

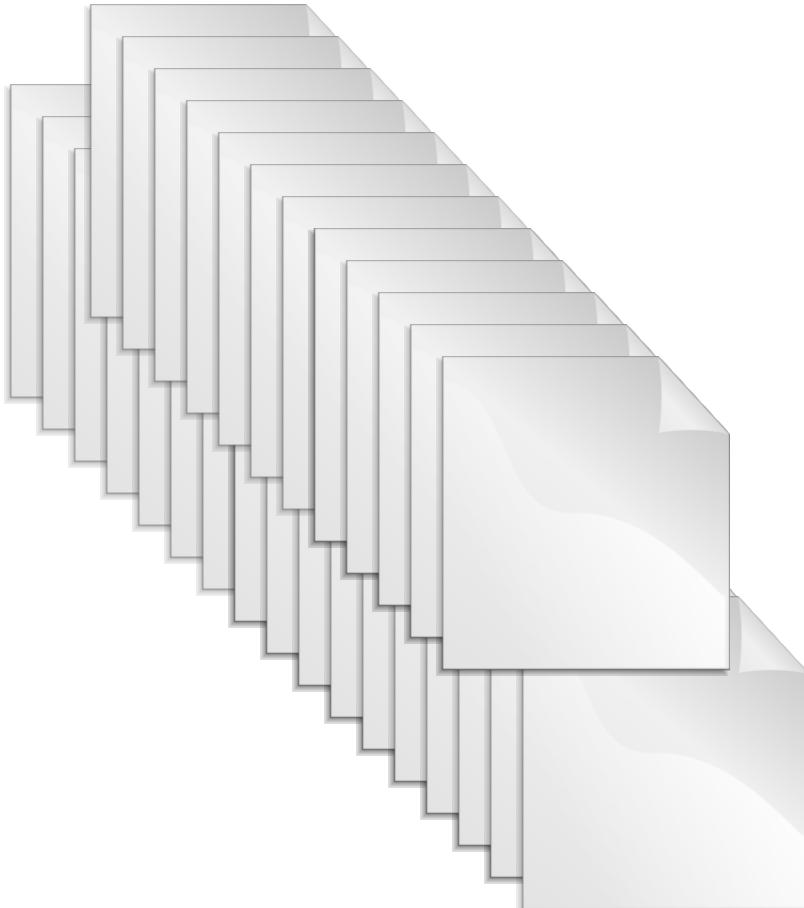
What is the Internet?

CMP 111: Web Lab
Professor Lien Tran

How the Internet Works in 5 Minutes

[https://www.youtube.com/watch?
v=7_LPdttKXPc](https://www.youtube.com/watch?v=7_LPdttKXPc)

Internet vs. the Web



The **Web** is a collection of documents whose content are structured with hypertext.

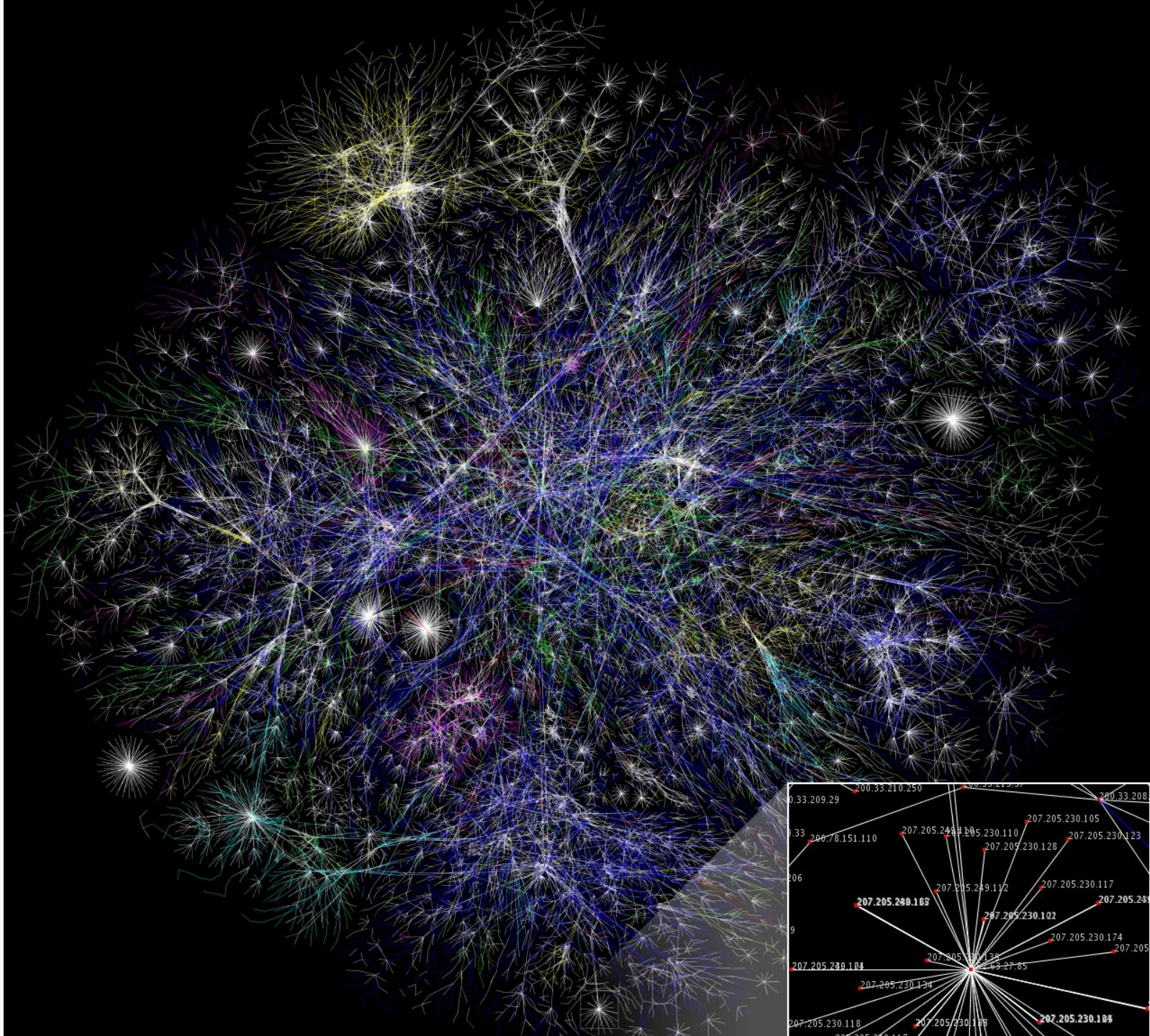
Hypertext

Text which contains links to other texts.
(Therefore considered non-linear text.)

The term was coined by Ted Nelson around 1965

HyperMedia

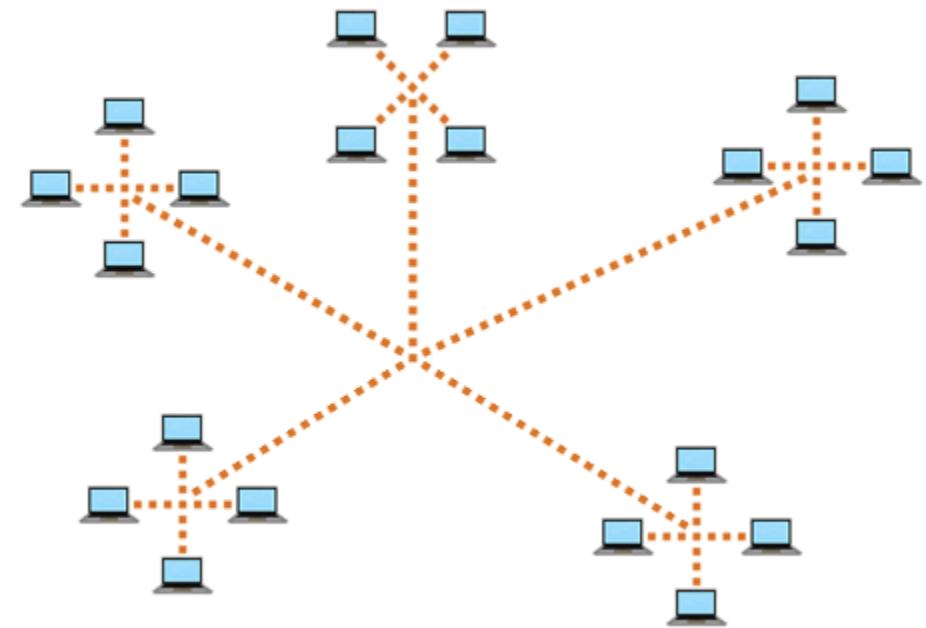
Hypertext which is not just text.
It can include graphics, video and sound.



<http://en.wikipedia.org/wiki/Internet>

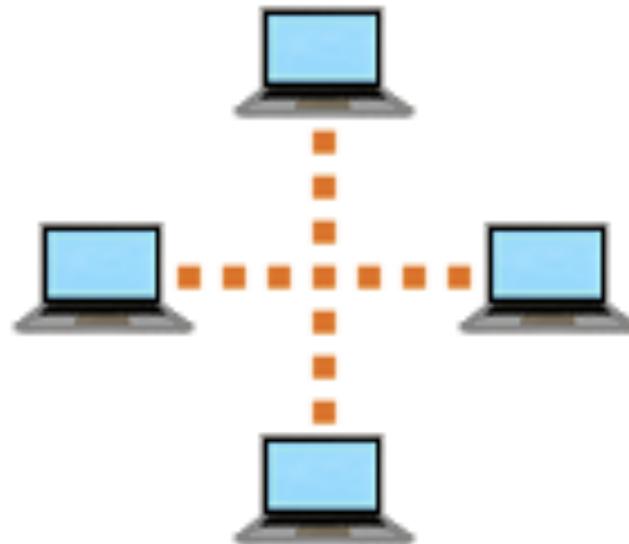
Internet vs. the Web

The **Internet** is a worldwide **network** of computers and systems cooperating with each other to exchange data using a common set of networking and software protocols.



What's a network?

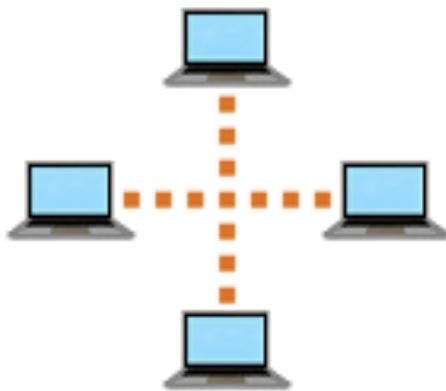
A group of 2 or more computer systems connected together and that can pass data to each other along data connections.



Local Area Network (LAN)

2 or more connected computers sharing certain resources in a relatively small geographic location, often in the same building.

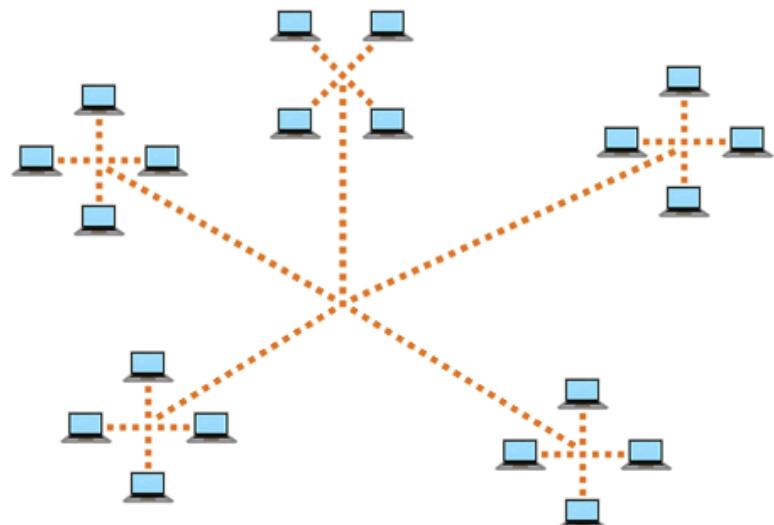
Ex. home networks and office networks

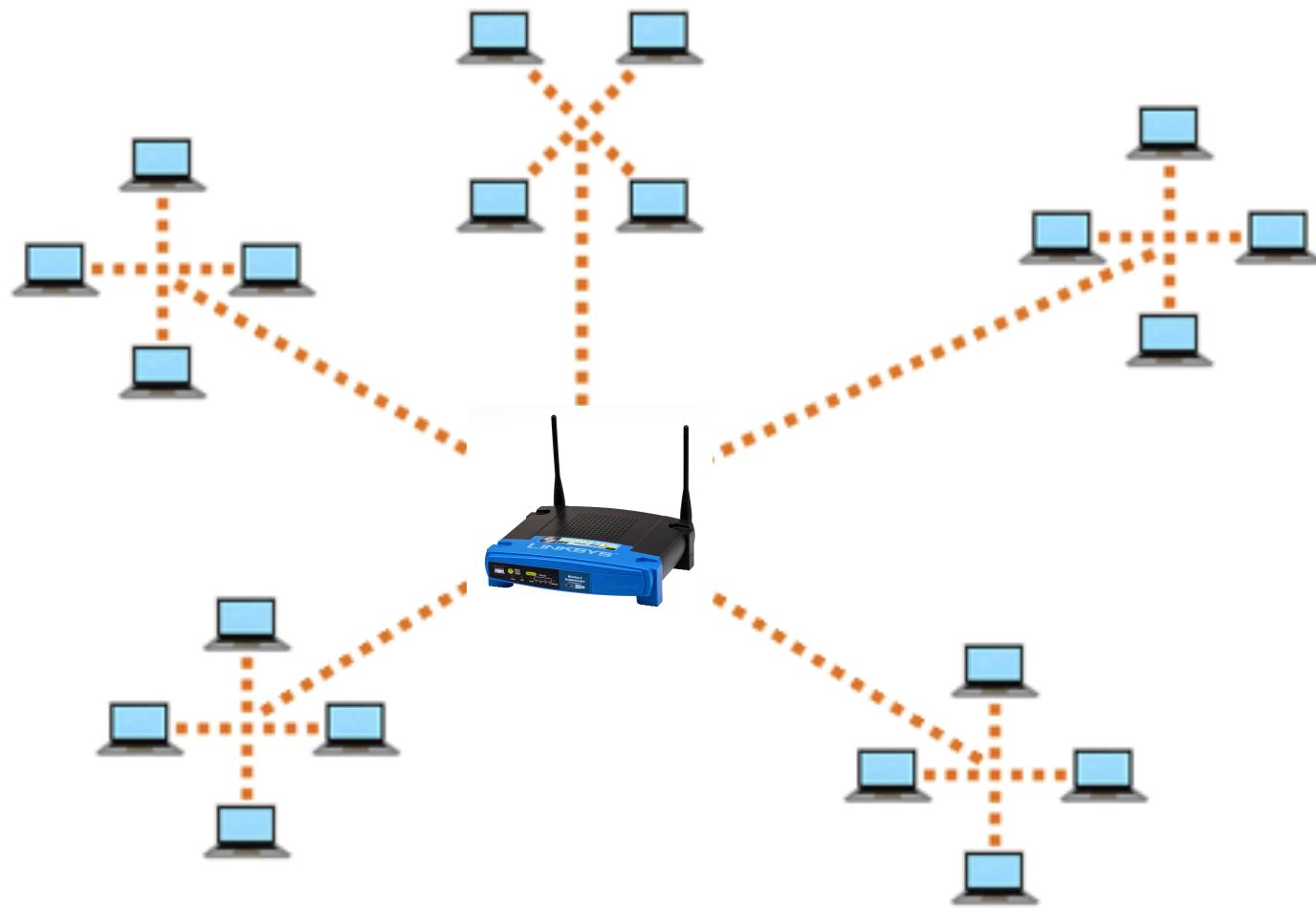


Wide Area Network (WAN)

Typically consists of 2 or more LANs where the computers are farther apart and are linked by telephone lines, dedicated telephone lines, or radio waves.

The Internet is the largest Wide Area Network (WAN) in existence.





A **router** is a network device that connects LANs to a WAN.

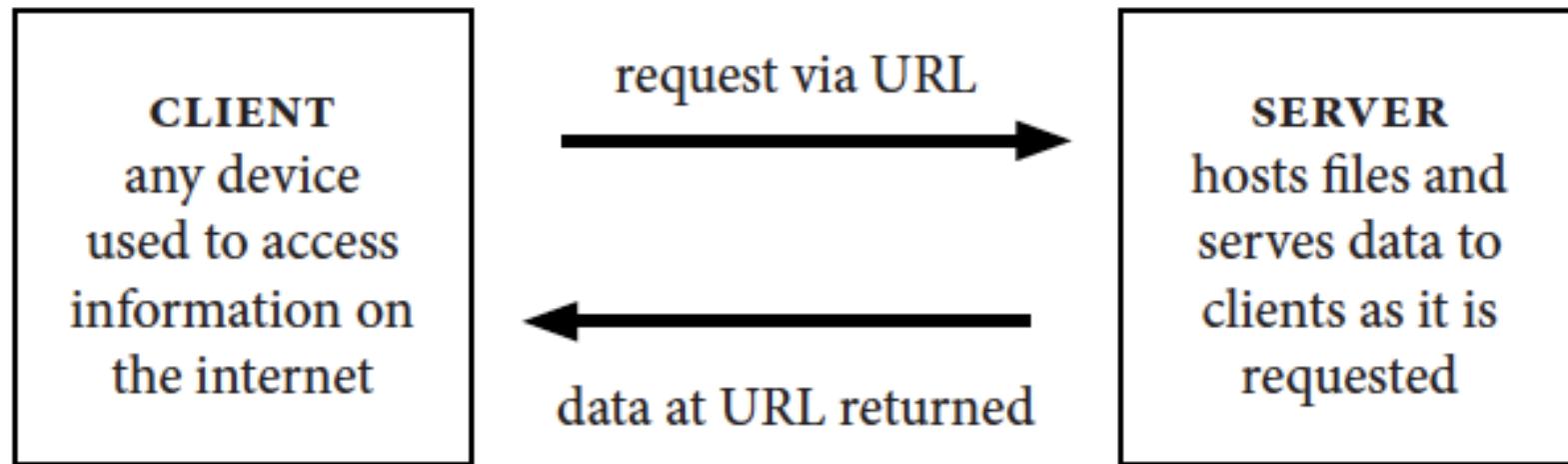
Connecting to the Internet

The **Internet** uses an information protocol to pass data back and forth between **computers** and **servers**.

This protocol is called **TCP/IP**, which stands for Transmission Control Protocol/Internet Protocol.

TCP/IP is how the web “serves” you hypertext documents, email, and everything else you see “online.”

Client-Server Model



Servers and files

Servers and computers have **IP addresses**.
These represent locations on the web.
These look like: 184.152.46.88

URLs point people to server IPs in order to download information they are looking for.

URLs not only make IP addresses easier for humans to remember, but they also allow multiple paths to point to the same IP address.

URL (Uniform Resource Locator)

`http://www.nytimes.com`

URL

http
https
ftp

::/
::/
::/

nytimes.com
facebook.com
domain.com/files.zip

Protocol identifier
indicates what
protocol to use

Resource name
indicates IP or domain
name where the
resource is located



Colon and 2 slashes always separate the
protocol identifier and the resource name

Web clients

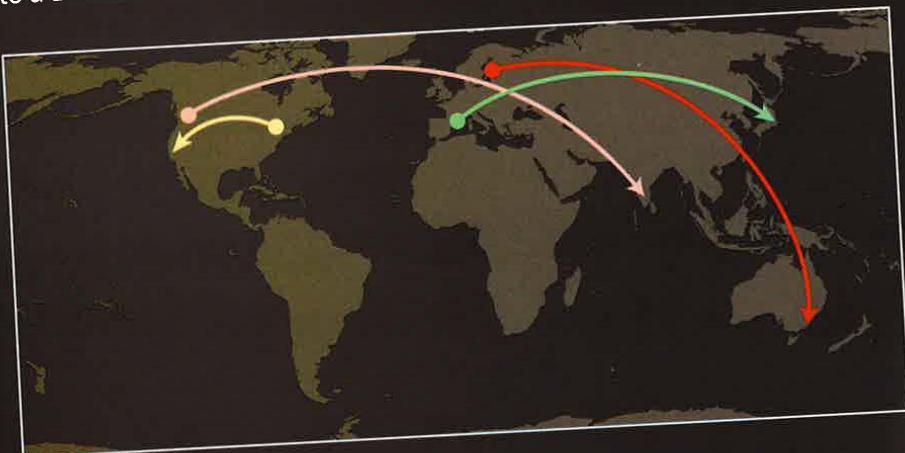
Web clients or browsers show us the content at a particular IP.

These clients interpret hypertext documents into visual elements.

As this interpretation is done at the browser level, it is important to test your webpages in as many browsers as possible.

HOW THE WEB WORKS

When you visit a website, the web server hosting that site could be anywhere in the world. In order for you to find the location of the web server, your browser will first connect to a Domain Name System (DNS) server.



On this page you can see examples that demonstrate how the web server that hosts the website you are visiting can be anywhere in the world. It is the DNS servers that tell your browser how to find the website.

- A user in Barcelona visits sony.jp in Tokyo
- A user in New York visits google.com in San Francisco
- A user in Stockholm visits qantas.com.au in Sydney
- A user in Vancouver visits airindia.in in Bangalore

On the right you can see what happens when a web user in England wants to view the website of the Louvre art gallery in France which is located at www.louvre.fr. Firstly, the browser in Cambridge contacts a DNS server in London. The DNS server then tells the web browser the location of the web server hosting the site in Paris.

1 When you connect to the web, you do so via an Internet Service Provider (ISP). You type a domain name or web address into your browser to visit a site; for example: google.com, bbc.co.uk, microsoft.com.

2 Your computer contacts a network of servers called Domain Name System (DNS) servers. These act like phone books; they tell your computer the IP address associated with the requested domain name. Every device on the web has a unique IP address; it is like the telephone number for that computer. Traditionally these were numbers of up to 12 digits separated by periods/full stops but they are now being updated to sets of up to 32 characters.

3 The unique number that the DNS server returns to your computer allows your browser to contact the web server that hosts the website you requested. A web server is a computer that is constantly connected to the web, and is set up especially to send web pages to users.



4 The web server then sends the page you requested back to your web browser.

HTML

Hypertext Markup Language (HTML)

HTML is a language for describing webpages

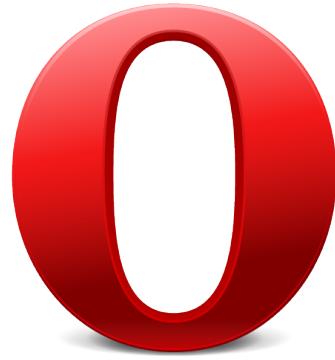
HTML is not a coding language, it is a **markup** language

HTML History

Created in 1991 by Sir Tim Berners-Lee.

Based off of SGML
(Standard Generalized Markup Language)

HTML DOCUMENTS



VISUAL WEB PAGES

Shoeshines Keep Wall Street X

dealbook.nytimes.com/2013/08/25/keeping-wall-st-in-the-black-or-maybe-brown/?hp&_r=0

INVESTMENT BANKING | AUGUST 25, 2013, 9:26 PM | 39 Comments

Shoeshines Keep Wall Street in the Black (or Maybe Brown)

BY WILLIAM ALDEN

A morning rush at Eddie's Shoe Repair in Rockefeller Center.

Ozier Muhammad/The New York Times

Mauricio Dias was being courted by Wall Street.

After losing his job at the investment bank Donaldson, Lufkin & Jenrette when it was sold to Credit Suisse, he received a phone call from the office of Hamilton E. James, the executive who had orchestrated the sale, Mr. Dias said. Mr. James was starting a new role as the No. 2 at the Blackstone Group, a big investment firm, and wanted Mr. Dias to join him.

Article Tools

[FACEBOOK](#) [SAVE](#)

Mr. Dias, now a 10-year stalwart at Blackstone, is no banker with a briefcase, however. He carries a shoeshine box.

PREVIOUS ARTICLE
Amgen to Buy Onyx for \$10.4 Billion

NEXT ARTICLE
An Appreciation of Leather and Polish Shoeshines

More New York Times News by Sector

GLOBAL ENERGY MEDIA HEALTH CARE

DealBook: Indian Firm to Pay \$2.6 Billion to Build Its Stake in African Gas Project
ONGC Videsh, a unit of the India's state-run Oil and Natural Gas Corporation, says it will acquire a 10 percent stake in a natural gas project in Mozambique from Anadarko Petroleum in an all-cash deal.

Under Obama, Little Progress on High-Level Jobs for Women
The president, who is considering candidates for a new Federal Reserve leader, has named no more women to major posts than Bill Clinton did. Janet L. Yellen, the Federal Reserve's vice chairwoman, is a finalist for the position.

DealBook: U.S. Short-Seller Takes Aim at Chinese Vegetable Producer
The Glaucus Research Group has accused the China Minzhong Food Corporation of fabricating sales and doctoring financial statements, leading to a 48 percent fall in Minzhong's stock before trading was suspended on Monday.

News by Sector

Energy	Technology
Industrials	Financials
Cyclical Goods & Services	Real Estate
Autos	Basic Materials
Media	Health Care
Non-Cycl. Goods & Services	Telecom
Food & Beverage	Utilities

Morning Agenda With William Alden

A Blockbuster Biotech Deal
Amgen agrees to buy Onyx Pharmaceuticals for about \$10.4 billion. | Muriel Siebert, the first woman to buy a seat on the New York Stock Exchange, has died at 80. | Inside New York's investment houses, pawn service has proved remarkably resilient. | Pawnshops are

www.nytimes.com/2013/08/27/us/politics/under-obama-little-progress-on-high-level-jobs-for-women.html?partner=rss&emc=rss

view-source:dealbook.nyti... X

← → C view-source:dealbook.nytimes.com/2013/08/25/keeping-wall-st-in-the-black-or-maybe-brown/?hp&_r=0

```
250 <h1 class="entry-title">Shoeshines Keep Wall Street in the Black (or Maybe Brown)</h1>
251 <address class="byline author vcard">By <a href="/author/william-alden/" class="url fn" title="See all posts by WILLIAM
ALDEN">WILLIAM ALDEN</a></address></header>
252 <!-- The Content -->
253 <div class="entry-content"><div class="w592"><span class="credit">Ozier Muhammad/The New York Times</span><span class="caption">A morning rush at
Eddie's Shoe Repair in Rockefeller Center.</span></div>
254 <p>Mauricio Dias was being courted by Wall Street.</p>
255 <p>After losing his job at the investment bank Donaldson, Lufkin & Jenrette when it was sold to <a
href="http://dealbook.on.nytimes.com/public/overview?symbol=CS&#038;inline=nyt-org" class="tickerized" title="More information
about Credit Suisse Group A.G">Credit Suisse</a>, he received a phone call from the office of Hamilton E. James, the executive who
had orchestrated the sale, Mr. Dias said. Mr. James was starting a new role as the No. 2 at <a
href="http://dealbook.on.nytimes.com/public/overview?symbol=BX&#038;inline=nyt-org" class="tickerized" title="More information
about The Blackstone Group">the Blackstone Group</a>, a big investment firm, and wanted Mr. Dias to join him.</p>
256 <div class="w231 left module">
257
258 <div class="entry entry-utility">
259 <h4>Article Tools</h4> <meta name="emailThisHash" content="tnzA+VJqsovmlTTs7Yus4Q">
260 <div class="shareTools shareToolsThemeClassic shareToolsThemeClassicHorizontal articleShareToolsBottom" data-
shares="facebook,save,twitter,email,google,print,showall|Share,permalink" data-
url="http://dealbook.nytimes.com/2013/08/25/keeping-wall-st-in-the-black-or-maybe-brown/" data-title="Shoeshines Keep Wall Street
in the Black (or Maybe Brown)" data-description="In-house shoeshine service has proved resilient, surviving the rise of
technology and even the 2008 financial crisis, which snuffed out many of Wall Street's quirks."></div>
261 </div><!-- end .utility -->
262 <div class="entry entry-related">
263 <h4>Related Links</h4><div class="entry-related">
264 <ul> <li><a href="http://dealbook.nytimes.com/2013/08/25/an-appreciation-of-leather-and-polish/">An
Appreciation of Leather and Polish</a></li></ul>
265 </div><!-- end .entry-related -->
266 </div><!-- end .entry-related -->
267 </div><!-- end .module -->
268 <p>Mr. Dias, now a 10-year stalwart at Blackstone, is no banker with a briefcase, however. He carries a shoeshine box.</p>
269 <p>Inside New York's investment houses, a vestige of old Wall Street lives on. Gone are the days when offices were filled with
smoke and secretaries were the only women in sight. But in-house shoeshine service has proved remarkably resilient, surviving the
rise of technology and even the turmoil of the 2008 financial crisis, which snuffed out many of Wall Street's quirks.</p>
270 <p>Mr. Dias, 52, is at the top of the heap in the shoeshine world. He charges $6 for a shine in Blackstone's offices, while the
Dr. Shine shoeshine parlor in the building's lobby charges $3. Not counting the tip.</p>
271 <p>"He's a V.I.P.," said Gotardo Cortez, 38, a co-owner of Dr. Shine. A spokesman for Blackstone declined to comment.</p>
272 <p>Though they are not bank employees, Wall Street's shoeshine workers are privy to the hidden dramas of trading floors and
executive suites. At <a href="http://dealbook.on.nytimes.com/public/overview?symbol=JPM&#038;inline=nyt-org" class="tickerized"
title="More information about JPMorgan Chase & Company">JPMorgan Chase</a>, for example, a shoeshine worker said that <a
href="http://topics.nytimes.com/top/reference/timestopics/people/d/james_dimon/index.html?inline=nyt-per" class="tickerized"
title="More articles about James Dimon.">Jamie Dimon</a>, the bank's powerful chief executive — who favors Ferragamo loafers —
typically offers $10 for a shoeshine, "the same thing the guys on the trading floor pay."</p>
273 <p>But the modern shoeshine business has changed since the old days, reflecting the evolution of Wall Street firms from private
partnerships to large, public corporations. Senior traders from <a
href="http://topics.nytimes.com/top/news/business/companies/bear_stearns_companies/index.html?inline=nyt-org" class="tickerized"
title="More information about Bear Stearns Cos">Bear Stearns</a> recall the days when they could put their feet up on a shoeshine
```

Text Editor: Brackets

If you haven't already, download Brackets at -
<http://brackets.io/>

Now open the Brackets program.

HTML Tags

<html>

</html>

- Keywords are surrounded by brackets
- Tags come in pairs with an opening and closing tag
- Tags describe page content

HTML ELEMENTS

<p> This whole line is an HTML element. </p>

- Everything between the start and end tags, including the tags

BASIC STRUCTURE

```
<!DOCTYPE html>
<html>

    <head>
        <meta charset = “utf-8”>
        <title>Page Name</title>
    </head>

    <body>
        <p>My first paragraph.</p>
    </body>

</html>
```

WHY DO WE NEED STRUCTURE?

Correctly written HTML and CSS improves
findability and SEO (Search Engine Optimization)

HTML Elements

```
<p>Hello world.</p>
```

Opening tag
Closing tag
lowercase

Empty Elements

```
<br />
```

Empty elements have no content.

HTML Headings

```
<h1>This is the main heading.</h1>
<h2>This is the next heading.</h2>
<h3>And the next....</h3>
<h4> ... </h4>
<h5> ... </h5>
<h6> ... </h6>
```

HTML Headings

```
<h1>This is the main heading.</h1>
<h2>This is the next heading.</h2>
<h3>And the next....</h3>
<h4> ... </h4>
<h5> ... </h5>
<h6> ... </h6>
```

HTML Paragraphs

```
<p>This is a paragraph.</p>
```

```
<p>This is a paragraph <br /> with a line  
break. </p>
```

HTML Comments

```
<!-- This is a comment. It does not show up on  
the browser. -->
```

Use comments to help you identify the purpose of segments in your code.

HTML Links

Provide additional information about an element specified in the opening tag

Attributes come in name/value pairs. A value is enclosed in quotes.

Format:

name="value"

HTML Links

```
<a href="url">Click here</a>
```

Example of an EXTERNAL link:

```
<a href="http://miami.edu">University of  
Miami</a>
```

HTML Links

```
<a href="xxxx">Click me</a>
```

Example of an INTERNAL link:

```
<a href="about.html">About Me</a>
```

```
<a href="/help/faq.html">FAQs</a>
```

HTML Images

```

```

Example of an IMAGE tag:

```

```

Review

```
<!DOCTYPE html>
<html>

<head> .....
```

Web Resources

W3C: World Wide Web Consortium

Validate & Debug:
<http://validator.w3.org>

Web Development Resource:
<http://w3schools.com>

Head Element

Includes scripts and stylesheets (css)

Example:

```
<head>
    <meta charset="utf-8" />
    <title>CVJ 341 Web Design</title>
</head>
```

Useful Tips

Write clean HTML with proper indentation.

Use comments to annotate and organize your code (and to test different code before deleting it)

Validate your pages at <http://validator.w3.org>.

Test your website in multiple browsers
(cross-browser compatibility)

Use “Inspect Element” and other developer tools to debug and test code