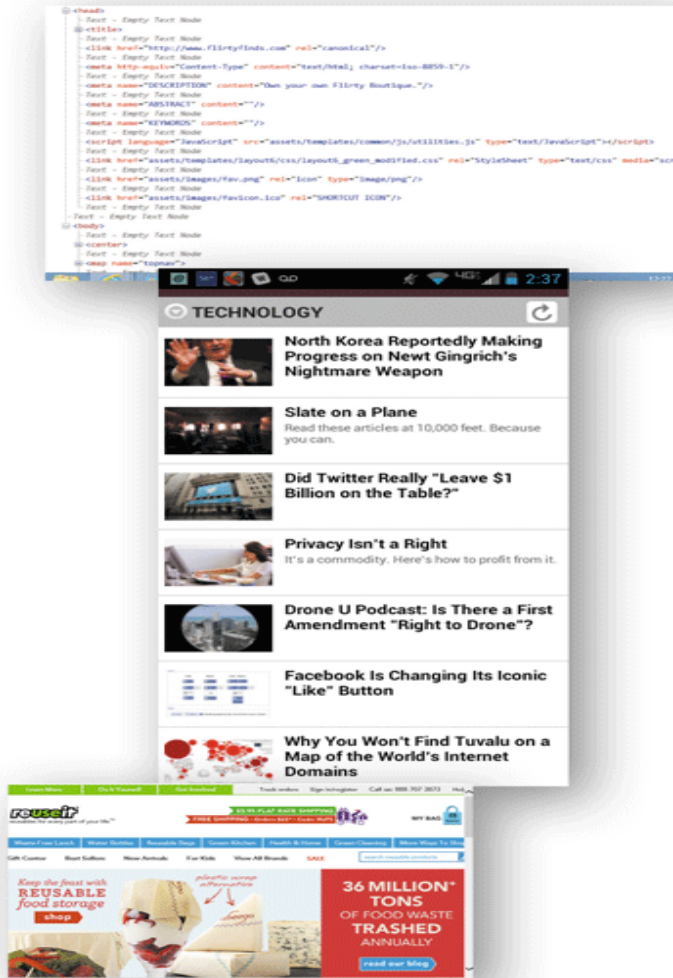


# 1 | Into the Internet (Lecture 01)



## Discovering the Internet, 5<sup>th</sup> Edition

# Objectives

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- Define the Internet
- Describe how individuals, businesses, educational institutions, and organizations use the Internet
- Discuss the developments of the Internet and the World Wide Web

# Defining the Internet

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- The **Internet** is a worldwide network of computers that allows individual and businesses around the world to share information and other resources and to conduct business transactions
- The Internet is an interconnected network of networks where each **host** (a computer directly connected to the Internet) has a number of other computers connected to it
- Users who connect to the Internet to access information and services are **online**

# Defining the Internet



# Defining the Internet

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- All computers and mobile devices use a common method of communicating known as a **protocol**, or standard
- The Internet uses **Transmission Control Protocol/Internet Protocol (TCP/IP)**

# Using the Internet

The **World Wide Web**, or **Web**, consists of a worldwide collection of electronic documents (**Web pages**)

- The Internet and web significantly have influenced the way the world communicates, educates, entertains, and conducts business. People use the Internet to:
  - Search for information and conduct business
  - Communicate and share information or media
  - Check weather, news, and sport statistics
  - Participate in online training
  - Shop and play games
  - Download books, music, or videos

# Using the Internet



# Using the Internet

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## ➤ Who Uses the Internet?

- Students
- Teachers
- Businesspeople
- Professionals
- Homemakers
- Children
- Retirees




# Using the Internet

Internet diary: time-stamped articles, or posts, in a diary or journal format, usually listed in reverse chronological order



- People also use the Internet to publish **blogs**
  - **Video sharing or video blogging**
  - **Microblogging**



Sending brief text messages to subscribers, such as by using Twitter or other services to share status updates, links to articles, photos, and more

# Using the Internet

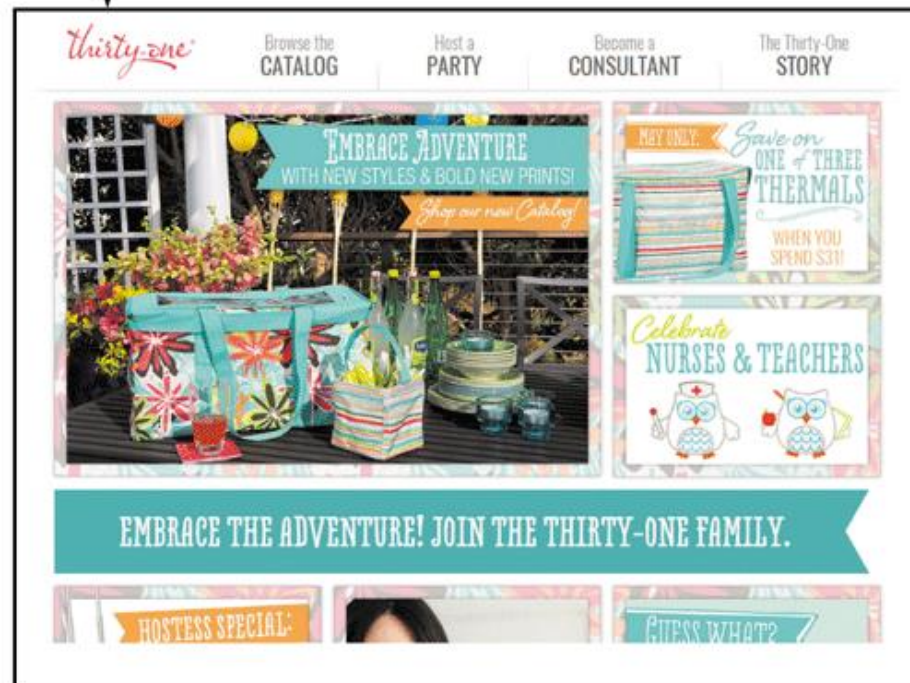
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## ➤ Internet Activities

- Browsing and searching for information
- Communicating with others through email, text or video chat, social networking, instant messaging, mailing lists, blogs and microblogs, and other media
- Downloading and uploading files
- Accessing remote computers or servers
- Conducting business activities
- Online shopping and bill payment

# Using the Internet

retail website

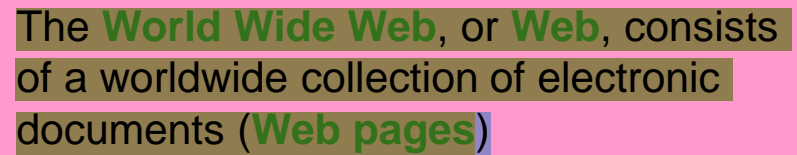


nonprofit website



# Using the Internet

The **World Wide Web**, or **Web**, consists of a worldwide collection of electronic documents (**Web pages**)



- Internet Activities – The **World Wide Web**
  - Commonly called the **web**, it is a subset of the Internet
  - **Webpages** – can include text, pictures, sound, animation, or video
  - **Website** – collection of related webpages
    - College, university, corporate, retail, non-profit, personal

webpage, Webpage, Web page and web page are used interchangeably

# Using the Internet

HTML - A set of codes that are included in the text describing how the text should be displayed or printed. The format used to store most files on the Web

- Internet Activities (continued)
  - **Markup language** – coding system that uses **tags** to control appearance of webpage
    - Hypertext Markup Language (HTML)
    - Cascading style sheets (CSS)
  - **Web authoring software**
  - **Web server** – computer on which webpages are stored

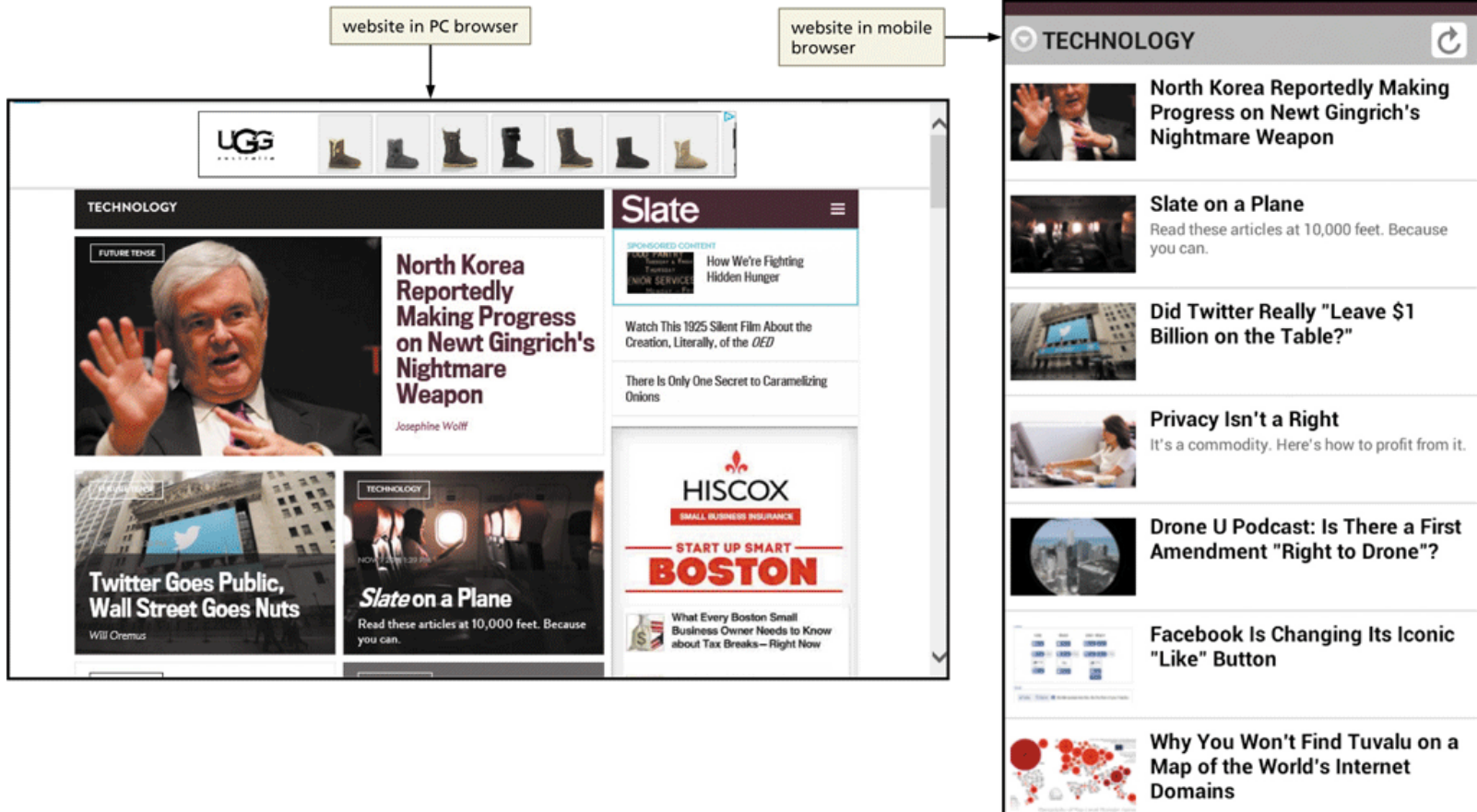
CSS includes styles that define **how to display** HTML elements. The styles are normally stored in **Style Sheets**, as **CSS files**.

# Using the Internet

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- Internet Activities (continued)
  - **Web browser** or **browser** – software used to access and view webpages
  - **Hyperlink**, or **link**, used to connect to other webpages
  - **Browsing** or **surfing the web** refers to moving from one webpage to another

# Using the Internet

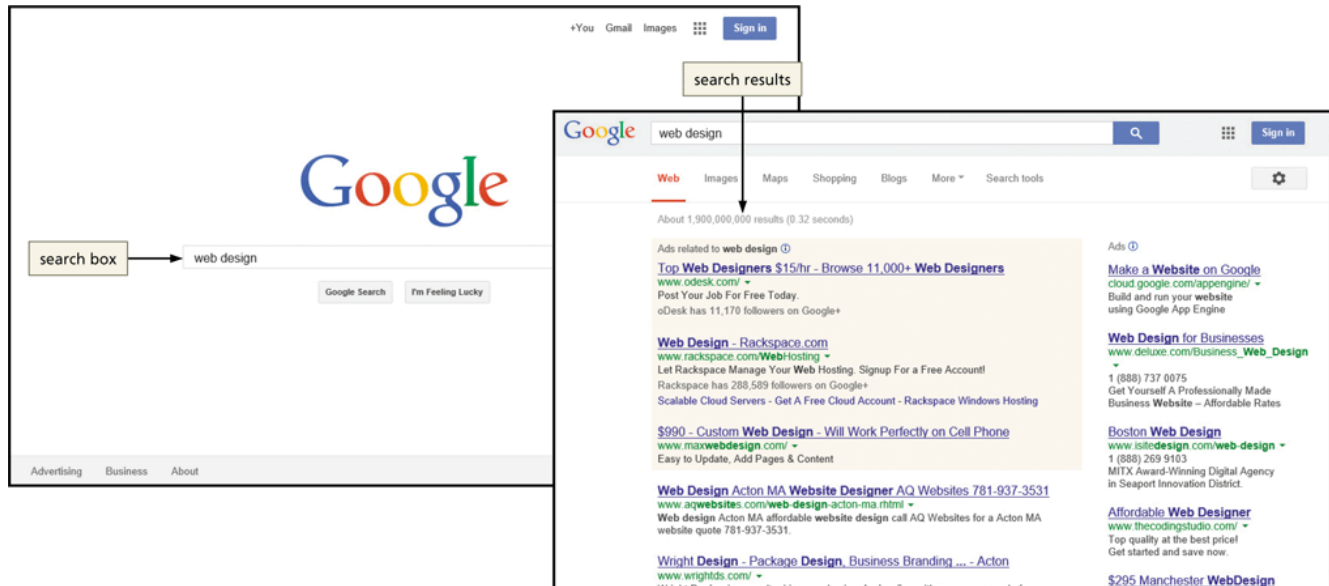


# Using the Internet

## ➤ Internet Activities (continued)

### – Search tools

- Web-based resource to help find specific information on the web





# Using the Internet

## ➤ Internet Activities (continued)

### Internet Communication Methods

Online Communication	Description	Must users be online at the same time?
Email	Users send and receive text with or without attached files	No
Instant messaging (IM) and mobile instant messaging (MIM)	Two or more users take turns exchanging brief messages	Yes
Internet Relay Chat (IRC) or chatting	Users type text into a chat window; all users can see what other users type	Yes
Massive multiplayer online games (MMOGs)	Many users play online games simultaneously, and can compete and interact with people all over the world	Yes
Newsgroups and mailing lists	Users subscribe to a newsgroup discussion or mailing list on a certain topic and receive messages about that topic	No
Social bookmarking	Users share web links to articles, videos, photographs, and webpages, and can use tags to organize their bookmarks	No
Social networking	Users share status updates, microblogs, photos and video, links, and personal commentary using a variety of online tools	No

# Using the Internet

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## ➤ Internet Activities (continued)

- **Downloading and uploading** files – using **FTP (File Transfer Protocol)** to send or retrieve electronic files from a **server**

- Remote computing

Allows remote data access, storage, software access, and collaboration technologies

- **Cloud computing**
- **Virtual private network (VPN)**
- **Web conferencing or video calling**
- Telnet

Provides a secure, encrypted connection between a remote user and a Local Area Network (LAN)

# Using the Internet

The image shows a Google Docs document titled "Meeting Room doc" with a star icon and a folder icon. The document is a form titled "Application for Meeting Room Use". The form contains the following fields:

- Date of request: \_\_\_\_\_
- 1. Name of Group/Organization: \_\_\_\_\_
- 2. Person in Charge of Activity: Name: \_\_\_\_\_
- Address: \_\_\_\_\_
- Home Telephone: \_\_\_\_\_
- Cell/Work Telephone: \_\_\_\_\_
- 3. Date facility is to be used: \_\_\_\_\_
- 4. Time needed: From: \_\_\_\_\_ To: \_\_\_\_\_
- 5. Equipment to be brought into the building (explain): \_\_\_\_\_
- 6. Facility equipment to be used: \_\_\_\_\_
- 7. Purpose of use of the facility (explain): \_\_\_\_\_
- 8. The signing of this application by a responsible adult constitutes an agreement to abide by all the rules and regulations governing the use of Sargent Memorial Library Meeting Room and to accept full responsibility for any damage to or loss of library property.
- 9. For library statistical purposes, please report the expected maximum number (100 limit) of people attending the meeting or program. Parking Limit: 54 (+3 Handicapped)
- 10. The Meeting Coordinator should notify library staff 44 equipment needed

Callouts in the image:

- A box labeled "share button" points to the "Share" button in the top right corner.
- A box labeled "menus and toolbars provide a familiar user interface" points to the top menu bar and toolbar.
- A box labeled "document created and stored using Google Docs" points to the document content area.

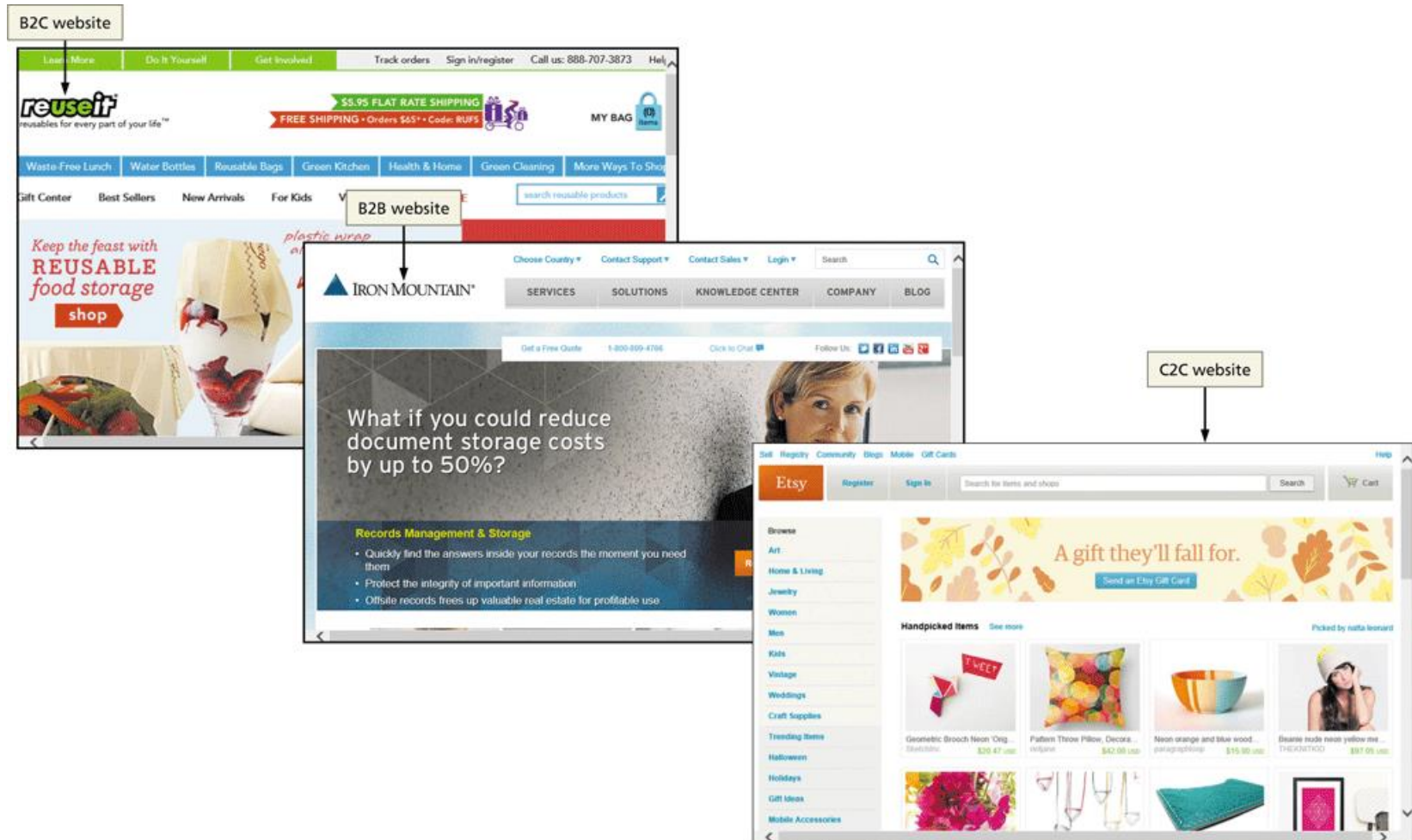
# Using the Internet

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## ➤ Internet Activities (continued)

- Conducting business activities
  - E-business:
    - **Business-to-consumer (B2C)**
    - **Business-to-business (B2B)**
    - **Business-to-employee (B2E)**
    - **Consumer-to-consumer (C2C)**
  - B2B transactions account for majority of e-business dollars spent

# Using the Internet



# Impact of the Internet

Packet switching involves separating data from a sending computer or device into small units known as packets, sending each packet independently over cables, and then reassembling the packets on the receiving computer or device

## ➤ Origins in ARPANET

- Department of Defense founded **Advanced Research Projects Agency (ARPA)** to prevent computer systems from being vulnerable to a nuclear attack
- J.C.R. Licklider headed computer and information processing research efforts
- Leonard Kleinrock developed **packet switching**
- **ARPANET** – prototype network connecting **ARPA** and university research centers

# Impact of the Internet

Circuit switching allows a caller to dial a number to establish and maintain a private circuit across the wires

## Circuit switching versus packet switching

Aspect	Circuit Switching	Packet Switching
Call setup	Required	Not required
Cost	Minimal; cost is per call	Cost is per packet
Bandwidth	Static between two computers; can cause wasted bandwidth	Dynamic; uses different paths to transfer packets separately
Congestion	Only at setup; once connection is established, data flows freely	Can occur on every packet because each is trying to find a separate path

# Impact of the Internet

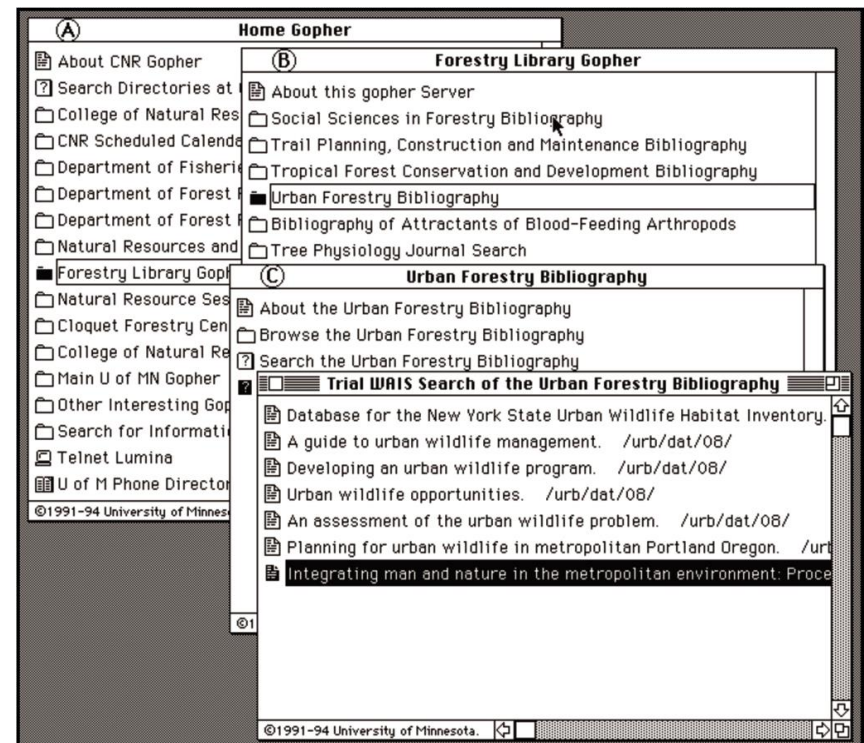
NSF – National Science Foundation

- Growth and Development of ARPANET
  - Thirteen research centers in ARPANET (1970)
  - Roughly doubled in size every year for next 15 years
  - Robert Kahn and Vinton Cerf developed standard or protocol for communications over a network **Transmission Control Protocol (TCP)** and **Internet Protocol (IP)** (1972)
- Beyond Research, to the Public
  - NSFnet replaced ARPANET (1985)
  - Congress authorized commercial activity on the NSFnet (1992)
  - NSFnet moved connections to commercial network providers (1995)



# Impact of the Internet

- The Beginnings and Rise of the Web
  - Gopher at University of Minnesota (1991)
    - Directory-based system
    - Used directory links to make navigation easier



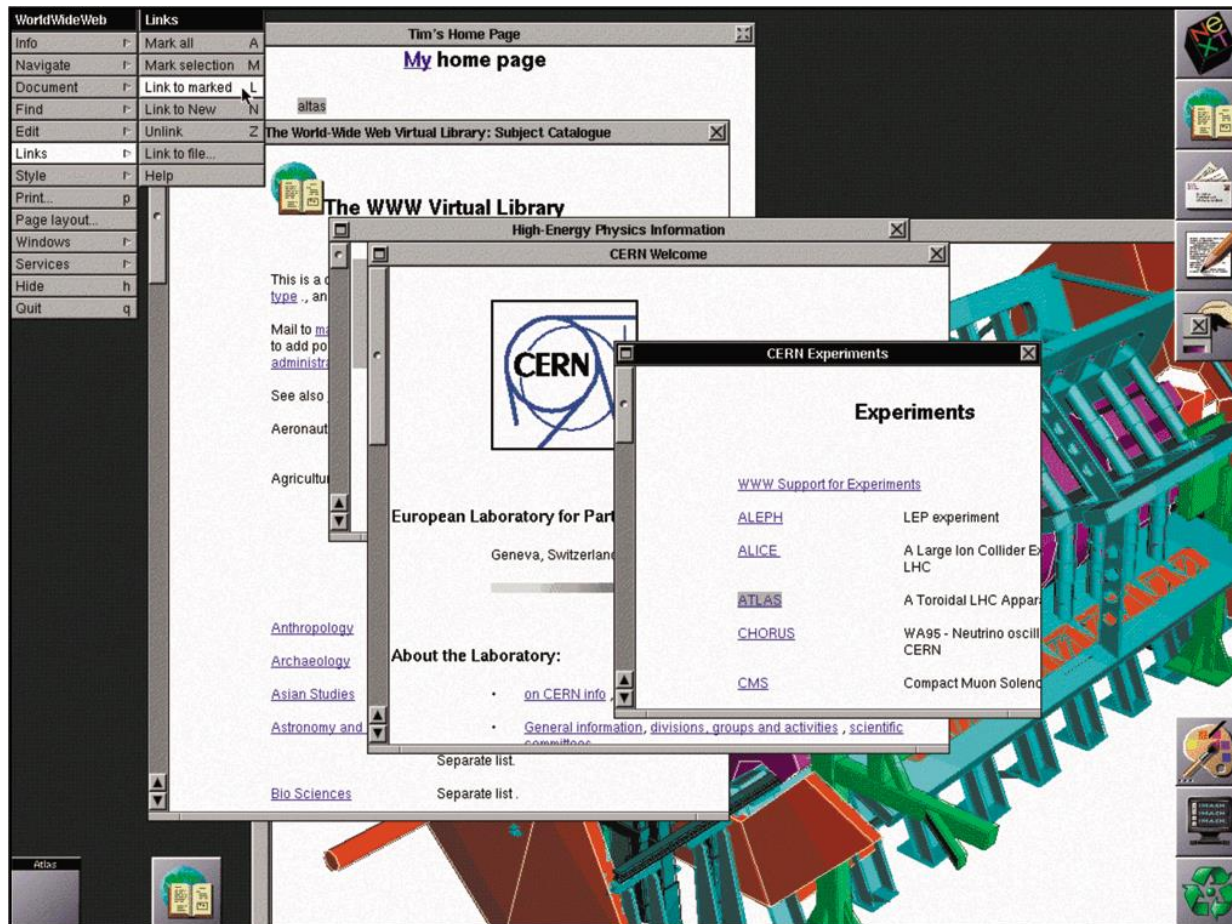
# Impact of the Internet

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## ➤ The Beginnings and Rise of the Web (continued)

- Tim Berners-Lee (1991)
  - Hypertext Markup Language (HTML)
  - **Hypertext Transfer Protocol (HTTP)**
  - First browser; was called [WorldWideWeb](#)
- Marc Andreessen and Eric Bina (1993)
  - Mosaic browser
- Marc Andreessen and Jim Clark (1994)
  - Netscape Navigator browser

# Impact of the Internet



# Impact of the Internet

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## ➤ The Beginnings and Rise of the Web (continued)

Microsoft released its browser called Internet Explorer (IE) for free

### – Research and education networks

- Microsoft Internet Explorer (1995)
- **Internet2 (I2)**

I2 is a major cooperative initiative among academia, industry, and government agencies devoted to developing and using new and emerging network technologies that facilitate research and education

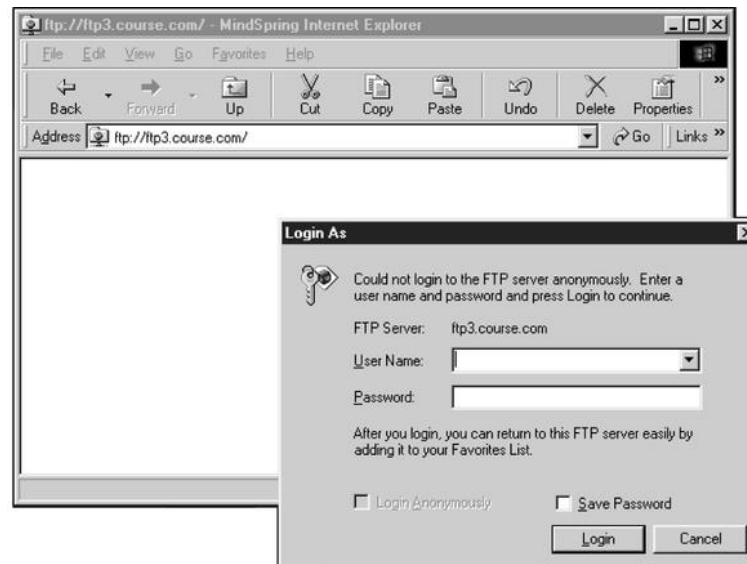
# FTP (File Transfer Protocol)

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- Can transfer binary files over the Internet without the encoding and decoding overhead
- FTP site
  - A computer that is running an FTP server application
- Anonymous FTP site
  - Does not require a login
  - Commonly used as a place to get software updates and patches

# Responsibilities of FTP Server Administrator

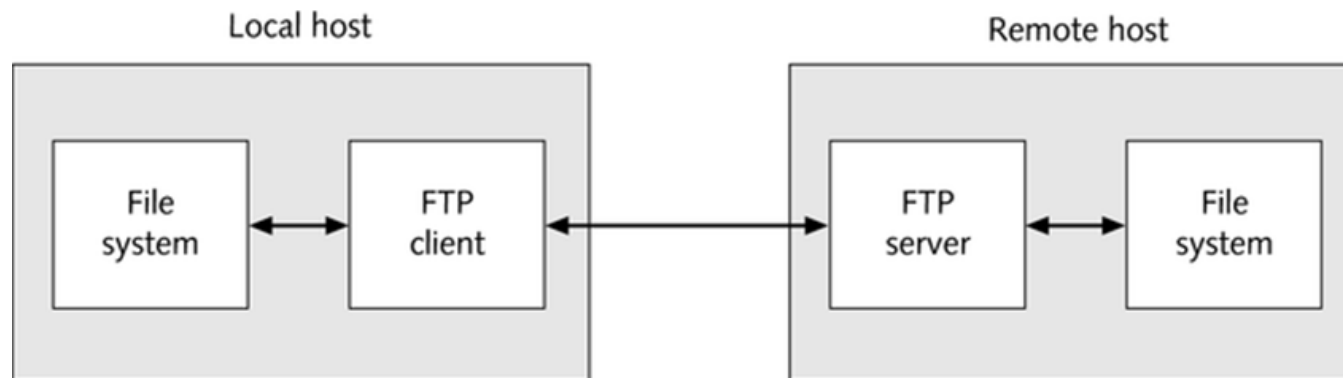
- Create and manage user IDs and passwords of those who can access the site
- Configure permissions
- Reset forgotten or compromised passwords



# How to Access FTP

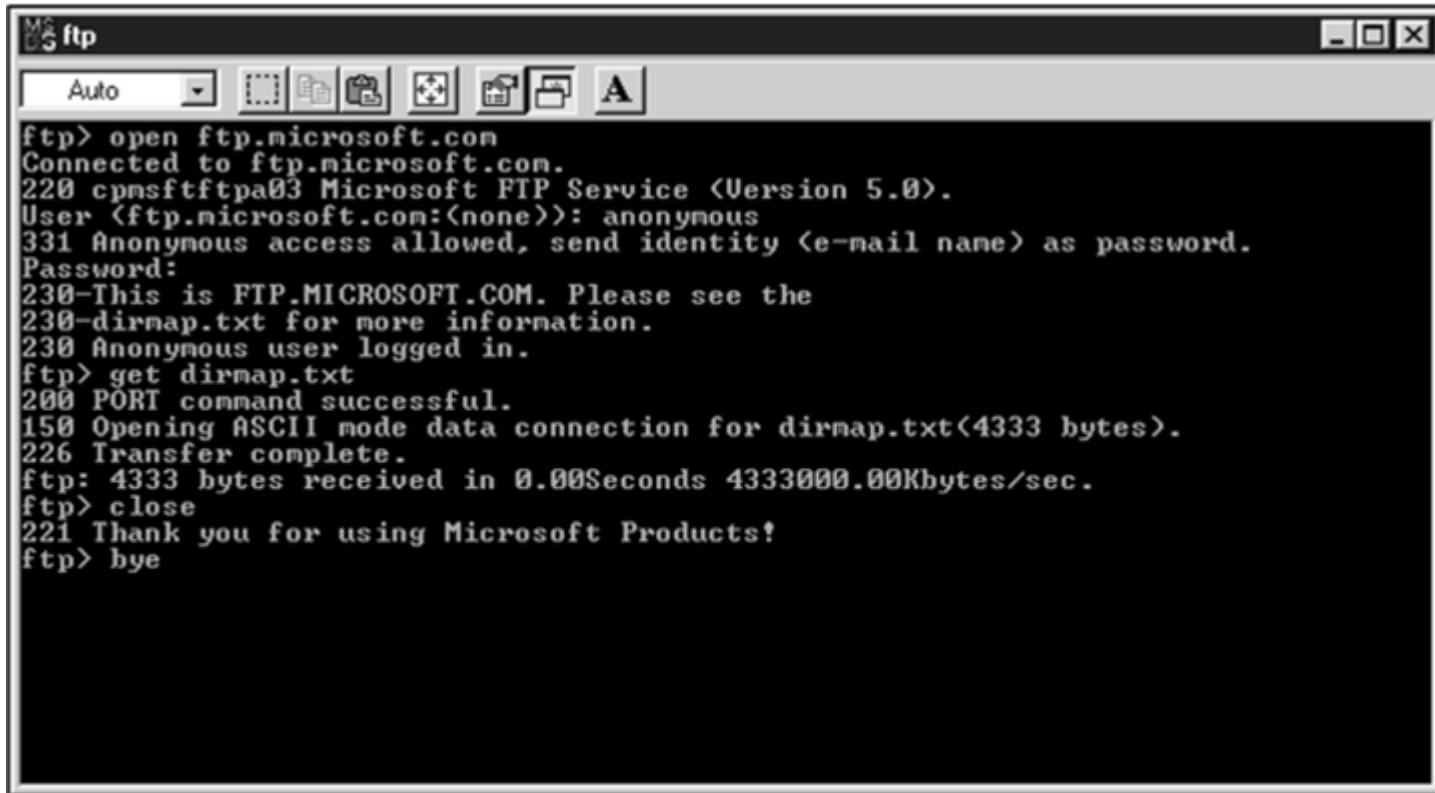
## Graphical User Interface

- Using client software:
  - Web browsers
  - Operating system command utilities
  - GUI software dedicated to FTP (e.g., FTP Pro)
- From a command prompt



FTP client and server software have access to their individual file systems — files can be transferred in either direction

# FTP from a Command Prompt



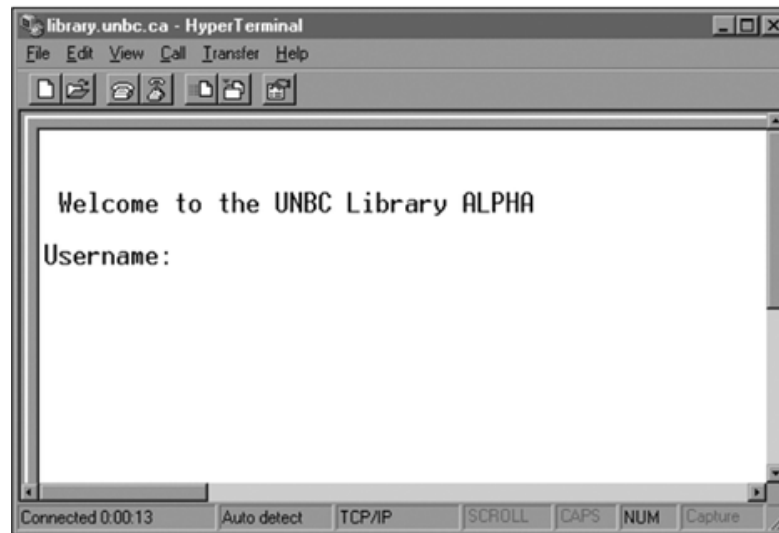
```
ftp> open ftp.microsoft.com
Connected to ftp.microsoft.com.
220 cpsftftpa03 Microsoft FTP Service (Version 5.0).
User (ftp.microsoft.com:(none)): anonymous
331 Anonymous access allowed, send identity (e-mail name) as password.
Password:
230-This is FTP.MICROSOFT.COM. Please see the
230-dirmap.txt for more information.
230 Anonymous user logged in.
ftp> get dirmap.txt
200 PORT command successful.
150 Opening ASCII mode data connection for dirmap.txt(4333 bytes).
226 Transfer complete.
ftp: 4333 bytes received in 0.00Seconds 4333000.00Kbytes/sec.
ftp> close
221 Thank you for using Microsoft Products!
ftp> bye
```

An FTP session using the FTP utility



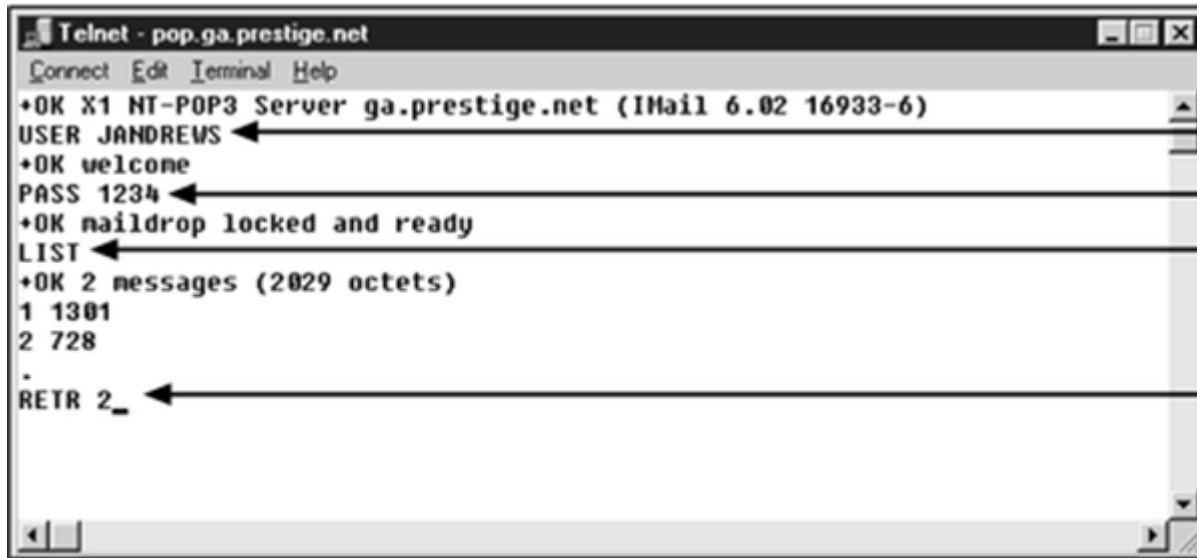
# Telnet

- A program that allows a computer to be controlled from a remote computer
- Example: library card catalogs



HyperTerminal can be used as a Telnet utility

# Telnet



```
Telnet - pop.ga.prestige.net
Connect Edit Terminal Help
+OK X1 NT-POP3 Server ga.prestige.net (IMail 6.02 16933-6)
USER JANDREWS
+OK welcome
PASS 1234
+OK maildrop locked and ready
LIST
+OK 2 messages (2029 octets)
1 1301
2 728
RETR 2_
```

Enter user ID

Enter password

List all messages

Retrieve second message

Using Telnet, you can read e-mail on an e-mail server using commands