WEB PAGES DESIGN

Internet & World Wide Web

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Lecture 1.
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Introduction to Internet

Introduction to Internet:

- A global computer network providing a variety of information and communication facilities, consisting of interconnected networks using standardized communication protocols.
- The Internet is the global system of interconnected computer networks that use the Internet protocol suite (TCP/IP) to link devices worldwide.
- It is a network of networks that consists of private, public, academic, business, and government networks of local to global scope, linked by a broad array of electronic, wireless, and optical networking technologies.
- The Internet carries a vast range of information resources and services.

History of Internet

- The Internet has its roots in the U.S. Department of Defense Advanced Research Project Agency (ARPA) project begun in or around 1960.
- Among the project's goals was the ability to network computers quickly and across great distances. The network was to be designed to be almost fail-safe, enabling connected computers to continue communicating even if assorted routes between them were to fail.
- In 1969, the ARPAnet was born, connecting several key universities. The network continued to grow, with more and more universities coming online. One of the goals of the initial project — robust, nearly fail-safe performance — was realized via the Internet Protocol (IP).
- This communication protocol became the backbone of today's Internet

History of Internet

- The Transmission Control Protocol was joined with the IP to provide a robust transmission suite, a marriage of two protocols to offer more flexibility and the ability to create better communications applications for the Internet.
- By 1992, the Internet was far and away the most popular network in the world. During this time, Tim Berners-Lee, a British software engineer and computer scientist, created HyperText Markup Language (HTML) to create documents, a protocol HyperText Transfer Protocol (HTTP) to send such documents, and the first browser editor, called the World Wide Web (WWW).
- By the early 2000s, the Web was accessible by almost any network-connected computer, many electronic devices, and some unlikely consumer devices such as automobiles.

World Wide Web

- The World Wide Web (abbreviated WWW or the Web) is an information space where documents and other web resources are identified by Uniform Resource Locators (URLs), interlinked by hypertext links, and can be accessed via the Internet. The Web is a collection of documents, called web pages.

- Web pages are primarily text documents formatted and annotated with Hypertext Markup Language (HTML). In addition to formatted text, web pages may contain images, video, audio, and software components.

World Wide Web

- WWW is another example of client/server computing. Each time a link is followed:
- The client is requesting a document (or graphic or sound file) from a server (also called a Web server) that's part of the World Wide Web that "serves" up the document.
- The server uses a protocol called HTTP or Hyper Text Transport Protocol. The standard for creating hypertext documents for the WWW is Hyper Text Markup Language or HTML. HTML essentially codes plain text documents so they can be viewed on the Web.

World Wide Web

- Client-side programming: technologies are used to build web pages and applications that are run on the client (i.e., in the browser on the user's device).
- Server-side programming: the applications that respond to requests from client-side web browsers, such as searching the Internet, checking your bank-account balance, ordering a book from Amazon.

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.

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. An IP address is a number of up to 12 digits separated by periods / full stops. Every device connected to the web has a unique IP address.

How the Web Works

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.

- Figure 1. shows a Client requesting a resource from a web server.
- Figure 2. shows a Client receiving a response from a web server.

How the Web Works

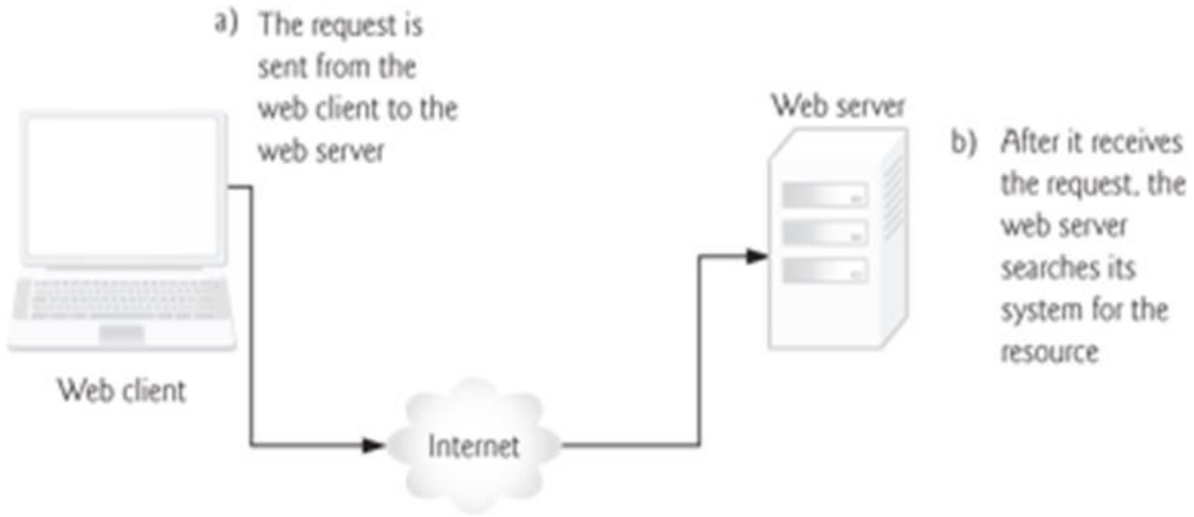


Fig 1. Client requesting a resource from a web server.

How the Web Works

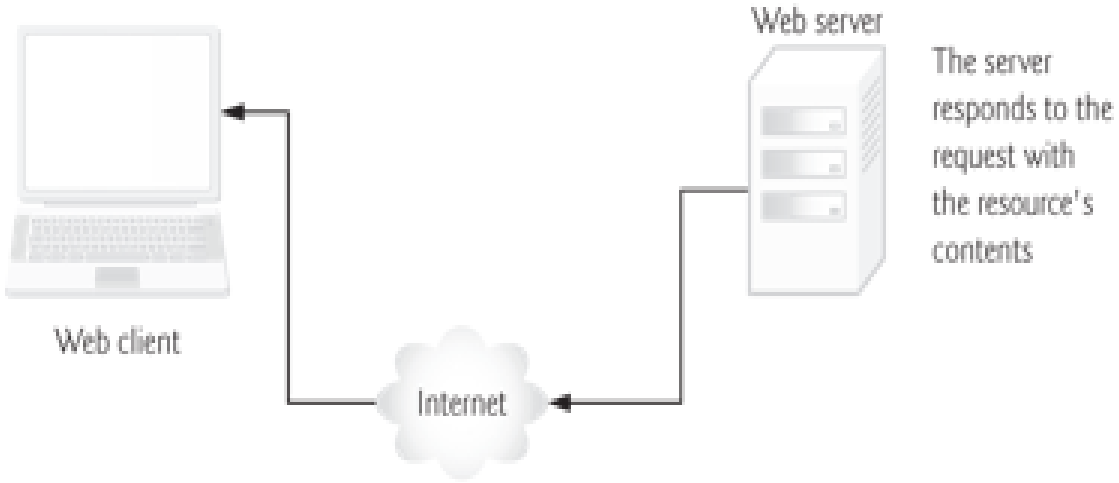


Fig 2. Client receiving a response from a web server.

Browsers

- WWW Clients, or "Browser": The program you use to access the WWW is known as a browser because it "browses" the WWW and requests these hypertext documents.
- Browsers can be graphical, allows to see and hear the graphics and audio; text-only browsers (i.e., those with no sound or graphics capability) are also available. All of these programs understand HTTP and other Internet protocols such as FTP, Mail.

Browsers

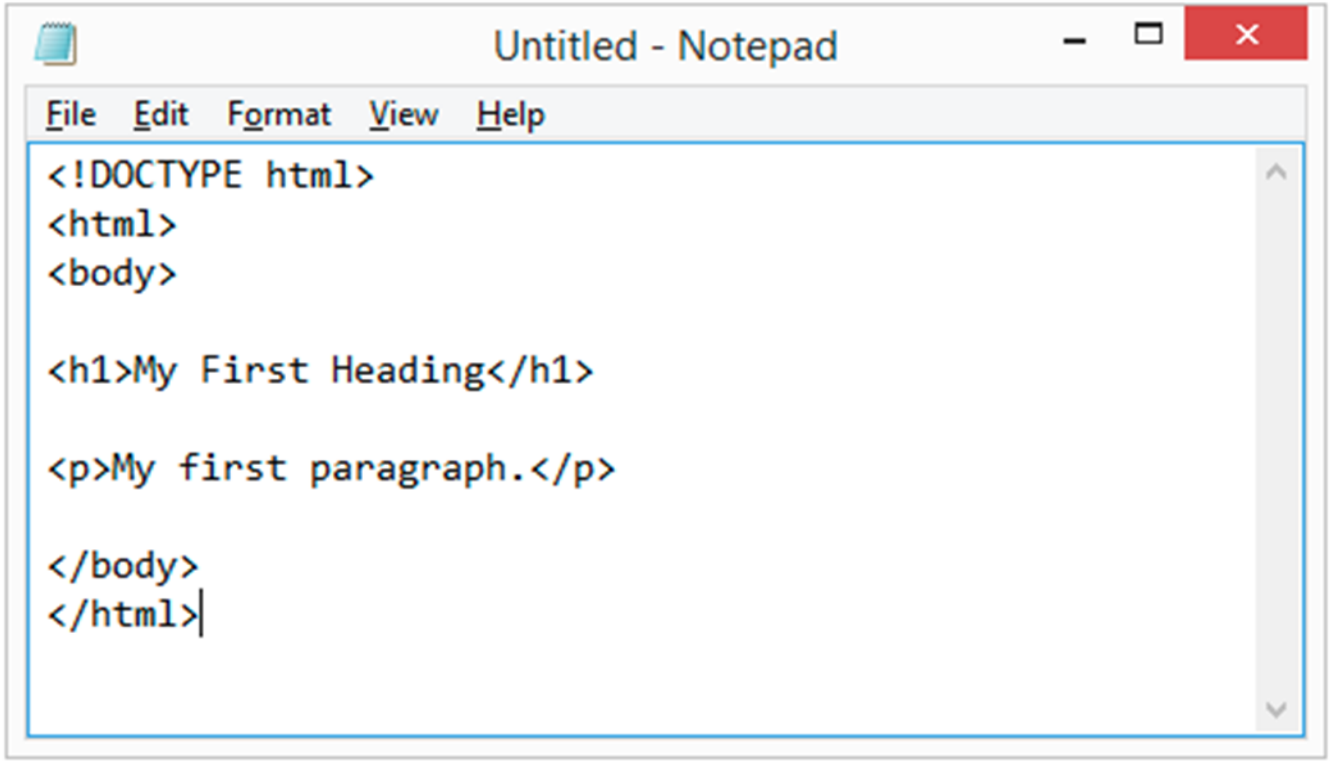
Year	List of Web browsers
1991	World Wide Web (Nexus)
1992	Viola WWW, Erwise, MidasWWW, MacWWW (Samba)
1993	Mosaic,Cello,[2] Lynx 2.0, Arena, AMosaic 1.0
1994	IBM WebExplorer, Netscape Navigator, SlipKnot 1.0, MacWeb, IBrowse, Agora (Argo), Minuet
1995	Internet Explorer 1, Internet Explorer 2, Netscape Navigator 2.0, OmniWeb, UdiWWW, Grail
1996	Arachne 1.0, Internet Explorer 3.0, Netscape Navigator 3.0,Opera 2.0, PowerBrowser 1.5,[4] Cyberdog,Amaya 0.9,[5] AWeb,Voyager
1997	Internet Explorer 4.0, Netscape Navigator 4.0, Netscape Communicator 4.0, Opera3.0,[6] Amaya 1.0[5]
1998	iCab, Mozilla
1999	Amaya 2.0,[5] Mozilla M3, Internet Explorer 5.0
2000	Konqueror,Netscape 6, Opera 4,[7] Opera 5,[8] K-Meleon 0.2, Amaya 3.0,[5] Amaya 4.0[5]
2001	Internet Explorer 6, Galeon 1.0, Opera 6,[9] Amaya 5.0[5]
2002	Netscape 7, Mozilla 1.0, Phoenix 0.1, Links 2.0, Amaya 6.0,[5] Amaya 7.0[5]
2003	Opera 7,[10] Apple Safari 1.0, Epiphany 1.0, Amaya 8.0[5]
2004	Firefox 1.0, Netscape Browser, OmniWeb 5.0
2005	Opera8,[11]Apple Safari2.0, Netscape Browser 8.0, Epiphany 1.8, Amaya 9.0,[5] AOL Explorer 1.0, Maxthon 1.0,Shiira 1.0

Browsers

2006	Mozilla Firefox 2.0, Internet Explorer 7,Opera 9,[12], SeaMonkey 1.0, K-Meleon 1.0, Galeon 2.0, Camino 1.0, Avant11, iCab 3
2007	Apple Safari 3.0, Maxthon 2.0, Netscape Navigator9,NetSurf 1.0, Flock 1.0, Conkeror
2008	Google Chrome 1, Mozilla Firefox 3, Opera 9.5,[13], Apple Safari 3.1, Konqueror 4, Amaya 10.0,[5] Flock 2, Amaya 11.0[5]
2009	Google Chrome 2–3, Mozilla Firefox 3.5, Internet Explorer 8,Opera 10,[14], Apple Safari 4, SeaMonkey 2, Camino 2,surf, Pale Moon 3.0[15]
2010	Google Chrome 4–8, Mozilla Firefox 3.6, Opera 10.50,[16], Opera 11, Apple Safari 5, K-Meleon 1.5.4,
2011	Google Chrome 9–16, Mozilla Firefox 4-9, Internet Explorer 9,Opera 11.50, Apple Safari 5.1, Maxthon 3.0, SeaMonkey 2.1–2.6
2012	Google Chrome 17–23, Mozilla Firefox 10–17, Internet Explorer 10, Opera 12, Apple Safari 6, Maxthon 4.0, SeaMonkey 2.7-2.14
2013	Google Chrome24–31,Mozilla Firefox 18–26,Internet Explorer 11, Opera 15–18, Apple Safari 7, SeaMonkey 2.15-2.23
2014	Google Chrome 32–39, Mozilla Firefox 27–34, Opera 19–26, Apple Safari 8
2015	Google Chrome 40–47, Microsoft Edge,Mozilla Firefox 35–43, Opera 27–34, Vivaldi
2016	Google Chrome 48–55,Mozilla Firefox 44–50,Microsoft Edge 14, Opera35–42, Apple Safari 10, SeaMonkey 2.24–2.30, Pale Moon 26.0.0[17], Pale Moon 27.0.0[18]
2017	Google Chrome56–60,Microsoft Edge 15,Mozilla Firefox 51–55.0.2, Opera43–45, Opera Neon

Editors

- Web pages can be created and modified by using professional HTML editors. However, for learning HTML we recommend a simple text editor like Notepad (PC) or TextEdit (Mac).



Uniform Resource Locators

- Uniform Resource Locators, or URLs: A Uniform Resource Locator, or URL is the address of a document found on the WWW. Browser interprets the information in the URL in order to connect to the proper Internet server and to retrieve your desired document. Each time a click on a hyperlink in a WWW document instructs browser to find the URL that's embedded within the hyperlink.
- The elements in a URL: **Protocol://server's address/filename**
- What are Domains? Domains divide World Wide Web sites into categories based on the nature of their owner, and they form part of a site's address, or uniform resource locator (URL).

Uniform Resource Locators

Common top-level domains are:

.com—commercial enterprises	.mil—military site
org—organization site (non-profits, etc.)	int—organizations established by international treaty
.net—network	.biz—commercial and personal
.edu—educational site (universities, schools, etc.)	.info—commercial and personal
.gov—government organizations	.name—personal sites

MIME (Multi-Purpose Internet Mail Extensions)

MIME (Multi-Purpose Internet Mail Extensions):

- MIME is an extension of the original Internet e-mail protocol that lets people use the protocol to exchange different kinds of data files on the Internet: audio, video, images, application programs, and other kinds, as well as the ASCII text handled in the original protocol.

Hypertext Transport Protocol (HTTP)

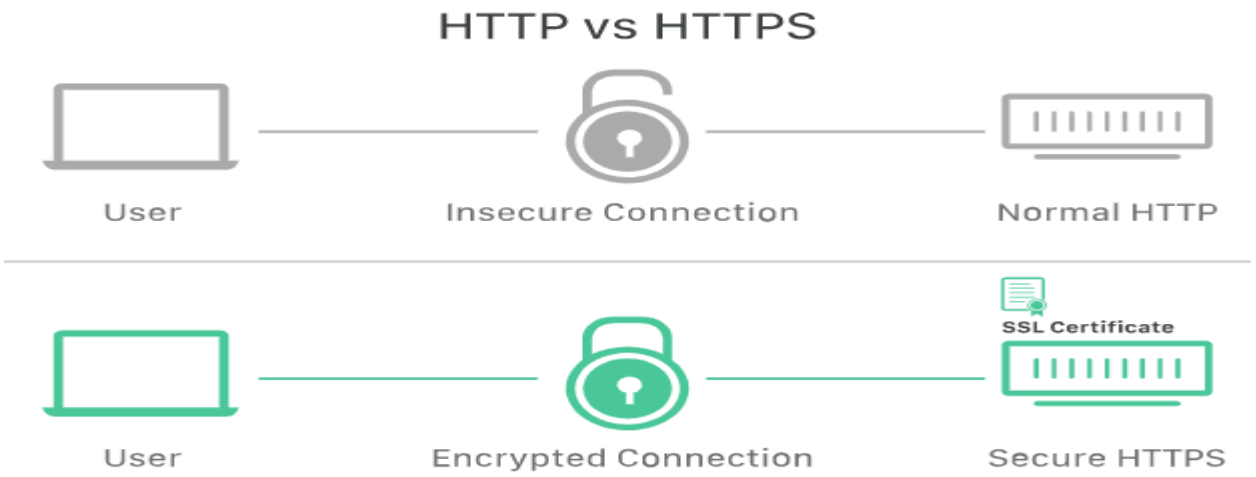
- HTTP means HyperText Transfer Protocol. HTTP is the underlying protocol used by the World Wide Web and this protocol defines how messages are formatted and transmitted, and what actions Web servers and browsers should take in response to various commands.
- For example, when you enter a URL in your browser, this actually sends an HTTP command to the Web server directing it to fetch and transmit the requested Web page. The other main standard that controls how the World Wide Web works is HTML, which covers how Web pages are formatted and displayed.

HTTP vs. HTTPS

- HTTP: is called a stateless protocol because each command is executed independently, without any knowledge of the commands that came before it. This is the main reason that it is difficult to implement Web sites that react intelligently to user input.
- HTTPS: A similar abbreviation, HTTPS means Hyper Text Transfer Protocol Secure. Basically, it is the secure version of HTTP.
- Communications between the browser and website are encrypted by Transport Layer Security (TLS) or Secure Sockets Layer (SSL).

HTTP vs. HTTPS

- HTTPS is HTTP with encryption and verification. The only difference between the two protocols is that HTTPS uses (TLS) (SSL) to encrypt normal HTTP requests and responses, and to digitally sign those requests and responses. As a result, HTTPS is far more secure than HTTP. A website that uses HTTP has http:// in its URL, while a website that uses HTTPS has https://.

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