New Perspectives on Creating Web Pages with HTML

Tutorial 1: Developing a Basic Web Page
Tutorial Objectives

- Explore the structure of the World Wide Web
- Learn the basic principles of Web documents
- Create a HTML document
- View an HTML file using a Web browser
- Use HTML tags for text, headings, paragraphs, and lists
- Insert character tags into an HTML document
Tutorial Objectives Continued

• Insert an inline graphic image into a HTML document
• Add special characters to an HTML document
• Insert horizontal lines into an HTML document
Introducing the World Wide Web

• In order for computers to share resources efficiently, they can be linked together in one of the following structured networks:
  – linked within a local area network (LAN)
  – linked across a wide area network (WAN)
• Networks are very useful, their use led to a “network of networks” called the Internet.
The Internet

- The Internet consists of millions of interconnected computers that enable users to communicate and share information.
- Many Internet tools required users to master an array of terms, acronyms, and commands before they could navigate the Internet.
- The World Wide Web was developed to make the Internet easier to use and give quick access to users.
Structure of the Internet

This figure shows the physical structure of the Internet, which uses fiber-optic cables, satellites, phone lines, and other telecommunications media to send data back and forth.
The Development of the World Wide Web

• In 1989, Timothy Berners-Lee and other researchers at the CERN nuclear research facility, laid the foundation of the World Wide Web, or the Web.

  – created an information system that would make it easy for researchers to locate and share data
  – required minimal training and support
  – developed a system of hypertext documents, electronic files that contain elements that you can easily select
Hypertext Documents

- **Hypertext** offers a better way of locating information.
- When you read a book, you follow a linear progression, reading one page after another.
- With hypertext, you progress through pages in whatever way is best suited to you and your objectives.
- Hypertext lets you skip from one topic to another.
Linear Versus Hypertext Documents

This figure shows how topics can be related in a hypertext fashion, as opposed to a linear fashion.
Hypertext Documents Continued

- The key to hypertext is the use of links, which you activate to move from one topic to another.
  - a link can open a document on a computer anywhere in the world
- Hypertext has become the dominate method of sharing and retrieving information on the Internet, becoming known as the World Wide Web, or the Web.
- Documents on the Web are known as Web pages.
Web Pages and Web Browsers

- A **Web page** is stored on a Web server, which makes the page available to users of the Web.
- To view a Web page, the user runs a **Web browser**, a software program that retrieves the page and displays it.
- A Web browser can either be text-based, or graphical.
This figure shows to view web pages, the user runs a Web browser, a software program that retrieves the page and displays it.
Internet Explorer and Netscape

• The most common Web browsers available today are:
  – Microsoft Internet Explorer
  – Netscape Navigator
Web Page with Interesting Fonts, Graphics, and Layout

This figure shows a Web page is not only a source of information, it can also be a work of art.

The Web designer has a great deal of control over the format of the page.
HTML: The Language of the Web

• Web pages are text files, written in a language called Hypertext Markup Language or HTML.
• A markup language is a language used to describe the contact and format of documents.
• HTML was developed from the Standard Generalized Markup Language (SGML), a language used for large-scale documents.
• SGML proved to be cumbersome and difficult, thus HTML was created.
Hypertext Markup Language (HTML)

- HTML allows Web authors to create documents that can be displayed across different operating systems.
- HTML code is easy to use, that even nonprogrammers can learn to use it.
- HTML describes the format of Web pages through the use of tags.
  - it’s the job of the Web browser to interpret these tags and render the text accordingly
## Versions of HTML

This figure presents a history of the various versions of HTML that have been released by the World Wide Web Consortium (W3C).

<table>
<thead>
<tr>
<th>VERSION</th>
<th>DATE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>HTML 1.0</td>
<td>1989–1994</td>
<td>The first public version of HTML which included browser support for inline images and text controls.</td>
</tr>
<tr>
<td>HTML 2.0</td>
<td>1995</td>
<td>The first version supported by all graphical browsers. It introduced interactive form elements such as option buttons and text boxes. A document written to HTML 2.0 should be compatible with all browsers on the World Wide Web.</td>
</tr>
<tr>
<td>HTML 3.0</td>
<td>1997</td>
<td>This version included additional support for creating and formatting tables and expanded the options for interactive form elements.</td>
</tr>
<tr>
<td>HTML 4.01</td>
<td>1999</td>
<td>This version added support for style sheets to give Web designers greater control over page layout. It added new features to tables and forms and provided support for international features. This version also expanded HTML's scripting capability and added increased support for multimedia elements.</td>
</tr>
<tr>
<td>XHTML 1.0</td>
<td>2001</td>
<td>This version is a reformulation of HTML 4.01 in XML and combines the strength of HTML 4.0 with the power of XML. XHTML brings the rigor of XML to Web pages and provides standards for more robust Web content on a wide range of browser platforms.</td>
</tr>
</tbody>
</table>
Hypertext Markup Language (HTML) Continued

• HTML has a set of rules, called **syntax**.
  – **syntax** are a set of standards or specifications developed by a consortium of Web developers, programmers, and authors called the **World Wide Web Consortium (WC3)**

• HTML extensions have been added to support new features, which have been adopted in subsequent sets of standards released by the W3C.
  – these extensions have provided Web page authors with more options
Web Development

• Web designers need to determine which browsers and browser versions support their web pages.
• In the future, Web development is focusing more on XML (Extensible Markup Language) and XHTML (Extensible HyperText Markup Language) for developing document content.
  – XML combined with style sheets provides the same functionality as HTML, but with greater flexibility
  – XHTML was designed to overcome some of the problems with competing HTML standards
Tools for Creating HTML Documents

- HTML documents are text files, which a text editor such as Windows NotePad can be used to create.
- You can also use an HTML converter or an HTML editor.
  - an HTML converter like Microsoft Word takes text in one format and converts it to HTML code
  - an HTML editor helps you create an HTML file by inserting HTML codes for you as you work
Creating an HTML Document

It’s always a good idea to plan the appearance of your Web page before you start writing code.
HTML Syntax

- **Document content** is what the users sees on the page, such as headings and images.
- **Tags** are the HTML codes that control the appearance of the document content.
  - *tag* is the name of the HTML tag
  - *attributes* are properties of the tag
  - *document content* is actual content that appears in the Web page
HTML Tags

• Tags can be one-sided or two-sided.
  – two-sided tags contain an opening tag `<b>` that tells the browser to turn on a feature and apply it to the contact that follows, and a closing tag `</b>` that turns off the feature
  – one-sided tags are used to insert noncharacter data into the Web page, such as a graphic image or video clip `<tag attribute>`

• Tags are not case sensitive. The current standard is to display all tags in lowercase letters.
Interpretation of the \(<\texttt{H1}>\) tag by Different Browsers

This figure shows how three different browsers might interpret a line of HTML code.

<table>
<thead>
<tr>
<th>BROWSER INTERPRETING THE (&lt;\texttt{H1}&gt;) TAG</th>
<th>APPEARANCE OF THE DOCUMENT CONTENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Browser A</td>
<td>Mr. Dubé’s Chemistry Classes</td>
</tr>
<tr>
<td>Browser B</td>
<td>Mr. Dubé’s Chemistry Classes</td>
</tr>
<tr>
<td>Browser C</td>
<td>Mr. Dubé’s Chemistry Classes</td>
</tr>
</tbody>
</table>
Initial HTML Tags in Notepad

Your text editor may not display the file extension in the title bar. This is okay.

- `<html>` tag indicates that this file is written in HTML
- `<head>` tag contains information about the Web page
- `<title>` tag contains the Web page title
- Page content will go between the `<body>` tags
The Initial HTML File in Internet Explorer

the title you entered between the <title> tags

address box indicates the name and location of the HTML file

page content will appear here

You should occasionally view the formatted page with different Web browsers to check compatibility, verify that there are no syntax errors, or other problems.
Creating Heading Tags

- HTML supports six levels of headings, numbered `<h1>` through `<h6>`, with `<h1>` being the largest and most prominent.
- Headings are always displayed in a bold font.
Six Heading Levels

This figure illustrates the general appearance of the six heading styles. Your browser might use slightly different fonts and sizes.

This is an h1 heading
This is an h2 heading
This is an h3 heading
This is an h4 heading
This is an h5 heading
This is an h6 heading
As of HTML 3.2, the heading tag can contain additional attributes, one of which is the alignment attribute.
Headings As They Appear in the Browser

<h1>Mr. Dube's Chemistry Classes</h1>

Chemistry Classes

Class Policies

Grading

<h2>Appointments</h2>

Safety
Entering Paragraph Text

If you are using a test editor like NotePad, the text might not wrap to the next line automatically.

Selecting the Word Wrap command within NotePad will allow you to see all the text on your screen.
Paragraph Text in the Browser

Mr. Dube's Chemistry Classes
at Robert Service High School

Welcome to Mr. Dube's Web site. I hope you will use this site to learn more about your class, my expectations, and chemistry in the world around you.

Chemistry Classes

Class Policies

Grading

Appointments

Safety
Adding Paragraphs

```html
<body>
<h1 align="center">Mr. Dube's Chemistry Classes</h1>
<h2 align="center">at Robert Service High School</h2>
Welcome to Mr. Dube’s Web site. I hope you will use this site to learn more about your class, my expectations, and chemistry in the world around you.

<h2>Chemistry classes</h2>
<h2>Class Policies</h2>
<h3>Grading</h3>
Homework will be given daily, is due at the beginning of the period the school day after it was assigned, and will be worth 5 to 10 points. A periodic quiz consisting of 1 or 2 homework problems from the past week may be given in lieu of collecting homework.

Tests and quizzes will be used to check your understanding of concepts, procedures, and information. Quizzes will be worth 10 to 25 points and will be given at least once a month. Tests will be worth up to 100 points and will be given 2 or 3 times a quarter.

Labs will be worth 10 to 30 points and will be graded on safety, participation, and write-up. I expect neat handwritten or typed reports. I'll also assign small research projects throughout the semester.

You must make up missed tests and quizzes the day you return, and you must submit missed homework assignments and labs within two days for every one day you missed. Failure to make up work within these time frames will result in a 0 for that test or assignment.

<h3>Appointments</h3>
I can meet with you before or after school. I will also be in my room (H113) during most lunch hours. Please do not hesitate to stop in if you need extra help -- do not wait! Chemistry is a building subject, and it is very hard to catch up once you fall behind.

<h3>Safety</h3>
We will be doing lab work nearly every week. Because of the potential danger of any lab exercise, I will hold you to the highest standards of behavior, and will remove you from the class if you pose a threat to yourself or other students.
</body>
```
The Paragraphs Displayed by the Browser

Remember: HTML formats text only through the use of tags and ignores such things as extra blank spaces, blank lines, or tabs.

four grading paragraphs are not separated

Mr. Dube's Chemistry Classes
at Robert Service High School

Welcome to Mr. Dube's Web site. I hope you will use this site to learn more about your class, my expectations, and chemistry in the world around you.

Chemistry Classes

Class Policies

Grading

Homework will be given daily, is due at the beginning of the period the school day after it was assigned, and will be worth 5 to 10 points. A periodic quiz consisting of 1 or 2 homework problems from the past week may be given in lieu of collecting homework. Tests and quizzes will be used to check your understanding of concepts, procedures, and information. Quizzes will be worth 10 to 25 points and will be given at least once a month. Tests will be worth up to 100 points and will be given 2 or 3 times a quarter. Labs will be worth 10 to 30 points and will be graded on safety, participation, and write-up. I expect neat handwritten or typed reports. I'll also assign small research projects throughout the semester. You must make up missed tests and quizzes the day you return, and you must submit missed homework assignments and labs within two days for every one day you missed. Failure to make up work within these time frames will result in a 0 for that test or assignment.
The Grading Text Separated into Paragraphs

To add space between paragraphs, you use the paragraph tag `<p>`. Text is now separated into four paragraphs.
Creating Lists

- HTML supports three kinds of lists:
  - an *ordered list*, which is used to display information in a numeric order
  - an *unordered list*, which list items are not listed in a particular order i.e. bullets
  - a *definition list*, which is a list of terms, each followed by a definition line that is typically indented slightly to the right
Entering an Unordered List

```html
<html>
<head>
<title>Mr. Dube's Chemistry Classes</title>
</head>

<body>
<h1 align="center">Mr. Dube's Chemistry Classes</h1>
<h2 align="center">at Robert Service High School</h2>
Welcome to Mr. Dube's Web site. I hope you will use this site to learn more about your class, my expectations, and chemistry in the world around you.
<h2>Chemistry Classes</h2>
<ul>
<li>Conceptual Chemistry: An introductory course requiring basic math but no algebra</li>
<li>Chemistry I: An introductory course requiring solid algebra skills</li>
<li>Advanced Placement Chemistry: An advanced course requiring a grade of A or B in Chemistry I and designed for students who want to prepare for the AP Chemistry exam (which can count toward college credits)</li>
</ul>
<h2>Class Policies</h2>
<h3>Grading</h3>
<p>Homework will be given daily, is due at the beginning of the period the school day after it was assigned, and will be worth 5 to 10 points. A periodic quiz consisting of 1 or 2 homework problems from the past week may be given in lieu of collecting homework.</p>
</body>
</html>
```
The Unordered List in the Browser

An unordered list is a bulleted list.

Mr. Dube's Chemistry Classes
at Robert Service High School

Welcome to Mr. Dube's Web site. I hope you will use this site to learn more about your class, my expectations, and chemistry in the world around you.

Chemistry Classes

- Conceptual Chemistry: An introductory course requiring basic math but no algebra
- Chemistry I: An introductory course requiring solid algebra skills
- Advanced Placement Chemistry: An advanced course requiring a grade of A or B in Chemistry I and designed for students who want to prepare for the AP Chemistry exam (which can count toward college credits)
Creating Character Tags

- HTML also lets you format individual characters.
- A tag that you apply to an individual character is called a **character tag**. There are two types of character tags:
  - logical character tag
  - physical character tag
This figure lists some common logical character tags.

<table>
<thead>
<tr>
<th>TAG</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;em&gt;</td>
<td>Indicates that characters should be emphasized in some way. Usually displayed with italics.</td>
</tr>
<tr>
<td>&lt;strong&gt;</td>
<td>Emphasizes characters more strongly than &lt;em&gt;. Usually displayed in a bold font.</td>
</tr>
<tr>
<td>&lt;code&gt;</td>
<td>Indicates a sample of code. Usually displayed in a Courier font or a similar monospace font.</td>
</tr>
<tr>
<td>&lt;kbd&gt;</td>
<td>Used to offset text that the user should enter. Often displayed in a Courier font or a similar monospace font.</td>
</tr>
<tr>
<td>&lt;var&gt;</td>
<td>Indicates a variable. Often displayed in italics or underlined.</td>
</tr>
<tr>
<td>&lt;cite&gt;</td>
<td>Indicates short quotes or citations. Often italicized by browsers.</td>
</tr>
</tbody>
</table>
Common Physical Character Tags

This figure shows examples of how these tags can be displayed in a browser.

<table>
<thead>
<tr>
<th>TAG</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>&lt;b&gt;</code></td>
<td>Enclosed text is bold.</td>
</tr>
<tr>
<td><code>&lt;i&gt;</code></td>
<td>Enclosed text is italic.</td>
</tr>
<tr>
<td><code>&lt;u&gt;</code></td>
<td>Enclosed text is underlined.</td>
</tr>
<tr>
<td><code>&lt;tt&gt;</code></td>
<td>Enclosed text is typewriter text, which is a monospace font such as Courier.</td>
</tr>
<tr>
<td><code>&lt;big&gt;</code></td>
<td>Enclosed text is displayed bigger than surrounding text.</td>
</tr>
<tr>
<td><code>&lt;small&gt;</code></td>
<td>Enclosed text is displayed smaller than surrounding text.</td>
</tr>
<tr>
<td><code>&lt;sub&gt;</code></td>
<td>Enclosed text is displayed as a subscript, in a smaller font if possible.</td>
</tr>
<tr>
<td><code>&lt;sup&gt;</code></td>
<td>Enclosed text is displayed as a superscript, in a smaller font if possible.</td>
</tr>
</tbody>
</table>
Logical Character Tags as They Appear in the Browser

- This is an example of the `<em>` tag.
- This is an example of the `<strong>` tag.
- This is an example of the `<code>` tag.
- This is an example of the `<kbd>` tag.
- This is an example of the `<var>` tag.
- This is an example of the `<cite>` tag.

- This is an example of the `<em>` and `<strong>` tags.
Underline text can sometimes be confused with hyperlinked text (which is usually underlined), and for that reason, use of the <u> tag is discouraged.
Applying Character Tags

Italic `<i>`  `</i>`
and bold `<b>`  `</b>`
character tags

If you support users with older browsers, you should use a logical tag. Otherwise, use physical tags, which are more common and easier to interpret.
The Effect of the Character Tags in the Browser

Class Policies

Grading

*Homework* will be given daily, is due at the beginning of the period the school day after it was assigned, and will be worth 5 to 10 points. A periodic quiz consisting of 1 or 2 homework problems from the past week may be given in lieu of collecting homework.

*Tests and quizzes* will be used to check your understanding of concepts, procedures, and information. Quizzes will be worth 10 to 25 points and will be given at least once a month. Tests will be worth up to 100 points and will be given 2 or 3 times a quarter.

*Labs* will be worth 10 to 30 points and will be graded on safety, participation, and write-up. I expect neat handwritten or typed reports. I'll also assign *small research projects* throughout the semester.

You must *make up* missed tests and quizzes the day you return, and you must submit missed homework assignments and labs within two days for every one day you missed. Failure to make up work within these time frames will result in a 0 for that test or assignment.
Inserting a Graphic

• Images can be displayed in two ways: as **inline images** or as **external images**.
  – an inline image displays directly on the Web page and is displayed when the page is accessed by a user
  – an inline image can be placed on a separate line in your HTML code, or it can be placed directly within a line of text
  – inline images should be in one of two file formats: **GIF** (Graphics Interchange Format) or **JPEG** (Joint Photographic Experts Group)
Inserting a Graphic Continued

- an external image is not displayed with the Web page, the browser must have a file viewer, which is a separate program that the browser launches when it encounters an external image file
- external images are represented by an icon that a user clicks to view the image
- external images are not limited to GIF or JPEG formats
Inserting a Graphic

Image file: dube.jpg

Use the `<p>` tag so you can center the image.
The Image File as it Appears in the Browser

Welcome to Mr. Dube's Web site. I hope you will use this site to learn more about your class, my expectations, and chemistry in the world around you.

Chemistry Classes
Special Characters

• Occasionally you will want to include entities or special characters in your Web page that do not appear on your keyboard. For example:
  – registered trademark symbol ®
  – copyright symbol ©

• HTML supports the use of character symbols that are identified by a code number or name.
Special Characters and Codes

This figure shows some HTML symbols and the corresponding code numbers or names.

<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>CODE</th>
<th>CODE NAME</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>©</td>
<td>©</td>
<td>©</td>
<td>Copyright symbol</td>
</tr>
<tr>
<td>®</td>
<td>®</td>
<td>®</td>
<td>Registered trademark</td>
</tr>
<tr>
<td>•</td>
<td>·</td>
<td>·</td>
<td>Middle dot</td>
</tr>
<tr>
<td>°</td>
<td>º</td>
<td>º</td>
<td>Masculine ordinal</td>
</tr>
<tr>
<td>TM</td>
<td>�</td>
<td>™</td>
<td>Trademark symbol</td>
</tr>
<tr>
<td></td>
<td> </td>
<td> </td>
<td>Nonbreaking space, useful when you want to insert several blank spaces, one after another</td>
</tr>
<tr>
<td>&lt;</td>
<td>&lt;</td>
<td>&lt;</td>
<td>Less than symbol</td>
</tr>
<tr>
<td>&gt;</td>
<td>&gt;</td>
<td>&gt;</td>
<td>Greater than symbol</td>
</tr>
<tr>
<td>&amp;</td>
<td>&amp;</td>
<td>&amp;</td>
<td>Ampersand</td>
</tr>
</tbody>
</table>
Special Characters in the Browser

This figure shows an example of the code “Welcome to Mr. Dubé’s Web site”, which accented the é in his last name.

Welcome to Mr. Dubé’s Web site. I hope you will use this site to learn more about your class, my expectations, and chemistry in the world around you.

Chemistry Classes

accented é added to last name
Inserting Horizontal Lines

- A horizontal line can improve the appearance of a Web page.
- The syntax for creating a horizontal line is:
  ```html
  <hr align="align" size="size"
  width="width" color="color" noshade>
  ```
Inserting Horizontal Lines

- The HTML horizontal syntax includes the following:
  - `align` specifies the horizontal alignment of the line on the page (center, left, or right)
  - `size` specifies the height of the line in pixels or percentage of the screen width
  - `width` indicates the width of the line in pixels or percentage of the screen width
  - `color` indicates the color of the line
  - `noshade` specifies that the browser display a solid line
Different Line Styles

You can use line styles to improve the appearance of your Web page.
Welcome to Mr. Dubé’s Web site. I hope you will use this site to learn more about your class, my expectations, and chemistry in the world around you.

Chemistry Classes
Tutorial 1 Summary

• Learned about the history and structure of the World Wide Web.
• Introduced the basic principles of Web documents and about the HTML language.
• Learned how to create a Web page using basic layout tags.
• Learned how to create paragraphs, headings and lists (both ordered and unordered).
Tutorial 1 Summary Continued

- Worked with character tags and special characters.
- Introduced to working with graphics by creating a horizontal line and an inline graphic image.