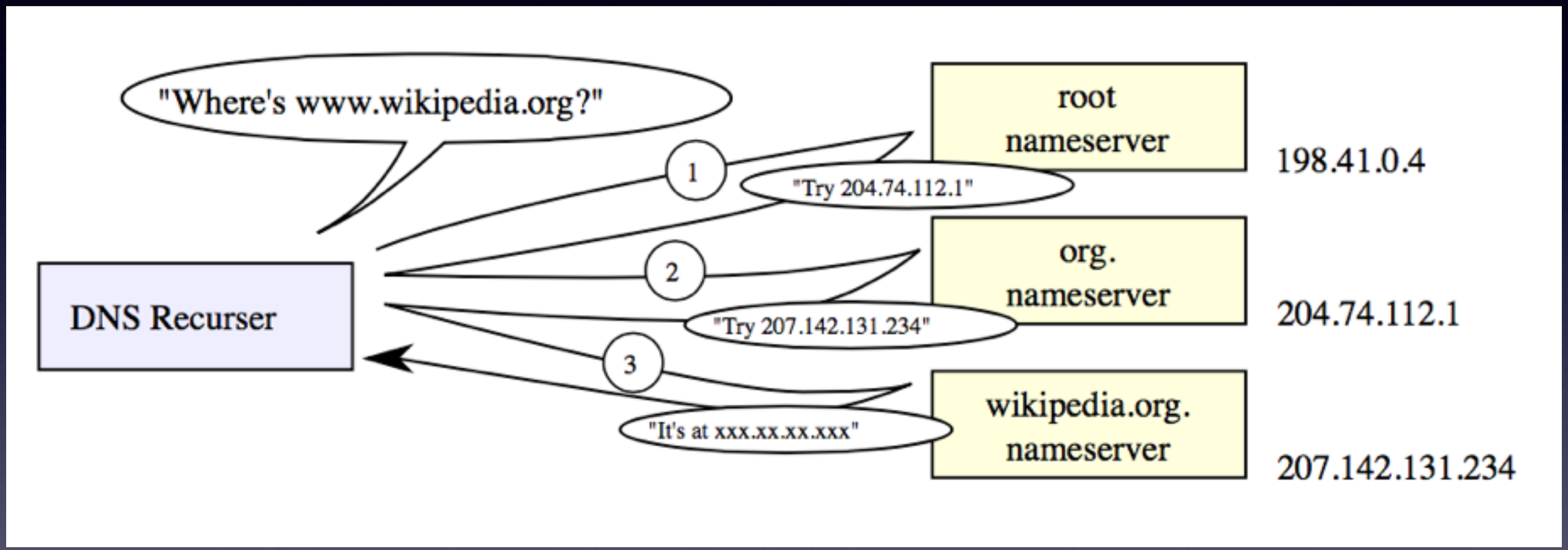
- Most prominently, **it translates domain names**, which can be easily memorized by humans, to the numerical **IP addresses** needed for the purpose of computer services and devices worldwide.

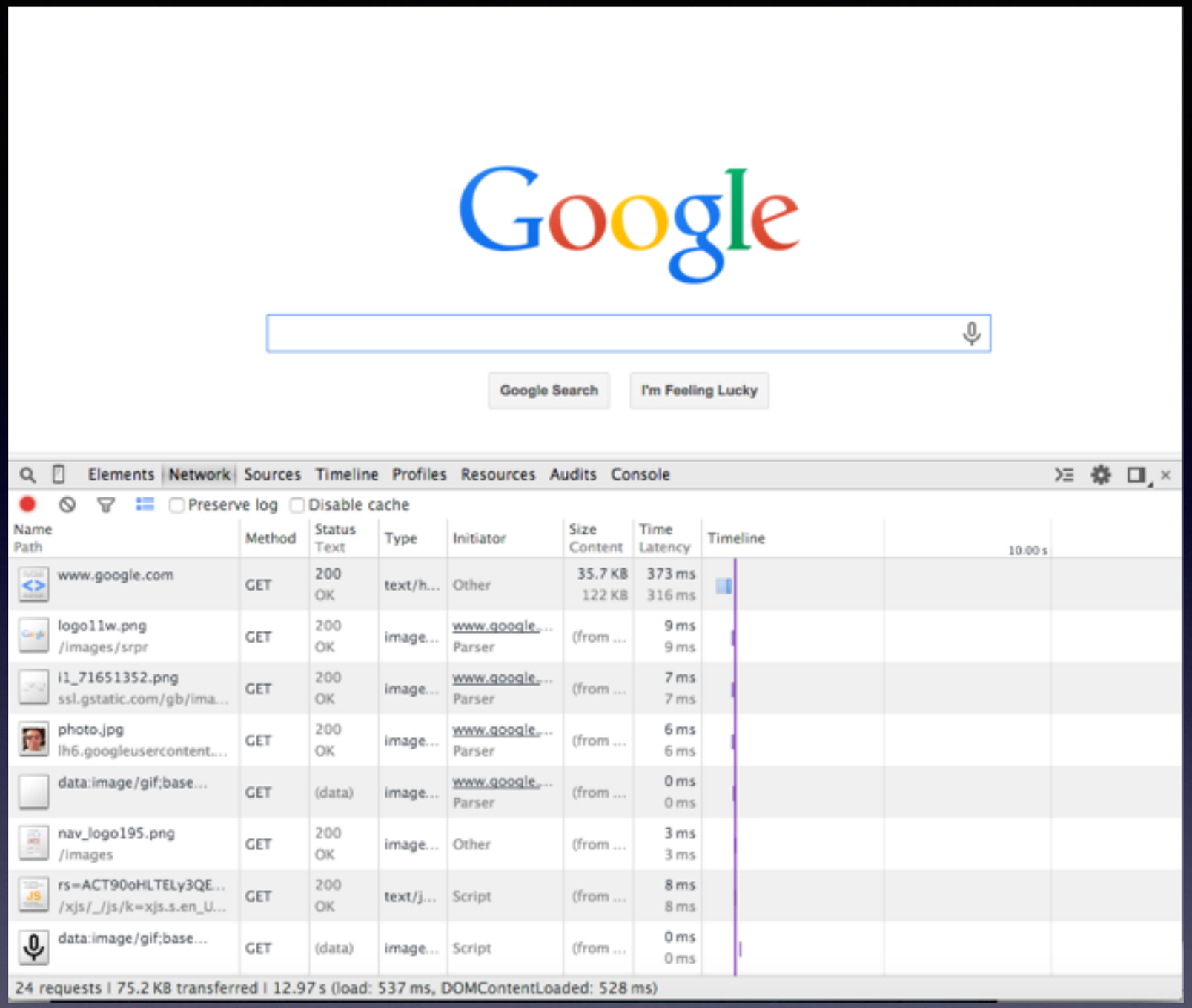
  - e.g. Terminal: >ping www.ridgidportal.com

DNS / IP


Mail Client
Web Browser
cache timeout:
1-30 min
mini
cache
Client Programs
local
cache
DNS Resolver
Operating System
Your Computer
local
cache
DNS Resolver
Your ISP
recursive
DNS
search

DNS / IP


"Where's www.wikipedia.org?"
root nameserver
198.41.0.4
1
"Try 204.74.112.1"
2
org. nameserver
204.74.112.1
DNS Recurser
"Try 207.142.131.234"
3
"It's at xxx.xx.xx.xxx"
wikipedia.org. nameserver
207.142.131.234



Chrome Developer Tool

Question ?

HTML

HyperText Mark-up Language

HTML

- HTML is written in the form of HTML elements consisting of tags enclosed in angle brackets (like <html>).
- HTML tags most commonly come in pairs like <h1> and </h1>

HTML

- A Web browser can read HTML files and compose them into visible or audible Web pages.
- The browser does not display the HTML tags and scripts, but uses them to **interpret** the content of the page.

Demo/Practice

http://www.w3schools.com/html/default.asp

Question ?