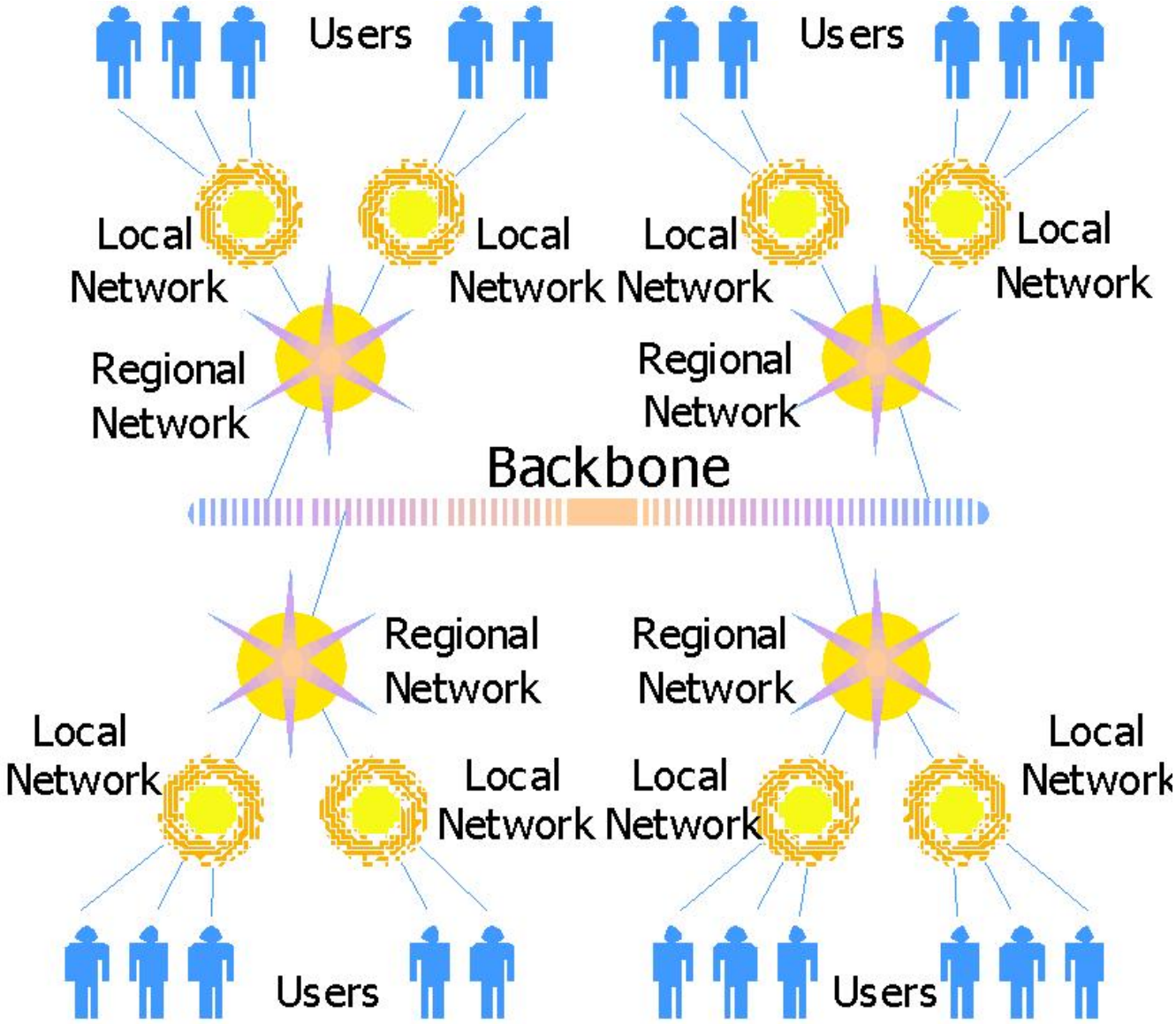
Internet Basics

This lesson includes the following sections:

- History of Internet
- How the Internet Works
- Major Features of the Internet
- Online Services
- Internet Features in Application Programs

The Internet: Evolution

- The Internet was created by the Advanced Research Projects Agency (ARPA) and the U.S. Department of Defense for scientific and military communications.
- The Internet is a network of interconnected networks. Even if part of its infrastructure was destroyed, data could flow through the remaining networks.
- The Internet uses high-speed data lines, called backbones, to carry data. Smaller networks connect to the backbone, enabling any user on any network to exchange data with any other user.
- ARPANET, NSFnet, Internet
- Internetworking: the process of connecting separate networks


Users
Users
Local Network
Local Network
Local Network
Local Network
Regional Network
Regional Network
Backbone
Regional Network
Regional Network
Local Network
Local Network
Local Network
Local Network
Users
Users

How the Internet Works

- TCP/IP
- Routing Traffic Across the Internet
- Addressing Schemes
- Domains and Subdomains

How the Internet Works - TCP/IP

- **Every computer and network on the Internet uses the same protocols (rules and procedures) to control timing and data format.**
- **The protocol used by the Internet is the Transmission Control Protocol/Internet Protocol, or TCP/IP.**
- **No matter what type of computer system you connect to the Internet, if it uses TCP/IP, it can exchange data with any other type of computer.**

How the Internet Works - Routing Traffic Across the Internet

- Most computers don't connect directly to the Internet. Instead, they connect to a smaller network that is connected to the Internet backbone.
- The Internet includes thousands of host computers (servers), which provide data and services as requested by client systems.
- When you use the Internet, your PC (a client) requests data from a host system. The request and data are broken into packets and travel across multiple networks before being reassembled at their destination.

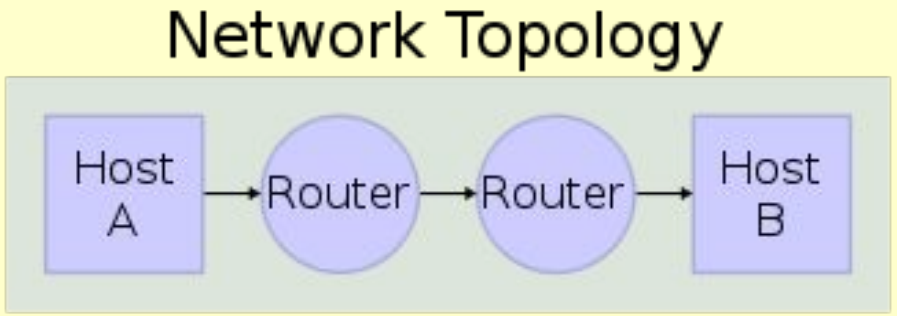
The Operation of the Internet

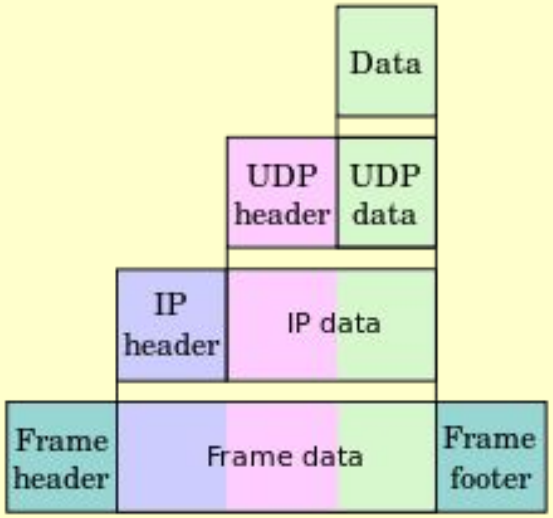
- Packets of information flow between machines governed by common rules (protocols):
  - Internet protocol (IP)
  - Transport control protocol (TCP)
- Internet is a packet-switching network
  - Messages are decomposed into packets, containing part of the message, plus information on the sending and receiving machines and how the packet relates to the other packets
  - Packets travel independently and possibly on different routes through the Internet
  - Packets are reassembled into the message at the receiving machine.

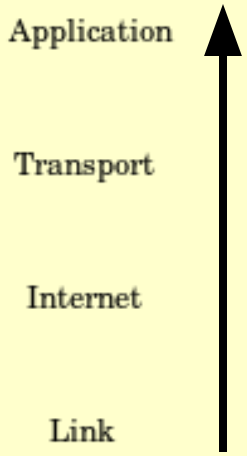
How internet works through protocol stacks

- Layered architecture

each layer is an *abstraction* that assumes the functionality of the layer underneath

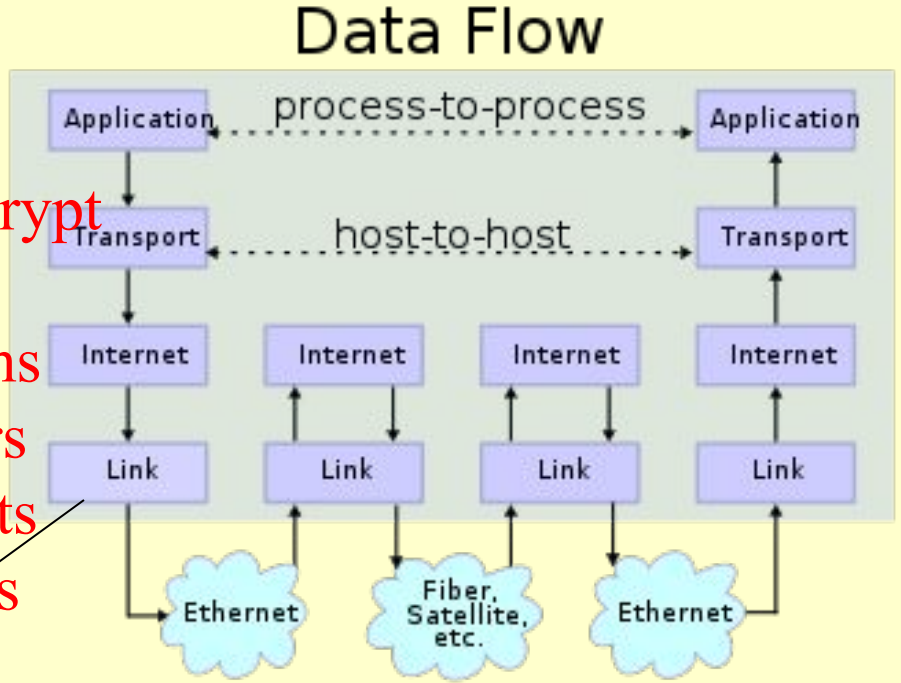


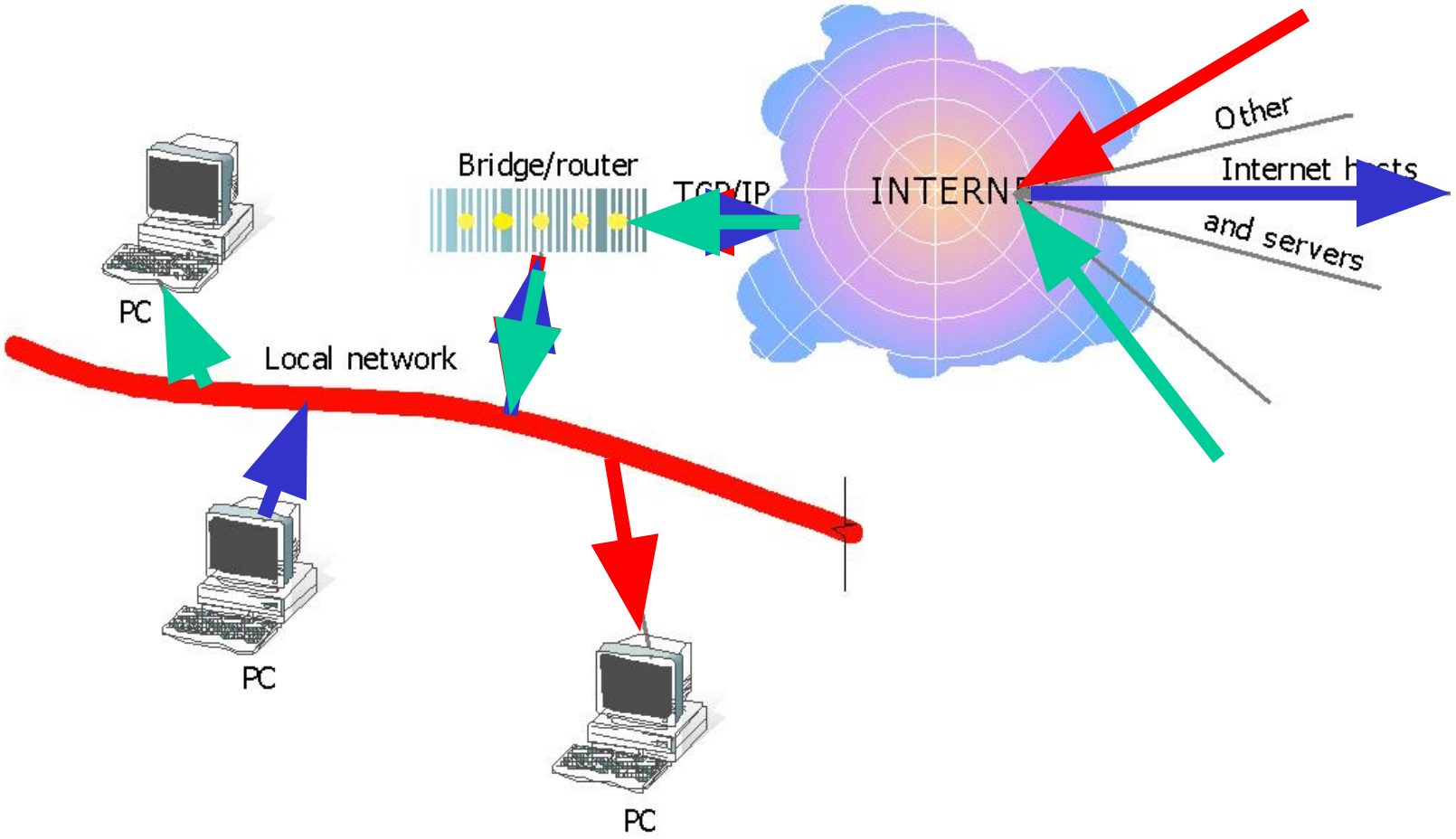




files
unencrypted
streams
buffers
packets
frames
bytes
bits

drivers, network



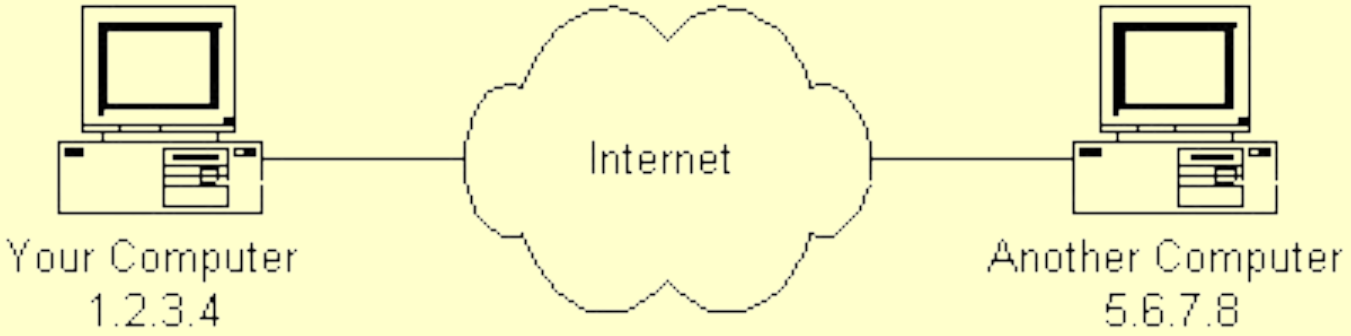

Bridge/router
TCP/IP
INTERNET
Other
Internet hosts
and servers
PC
Local network
PC
PC

How the Internet Works - Addressing Schemes

- In order to communicate across the Internet, a computer must have a unique address.
- Every computer on the Internet has a unique numeric identifier, called an Internet Protocol (IP) address.
- Each IP address has four parts – each part a number between 0 and 255. An IP address might look like this: 205.46.117.104.

Where to Begin? Internet Addresses

- Because the Internet is a global network of computers each computer connected to the Internet **must** have a unique address. Internet addresses are in the form **nnn.nnn.nnn.nnn** where nnn must be a number from 0 - 255. This address is known as an IP address. (IP stands for Internet Protocol)
- The picture below illustrates two computers connected to the Internet; your computer with IP address 1.2.3.4 and another computer with IP address 5.6.7.8. The Internet is represented as an abstract object in-between.

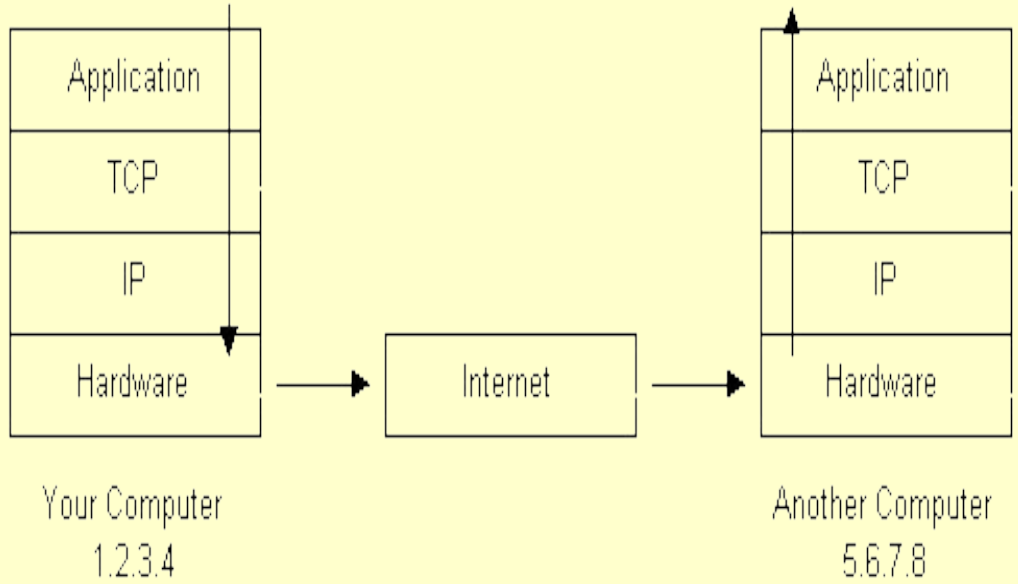


- If you connect to the Internet through an Internet Service Provider (ISP), you are usually assigned a temporary IP address for the duration of your dial-in session.
- If you connect to the Internet from a local area network (LAN) your computer might have a permanent IP address or it might obtain a temporary one from a DHCP (Dynamic Host Configuration Protocol) server.
- In any case, if you are connected to the Internet, your computer has a unique IP address.

Protocol Stacks and Packets

So your computer is connected to the Internet and has a unique address. How does it 'talk' to other computers connected to the Internet? An example should serve here: Let's say your IP address is 1.2.3.4 and you want to send a message to the computer 5.6.7.8. The message you want to send is "Hello computer 5.6.7.8!". Obviously, the message must be transmitted over whatever kind of wire connects your computer to the Internet. Let's say you've dialed into your ISP from home and the message must be transmitted over the phone line. Therefore the message must be translated from alphabetic text into electronic signals, transmitted over the Internet, then translated back into alphabetic text. How is this accomplished? Through the use of a **protocol stack**. Every computer needs one to communicate on the Internet and it is usually built into the computer's operating system (i.e. Windows, Unix, etc.). The protocol stack used on the Internet is referred to as the TCP/IP protocol stack because of the two major communication protocols used. The TCP/IP stack looks like this:

Protocol	LayerComments
Application Protocols	LayerProtocols specific to applications such as WWW, e-mail, FTP, etc.
Transmission Control Protocol Layer	TCP directs packets to a specific application on a computer using a port number.
Internet Protocol Layer	IP directs packets to a specific computer using an IP address.
Hardware Layer	Converts binary packet data to network signals and back. (E.g. ethernet network card, modem for phone lines, etc.)



How the Internet Works - Domains and Subdomains

- In addition to an IP address, most Internet hosts or servers have a Domain Name System (DNS) address, which uses words.
- A domain name identifies the type of institution that owns the computer. An Internet server owned by IBM might have the domain name ibm.com.
- Some enterprises have multiple servers, and identify them with subdomains, such as products.ibm.com.

Internet Domains

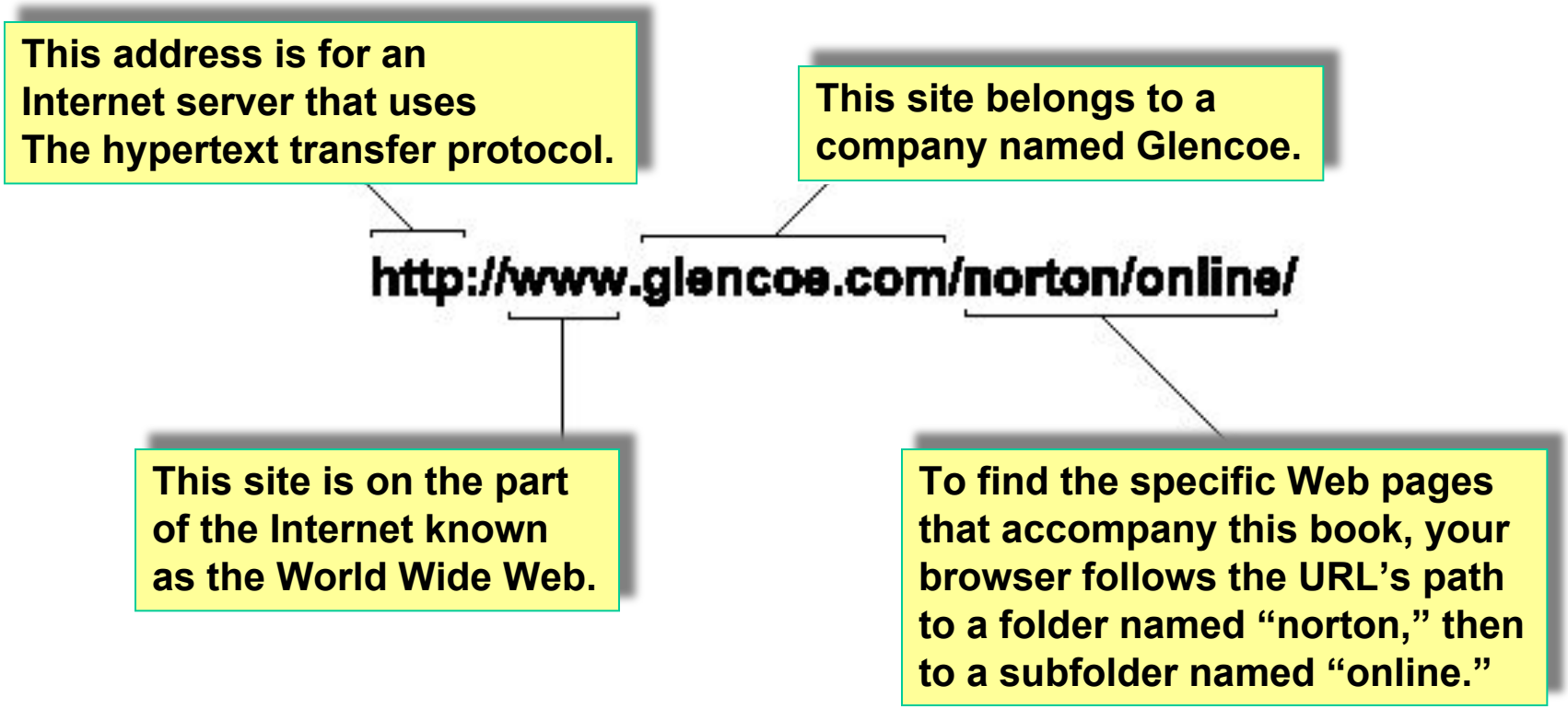
Domain	Type of Organization	Example
.com	Business (commercial)	ibm.com (International Business Machines Corp.)
.edu	Educational	center.edu (Centre College, Danville, KY)
.gov	Government	Whitehouse.gov (The White House)
.mil	Military	Navy.mil (The United States Navy)
.net	Gateway or host (or business/commercial)	Mindspring.net (A regional Internet service provider)
.org	Other organization (typically nonprofit)	isoc.org (The Internet Society)

Major Features of the Internet

- The World Wide Web
- E-Mail
- News
- Telnet
- File Transfer Protocol (FTP)
- Internet Relay Chat (IRC)

Major Features of the Internet - The World Wide Web

- The World Wide Web is a part of the Internet, which supports hypertext documents, allowing users to view and navigate different types of data.
- A Web page is a document encoded with hypertext markup language (HTML) tags.
- HTML allows designers to link content together via hyperlinks.
- Every Web page has an address, a Uniform Resource Locator (URL).

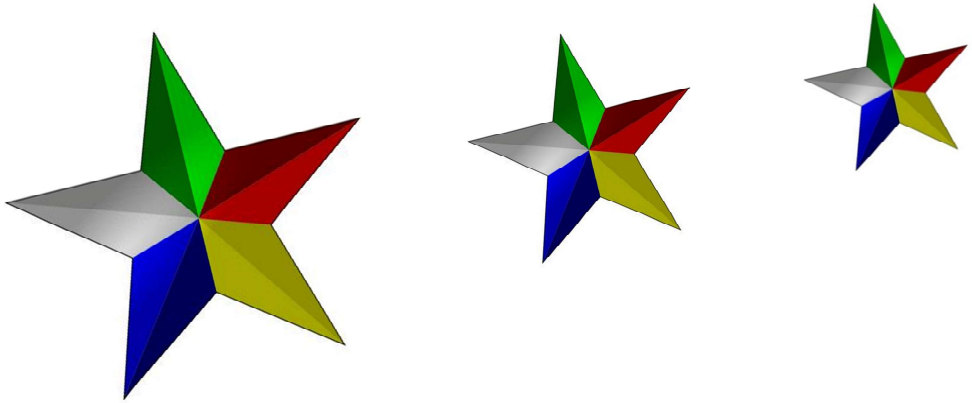

This address is for an Internet server that uses The hypertext transfer protocol.
This site belongs to a company named Glencoe.
http://www.glencoe.com/norton/online/
This site is on the part of the Internet known as the World Wide Web.
To find the specific Web pages that accompany this book, your browser follows the URL's path to a folder named "norton," then to a subfolder named "online."

Major Features of the Internet - E-Mail

- **Electronic mail (e-mail) is the most popular reason people use the Internet.**

- **To create, send, and receive e-mail messages, you need an e-mail program and an account on an Internet mail server with a domain name.**

- **To use e-mail, a user must have an e-mail address, which you create by adding your user name to the e-mail server's domain name, as in jsmith@aol.com.**



HTML

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Introduction

What is HTML?

- HTML stands for Hyper Text Markup Language
- HTML is a markup language for describing web documents (web pages)
- Structured language

Introduction

- It is just to display static pages. So we should design the contents and area where it should be displayed.
- HTML documents are displayed by Web Browsers.
- HTML documents can be simple or complex comprising of multimedia objects including sounds, moving objects.

Introduction

What is an HTML File?

- An HTML file is a text file containing small markup tags
- The markup tags tell the Web browser how to display the page
- An HTML file must have an htm or html file extension
- An HTML file can be created using a simple text editor

HTML Tags (Elements)

- HTML tags are surrounded by the two characters < and >
- The surrounding characters are called angle brackets
- HTML tags normally come in pairs like and
- The first tag in a pair is the start tag, the second tag is the end tag

HTML Tags (Elements)

- The text between the start and end tags is the element content
- HTML tags are not case sensitive, <b> means the same as <B>
- Element names can not contain spaces
- Elements should nest

  <B><U>Welcome</U></B>

- Browsers ignore unknown elements and attributes

HTML Tags (Elements)

Two types of tags:

1. Paired: requires a ending tag which ends with a Slash /

   <html>….</html>

   <body>….</body>

2. Single: No need to specify the ending tag

   (also called empty elements)

, <li>, <td>, <hr>

Tag Attributes

- Tags can have attributes
- Attributes can provide additional information about the HTML elements on your page
- Attribute name are not case sensitive
- Attribute values may be case sensitive
- Attribute value should be quoted

Basic Structure of a HTML Document

```
<HTML>
   <HEAD>
        <TITLE> Document Title <TITLE>
        Other supplementary information
   </HEAD>

   <BODY>
        Document content and markup
   </BODY>
</HTML>
```

Basic Structure of a HTML Document

- HTML documents are enclosed by html tags <html>…</html>
- The rest of the document has two sections : the head and body

```
<html>
        <head>…</head>
        <body>…</body>
</html>
```

Basic Structure of a HTML Document

- The head section contains information about the document.
  - e.g. the title of the document
- Example:

```
<head>
        <title>My Home Page</title>
</head>
```

“My Home Page” will appear in title bar of t he browser

Basic Structure of a HTML Document

- The body section contains text that will be displayed in the browser window

- Some useful/common tags used in the body:

  <h1> to <h6>

  …

  …

Basic Structure of a HTML Document

Body tag Attributes:

Bgcolor : <body bgcolor="red">

Background : <body background="D:\imgs\flower.jpg">

Bgproperties : <body bgproperties="fixed">

Bottommargine : <body bottommargin="100">

Topmargine : <body topmargin="100">

Leftmargin : <body leftmargin="100">

Rightmargine : <body rightmargin="100">

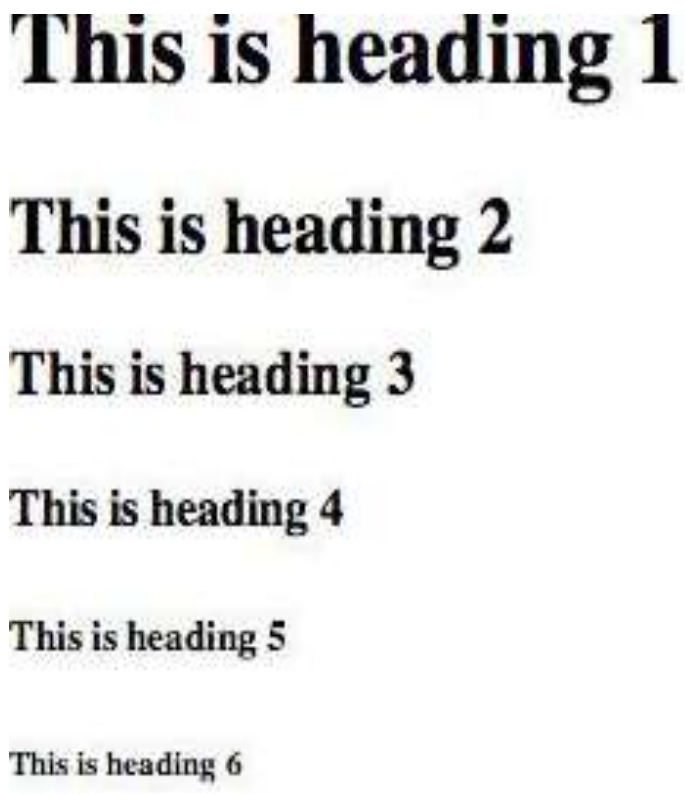
Heding Tags

<h1> to <h6> tags

- Headings are defined with the <h1> to <h6> tags
- <h1>
  - defines the most important heading
  - rendered in a larger font than the other five headings
- <h6>
  - defines the least important heading

Heding Tags

```
<html>
    <head>
        <title>Heading Example</title>
    </head>
    <body>
        <h1>This is heading 1</h1>
        <h2>This is heading 2</h2>
        <h3>This is heading 3</h3>
        <h4>This is heading 4</h4>
        <h5>This is heading 5</h5>
        <h6>This is heading 6</h6>
</body>
</html>
```



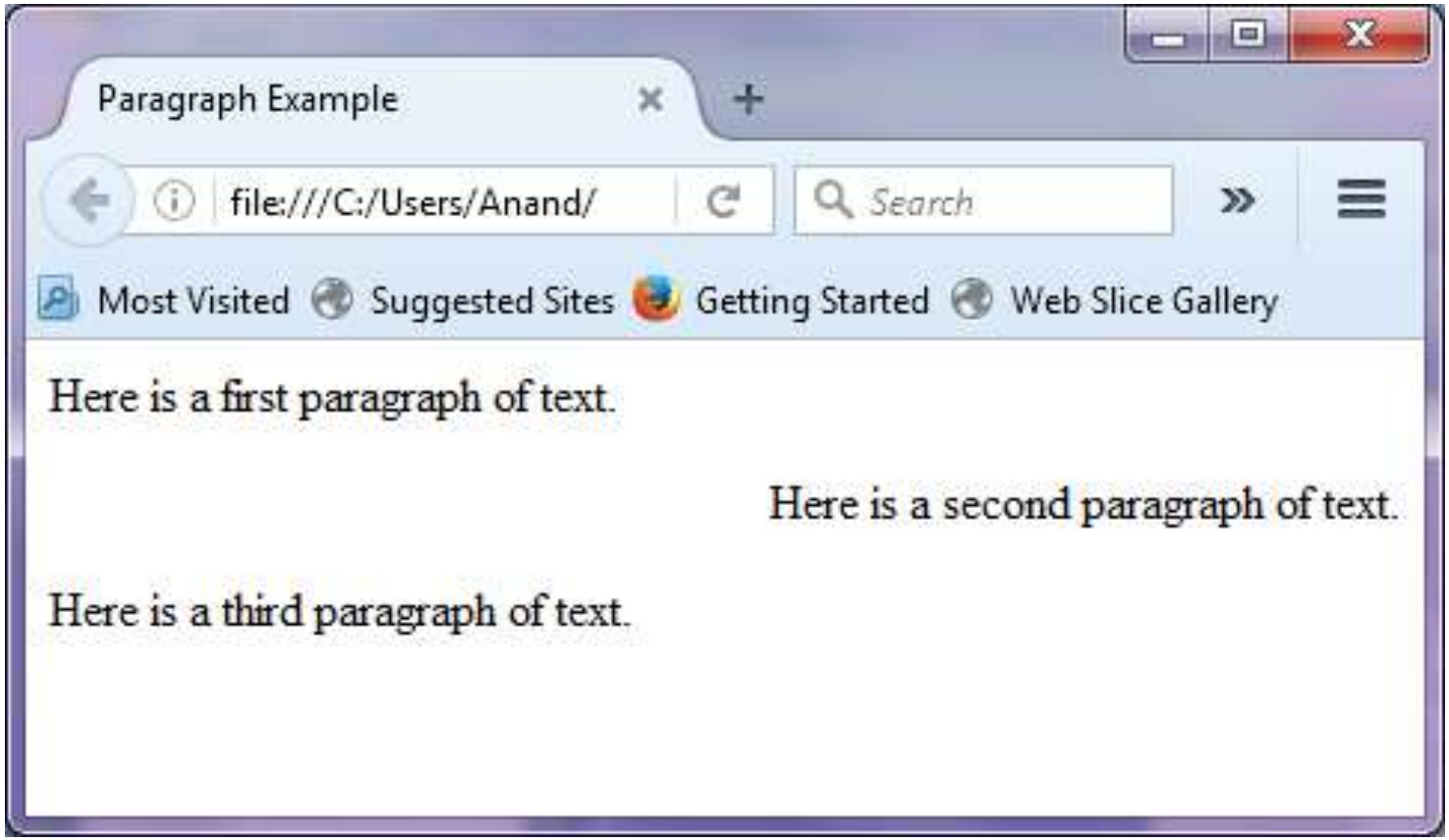
Paragraph Tag

- <p> - Paragraph break
  - Formats the text into a paragraph and adds space before the paragraph
  - a blank line usually precedes and follows paragraph text
  - Align attribute: left, center, right, justify

Paragraph Tag

```
<html>
    <head>
        <title>Paragraph Example</title>
    </head>
    <body>
        <p>Here is a first paragraph of text.</p>
        <p align="right">Here is a second paragraph
        of text.</p>
        <p align="justify">Here is a third paragraph
        of text.</p>
</body>
</html>
```

Paragraph Tag

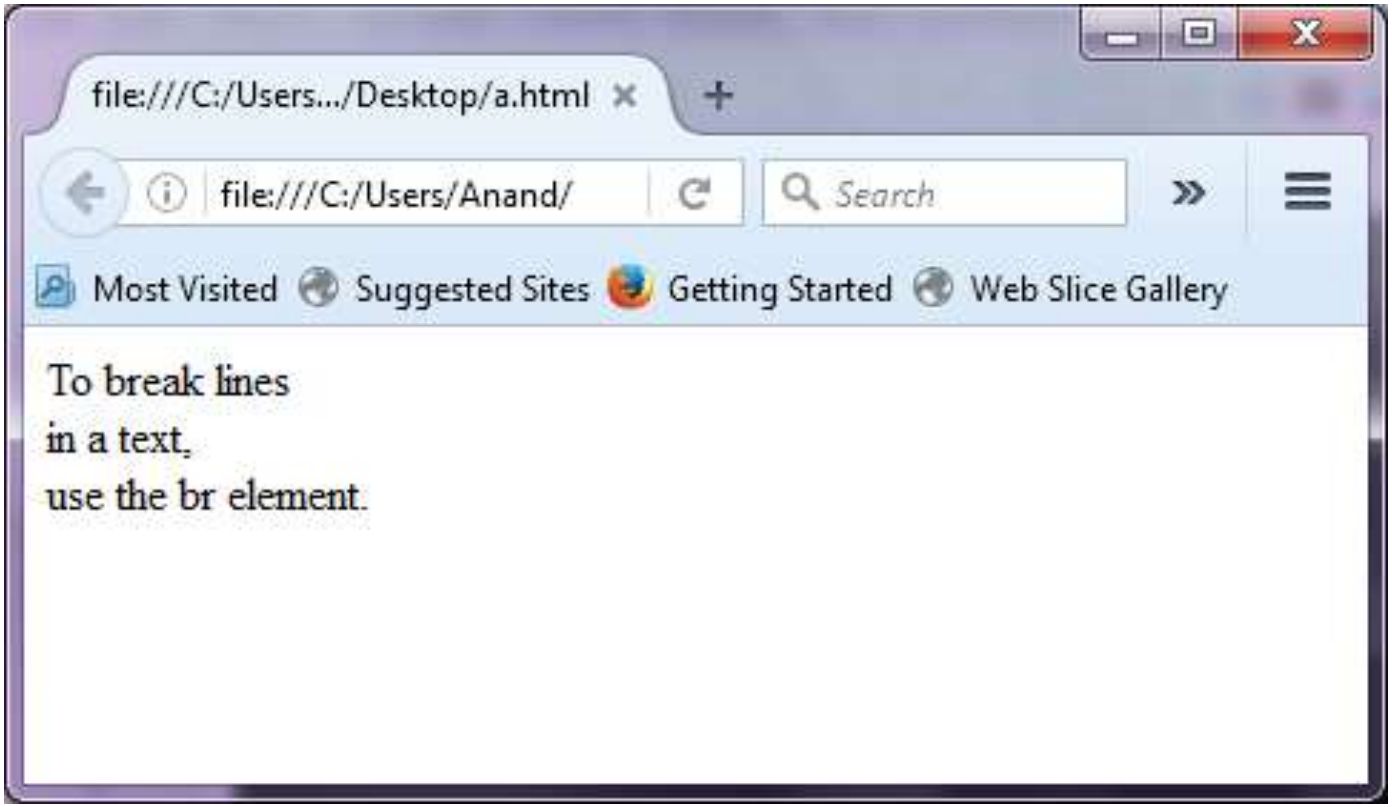


Line Break Tag

-
 - Line break. White spaces are ignored

```
<html>
    <body>
        <p>
         To break lines<br>in a text,<br>use the   br
    element.
        </p>
    </body>
</html>
```

Line Break Tag



Centering Content

```
<html>
    <head>
        <title>Centring Content Example</title>
    </head>
        <body>
            <p>This text is not in the center.</p>
            <center>
                <p>This text is in the center.</p>
            </center>
        </body>
</html>
```

Horizontal Lines

- The <hr> tag creates a line from the current position in the document to the right margin and breaks the line accordingly

Horizontal Lines

```
<html>
<head>
   <title>Horizontal Line Example</title>
</head>
<body>
   <p>This is paragraph one and should be on top</p>
   <hr >
   <p>This is paragraph two and should be at bottom</p>
</body>
</html>
```

HTML Comments

- Single Line Comment

```
<! Single Line Comment >
```

- Multiple Line Comment

```
<!--
   This is
   multiple
   line comment
-->
```

Text Level Elements

- Two Types

1. Physical Elements
   - Specify how text should be rendered

2. Logical Elements
   - Indicates the type of the text, but not necessarily how it should look.

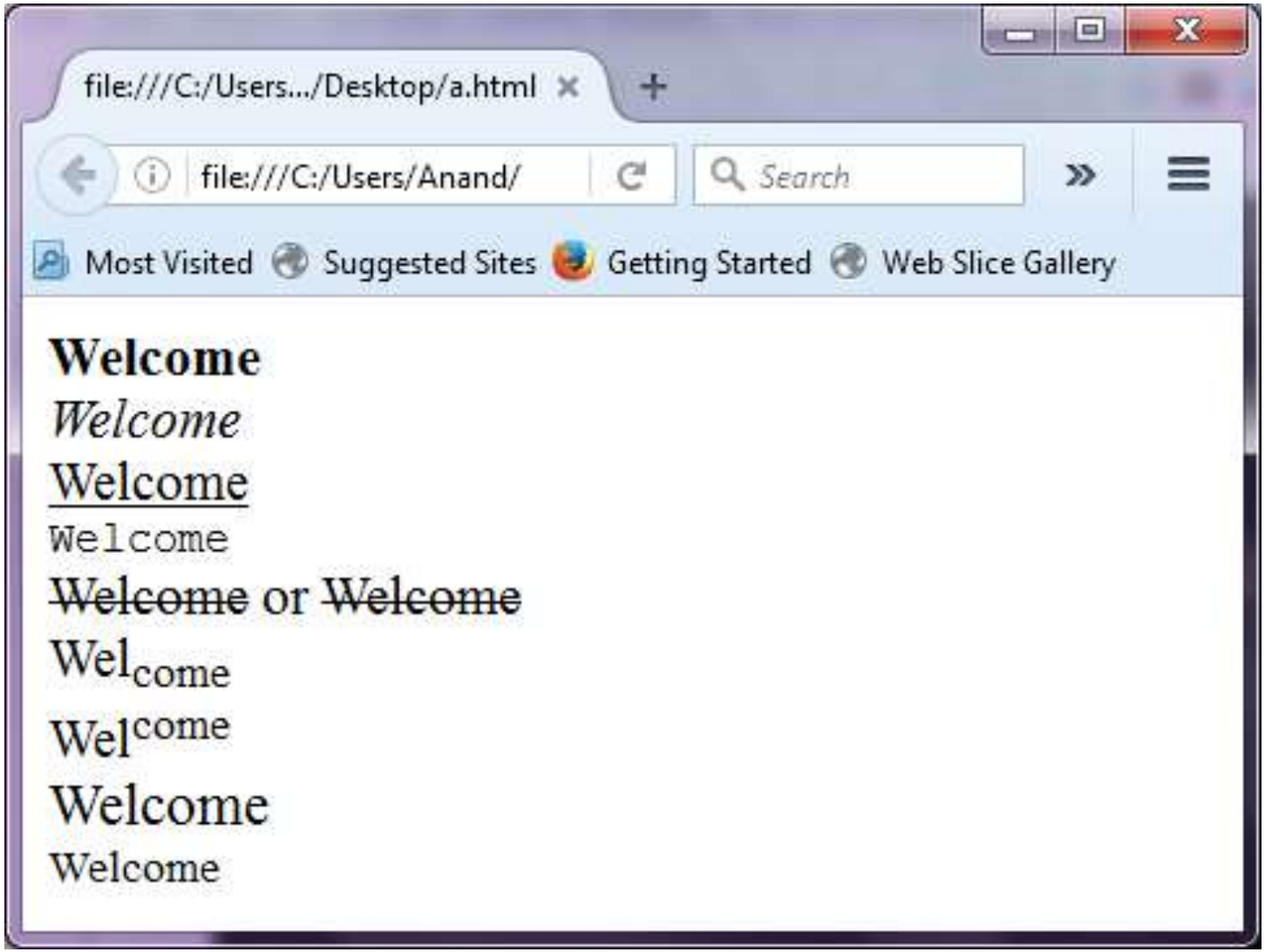
Physical Text Formatting

- <B>…</B>
- <I>…</I>
- <U>…</U>
- <TT>…</TT>
- <STRIKE>…</STRIKE> or <S>…</S>
- _…
- […]
- <BIG>…</BIG>
- <SMALL>…</SMALL>

Physical Text Formatting

```
<html>
  <body>
   <B>Welcome</B><br>
   <I>Welcome</I><br>
   <U>Welcome</U><br>
   <TT>Welcome</TT><br>
   <STRIKE>Welcome</STRIKE> or
   <S>Welcome</S><br>
   Wel<SUB>come</SUB><br>
   Wel<SUP>come</SUP><br>
   <BIG>Welcome</BIG><br>
   <SMALL>Welcome</SMALL><br>
  </body>
</html>
```

Physical Text Formatting



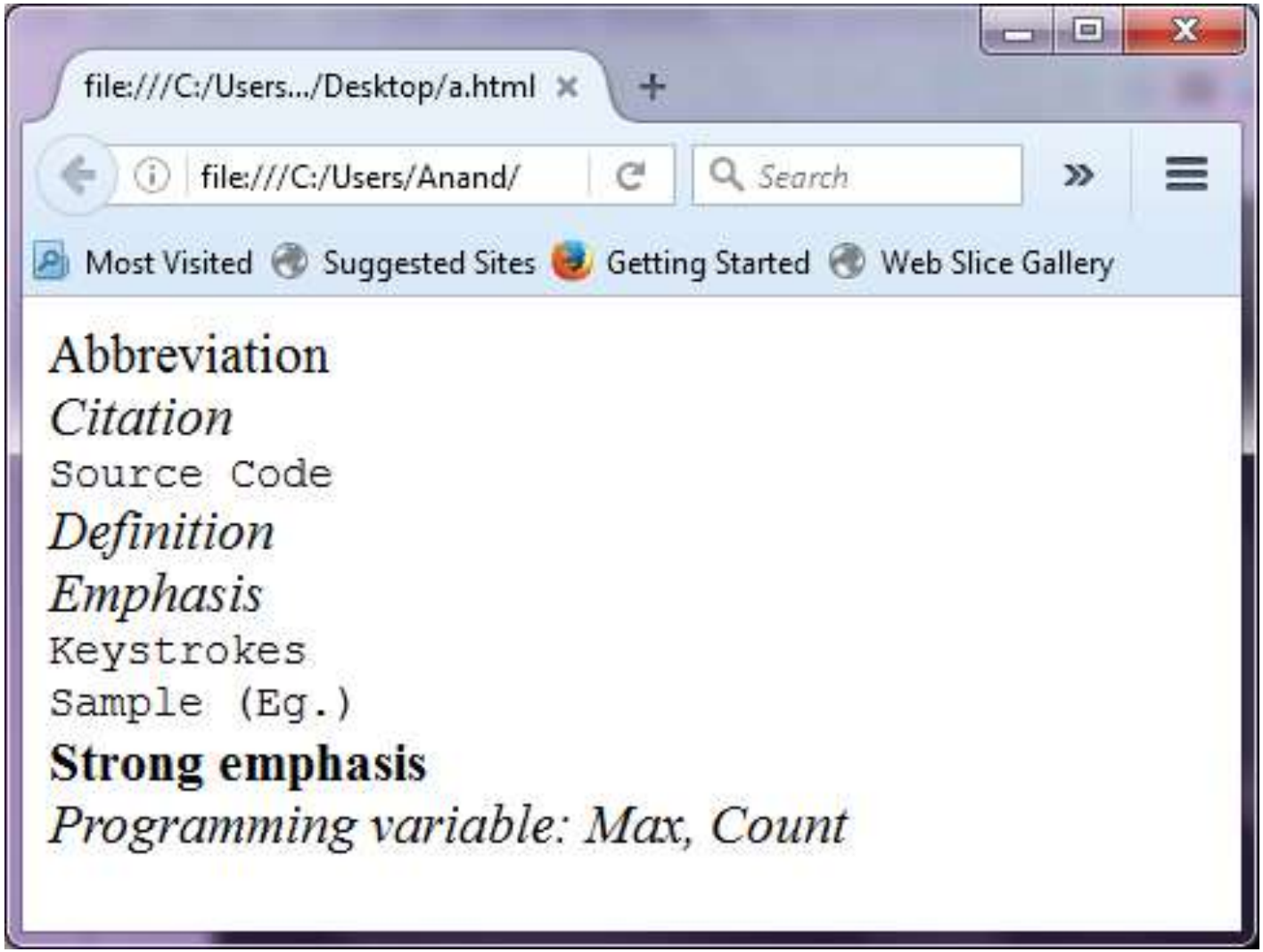
Logical Elements

- <ABBR>…</ABBR> - Abbreviation
- <CITE>…</CITE> - Citation
- <CODE>…</CODE> - Source Code
- <DFN>…</DFN> - Definition
- <EM>…</EM> - Emphasis
- <KBD>…</KBD> - Keystrokes
- <SAMP>…</SAMP> - Sample (Eg.)
- <STRONG>…</STRONG> - Strong emphasis
- <VAR>…</VAR> - Programming variable

Logical Elements

```
<html>
  <body>
    <ABBR>Abbreviation</ABBR><br>
    <CITE>Citation</CITE><br>
    <CODE>Source Code</CODE><br>
    <DFN>Definition</DFN><br>
    <EM>Emphasis</EM><br>
    <KBD>Keystrokes</KBD><br>
    <SAMP>Sample (Eg.)</SAMP><br>
    <STRONG>Strong emphasis</STRONG><br>
    <VAR>Programming variable: Max, Count</VAR>
  </body>
</html>
```

Logical Elements



Character Entities

Numeric Value	Named Value	Symbol	Description
&#034;	&quot;	“	Quotation mark
&#038;	&amp;	&	Ampersand
&#060;	&lt;	<	Less than
&#062;	&gt;	>	Greater than
&#153;	-	TM	Trademark
			Non breaking space
&#169;	&copy;	©	Copyright Symbol
&#174;	&reg;	®	Registered Trademark

& or & or & or & (in hex) → &

Linking

- **Hyperlink** – references or links other resources, such as XHTML documents and images
- In XHTML, both text and images can act as hyperlinks
- Web browsers typically underline text hyperlinks and color their text blue by default

Linking

- Links are created using the **a (anchor)** element
- **HREF** attribute specifies the location of a linked resource
  - a web page, a file or an e-mail address

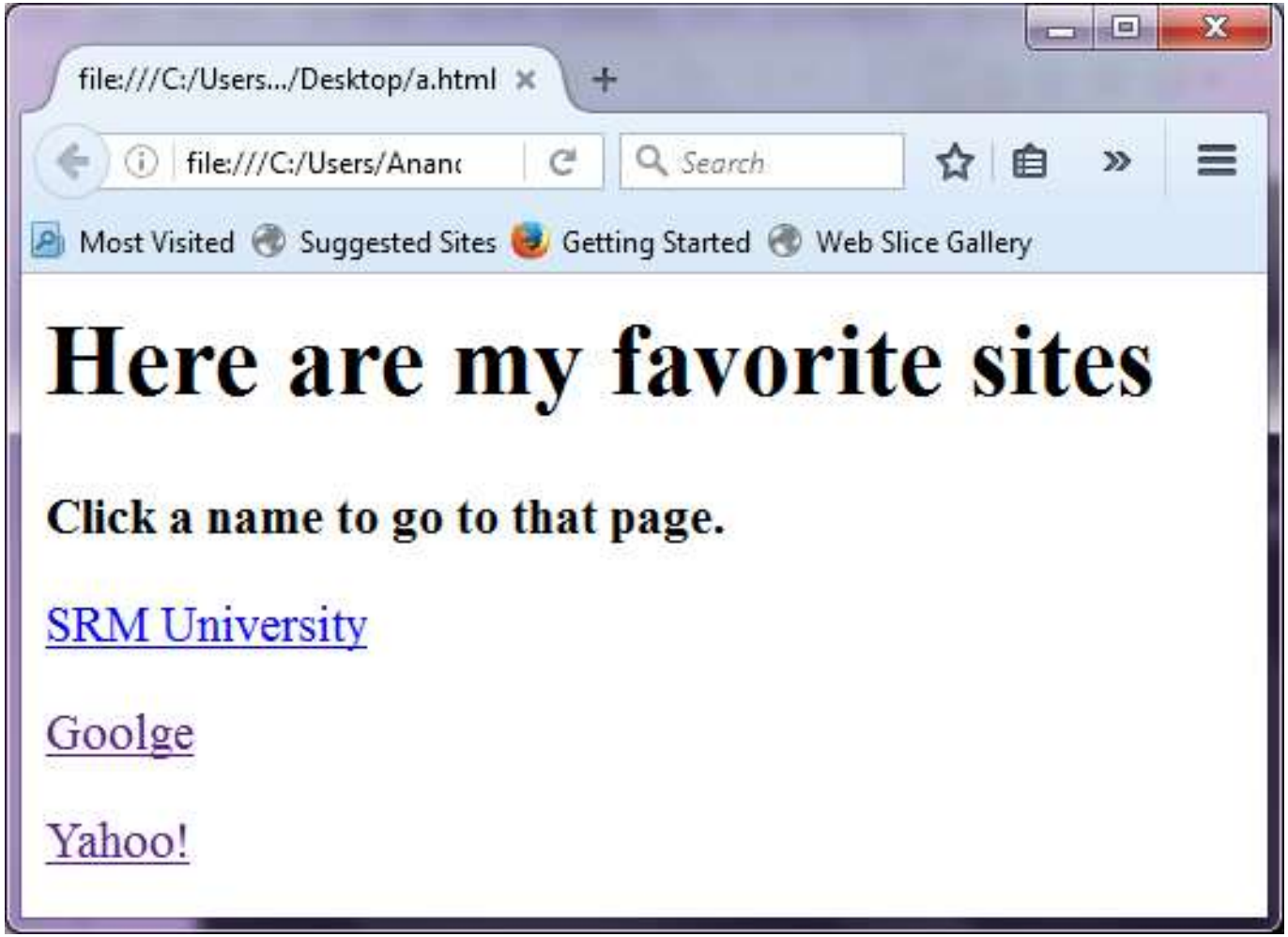
- Eg.:

```
<a href="apple.html">Apple</a>
<a href="fruits/apple.html">Apple</a>
<a href="../apple.html">Apple</a>
```

Linking

```
<html>
 <body>
  <h1>Here are my favorite sites</h1>
  <p><strong>Click a name to go to that page.</strong></p>
  <p><a href="http://www.srmist.edu.in">
                                        SRM University</a></p>
  <p><a href="http://www.google.com">Goolge</a></p>
  <p><a href="http://www.yahoo.com">Yahoo!</a></p>
 </body>
</html>
```

Linking

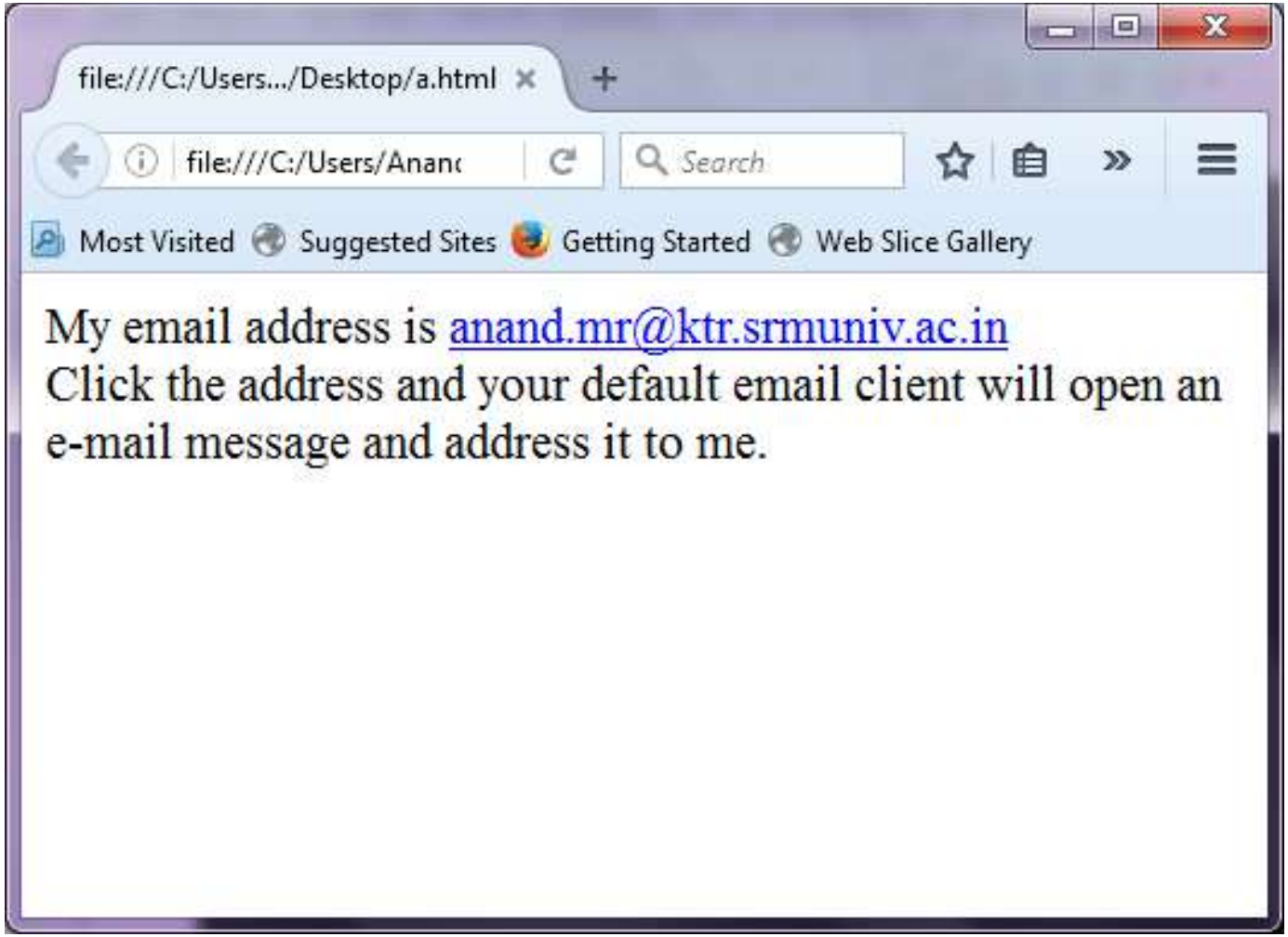

file:///C:/Users.../Desktop/a.html
file:///C:/Users/Anan
Search
Most Visited
Suggested Sites
Getting Started
Web Slice Gallery
Here are my favorite sites
Click a name to go to that page.
SRM University
Goolge
Yahoo!

Linking

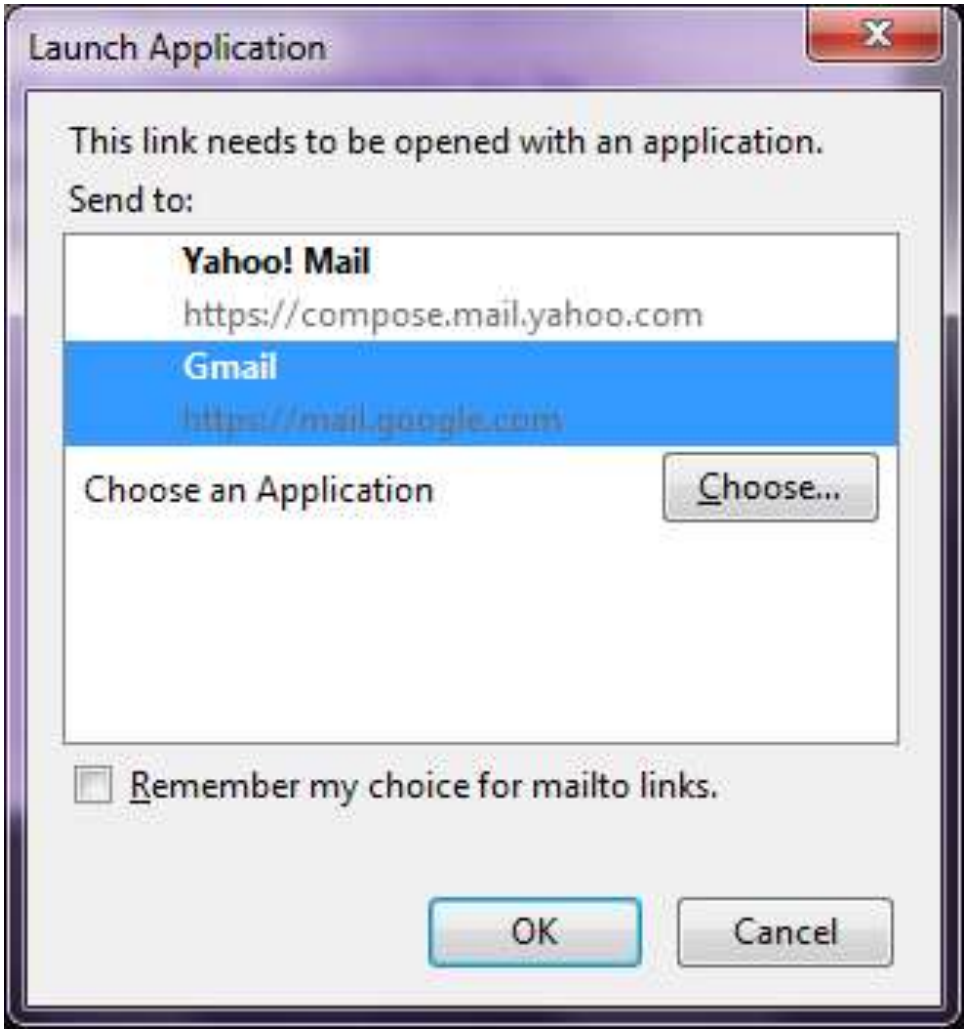
Hyperlinking to an E-Mail Address

```
<html>
 <body>
  <p>My email address is
    <a href="mailto:anand.mr@ktr.srmuniv.ac.in?
    subject=feedback">anand.mr@ktr.srmuniv.ac.in</a><br>
    Click the address and your default email client will open an
    e-mail message and address it to me.
  </p>
 </body>
</html>
```

Linking


file:///C:/Users.../Desktop/a.html
file:///C:/Users/Anan
Search
Most Visited
Suggested Sites
Getting Started
Web Slice Gallery
My email address is anand.mr@ktr.srmuniv.ac.in
Click the address and your default email client will open an e-mail message and address it to me.

Linking


Launch Application
This link needs to be opened with an application.
Send to:
Yahoo! Mail
https://compose.mail.yahoo.com
Gmail
Choose an Application
Choose...
Remember my choice for mailto links.
OK
Cancel

Linking

Eg:

```
<a name="top">
        …
        …
<a href="#top">Go Top</a>

<a href="spec.html#top">Go Top</a>

<a href="ftp://ftp.abc.com/order.pdf">
                Download order form</a>
```

Linking

- Attributes:
  - Title="click here" → Tool tip
  - Tabindex="1" → Tab order
  - Target="frame1" → Set target frame

Images

- Three most popular image formats used by web developers
  - Graphics Interchange Format (GIF)
  - Joint Photographic Experts Group (JPEG)
  - Portable Network Graphics (PNG)

Images

- An **img** element is used to insert an image in the document
- The location of the image file is specified by the **src** attribute

<img src="apple.gif">

<img src="http://yahoo.com/images/img1.gif">

Images

- IMG tag attributes:

  width="500"

  height="350"

  border="0"

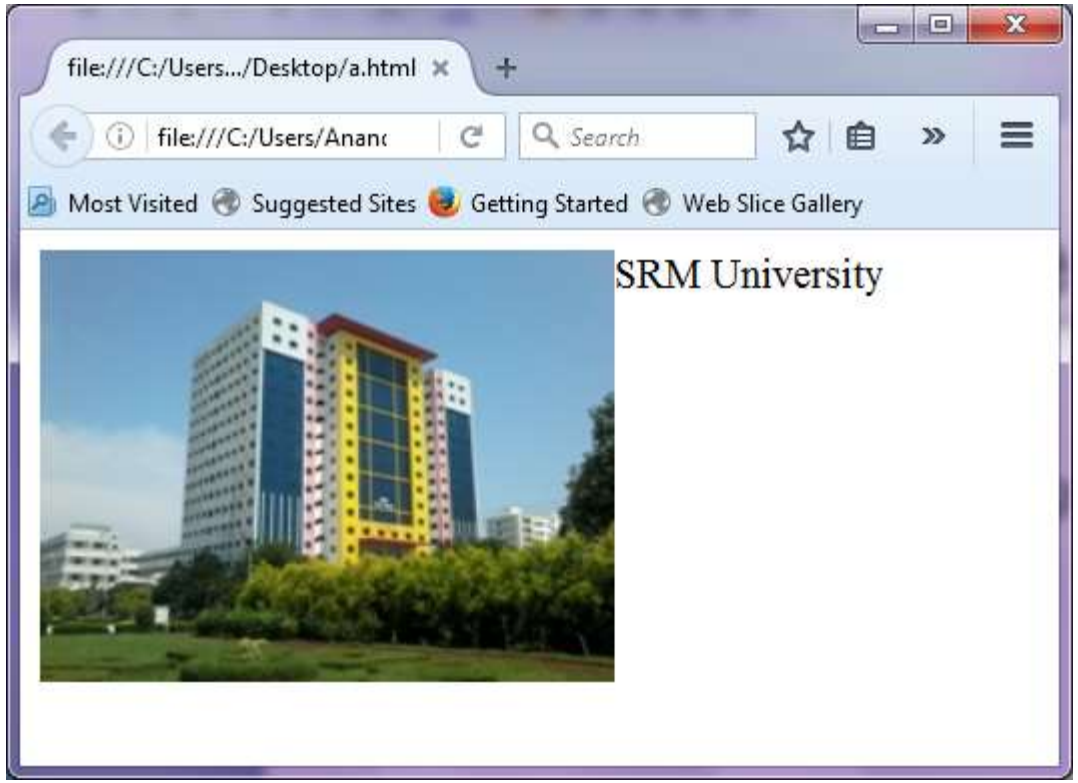
  align="top" → bottom, middle, left, right

  hspace="50"

  vspace="50"

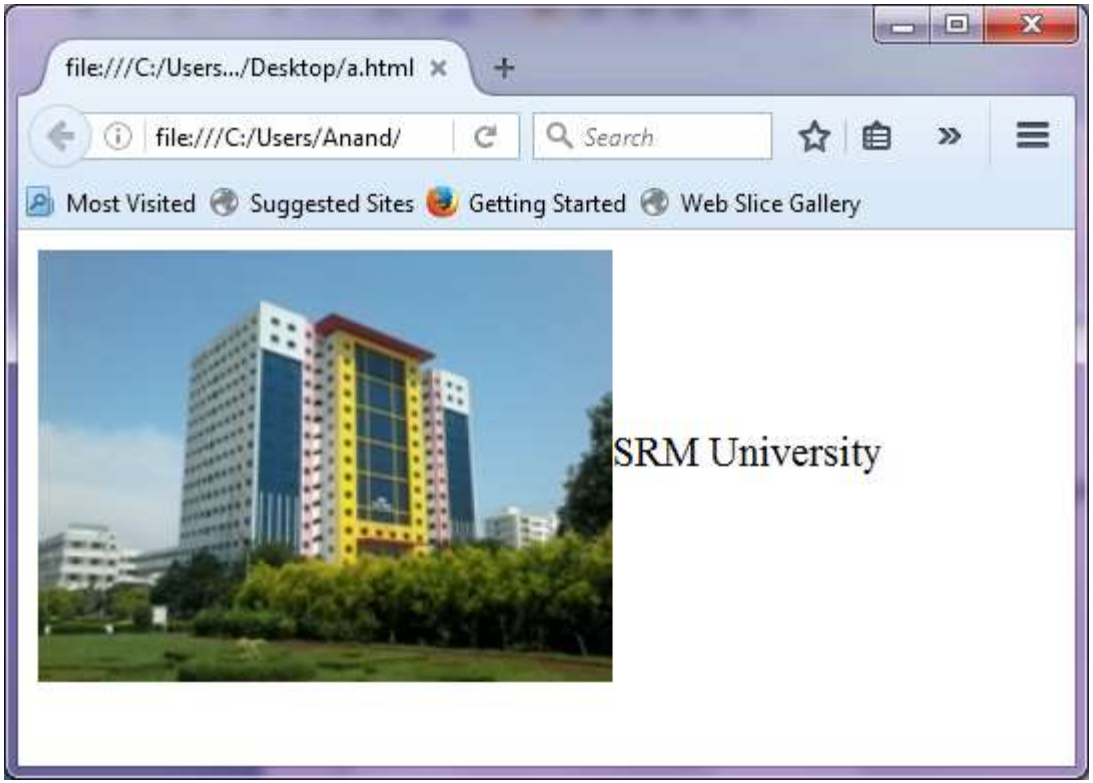
Images

```
<html>
    <body>
        <img src="TechPark.jpg" align="top">SRM University
    </body>
</html>
```



Images

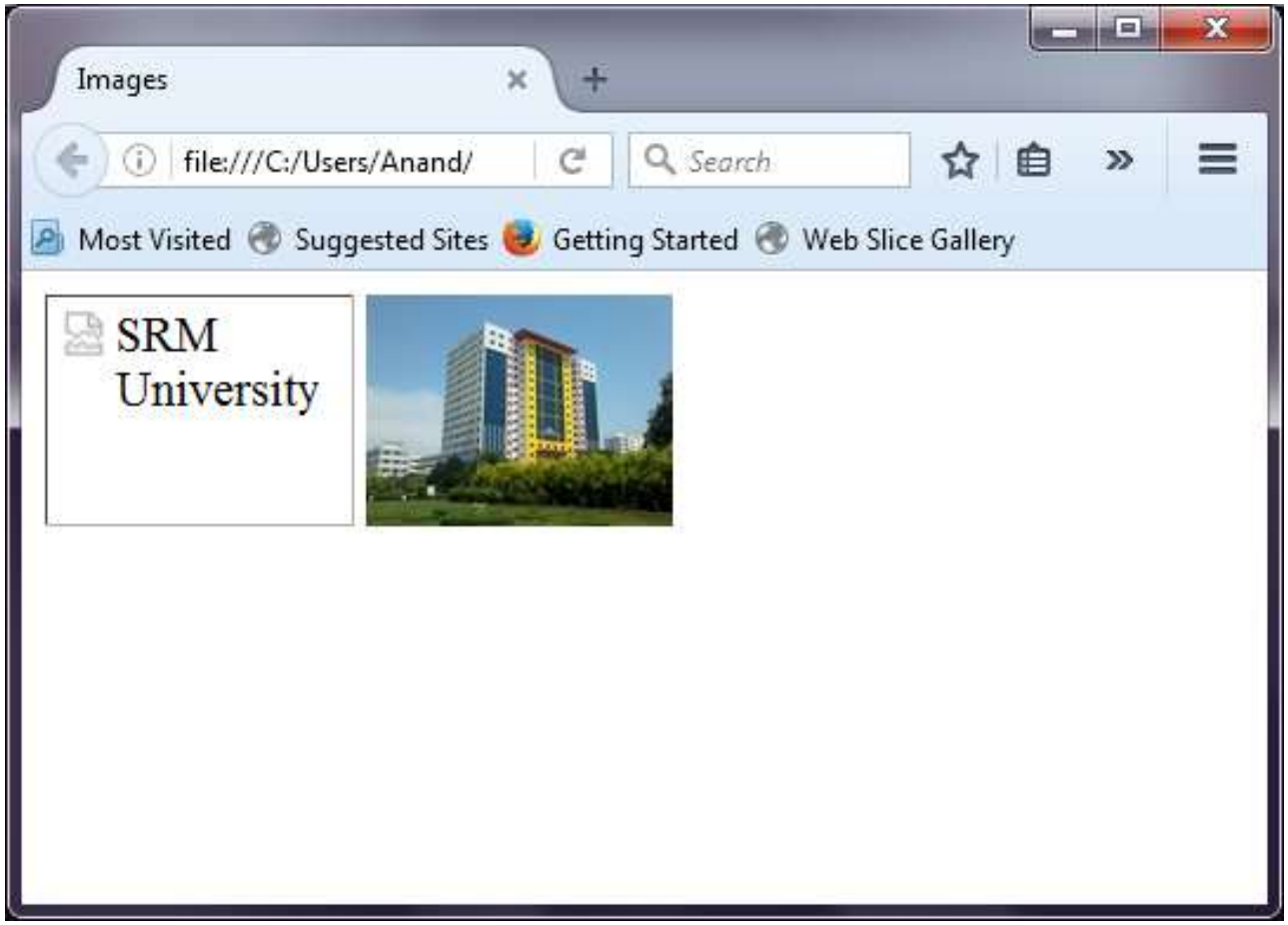
```
<html>
   <body>
      <img src="TechPark.jpg" align=“middle">SRM University
   </body>
</html>
```



Images

```
<html>
 <head>
   <title>Images</title>
 </head>
 <body>
  <img src="SRM.jpg" width="100" height="75"
                                        alt="SRM University">
  <img src="TechPark.jpg" width="100" height="75"
                                        alt="Tech Park“>
 </body>
</html>
```

Images

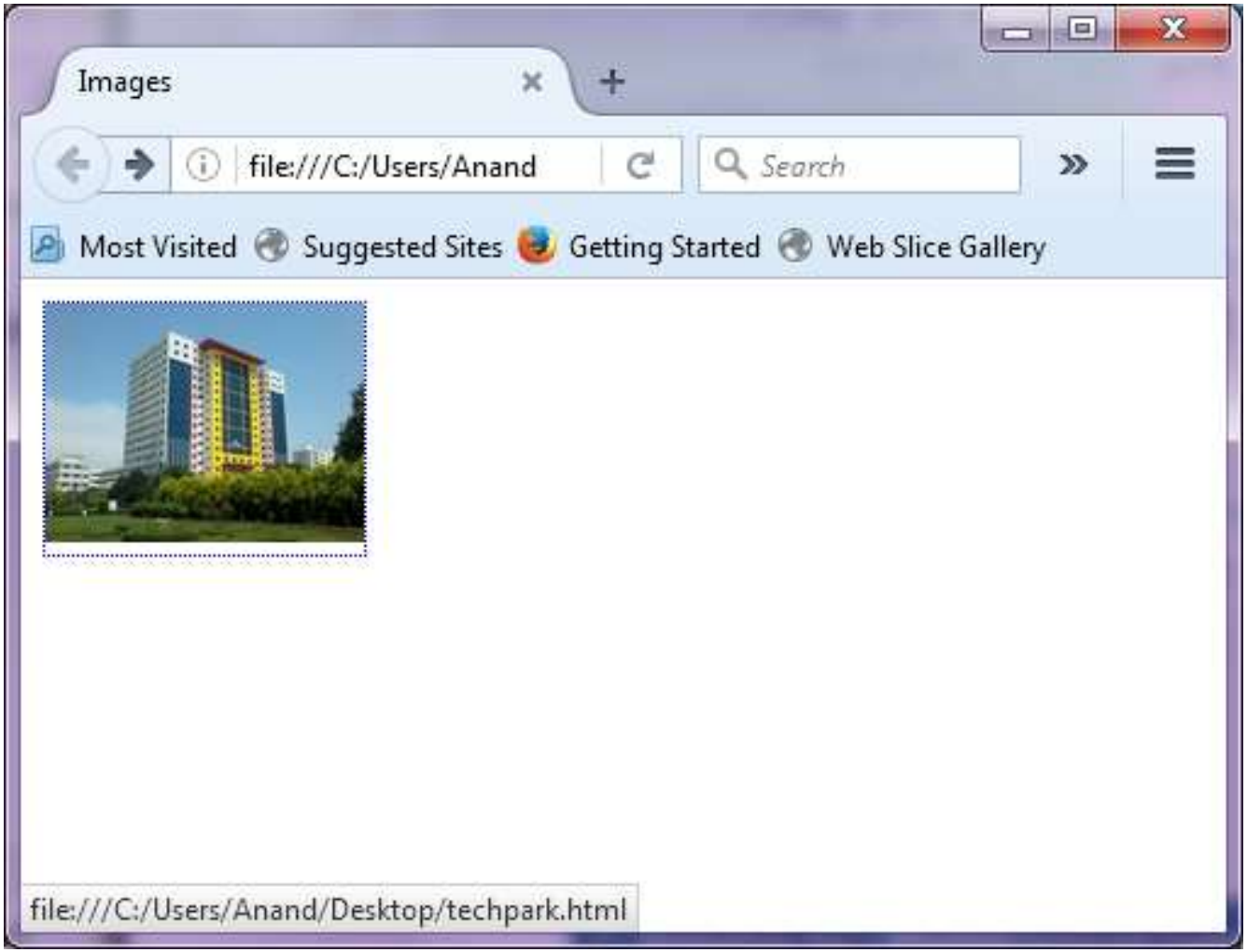

Images
file:///C:/Users/Anand/
Search
Most Visited
Suggested Sites
Getting Started
Web Slice Gallery
SRM
University

Images

Using Images as Hyperlinks

```
<html>
  <head>
     <title>Images</title>
  </head>
  <body>
     <a href="techpark.html">
       <img src="TechPark.jpg" width="100"
                height="75" border="0" alt="Tech Park">
     </a>
   </body>
</html>
```

Images


Images
file:///C:/Users/Anand
Search
Most Visited
Suggested Sites
Getting Started
Web Slice Gallery
file:///C:/Users/Anand/Desktop/techpark.html

Lists

- Two types

1. Ordered List
2. Unordered List

Ordered List

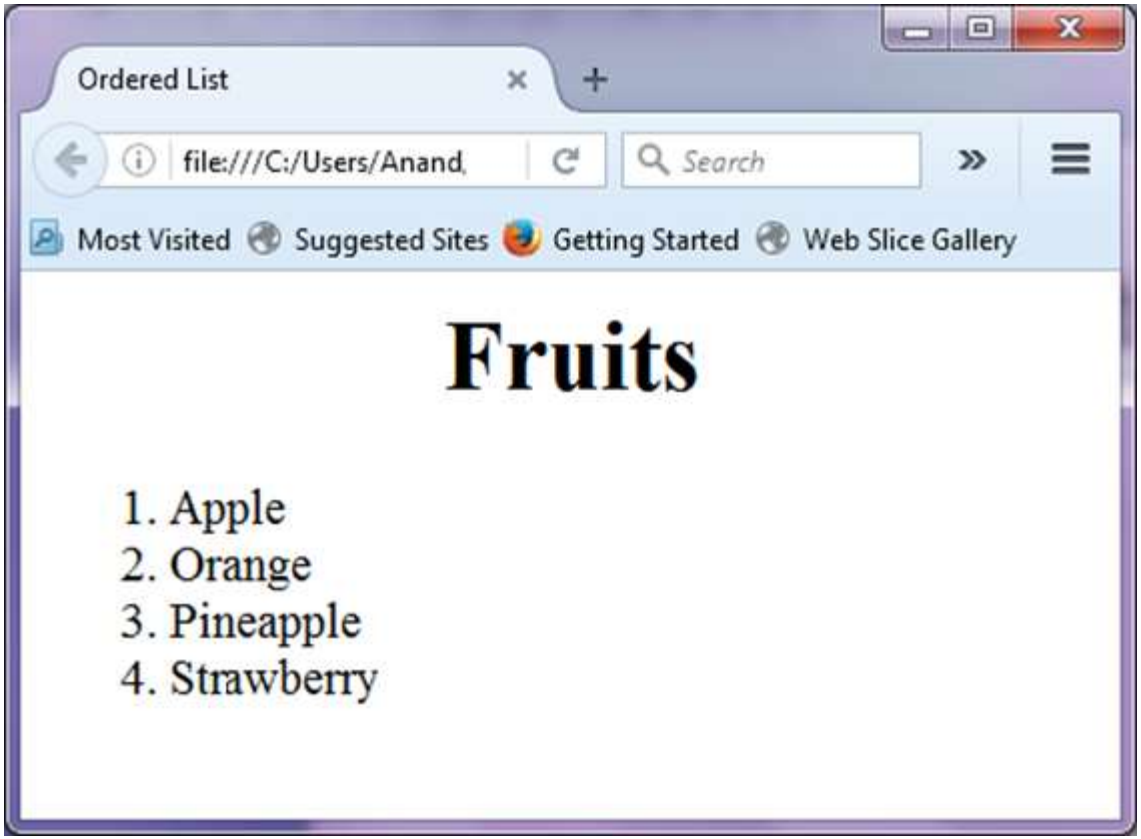
- - ordered list tag
- - list item tag

- Attributes:
  - TYPE="a" → a, A, i, I, 1
  - START="5"

Ordered List

```
<html>
    <head><title>Ordered List</title></head>
    <body>
        <h1 align="center">Fruits</h1>
        <ol>
            <li>Apple</li>
            <li>Orange</li>
            <li>Pineapple</li>
            <li>Strawberry</li>
        </ol>
    </body>
</html>
```

Ordered List



Unordered List

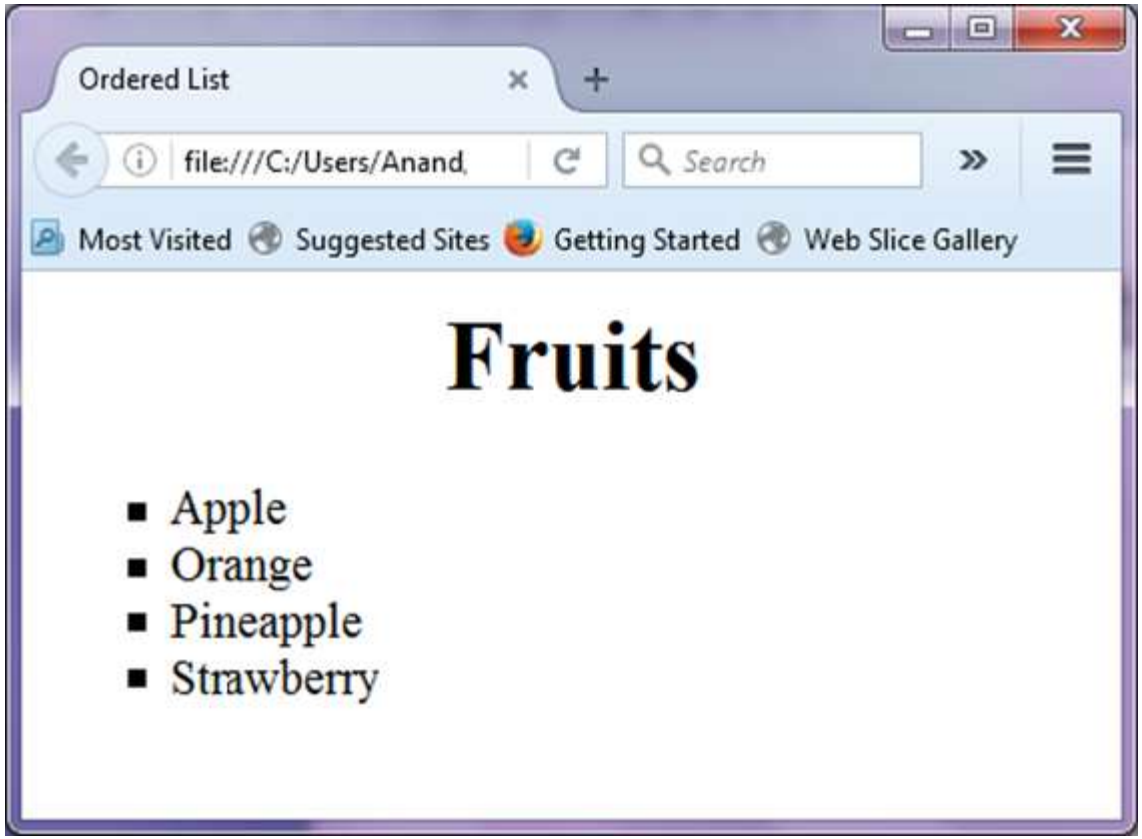
- - Unordered list tag
- - List item tag

- Attribute:
  - TYPE="circle" → disc, circle, square

Unordered List

```
<html>
    <head><title>Unordered List</title></head>
    <body>
        <h1 align="center">Fruits</h1>
        <ul type="square">
            <li>Apple</li>
            <li>Orange</li>
            <li>Pineapple</li>
            <li>Strawberry</li>
        </ul>
    </body>
</html>
```

Unordered List



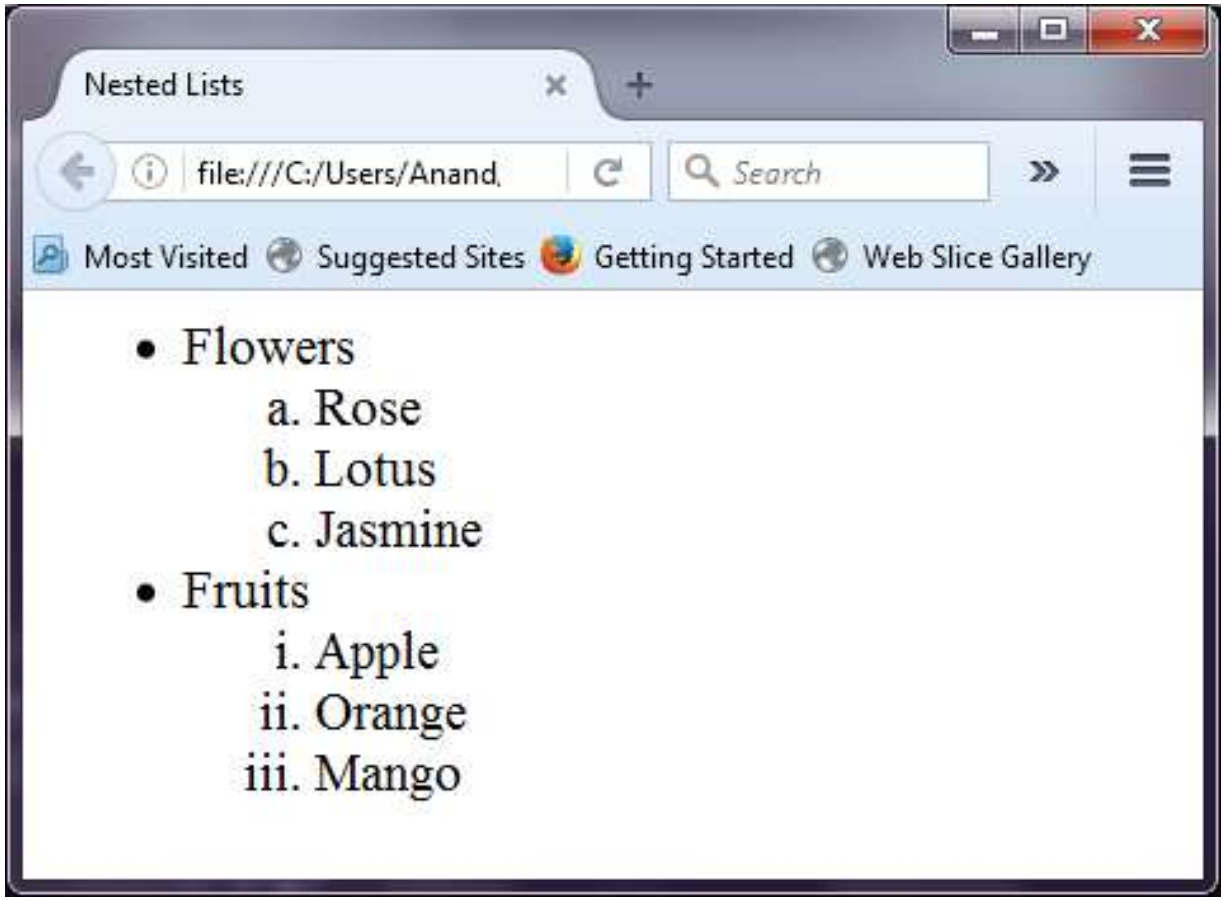
Nested Lists

```
<html>
  <head><title>Nested Lists</title></head>
  <body>
    <ul>
        <li>Flowers
            <ol type="a">
                <li>Rose</li>
                <li>Lotus</li>
                <li>Jasmine</li>
            </ol>
        </li>
```

Nested Lists

```
        <li>Fruits
            <ol type="i">
                <li>Apple</li>
                <li>Orange</li>
                <li>Mango</li>
            </ol>
        </li>
    </ul>
  </body>
</html>
```

Nested Lists



Tables

- Used to organize data into rows and columns
- Table element

  <table>…</table>

- **Attributes:**
  - Border="0"
  - Width="50%"
  - Caption="Price of Fruit"
  - Summary="Price of Fruit"
    - speech devices use for visually impairment users

Tables

- Three sections of table
  1. **Head**
  2. **Body**
  3. **Foot**

<caption>…</caption>
<thead><tr><th>…</th></tr></thead>
<tfoot><tr><th>…</th></tr></tfoot>
<tbody><tr><td>…</td></tr></tbody>

Tables

```
<html>
    <head><title>Fruits</title></head>
    <body>
        <h1 align="center">Fruits</h1>
        <table border = "1" width = "60%">
          <caption>Price of Fruit</caption>
          <thead>
              <tr>
                  <th>Fruit</th>
                  <th>Price (Rs.)</th>
              </tr>
          </thead>
```

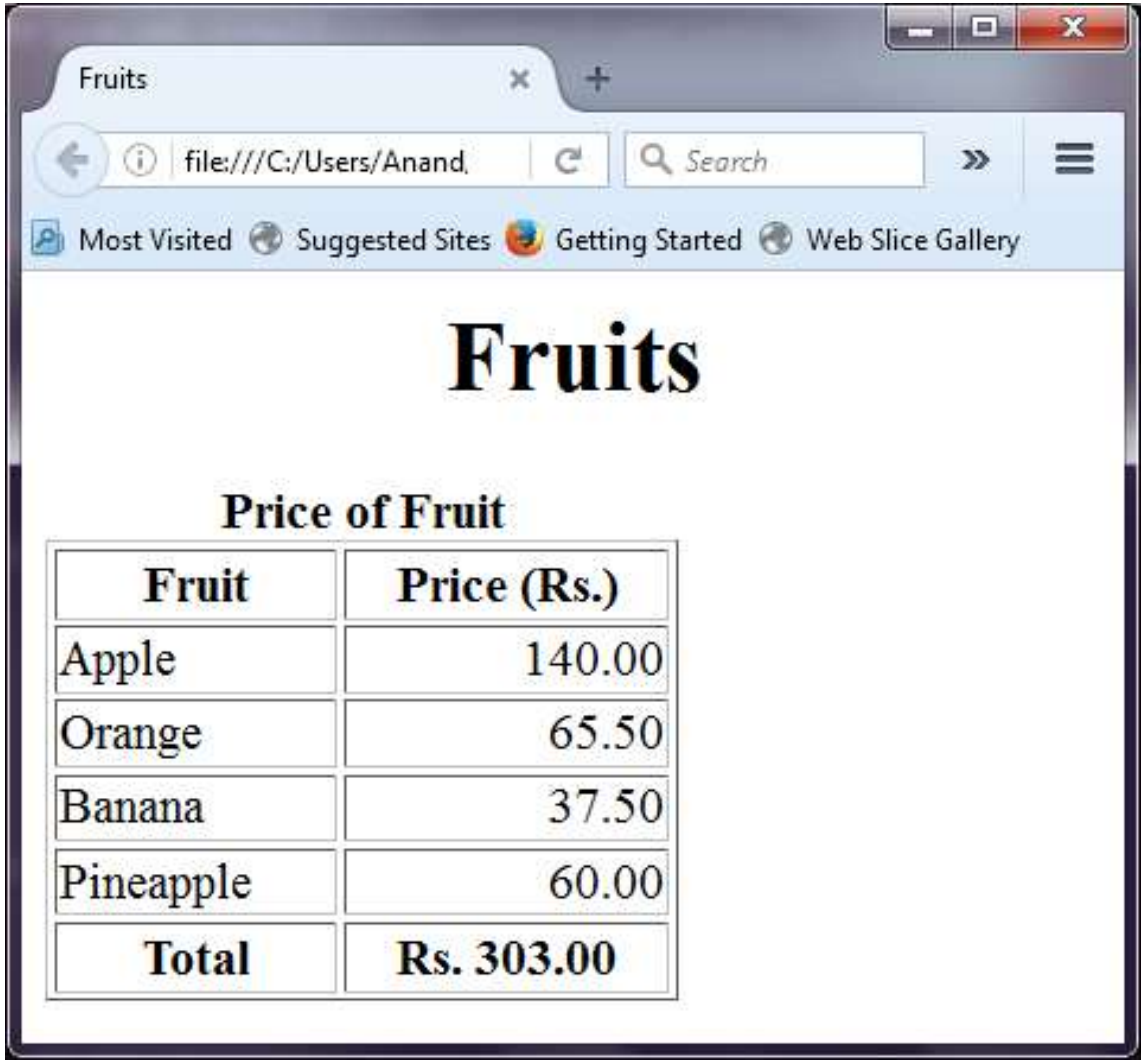
Tables

```
<tfoot>
    <tr>
        <th>Total</th>
        <th>Rs. 303.00</th>
    </tr>
</tfoot>
<tbody>
    <tr>
        <td>Apple</td>
        <td align="right">140.00</td>
    </tr>
```

Tables

```
            <tr><td>Orange</td><td align="right">65.50</td></tr>
            <tr><td>Banana</td><td align="right">37.50</td></tr>
            <tr><td>Pineapple</td><td align="right">60.00</td></tr>
        </tbody>
    </table>
</body>
</html>
```

Tables


Fruits
file:///C:/Users/Anand.
Search
Most Visited
Suggested Sites
Getting Started
Web Slice Gallery
Fruits
Price of Fruit
Fruit
Price (Rs.)
Apple
140.00
Orange
65.50
Banana
37.50
Pineapple
60.00
Total
Rs. 303.00

Tables

Using rowspan and colspan

```
<html>
<head>
<title>Fruits</title>
</head>
<body>
<h1 align="center">Fruits</h1>
<table border = "1" width = "60%">
<thead>
<tr><th rowspan="2">Fruits</th>
<th colspan="3">Price Details</th></tr>
```

Tables

```
<tr><th>MRP</th><th>Qty</th><th>Amount (Rs.)</th>
</tr>
</thead>
<tfoot><tr><th colspan="2">Total</th>
<th colspan="2">Rs. 722.50</th></tr>
</tfoot>
<tbody>
<tr><td>Apple</td><td>140.00</td><td>2</td>
<td>280.00</td></tr>
<tr><td>Orange</td><td>65.00</td><td>3</td>
<td>195.00</td></tr>
```

Tables

```
<tr><td>Banana</td><td>25.50</td><td>5</td>
<td>127.50</td></tr>
<tr><td>Pineapple</td><td>60.00</td><td>2</td>
<td>120.00</td></tr>
</tbody>
</table>
</body>
</html>
```

Tables


Fruits
file:///C:/Users/Anand
Search
Most Visited
Suggested Sites
Getting Started
Web Slice Gallery
Fruits
Fruits
Price Details
MRP
Qty
Amount (Rs.)
Apple
140.00
2
280.00
Orange
65.00
3
195.00
Banana
25.50
5
127.50
Pineapple
60.00
2
120.00
Total
Rs. 722.50

Forms

- Used for collecting data from a user
- Data that users enter on a web page is normally sent to a web server
- The server processes the request and returns the requested resource

Forms

- The **<form>** element defines an HTML form:

```
<form>
    ...
    form elements
    ...
</form>
```

- HTML forms contain **form elements**.
- Form elements are different types of input elements, checkboxes, radio buttons, submit buttons, and more.

The <input> Element

- The **<input>** element is the most important **form element**.
- The <input> element has many variations, depending on the **type** attribute.
- Type attribute values:
  - text, password, hidden, submit, reset, button, radio, checkbox

The <input> Element

Example:

Input type : Text field

```
<form>
  First name:<br>
        <input type="text" name="firstname"><br>
  Last name:<br>
        <input type="text" name="lastname">
</form>
```

The <input> Element

Input type : password

```
<form>
      Password: <input type="password" name="pwd">
</form>
```

The <input> Element

Input type : Radio Button

• **<input type="radio">** defines a **radio button**.

• Radio buttons let a user select ONE of a limited number of choices.

• Buttons within a group should have the same name but different values.

The <input> Element

Example:

```
<form>
  <input type="radio" name="gender" value="male" checked>
        Male<br>
  <input type="radio" name="gender" value="female">
        Female<br>
</form>
```

The <input> Element

Input type : Checkbox

- checkbox is a box, when you click on it, it gets checked and its unchecked when you click again.
- checkbox attributes: type, name, value

Example:

```
<input type="checkbox" name="fruits" value="Apple"/>
        Apple<br>
<input type="checkbox" name="fruits" value="Orange"/>
        Orange<br>
```

The <input> Element

Input type : Submit

- **<input type="submit">** defines a button for **submitting** a form
- Submit creates button which displays the value attribute as its text.
- It is used to send the data to the server

```
<form>
        Username: <input type="text" name="user">
        <input type="submit" value="Submit">
</form>
```

The <input> Element

Input type: Button

- **<input type="button">** defines a clickable button

Example

```
<form>
        Username: <input type="text" name="user">
        <input type="button" value=“Click me!">
</form>
```

The <input> Element

Input type: Reset

- **<input type="reset">** defines a reset button

Example

```
<form>
    Username: <input type="text" name="user">
    Password: <input type=“password" name=“pwd”>
    <input type=“submit" value=“Submit">
    <input type=“reset" value=“Clear">
</form>
```

The <select> Element (Drop-Down List)

- The **<select>** element defines a **dropdown** list:
- The **<option>** elements defines the options to select.

Example:

```
<form>
  <select name="fruits">
    <option value="apple“>Apple</option>
    <option value="orange">Orange</option>
    <option value="mango“ selected>Mango</option>
  </select><br>
  <input type="submit">
</form>
```

The <textarea> Element

• The **<textarea>** element defines a multi-line input field (**a text area**):

Example:

```
<form>
  <textarea name="message" rows="10" cols="30">
        The cat was playing in the garden.
  </textarea>
  <br>
  <input type="submit">
</form>
```

HTML5 <datalist> Element

- The **<datalist>** element specifies a list of pre-defined options for an <input> element.
- Users will see a drop-down list of pre-defined options as they input data.
- The **list** attribute of the <input> element, must refer to the **id** attribute of the <datalist> element.

HTML5 <datalist> Element

Example:

```
<form>
  <input list="browsers" name="browser">
  <datalist id="browsers">
    <option value="Internet Explorer">
    <option value="Firefox">
    <option value="Chrome">
    <option value="Opera">
    <option value="Safari">
  </datalist>
  <input type="submit">
</form>
```

HTML 5 Input Types

HTML5 added several new input types:

- color
- date
- datetime
- email
- month
- Number

HTML 5 Input Types

Input Type: number

- The **<input type="number">** is used for input fields that should contain a numeric value.
- You can set restrictions on the numbers.

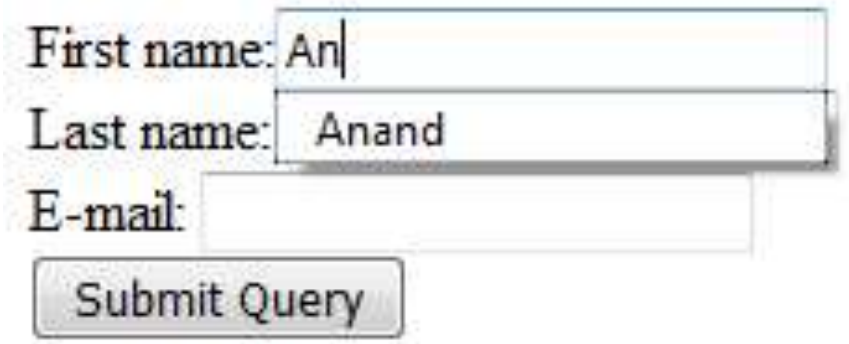
```
<form>
  Quantity (between 1 and 5):
  <input type="number" name="qty" min="1" max="5">
</form>
```

HTML 5 Input Types

```
<form>
  Birthday:
  <input type="date" name=“dob">
  <input type="submit">
</form>

<form>
  Select your favorite color:
  <input type="color" name="favcolor" value="#ff0000">
  <input type="submit">
</form>
```

HTML5 Attributes

```
<form autocomplete="on">
  First name:<input type="text" name="fname"><br>
  Last name: <input type="text" name="lname"><br>
  E-mail: <input type="email" name="email“
                                    autocomplete="off"><br>
  <input type="submit">
</form>
```



HTML5 Attributes

```
<form >
    User Name:
    <input type="text" name=“uname" value=“Anand" readonly>
 <input type="submit">
</form>
```

Form Attributes

- Action
- Method

The Action Attribute

- The **action attribute** defines the action to be performed when the form is submitted.
- The common way to submit a form to a server, is by using a submit button.

Form Attributes

- In the action attribute we have to give the url of the page, where we want to send the data.

```
<form action="login_page.php">
```

- If the action attribute is omitted, the action is set to the current page.

Form Attributes

The Method Attribute

- The **method attribute** specifies the HTTP method (**GET** or **POST**) to be used when submitting the forms:

```
<form action="login_page.php" method="get">
```

or

```
<form action="login_page.php" method="post“>
```

When to Use GET?

- You can use GET (the default method):
  - If the form submission is passive (like a search engine query), and without sensitive information.
  - When you use GET, the form data will be visible in the page address:

register_page.php?firstname=Mickey&lastname=Mouse

- GET is best suited to short amounts of data. Size limitations are set in your browser.

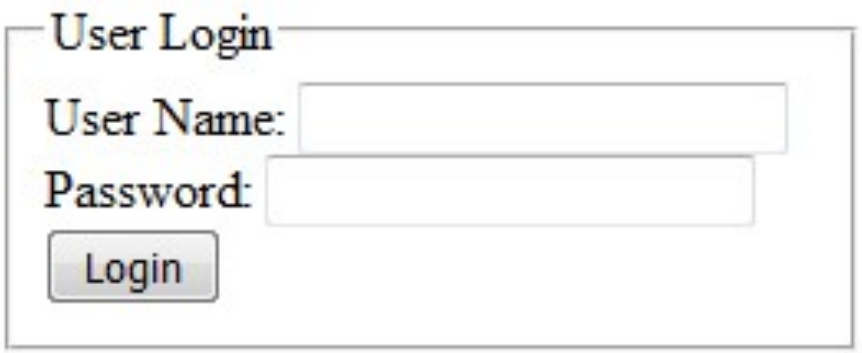
When to Use POST?

- You should use POST:
  - If the form is updating data, or includes sensitive information (password).
  - POST offers better security because the submitted data is not visible in the page address.

fieldsets and labels

- **fieldset** is used to surround related info.

<legend> tag can be used with fieldset.




```
<form>
 <fieldset>
 <legend>User Login</legend>
  User Name: <input type="text"><br>
  Password: <input type="password"><br>
  <input type="submit" value="Login">
 </fieldset>
</form>
```

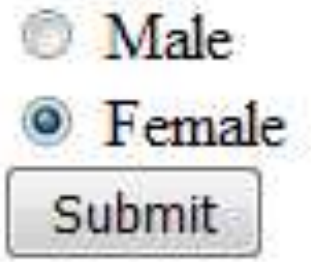
fieldsets and labels

- **label**: by using FOR attribute in label, the user can click on label instead of the elements(checkbox).

Note: the FOR attribute's value should match with the id attribute's value of input element.

fieldsets and labels

```
<form>
  <input type="radio" name="gender" id="male" value="male">
  <label for="male">Male</label><br>
  <input type="radio" name="gender" id="female" value="female">
  <label for="female">Female</label><br>
  <input type="submit" value="Submit">
</form>
```



<iframe> Tag - Inline Frame

The **<iframe>** tag can be used to create an inline frame or subwindow within a web page. This allows a web page to be displayed inside of the current web page. If the browser does not support iframes then the content between the opening and closing **<iframe>** tags is displayed.

```
<html>
<head>
<title>HTML Test</title>
</head>
<body>
<p>Below is an iframe.</p>
<iframe src=“cboxandradiobut.html" width="1000" height="950">
 <p>iframes are not supported by your browser.</p>
</iframe>
</body>
</html>
```

Iframe - Remove the Border

By default, an iframe has a black border around it.

To remove the border, add the style attribute and use the CSS border property:

Example

```
<iframe src="demo_iframe.htm" style="border:none"></iframe>
```

With CSS, you can also change the size, style and color of the iframe's border:

Example

```
<iframe src="demo_iframe.htm" style="border:5px dotted red"></iframe>
```

Use iframe as a Target for a Link

An iframe can be used as the target frame for a link.

The target attribute of the link must refer to the name attribute of the iframe:

Example

```
<iframe src="demo_iframe.htm" name="iframe_a"></iframe>
<p><a href="http://www.w3schools.com" target="iframe_a">W3Schools.com</a></p>
```

New HTML5 Elements

- New **semantic** elements like <header>, <footer>, <article>, and <section>
- New **multimedia** elements: <audio> and <video>

HTML5 Semantic Elements

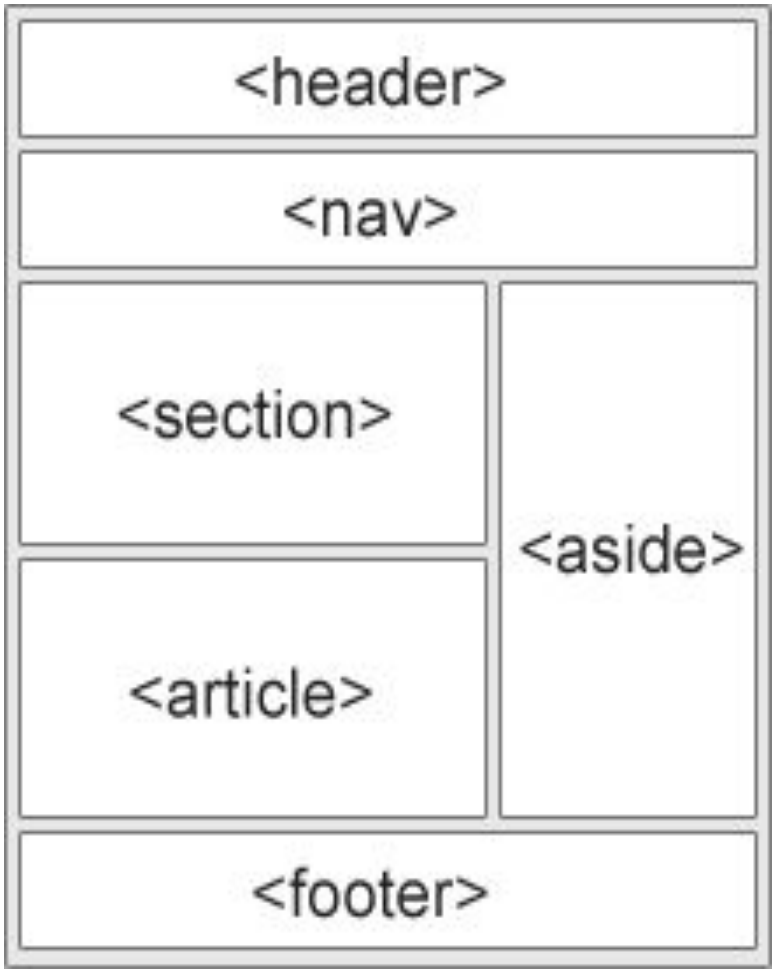
- A semantic element clearly describes its meaning to both the browser and the developer.
- Examples of non-semantic elements: and - Tells nothing about its content.
- Examples of semantic elements: <form>, <table>, and <img> - Clearly defines its content.

New Semantic Elements in HTML5

Many web sites contain HTML code like:

   to indicate navigation, header, and footer.

HTML5 offers new semantic elements to define different parts of a web page:



HTML5 <section> Element

The <section> element defines a section in a document.

According to W3C's HTML5 documentation: "A section is a thematic grouping of content, typically with a heading."

A Web site's home page could be split into sections for introduction, content, and contact information.

Example

```
<section>
  <h1>WWF</h1>
  <p>The World Wide Fund for Nature (WWF) is....</p>
</section>
```

HTML5 <article> Element

The <article> element specifies **independent, self-contained content.**

An article should make sense on its own, and it should be possible to read it independently from the rest of the web site.

Examples of where an <article> element can be used:

Forum post

Blog post

Newspaper article

Example

```
<article>
  <h1>What Does WWF Do?</h1>
  <p>WWF's mission is to stop the degradation of our planet's natural environment,
  and build a future in which humans live in harmony with nature.</p>
</article>
```

HTML5 <header> Element

The <header> element specifies a header for a document or section.

The <header> element should be used as a container for introductory content.

You can have several <header> elements in one document.

The following example defines a header for an article:

Example

```
<article>
  <header>
    <h1>What Does WWF Do?</h1>
    <p>WWF's mission:</p>
  </header>
  <p>WWF's mission is to stop the degradation of our planet's natural environment,
  and build a future in which humans live in harmony with nature.</p>
</article>
```

New multimedia elements: <audio> and <video>

audio tag

```
<audio controls autoplay loop>
<source src="music.mp3" type="audio/mpeg"/>
if you can see this, update your browser
</audio>
```

video tag

```
<video width="640" height="360" controls autoplay loop>
<source src="video.mp4" type="video/mp4"/>
if you can see this, update ur browser
</video>
```

XHTML

XHTML is HTML written as XML.

XHTML stands for E**X**tensible **H**yper**T**ext **M**arkup **L**anguage

XHTML is almost identical to HTML

XHTML is stricter than HTML

XHTML is HTML defined as an XML application

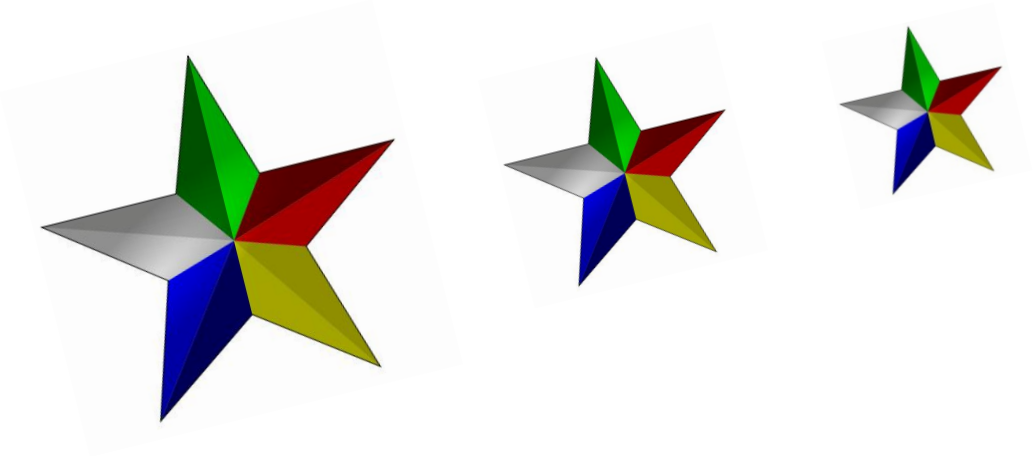
XHTML is supported by all major browsers

- XML is a markup language where documents must be marked up correctly (be "well-formed").
- By combining the strengths of HTML and XML, XHTML was developed.
- XHTML is HTML redesigned as XML.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0
Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">

<html xmlns="http://www.w3.org/1999/xhtml">

<head>
  <title>Title of document</title>
</head>

<body>
  some content
</body>

</html>
```

How to Convert from HTML to XHTML

- Add an XHTML <!DOCTYPE> to the first line of every page
- Add an xmlns attribute to the html element of every page
- Change all element names to lowercase
- Close all empty elements
- Change all attribute names to lowercase
- Quote all attribute values



CSS

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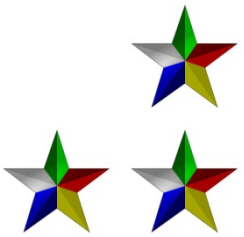
SRM IST



Cascading Style Sheets (CSS)

- CSS stands for **C**ascading **S**tyle **S**heets
- allows document authors to specify the presentation of elements on a web page (e.g., fonts, spacing, colors) separately from the structure of the document
- This **separation of structure from presentation** simplifies maintaining and modifying a web page

Cascading Style Sheets (CSS)

- Styling can be added to HTML elements in 3 ways:
  - **Inline** - using a **style attribute** in HTML elements
  - **Internal** - using a **<style> element** in the HTML <head> section
  - **External** - using one or more **external CSS files**
- The most common way to add styling, is to keep the styles in separate CSS files

Inline Styles (Inline CSS)

- **Inline styling** is used to apply a unique style to a single HTML element
- Inline styling uses the **style** attribute
- Inline styles override other styles applied for the element.
- This example changes the text color of the <p> element to blue:

```
<p style="color:blue;">
    This is a Blue color paragraph</p>
```

Inline Styles (Inline CSS)

```
<p style="font-size: 20pt; color: #6666ff">
    This text has the <em>font-size</em> and
    <em>color</em> styles applied to it, making it 20pt.
    and light blue.</p>
```

```
<!DOCTYPE html>
<html>
<body>
<h1 style="color:blue;">This is a Blue Heading</h1>
</body>
</html>
```

Internal Styling

- Also known as embedded style sheet
- **Internal styling** is used to define a style for one HTML page
- **Internal styling** is defined in the **<head>** section of an HTML page, within a **<style>** element

Internal Styling

```
<!DOCTYPE html>
<html>
    <head>
      <style>
     body {background-color:lightgrey;}
     h1   {color:blue;}
     p    {color:green;}
      </style>
    </head>
    <body>
     <h1>This is a heading</h1>
     <p>This is a paragraph.</p>
    </body>
    </html>
```

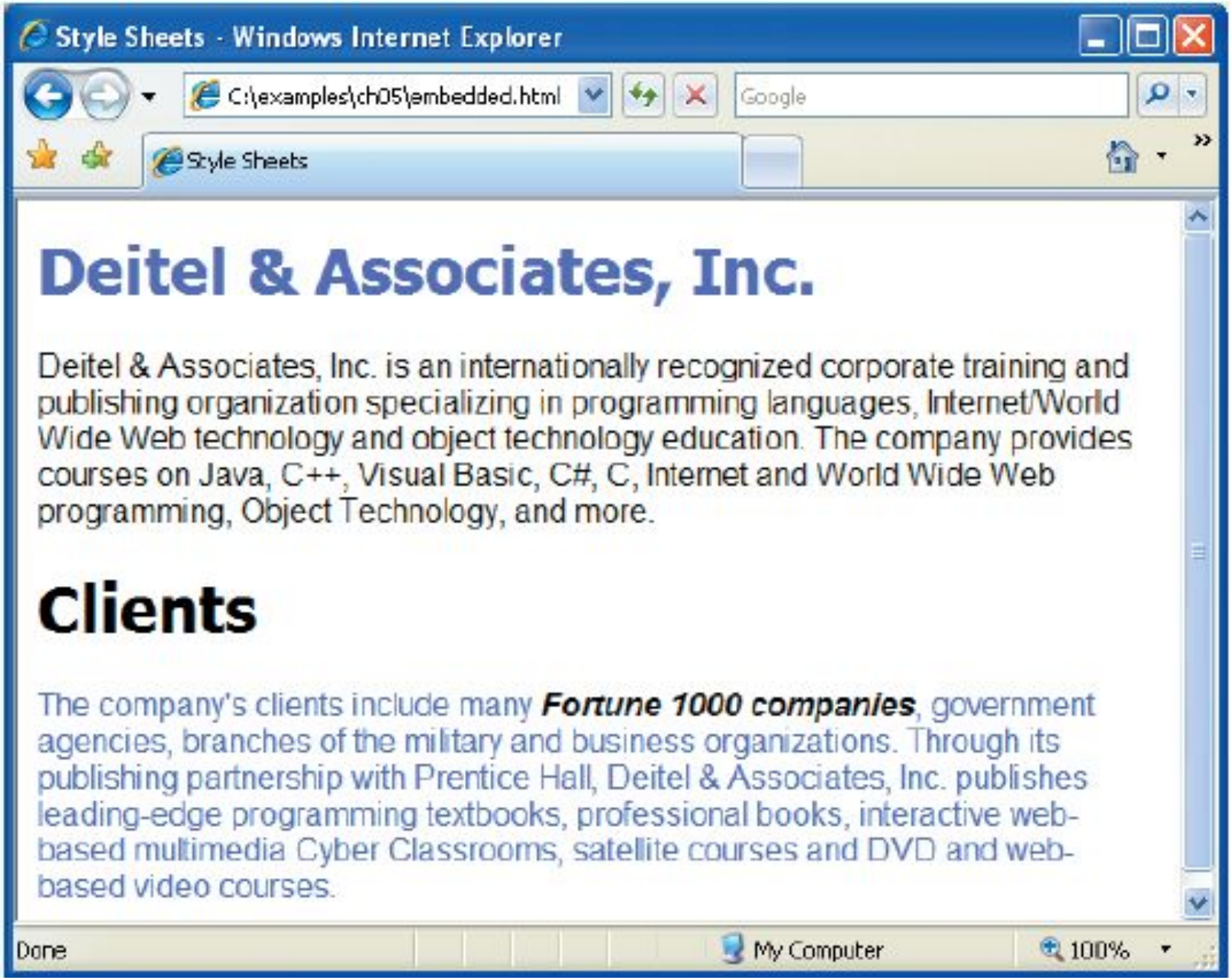
```
<html xmlns = "http://www.w3.org/1999/xhtml">
   <head>
      <title>Style Sheets</title>

      <!-- this begins the style sheet section -->
      <style type = "text/css">
         em        { font-weight: bold;
                     color: black }
         h1        { font-family: tahoma, helvetica, sans-serif }
         p         { font-size: 12pt;
                     font-family: arial, sans-serif }
         .special { color: #6666ff }
      </style>
   </head>
```

```
   <body>
      <!-- this class attribute applies the .special style -->
      <h1 class = "special">Deitel &amp;amp; Associates, Inc.</h1>

      <p>Deitel &amp;amp; Associates, Inc. is an internationally
      recognized corporate training and publishing organization
      specializing in programming languages, Internet/World
      Wide Web technology and object technology education.
      The company provides courses on Java, C++, Visual Basic,
      C#, C, Internet and World Wide Web programming, Object
      Technology, and more.</p>

      <h1>Clients</h1>
      <p class = "special"> The company's clients include many
      <em>Fortune 1000 companies</em>, government agencies,
      branches of the military and business organizations.
      Through its publishing partnership with Prentice Hall,
      Deitel &amp;amp; Associates, Inc. publishes leading-edge
      programming textbooks, professional books, interactive
      web-based multimedia Cyber Classrooms, satellite
      courses and World Wide Web courses.</p>
   </body>
</html>
```


Style Sheets - Windows Internet Explorer
C:\examples\ch05\embedded.html
Google
Style Sheets
Deitel & Associates, Inc.
Deitel & Associates, Inc. is an internationally recognized corporate training and publishing organization specializing in programming languages, Internet/World Wide Web technology and object technology education. The company provides courses on Java, C++, Visual Basic, C#, C, Internet and World Wide Web programming, Object Technology, and more.
Clients
The company's clients include many Fortune 1000 companies, government agencies, branches of the military and business organizations. Through its publishing partnership with Prentice Hall, Deitel & Associates, Inc. publishes leading-edge programming textbooks, professional books, interactive web-based multimedia Cyber Classrooms, satellite courses and DVD and web-based video courses.
Done
My Computer
100%

External Style Sheets

- An external style sheet is used to define the style for many pages.
- With an **external style sheet**, you can change the look of an entire web site by changing one file
- An external style sheet can be written in any text editor.
- The file should not contain any html tags.
- The style sheet file must be saved with a **.css** extension

External Style Sheets

- Example: **"styles.css"**

```
body {
    background-color: lightgrey;
}

h1 {
    color: blue;
}

p {
    color:green;
}
```

External Style Sheets

- To use an external style sheet, add a link to it in the **<head>** section of the HTML page

```
<!DOCTYPE html>
<html>
 <head>
     <link rel="stylesheet" href="styles.css">
 </head>
 <body>
     <h1>This is a heading</h1>
     <p>This is a paragraph</p>
 </body>
</html>
```

Conflicting Styles

- Styles may be defined by a **user,** an **author** or a **user agent**
  - A **user** is a person viewing your web page
  - **Author**—the person who writes the document
  - **User agent** is the program used to render and display the document (e.g., a web browser)

Conflicting Styles

- Styles defined by the user take precedence over styles defined by the user agent
- Styles defined by authors take precedence over styles defined by the user

```
<html xmlns = "http://www.w3.org/1999/xhtml">
   <head>
      <title>More Styles</title>
      <style type = "text/css">
         body      { font-family: arial, helvetica, sans-serif }
         a.nodec   { text-decoration: none }
         a:hover   { text-decoration: underline }
         li em     { font-weight: bold }
         h1, em    { text-decoration: underline }
         ul        { margin-left: 20px }
         ul ul     { font-size: .8em }
      </style>
   </head>
```

```
   <body>
      <h1>Shopping list for Monday:</h1>

      <ul>
         <li>Milk</li>
         <li>Bread
            <ul>
               <li>White bread</li>
               <li>Rye bread</li>
               <li>Whole wheat bread</li>
            </ul>
         </li>
         <li>Rice</li>
         <li>Potatoes</li>
         <li>Pizza <em>with mushrooms</em></li>
      </ul>

      <p><em>Go to the</em>
         <a class = "nodec" href = "http://www.deitel.com">
            Grocery store</a>
      </p>
   </body>
</html>
```

Conflicting Styles

- body { font-family: arial, helvetica, sans-serif }
- **a.nodec { text-decoration: none }**
  - applies property text-decoration to all a elements whose class attribute is set to nodec
  - By default, browsers underline the text of an a (anchor) element.
  - The text-decoration property none indicates that the browser should not underline hyperlinks.
  - Other possible values for text-decoration include overline, line-through, underline and blink.

Conflicting Styles

- **a:hover { text-decoration: underline }**
  - specifies a style for hover, which is a **pseudoclass**
  - **Pseudoclasses** give the author access to content not specifically declared in the document
  - The **hover pseudoclass** is activated dynamically when the user moves the mouse cursor over an element
  - Pseudoclasses are separated by a colon (with no surrounding spaces)

Conflicting Styles

- **li em { font-weight: bold }**
  - causes all em elements that are children of li elements to be bold
- **h1, em { text-decoration: underline }**
  - applies an underline style rule to all h1 and all em elements
- **ul { margin-left: 20px }**
  - assigns a leftmargin of 20 pixels to all ul elements
  - A pixel is a **relative-length measurement**—it varies in size, based on screen resolution

Conflicting Styles

- **ul ul { font-size: .8em }**
  - specifies that all nested unordered lists are to have font size .8em
- **relative-length measurement**
  - A **pixel** is a relative-length measurement—it varies in size, based on screen resolution
  - Relative lengths include
    - **em** (the *M-height of the* font, which is usually set to the height of an uppercase *M)*
    - ***ex*** *(the x-height of the font,* which is usually set to the height of a lowercase *x)*
    - *Percentages (e.g., font-size: 50%).*

Conflicting Styles

- To set an element to display text at 150 percent of its default text size

font-size: 1.5em

or

font-size: 150%

Conflicting Styles

- **absolute-length measurements**
  - units that do not vary in size based on the system
  - These units are:
    - **in (inches)**
    - **cm (centimeters)**
    - **mm (millimeters)**
    - **pt (points; 1 pt = 1/72 in)**
    - **pc (picas; 1 pc = 12 pt)**

Positioning Elements

- The position property gives authors greater control over how document elements are displayed.
- The position property specifies the type of positioning method used for an element.
- There are four different position values:
  - **absolute**
  - **static**
  - **relative**
  - **fixed**

Absolute Positioning

```
<html xmlns = "http://www.w3.org/1999/xhtml">
   <head>
      <title>Absolute Positioning</title>
      <style type = "text/css">
         .bgimg   { position: absolute;
                    top: 0px;
                    left: 0px;
                    z-index: 1 }
         .fgimg   { position: absolute;
                    top: 25px;
                    left: 100px;
                    z-index: 2 }
         .text    { position: absolute;
                    top: 25px;
                    left: 100px;
                    z-index: 3;
                    font-size: 20pt;
                    font-family: tahoma, geneva, sans-serif }
      </style>
   </head>
```

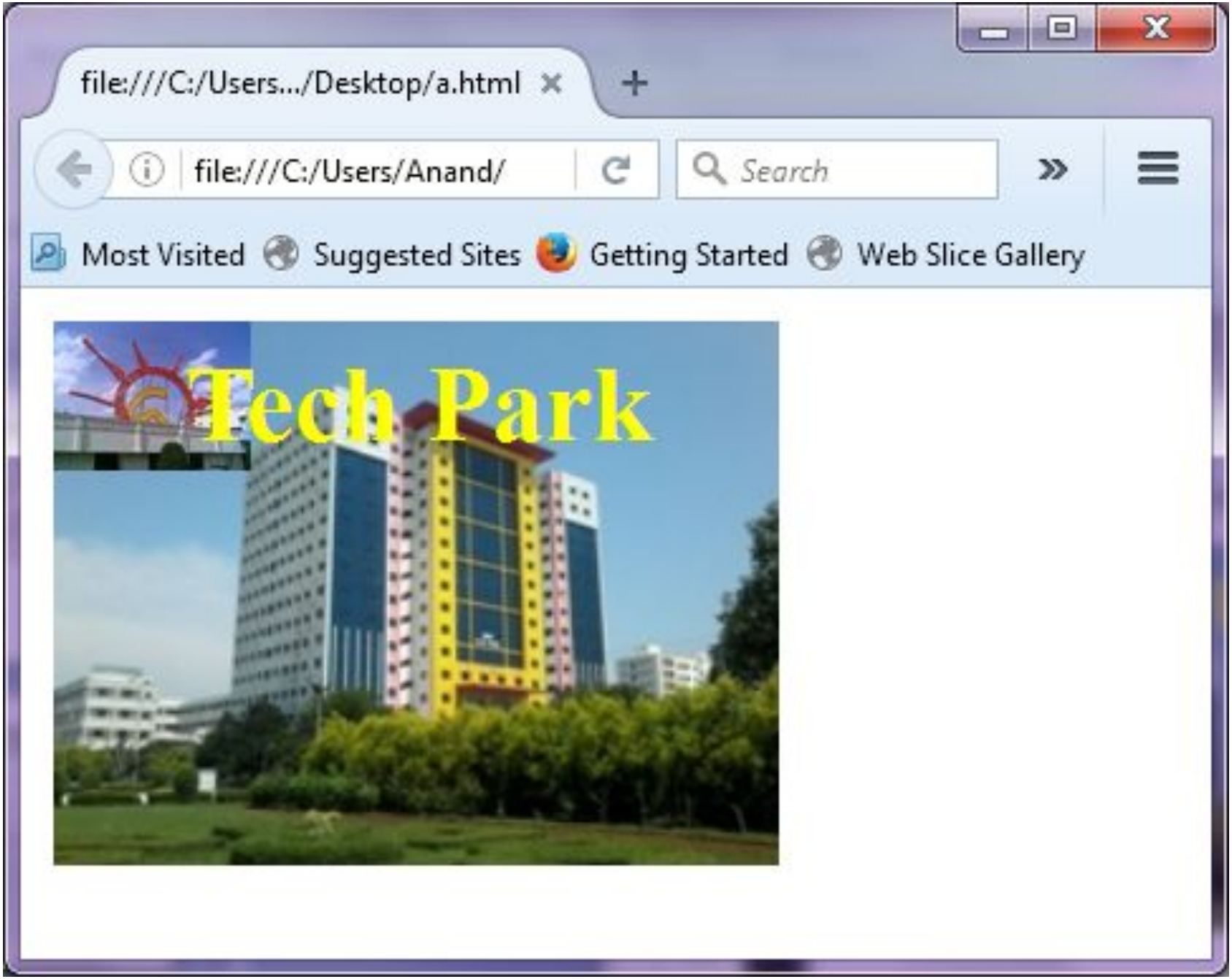
Absolute Positioning

- An element with position: absolute; is positioned relative to the nearest positioned ancestor (instead of positioned relative to the viewport, like fixed)
- if an absolute positioned element has no positioned ancestors, it uses the document body, and moves along with page scrolling

Untitled - Notepad

File Edit Format View Help

```
<!DOCTYPE html>
<html>
    <head>
        <style>
        .tpimg{
                position: absolute;
                top: 10px;
                left: 10px;
                z-index:1; }
        .arimg{
                position: absolute;
                top: 10px;
                left: 10px;
                z-index:2; }
        .txt{
                position: absolute;
                top: 15px;
                left: 50px;
                z-index:3;
                color:yellow; }
        </style>
    </head>
    <body>
        <h1 class="txt">Tech Park</h1>
        <img class="tpimg" src="techpark.jpg"></img>
        <img class="arimg" src="aarush.jpg" width="60" height="45">
</img>
    </body>
</html>
```


file:///C:/Users.../Desktop/a.html
file:///C:/Users/Anand/
Search
Most Visited
Suggested Sites
Getting Started
Web Slice Gallery
Tech Park

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```
<!DOCTYPE html>
<html>
    <head>
        <style>
                .header{
                        position:absolute;
                        background-color:blue;
                        width:150px;
                        top:100px;
                        left:200px;
                        min-height:100px; }
                .tpimg{
                        position: absolute;
                        top: 10px;
                        left: 10px;
                        z-index:1; }
                .arimg{
                        position: absolute;
                        top: 10px;
                        left: 80px;
                        z-index:2; }
                .txt{
                        position: absolute;
                        top: 50px;
                        left: 30px;
                        z-index:3;
                        color:yellow; }
        </style>
    </head>
```

Untitled - Notepad

File Edit Format View Help

```
    <body>
        <div>
                Welcome
        </div>
        <div class="header">
          <p class="txt">Tech Park</p>
          <img class="tpimg" src="techpark.jpg" width="100"
                                                height="75"></img>
        </div>
        <div style="min-height: 100px;width: 50%;
                                background-color: green;">
           <img class="arimg" src="aarush.jpg" width="60"
                                                height="45"></img>
        </div>
        </body>
</html>
```

file:///C:/Users.../Desktop/a.html

file:///C:/Users/Anand/D

Search

Most Visited Suggested Sites Getting Started Web Slice Gallery

Welcome

The CSS Box Model

- All HTML elements can be considered as boxes. In CSS, the term "box model" is used when talking about design and layout.
- The CSS box model is essentially a box that wraps around every HTML element. It consists of: margins, borders, padding, and the actual content.

The box model allows us to add a border around elements, and to define space between elements.

Example

```
div {
    width: 300px;
    padding: 25px;
    border: 25px solid navy;
    margin: 25px;
}
```

The CSS Box Model

Explanation of the different parts:

Content - The content of the box, where text and images appear

Padding - Clears an area around the content. The padding is transparent

Border - A border that goes around the padding and content

Margin - Clears an area outside the border. The margin is transparent

The box model allows us to add a border around elements, and to define space between elements.