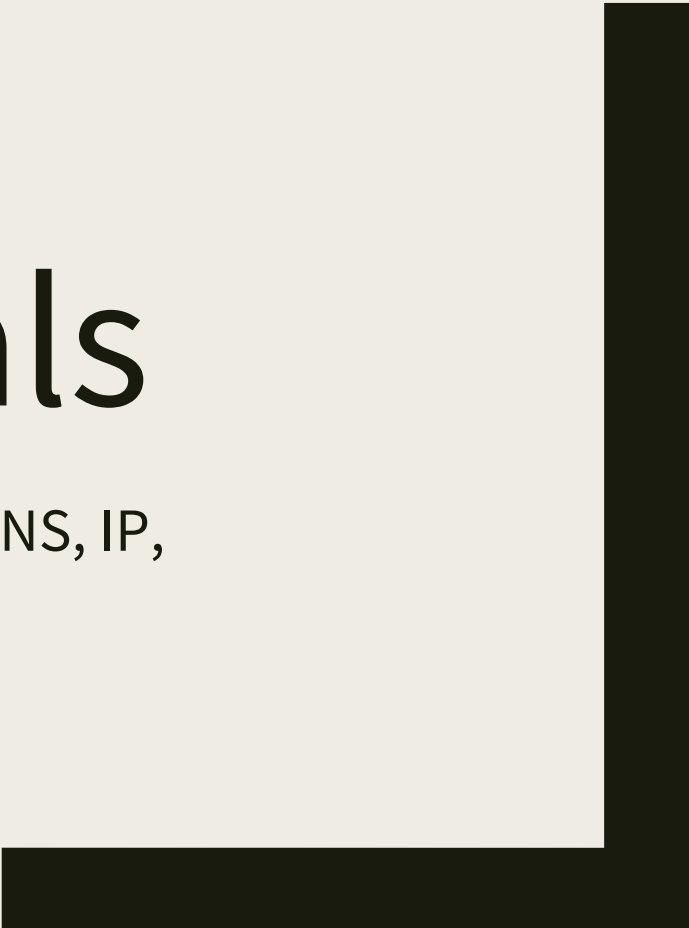# Web Dev Fundamentals

History, Internet vs Web, Brower wars, DNS, IP, Domain, URL.

Internet and web

■ Computers of the 1940s and 1950s were mostly solitary machines, but in the 1960s computer networks evolved. A computer network allows computers to communicate information with each other. The **_Internet_** began as four networked computers in 1969 but is today the largest and most popular computer network, spanning the entire globe. Early versions of the Internet looked and acted similar to today, but in a much simpler way. Documents were plain text: no images, no formatting, and no interaction. **_FTP_** (**_File Transfer Protocol_**) was an early way for transferring files over the Internet. Users used FTP programs to connect to servers, look at listings of available documents, and download documents of interest.

■ In the early 1990s, Tim Berners-Lee was working at a Swiss research institute named CERN and developed a more convenient way for computers to communicate files over the Internet. Berners-Lee named his creation the ***World Wide Web***, or simply "the ***web***". The web involved three things:

■ Text files, known as HTML files, containing *links* to other text files.

■ A program, known as a browser, for viewing HTML files.

■ A set of rules, known as the HTTP protocol, for transferring HTML files among computers.

The web was originally called the World Wide Web, or WWW, because Berners-Lee envisioned a large collection of globally distributed web pages linking to each other. A *web page* is a document that is viewed in a web browser. A collection of related web pages are organized into a *website* and stored on a web server. A *web server* is a computer (or software running on a computer) that serves web pages to web browsers.

Figure 1.1.2: The web's name comes from the interconnections of computers being like the interconnections of a spider's web.
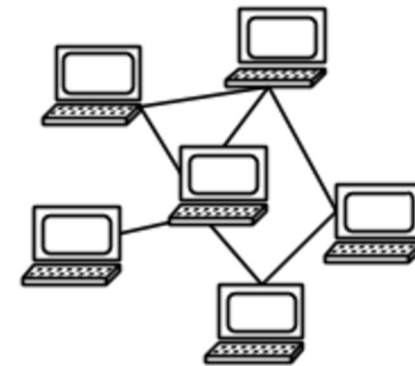
Source: Spider web (Steve Gibson / Public Domain), computer network (zyBooks)

Feedback?

Introduction of HTML

- ***HyperText markup language*** (***HTML***) is the standard markup language for web documents. ***Hypertext*** is text that has links to other text (and today to images, videos, and more). Document ***markup*** is special markings in the document that provide additional information about links, formatting, and images. HTML also permits adding metadata like search engine keywords, author information, and language.

World's first website

Figure 1.1.3: One of the first web pages.

World Wide Web

The WorldWideWeb (W3) is a wide-area hypermedia information retrieval initiative aiming to give universal access to a large universe of documents.

Everything there is online about W3 is linked directly or indirectly to this document, including an executive summary of the project, Mailing lists , Policy , November's W3 news , Frequently Asked Questions .

What's out there?
        Pointers to the world's online information, subjects , W3 servers, etc.
Help
        on the browser you are using
Software Products
        A list of W3 project components and their current state. (e.g. Line Mode ,X11 Viola , NeXTStep , Servers , Tools ,
        Mail robot ,Library)
Technical
        Details of protocols, formats, program internals etc
Bibliography
        Paper documentation on W3 and references.
People
        A list of some people involved in the project.
History
        A summary of the history of the project.
How can I help ?
        If you would like to support the web..
Getting code
        Getting the code by anonymous FTP , etc.

FROM: W3.ORG

Feedback?

Internet vs. Web?

■ Today, most but not all Internet traffic is web traffic. People thus have a hard time distinguishing the Internet (the interconnection of computers communicating using a set of rules), and the Web (which is just one particular use of the Internet).

Websites over the years –

Source : https://siteefy.com/how-many-websites-are-there/

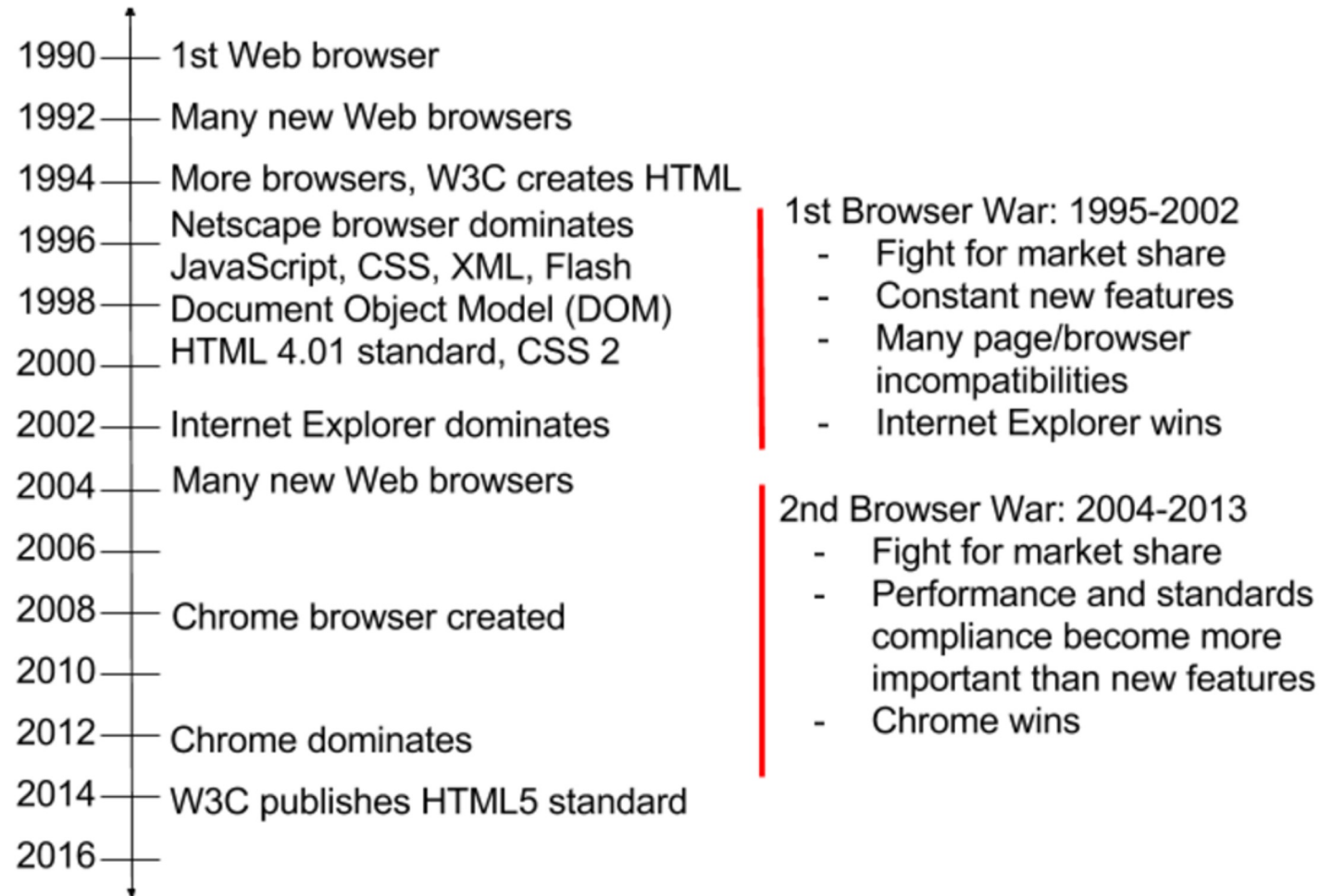| Year (June)	Websites	Change	Internet Users	Users per Website	Websites launched
2018	1,630,322,579	-8%			
2017	1,766,926,408	69%			
2016	1,045,534,808	21%			
2015	863,105,652	-11%	3,185,996,155*	3.7	
2014	968,882,453	44%	2,925,249,355	3.0	
2013	672,985,183	-3%	2,756,198,420	4.1	
2012	697,089,489	101%	2,518,453,530	3.6	
2011	346,004,403	67%	2,282,955,130	6.6	
2010	206,956,723	-13%	2,045,865,660	9.9	Pinterest, Instagram
2009	238,027,855	38%	1,766,206,240	7.4	
2008	172,338,726	41%	1,571,601,630	9.1	Dropbox
2007	121,892,559	43%	1,373,327,790	11.3	Tumblr
2006	85,507,314	32%	1,160,335,280	13.6	Twttr
2005	64,780,617	26%	1,027,580,990	16	YouTube, Reddit
2004	51,611,646	26%	910,060,180	18	Thefacebook, Flickr
2003	40,912,332	6%	778,555,680	19	WordPress, LinkedIn
2002	38,760,373	32%	662,663,600	17	
2001	29,254,370	71%	500,609,240	17	Wikipedia
2000	17,087,182	438%	413,425,190	24	Baidu
1999	3,177,453	32%	280,866,670	88	PayPal
1998	2,410,067	116%	188,023,930	78	Google
1997	1,117,255	334%	120,758,310	108	Yandex, Netflix
1996	257,601	996%	77,433,860	301	
1995	23,500	758%	44,838,900	1,908	Altavista, Amazon, AuctionWeb
1994	2,738	2006%	25,454,590	9,297	Yahoo
1993	130	1200%	14,161,570	108,935	
1992	10	900%			
Aug. 1991	1				World Wide Web Project

Source: *NetCraft and Internet Live Stats* (elaboration of data by *Matthew Gray of MIT and Hobbes' Internet Timeline* and *Pingdom*)

©Prof.Shoaib Ahamed

Browser wars

■ A ***web browser*** is a program that downloads an HTML document from a server, displays the document to the user with the appropriate formatting, and allows the user to interact with the document, such as clicking hyperlinks to access other documents. A web browser uses HTML to understand the structure and semantics, or meaning, of the document.

■ Early in browser history, browser developers competed for users by trying to provide the best web browsing experience. Ex: Browser developers added enhancements allowing greater interactivity in web documents. These enhancements only worked within specific browsers, so many documents could not be viewed properly on all browsers.

Figure 1.1.4: Web browser timeline.

Year	Event
1990	1st Web browser
1992	Many new Web browsers
1994	More browsers, W3C creates HTML
1996	Netscape browser dominates
	JavaScript, CSS, XML, Flash
1998	Document Object Model (DOM)
2000	HTML 4.01 standard, CSS 2
2002	Internet Explorer dominates
2004	Many new Web browsers
2006	
2008	Chrome browser created
2010	
2012	Chrome dominates
2014	W3C publishes HTML5 standard
2016	

1st Browser War: 1995-2002
- Fight for market share
- Constant new features
- Many page/browser incompatibilities
- Internet Explorer wins

2nd Browser War: 2004-2013
- Fight for market share
- Performance and standards compliance become more important than new features
- Chrome wins

Feedback?

©Prof.Shoaib Ahamed

HTML standardization

■ The frequent web page and browser incompatibility headaches pushed the industry to value standardization. **W3C** (the World Wide Web Consortium) is the international standards organization that controls web standards. HTML5 is the current HTML standard and was standardized in 2014. An HTML5 valid web page will look and act the same way in any web browser that follows HTML5 rules. With standardization, browser developers now compete on browser speed, standards compliance, and browser features rather than on the basis of proprietary extensions.

HTML5 or HTML 5?

■ *W3C always uses the name HTML5 instead of HTML 5 when referring to the 5th version of HTML standard.*

■ A significant change that occurred over time was a move to separate document structure, document presentation (how the document is displayed in a browser), and web page interaction with the user. Document markup was initially used to control both document structure and appearance. Some markup, such as the tag <b>, was originally used just to control appearance. Interlacing document structure with presentation and interaction complicates having pages work well across the range of technologies from large screens, to small phones, to printing devices.

■ HTML5 standard uses HTML, CSS, and JavaScript to create a web page. HTML defines the structure and content of a web page. CSS specifies the layout and visible appearance. JavaScript describes the dynamic behaviors and actions of a web page.

Quiz

HTTP	web server	Information mesh	website	web page	Early 1990s	Browser	HTML

	The period when the web was first developed.
	The language used for a text file that describes a web page.
	Web document that is viewed in a web browser.
	Collection of related web pages.
	Software that serves web pages to browsers.
	The protocol for transferring files among computers via the web.
	A program for viewing web pages.
	Another name for the web that was considered by the web's creator.

IP, DOMAIN,URL

■ An **IP address** (short for **Internet Protocol** address) is a computer's unique address on the Internet (like a house's unique address in the world), usually represented numerically like 198.51.100.7.A typical IP address is 32 bits, divided into four 8-bit groups, each group often written as a decimal number.

198 . 51 . 100 . 7

11000110 00110011 01100100 00000111

DNS server table

|	
cnn.com	157.166.226.25
stanford.edu	171.67.215.200
whitehouse.gov	96.16.200.110
wikipedia.org	198.35.26.96

■ All websites could be reached by the computer system's IP address. Ex: The news company CNN could say "Go to 157.166.226.25 for the latest world news." But those numbers are hard to remember, so domain names are also used. A **domain name** is a name for an IP address, such as the name wikipedia.org for the IP address 208.80.154.224; the name is easier to remember and type. Capitalization doesn't matter: Wikipedia.org, wikipedia.org, and WIKIPEDIA.ORG are treated the same. When a computer sends a packet using a domain name over the Internet, the first step is to contact a **DNS server** to convert the domain name to an IP address. **DNS** is short for Domain Name System.

©Prof.Shoaib Ahamed
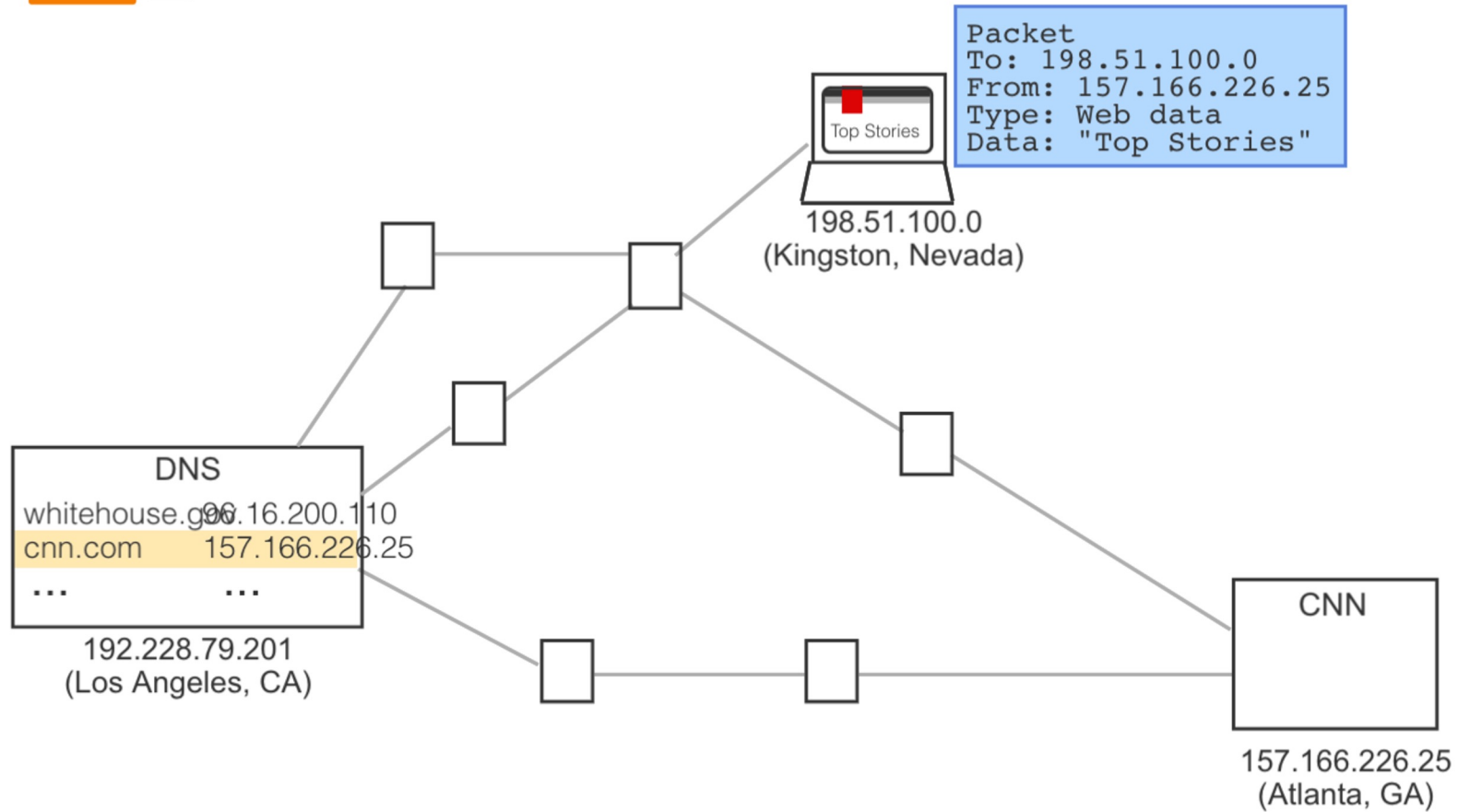
Useful videos -

- [What is internet?](#)

- [How the web works?](#)

- [What's IP address and Domain?](#)