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# Internet & Multimedia

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# Talk Outline

- Two main components
  - Internet Services & WWW
  - Web Related Multimedia

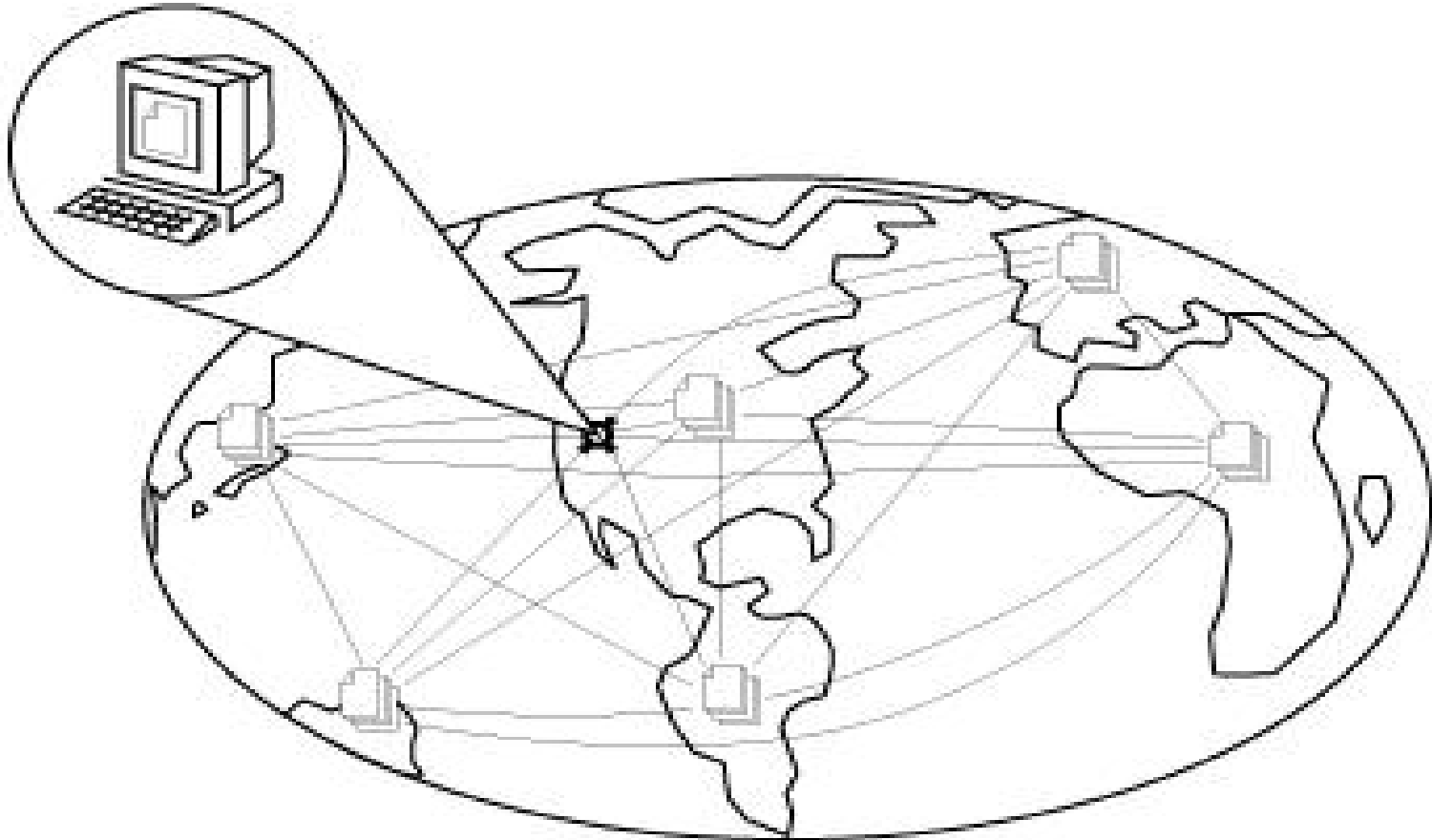
# Will Cover

- Introduction to the Internet
- Internet Access, Tools & Navigation
- Internet Services
- World Wide Web
- Multimedia and formats
- And more
- Will mention briefly:
  - . Creating Web Pages
  - . Getting an ISP

# What Is The Internet?

- Worldwide network of computer networks
- No central authority
- Quick communication & data transfer
- **Size** more than **doubles** annually
- **Traffic** increases more than **15%/month**
- Offers an enormous array of information

# What Is The Internet?



- Network of computer networks
- Common language (TCP/IP)

## Who Runs The Internet?

- No one owns or runs the Internet.
- Every computer connected to the Internet is responsible for its own part.
- The National Science Foundation is responsible for maintaining only the backbone.

<http://www.isoc.org>

- If something doesn't work, you do not complain to the management of the Internet. Instead you talk to the system administrators of the computer you are connected to.

# The Internet Then ...

- Internet is network of networks.
- Users on one computer can access services from other computers.
- You can access a wide variety of these services
- Each service can give you many kinds of information.
- In summary: The Internet is provides a way to move data from one computer to another

# Virtual Library

- Databases
  - » Individual Library Catalogs
  - » MEDLINE
- Publications
  - » English, Arabic and other Newspapers
  - » Electronic journals
- Software
  - » Freeware+or Shareware+
- Audiovisuals
  - » **Graphics, sound, motion pictures**



# Do You Do On The Internet?

- Search and Retrieve Documents
- Exchange e-mail (100 M email addresses)
- Download programs, demos and **graphics**
- Search databases of Companies and Government
- Read and Response to USENET groups (30,000 different topics)
- **Real-time chat, web-phone and video conference**

# Do You Do On The Internet? (Examples)

- Book an air ticket (best itinerary)
- Choose and order a book from a bookstore
- Order Pizza
- Buy Stocks (invest in companies)
- See a movie
- Make friends
- Visit e-malls, do e-shopping
- Watch what others are doing
- Display info about yourself
- Gossip
- etc.

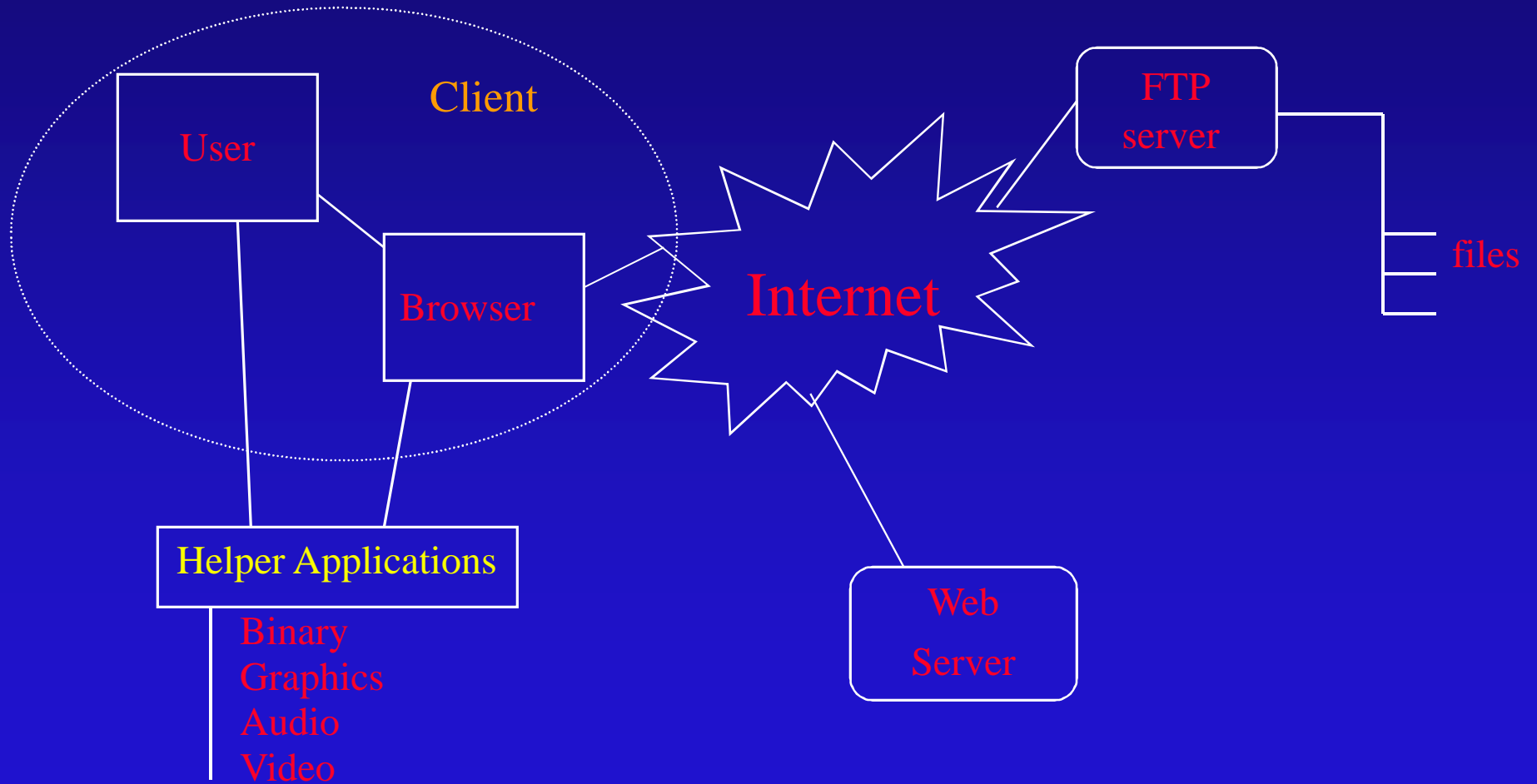
# What really is a Service?

- On internet (network of networks), computers communicate with one another. Users of one computer can access services from another.
- You can use many methods to communicate with a computer somewhere else on the Internet.
- These **methods used to communicate are called services because they service your requests.**
- There are a wide variety of services, and each can give you many kinds of information.
- In summary the internet is a:
  - > way to **move** data (audio, video, etc)
  - > a bunch of **protocols** (or rules for machines to **communicate with each other**)

# Clients and Servers

- All that we speak of internet fall into three categories:
  - » **Clients**
  - » **Servers**
  - » **Content**
- Software/Hardware that we use to browse the web, send mail, download files, etc are called clients.
- Servers respond to clients requests.

# Internet Applications: FTP and WWW



# Available Services

- **Some most popular services on the Internet are:**
  - » **E-mail**
  - » **Telnet**
  - » **FTP**
  - » **WWW**
- **Others** (Archie, Wais, Gopher, News and News Groups, Internet Relay Chat, Internet Phone, Net2phone, Video Conferencing, & Internet Collaborative Tools)

## Available Services (Contd.)

- » **Email:** Electronic mail
- » **Telnet:** Remote login into computer networks
- » **FTP:** File Transfer Protocol for transferring computer files
- » **WWW:** World Wide Web
- » **Gopher:** Searchable index, selectable index of documents
- » **USENET:** Newsgroups with different subjects enable people with common interest to share information
- » **Chat:** Real-time communications between people on the Internet

# E-mail

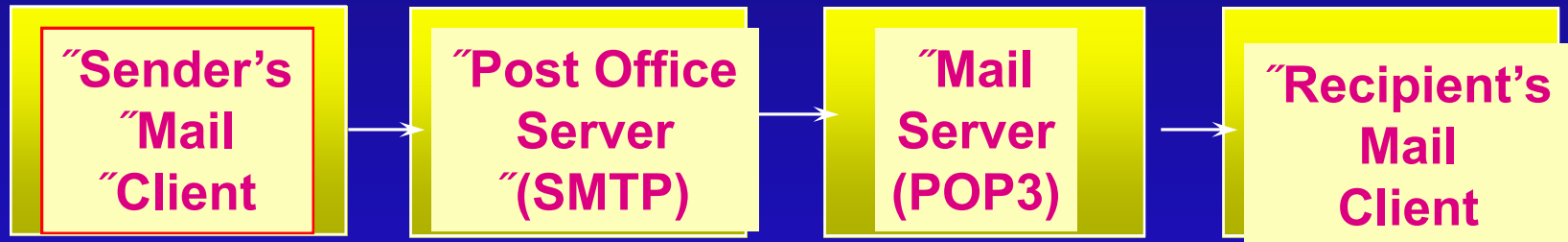
- **Most popular** and widely used internet service.
- Has become a **de-facto standard** of communication within the corporate and beyond.
- Works between **disparate systems** like PC, Unix, Mac, etc.
- Latest e-mail standards let users attach files (audio, **video, animation**, etc).
- Volume of data transferred is **billions of bytes/day**.



## E-mail (Contd.)

- It is **easy to send, read, reply to, and manage.**
- It is **convenient, global, economical and very fast.**
- Studies have shown that **recipients are more likely to reply** to an e-mail message than a written request.
- E-mail can be **read or written at any time, independent of time zones and business hours.**

# How e-mail



# E-mail addresses/Mailing lists

- Finding an e-mail Address
  - Finger
  - Whois
- Mailing list/Groups of e-mail addresses

# FTP

- File Transfer Protocol
  - » Allows transfer of any type of file from the remote server to a local computer and vice versa
- File types could be ASCII or Binary
- All types of files from text to multimedia can be transferred.
- Two types of FTP: Secure and **Anonymous**
- can **download** or upload files without having an account on the machine.

# Archie

- The archie service is a collection of resource discovery tools that together provide an electronic directory service for locating information in an Internet environment.
- Archie creates a central index of files available on anonymous FTP sites around the Internet.
- The Archie servers connect to anonymous FTP sites that agree to participate and download lists of all the files on these sites.
- These lists of files are merged into a database, which users can then search

# WAIS

- **WAIS** stands for **Wide Area Information Server** and is pronounced *ˈwaɪs*.
- **WAIS** searches for words in documents.
- The core of the software is an indexer, used to create full-text indexes of files fed to it, and a server that can use those indexes to search for keywords or whole English expressions among the files indexed.

# Gopher

- The term **Gopher** refers to:
  - **A network protocol**
  - **A server type**
  - **One of the many Gopher client applications.**
- **Gopher** protocol and software allow for browsing information systems so that **one doesn't need to know exactly where the needed information is** before looking for it.
- You do need to know the address of a **Gopher server** to get started.
- **Veronica** is a service that provides a (very large) index of titles of **Gopher** items from most servers throughout the Internet.

# Discussion on the Net

- Network **news** is another way to take part in a lot of discussions over the internet
- Talk
- Internet relay chat
- Internet phone
- Net2Phone
- Video Conferencing





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# Introduction to WWW

# Introduction to WWW

- WWW Terminology
- Web page basics
- Web Client/Server Software and HTTP
- Images, Image maps, forms, and frames
- Web authoring
- Search engines
- Related topics and much more

# Lingo

- HyperText: Enables linking to places
- Link(s)
- Hyperlinks: Hot spots on which a user can click to access other:
  - » topics (in the same document)
  - » documents, or
  - » Web sites
- URL: Addresses on Internet to which hot spots connect

# Lingo

- GIF, JPEG, XBM, XPM (picture formats)
- Netscape, Mosaic, Iexplorer (browsers)
- WebEdit, HoTMetaL, FrontPage (editors/tools)
- FTP, TCP/IP, HTTP (protocols)
- Applets, J++, javac, Java Engine (Java programming)
- xv, clipart, etc (graphics editors)

# Why Design and for Who?

- **Personal Pages**
- **Companies, Organizations**
  - » (schools, universities, research centers, etc)
- **News Networks**
- **Journals**
- **Events (conferences, international games, etc)**
- **Internet/Intranet**

# What in this session?

- What is **HTML** and why do we care?
- **WWW** and **HTTP**
- HTML Document structure
- Images and Hyperlinks
- Multimedia (audio/video streaming, webcam)
- Other Web related aspects

# What is HTML?

- HTML is a structured language
  - » rules of nesting
- All WWW documents are written in HTML
- WWW
  - » World Wide Web
  - » Most popular Internet information service

# What is Internet?

- What is Internet?
  - » Worlds largest network
  - » Collection of interconnected networks built on the Internet protocol **TCP/IP**
  - » Growing at an amazing rate
  - » Open system with decentralized management
- Estimated: **28.8** million people over 16 in the US have access, **16.4** million use the Internet and **11.5** million use the web.



# World Wide Web

- **Client/Server Architecture**
- **Designed to make it easy for people to share information**
  - » Hides complexities of location of documents
  - » Easy to distribute information
  - » Fun to look at
- **Hyperlinks**
  - . Highlighted words or pictures
  - . Item pointed to may be another document image, movie, sound clip etc

# Example



# WWW Browsers

- Interpret HTTP as well as other protocols
  - » ftp, mailto, gopher, etc.
- Display physical formatted HTML text
  - » in-line images
  - » hyperlinks

# Helpers/Plugins

- Helper Applications
  - » Programs on the user's computer that can be used to display images, movies, sound, etc. that cannot be displayed on the browser itself
    - . Sound files
    - . Movies (MPEG)
    - . Mail
    - . Other file formats
- Examples (media player, real player, etc)

# Why learn HTML?

- Everyone is a publisher
  - » The architecture of the Internet allows almost anyone to become an information provider for a world wide audience
- WWW documents must be in HTML
  - » To create your own home page you need to know some HTML
- Not a **must**
- It is very easy to learn

# Creating an HTML Page

- **Requirements**
  - » Text or HTML Editor to enter TAGS
  - » Graphics editors
  - » Browser (Netscape, Internet Explorer, Lynx, etc.)
- **Focus**
  - » Usable and Eye-catching documents
  - » Images in Web pages
  - » Animation

# HTML Basics

- HTML documents contain 3 things
  - » Text +TAGS
  - » External Multimedia such as graphics, sound, movies, etc.
- Example
  - » `<TAG> Your Text Here </TAG>`
  - » Types, used in pairs, or not in pairs
  - » Tags can be nested

# What are Tags?

- **Mark text as**
  - » headings, paragraphs
  - » formatting (physical, logical)
  - » list
  - » quotations, etc.
- **Also for**
  - » creating hyperlinks
  - » including images, making tables
  - » fill-in forms, frames



# How do they look?

- `<H1> KFUPM </H1>`
  - » display KFUPM as a level 1 heading, can go down from H1 to H6
- `<P> A paragraph comes here </P>`
- `<A> Anchor </A>`
- `<BR>` for line breaks
- `<HR>` for horizontal line

# HTML Document Structure

- Basic Structure

- » <HTML>

- » <HEAD>

- » <TITLE> KFUPM </TITLE></HEAD>

- » <BODY>

.....

- » </BODY>

- » </HTML>

# HTML Document Structure

- HTML= head + body
  - » Body elements contain all the text and other material to be displayed
- Line breaks and indentation exist only for human readability
- Comment
  - » `<! upto the next >`
- `<PRE>` for pre-formatted text

# Example

<HTML>

<HEAD><TITLE>head/title</TITLE></HEAD>

<BODY> all elements of document

<H1> Big heading </H1>

<H6> Small heading </H6>

<P> a para of text comes here </P>

</BODY>

</HTML>

# More on Tags

- HTML elements

- » start tag and end tag

- `<NAME>`    `&nbsp;`    `</NAME>`

- Attributes for elements

- » `<IMG SRC=%60adiq.gif+>`

- tag names and attributes are case **insensitive**

- filename is case sensitive

# Spinning your HTML Web

- To create hot spots (or Anchors) you need two things
  - » URLs (Uniform Resource Locator)
  - » Links
- Anchors and Links allow readers to jump from place to place in the document
- URL is a fancy way of saying address or location for information on the Internet

# URL Anatomy & Types

- **Example:**

**http://www.ccse.kfupm.edu.sa/~sadiq/tut.html**  
**protocol indicator, hostname, directory/filename**

- **Types:**

- » **Absolute URLs (also called complete URLs)**
- » **Relative URLs (are incomplete URLs)**

- **Other Protocols (mailto, ftp, etc)**

**ftp://ftp/pub/images/backgrounds/glosbgr.gif**  
**mailto:sadiq@ccse.kfupm.edu.sa**

# Examples

- `http://www.ccse.kfupm.edu.sa/~sadiq/tut.html`
- `<IMAGE SRC=  
ftp://ftp/pub/images/backgrounds/glosbgr.gif ALIGN  
= MIDDLE>`
- `<A HREF="  
mailto:sadiq@ccse.kfupm.edu.sa">  
sadiq@ccse.kfupm.edu.sa</A>`



# Building Anchors <A>

- **Components required**
  - » **The Tag: <A> anchor\_name </A>**
  - » **HREF: Indicates where to jump**
  - » **NAME: Identifies an internal label**
- **HREF: Lets users jump to either material on the same Web site or to other material on the Internet**
- **NAME: Lets users jump to material within the same document**

# Named Anchor & Basic Links

- `<A HREF=something>anchor_name </A>`
  - » `something = #name`
    - . name=funny (for example)
  - » `something = filename.html[#name]`
    - . tutorial.html
  - » `something = a Web site, for example`
    - . `http://www/uqu.edu.sa/~youssef/tutorial.html`
    - . `ftp://www/ksu.edu.sa/~ahmed/jokes.html`
- `<H2><A NAME="funny"> Funny</A></H2>`

# Images

- Including
- Aligning
- Using them as links
- Making images load more quickly
- Using thumbnail images

# Adding Images

- Must include them as GIF or JPG graphics
- Use graphic editors, scanners, or, **borrow**
- Must use an Image Tag `<IMG SRC = "..\.. \ +>`
- `ALT="..."` specifies text to be displayed if image not available
- `BORDER=#` of pixels, controls the thickness of the border
- Pictures can be aligned Left, Right, etc.

# Example of Image Inclusion

```
<HTML>
<HEAD><TITLE> Biography </TITLE></HEAD>
<BODY>
<H1> Dr. Sadiq M. Saits Biography </H1>
<P><IMG SRC="sadiq.gif"
ALT="Picture of Sadiq Sait " ALIGN=RIGHT>
Picture of Sadiq M. Sait for his biography...</P>
</BODY>
</HTML>
```

# More on Images

- Loading of images is made **faster** by telling the browser the **size** of the image
- Size is specified in **pixels**
- You can link by using **images**
  - » Can have pictures with no borders
- You can use **thumbnail** images to link to larger images
- Making **clickable** images (image maps)

# Other Attributes

- Choosing Colors
  - » Background
  - » Links (link, alink, vlink)
  - » Text
- Colors can be chosen for tables, background etc.
- RGB concept (#FFFFFF=white)
- Choosing background (using images, .gif files)

# Some More Tags

- CENTER, BLINK, HR, APPLET
- <FORM>
  - » SELECT, OPTION, TEXTAREA
- <TABLE>
  - » TR, TH, TD, CAPTION
- Frames and Forms
- Java Applets
- And many more .



- Some HTML commands and Tricks
  - » BLINK tag, etc
- Animation and Sound
- Using Java Applets

# Java Applet inclusion

- Compile the Java code (e.g., use javac)
  - » example: javac Blinker
- Creates file with extension .class,
  - » example Blinker.class
- Use the tags `<APPLET>` ÷ `</APPLET>`
- Specify parameters such as speed, color (for background and text, etc.)

# Java Applet Inclusion (contd)

```
<applet code=%Blink.class+width=300  
height=30>
```

```
<param name=lbl value = %SADIQ M. SAIT,+>
```

```
<param name=speed value=%6+>
```

```
</applet>
```

# Java Applet Inclusion (contd..)

```
<applet code=%ticker.class+width=280 height=30>  
<param name=msg value = %W>Welcome to the  
tutorial on Web page design and HTML!+>  
<param name=%shco+value=%210, 210,210+>  
<param name=%speed+value=%8+>  
<param name=%bgco+value=%255,255,255+>  
<param name=%xtco+value=%255,0,0+>  
</applet>
```

# Forms on Web

- What are they used for
  - » Surveys
  - » Collect addresses of visitors to your Homepage
  - » Allow people to register for something
- Features
  - » Submitted by mail
  - » Security (Passwords)
  - » Checkboxes and Radio buttons
  - » Area for Text and Comments
- Require a CGI program on server to process data coming from the form submission

# CGI programs

- cgi-bin (common gateway interface)
- Executable: Example
  - » `<!--#exec cgi=%6cgi-bin/counter+-->` people visited this page.
- Helper programs
  - » to send mail
  - » run audio/video applications
  - » etc

# Searching

- On the internet we can
  - » search for a file using Archie
  - » Find an e-mail address
    - . Internet White Pages (internic keeps records)
  - » Finding a gopher site
  - » etc
- Search engines using the Web

# To Find Information On The Web

- The most common way to find information is using the following services
  - » Yellow pages
    - . Yahoo
  - » Search Engines
    - . InfoSeek, WebCrawler, Alta-Vista, Lycos



# Search Engines

- Tools to discover Web resources on the internet.
- Help in locating information.
- They act as an agent between publishers and users.
- Examples: yahoo, altavista, webcrawler, etc.

# Web- Directories

- A Web-directory, like **Yahoo**, maintains a database of all the Web sites by recording the company name and other important information from the Web-pages like captions, etc.
- A Web directory can be compared to the contents page of a book.

# Web-Indexes

- A Web Index, like **Alta-Vista**, maintains exhaustive information of every Web-site by picking up all important and key-words from every single page of the site.
- A Web-Index can be compared to the index pages of a book.

# Search Engine Tools

- Yahoo: [www.yahoo.com](http://www.yahoo.com)
- Alta Vista: [www.altavista.digital.com](http://www.altavista.digital.com)
- Excite: [www.excite.com](http://www.excite.com)
- Hot Bot: [www.hotbot.com](http://www.hotbot.com)
- InfoSeek: [www.infoseek.com](http://www.infoseek.com)
- LookSmart: [www.looksmart.com](http://www.looksmart.com)
- Magellan: [www.mckinley.com](http://www.mckinley.com)
- MetaCrawler:  
[www.metacrawler.com](http://www.metacrawler.com)

- Helper programs
  - » to send mail
  - » run audio/video applications
  - » etc
- Authoring Tools
- VRML, Dynamic HTML, ASPs, etc
- Video Streaming
- Push Technology
- Data-Base Integration
- Search Engines
- E-Commerce

# Connecting To The Internet

- Things needed to connect to the Internet
  - » Computer
    - . PC, SUN, Mac or other
  - » ISP connection
    - . Dial-up connection
      - Telephone connection, ISDN
    - . Dedicated leased lines
      - T1, E1, ATM, SONET
      - Connect to an existing network
  - » Software
    - . Email client
    - . WWW browser
    - . TCP/IP network software

# Internet Service Providers

- Provide connection to the Internet, just like telephone companies give connection to Telephone network.
- Connection Options:
  - » Dial-up Connection: Data over telephone lines, speeds upto 33 Kbps
  - » ISDN: Integrated Service Digital Network: Even though around for a long time, getting very popular now, Speeds upto 128 Kbits/sec



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# Finally....

- Summary
- Demo