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Lesson Proper for Week 1

The World Wide Web (WWW or simply the Web) is certainly what most people think of when they see the word “Internet.”

Short History of the Internet

The Internet is not alone in providing instantaneous digital communication. Earlier technologies like radio, telegraph, and telephone networks in particular provide a good starting place to learn about modern digital communications. In the early days, operators had to manually connect calls to a switchboard to complete a circuit. These operators were around in some areas for almost a century before being replaced by automated systems.

One of the weaknesses of having a physical connection is that you must establish a link and maintain a dedicated connection for the duration of the communication.



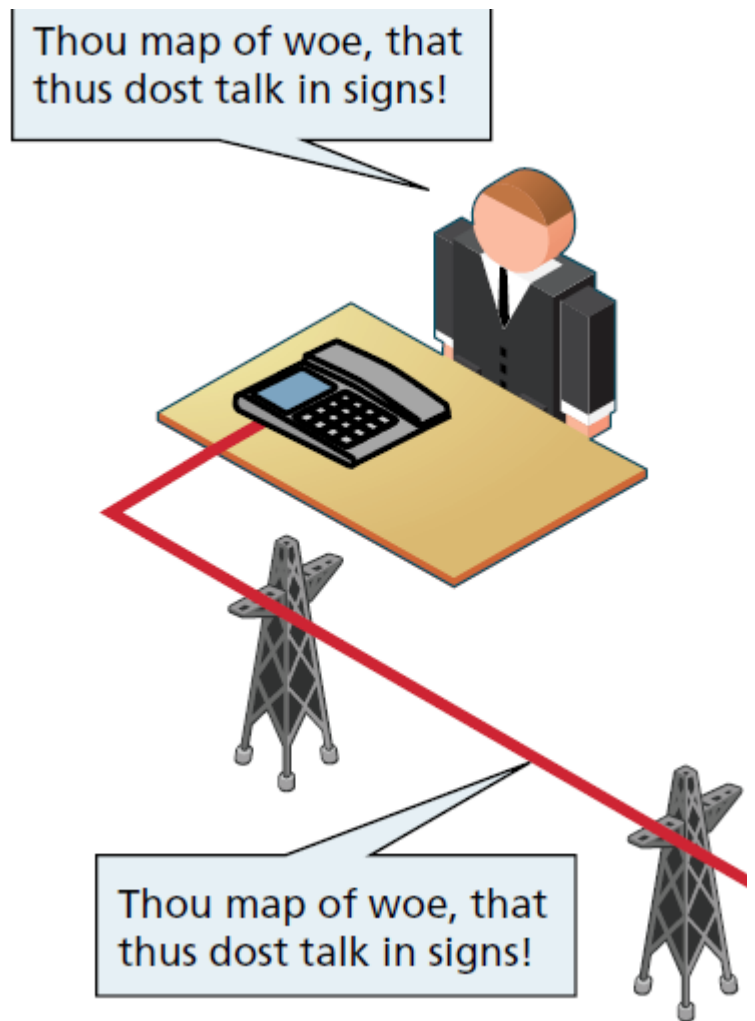


Figure 2 Telephone ne

In the 1960s, as researchers explored digital communications and began to construct the first networks, the res instead used an alternative communications method called packet switching. A packet-switched network does not require based on the destination address. The packets can take different routes to the destination, as shown in Figure 3.



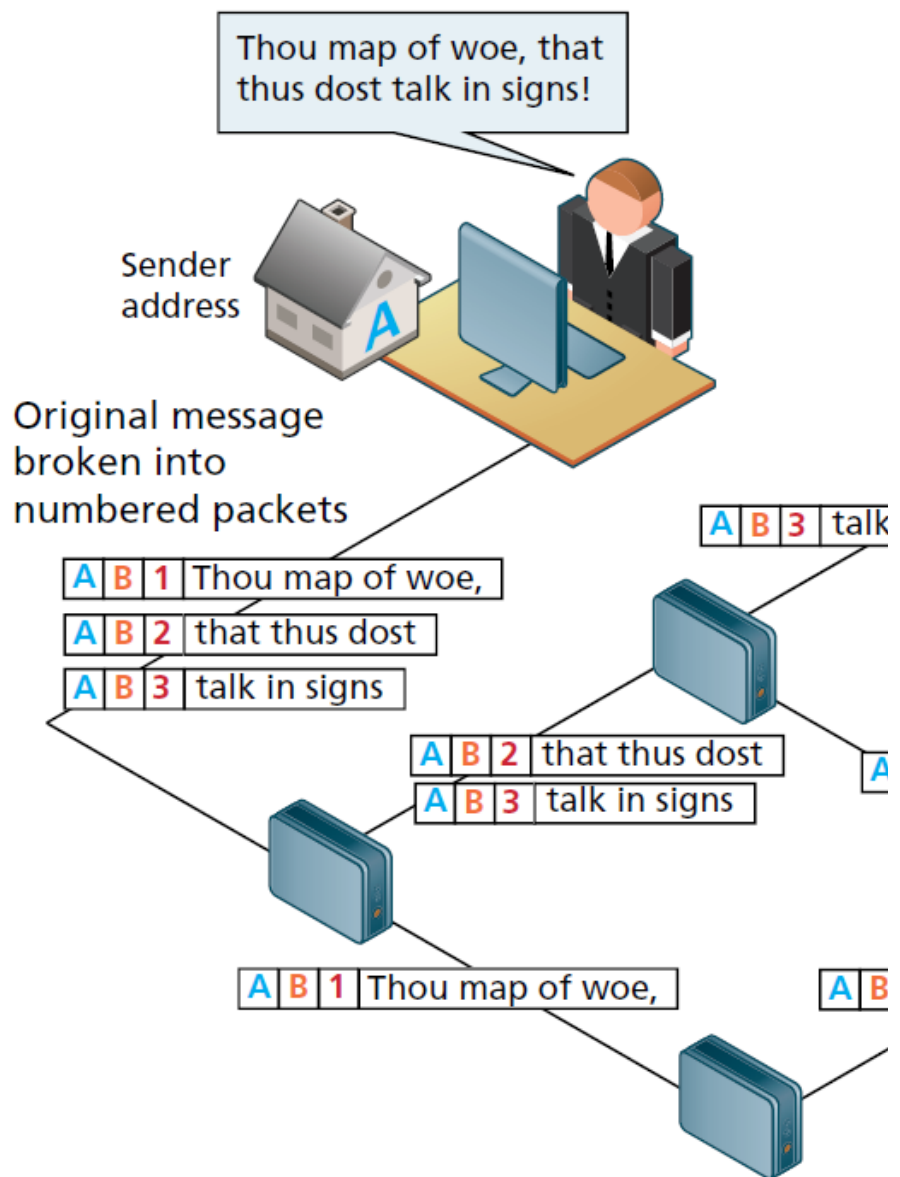


Figure 3 Internet network

This early ARPANET network was funded and controlled by the United States government and was used exclusively by research institutions and companies in 1969 and grew to a few hundred by the early 1980s.

To promote the growth and unification of the disparate networks, a suite of **protocols** was invented to unify them. Communications protocols allow any two computers to talk to one another, so long as they implement the protocol. By 1983, the **(Transmission Control Protocol/Internet Protocol)** communication model while older networks were transitioned over. On January 1, 1983, TCP/IP was adopted across all of ARPANET, marking the end of the research network that spawned

- ✦ **Transmission Control Protocol (TCP):** a connection-oriented communications protocol that facilitates the reliable transfer of data between two endpoints.
- ✦ **Internet Protocol (IP):** is the method or protocol by which data is sent from one computer to another on the Internet.

The Birth of the Web

The next decade saw an explosion in the numbers of users, but the Internet of the late 1980s and the very early Internet experience.

This transition from the old terminal and text-only Internet of the 1980s to the Internet of today is of course due to (Tim Berners-Lee), who, along with the Belgian Robert Cailliau, published a proposal in 1990 for a hypertext system while both were working at CERN in Switzerland. Shortly after, in 1991, the World Wide Web was born.

This early web incorporated the following essential elements that are still the core features of the web today:

This early web incorporated the following essential elements that are still the core features of the web today.

Uniform Resource Locator (URL) a unique identifier used to locate a resource on the internet.

Hypertext Transfer Protocol (HTTP) a protocol used to transfer data over the web.

software program (later called web server software) that can respond to HTTP requests.

hypertext Markup Language (HTML) a language used to create webpages.

program (later called a browser) that can make HTTP requests from URLs and that can display the HTML it receives.

How the web works

Before you can understand web coding and development, you need to take a step back and understand a bit about how you get a page address into your browser.

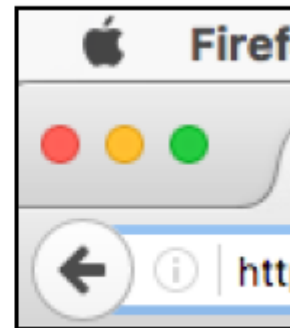
Here's a high-level blow-by-blow of what happens:

1. You tell the web browser the web page you want to visit.

You do that either by clicking a link to the page or by typing the location known as the **uniform resource locator** or

FIGURE 1-1:

One way to get to a web page is to type the URL in the browser's address bar.



The browser decodes the URL.

Decoding the URL means two things: First, it checks the prefix of the URL to see what type of resource you're requesting (like a web page or image). Then it takes the something.com or whatever.org part — and asks the *domain name system* (DNS) to translate this into a unique location (IP address).

FIGURE 1-2:

The browser extracts the prefix, domain, and the server address from the URL.

Decoding http://mcfe

Results:

Prefix: http://

Domain name:

Web server IP address:

The browser contacts the web server and requests the web page.

With the web server's unique IP address in hand, the web browser sets up a communications channel with the server and



FIGURE 1-3:
The browser asks
the web server
for the web page.

Dear 162.14.

At your ea
me the mc
webcoding

Sincerely,
W. Browse

The web server decodes the page request.

Decoding the page request involves a number of steps. First, if the web server is shared between multiple user account directory that holds the page and the file in which the page code is stored (see Figure 1-4).

FIGURE 1-4:
The server
uses the page
request to get
the account,
directory, and
filename.

Decoding mcfedrie

Results:

User account:
Directory: web
Filename: ind

The web server sends the web page file to the web browser (see Figure 1-5).



FIGURE 1-5:
The web server
sends the
requested web
page file to the
browser.

Dear W. Brown

*Thank you for
requested. Let*

*Best,
mcfedries.com*

The web browser decodes the web page file.

Decoding the page file means looking for text to display, instructions on how to display that text, and other resources requ

FIGURE 1-6:
The web browser
scours the page
file to see if it
needs anything
else from the
server.

Decodin

Results:

Tex
For
Ima
Auc
Vid
Dat

If the web page requires more resources, the web browser asks the server to pass along those resources (see Figure 1-7



FIGURE 1-7:
The web browser goes back to the server to ask for the other data needed to display the web page.

Dear 162.144.120

Thank you for trouble, could y

styles.css
logo.png
cover.jpg
Book examples

For each of the requested resources, the webserver locates the associated file and sends it to the browser (see Figure 1-

FIGURE 1-8:
The web server sends the browser the rest of the requested files.

Dear W. Brov

You're very n

gathering you

data you requ

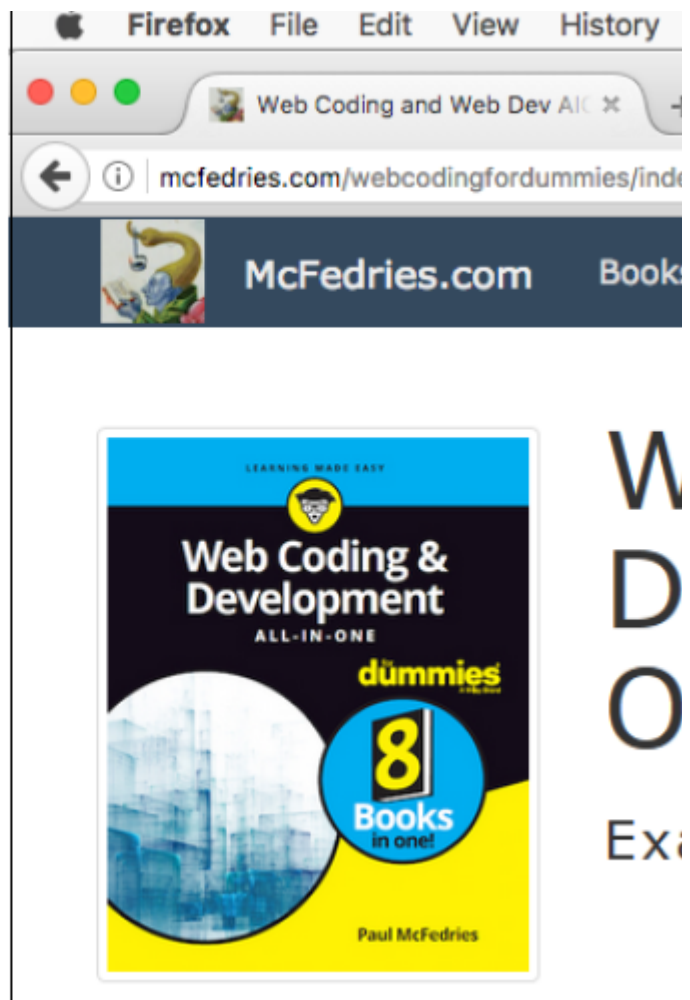
Best,

mcfedries.com

The web browser gathers up all the text, images, and other resources and displays the page in its entire digital splendor i



FIGURE 1-9:
At long last,
the web browser
displays the
web page.



Another way to look at this process is to think of the web as a giant mall or shopping center, where each website the clerk for the web page. The clerk goes into the back of the store, locates the page, and hands it to the browser. The the browser has everything it needs, and it then puts all the page pieces together for you, right there in the front of the important concepts in web development.

In the same way that our website store has a front and a back, so, too, is web development separated into a front
front end: That part of the web page that the web browser displays in the browser window. That is, it's the page stuff you

back end: That part of the web page that resides on the webserver. That is, it's the page stuff that the server gathers base

As a consumer of web pages, you only ever deal with the front end, and even then you only passively engage wil

However, as a maker of web pages — that is, as a web developer — your job entails dealing with both the front e
the back end and coding the intermediate tasks that tie the two together.

Static Websites versus Dynamic Websites

In the earliest days of the web, a **webmaster** (the term popular in the 1990s for the person who was responsible not provide feedback. The early days of the web included many encyclopedic, collection style sites with lots of content to

In those early days, the skills needed to create a website were pretty basic: one needed knowledge of the HTML consists only of HTML pages that look identical for all users at all times.

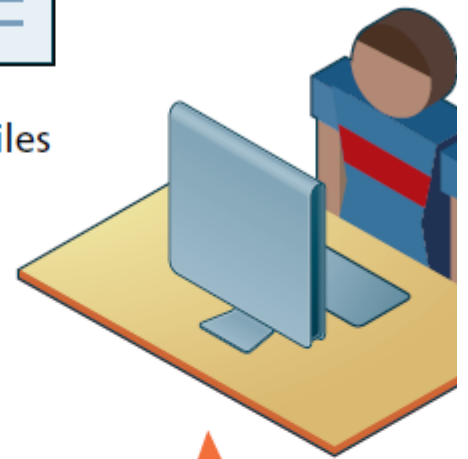
The image below illustrates a simplified representation of the interaction between a user and a static website.





4 Browser displays files

1



3 Server "sends" and then later to browser

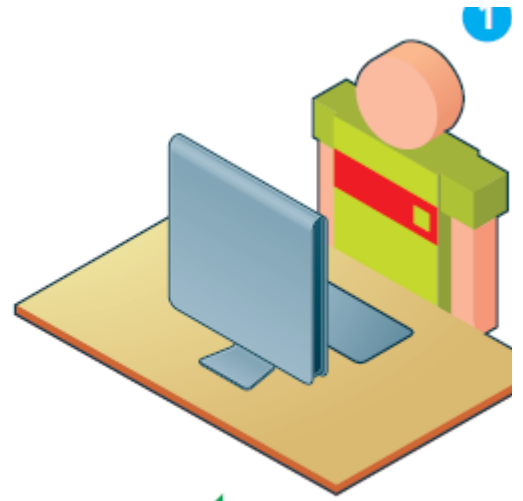
Within a few years of the invention of the web, sites began to get more complicated as more and more sites began to use databases, interface with existing enterprise computer systems, communicate with financial institutions, and then output HTML page content is being created at run time by a program created by a programmer; this page content can vary from user to user.

The image below illustrates a very simplified representation of the interaction between a user and a dynamic website.





6 Browser displays files



5 Server "sends" generated HTML and the image file to user.



4 S
"



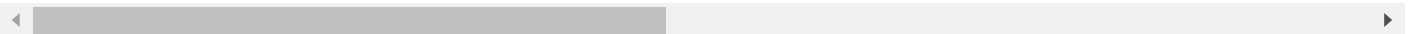


Lesson in Module 1 Part 1 CCS3218



Lesson in Module 1 CCS3218





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01 Introduction to Internet and World Wide Web



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