Introduction to Web Programming
Unit-1

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Content:

- Structural Elements, Title Element, meta Element, HTML Attributes,
- Body Element,
- Differences between Old HTML and HTML5,
- HTML CodingConventions. Comments, Block Elements, block quote Element, Whitespace Collapsing,
- Pre Element,Phrasing Elements, Editing Elements, q and cite Elements, dfn, abbr, and time Elements,
- br and wbr Element, sub, sup, s, mark, and small Elements, strong, em, b, u, and i Elements, Span Element

Source Code

```
<!DOCTYPE html>
<html lang="en">
<head>
<meta charset="utf-8">
<meta name="author" content="John Dean">
<meta name="description" content="Kansas City weather conditions">
<title>K.C. Weather</title>
<style>
  h1 {text-align: center;}
  hr {width: 75%;}
</style>
</head>

<body>
<h1>Kansas City Weather</h1>
<hr>
<p>
  It should be pleasant today with a high of 95 degrees.<br>
  With a humidity reading of 30%, it should feel like 102 degrees.
</p>
<div>
  Tomorrow's temperatures:<br>
  high 96, low 65
</div>
</body>
</html>
```

FIGURE 1.4 Source code for Kansas City Weather web page

Source Code Description

- The first construct, <!DOCTYPE html>, tells the browser what type of document the webpage is.
- Its html value (in <!DOCTYPE html>) indicates that the document is an HTML document,
- The document uses the HTML5 standard for its syntax.
- *Syntax* refers to the words, grammar, and punctuation that make up a language.

- After the doctype instruction comes the html element. It’s a container, and it contains/ surrounds the rest of the web page.
- Its start tag includes lang="en", which tells the browser that the web page is written in English.
- The head and body elements are also containers.
- The head element surrounds elements that provide information associated with the web page as a whole.

- The body element surrounds elements that display content in the web page.
- Container elements must be properly *nested*, meaning that if you start a container inside another container,
- you must end the inner container before you end the outer container.
- Because the body element starts inside the html element, the </body> end tag must come before the </html> end tag.
- In Figure 1.5, note how the head and body elements are properly nested within the html element.

```
<!DOCTYPE html>
<html lang="en">
<head>
   .
   .
   .
</head>

<body>
   .
   .
   .
</body>
</html>
```

FIGURE 1.5 Skeleton code using just doctype and the structural elements

Title Element

```
<head>
<meta charset="utf-8">
<meta name="author" content="John Dean">
<meta name="description" content="Kansas city weather conditions">
<title>K.C. Weather</title>
</head>
```

FIGURE 1.6 head container for Kansas City Weather web page

- The head element contains two types of elements—meta and title
- Head element surrounds elements associated with the web page as a whole.
- The web page's title pertains to the entire web page, so its title element goes within the head container. The title element's contained data (e.g., "K.C. Weather") specifies the label that appears in the browser window's *title bar*.

- The official HTML standard requires that every head container contains a title element
- purpose of the title element?

(1) It provides documentation for someone trying to maintain your web page, and

(2) it helps web search engines find your web page.

meta Element

- Meta elements within the head container.
- The meta elements provide information about the web page.
- The meta element is a void element (not a container), so it does not have an end tag.
- There are no end tags for meta elements.
- Syntax:<meta charset="utf-8" >

HTML Attributes

- Container elements provide information between their start and end tags.
- Void elements (including the meta element) have no end tags, so they can’t provide information that way.
- Instead, they provide information using attributes

- In the following example, charset is an attribute for a meta element:
- <meta charset="utf-8">
- Most attributes have a value assigned to them.
- In this example, charset is assigned the value "utf-8"

- A *string* is a group of zero or more
- characters surrounded by a pair of double quotes (“) or a pair of single quotes (‘), with double quotes preferred.

- Attributes are more common with void elements, but they can be used with container elements as well. Here's an example of a container element that uses an attribute:

```
<html lang="fr">
  •
  •
  •
</html>
```

- The lang attribute tells the browser that the element is using a particular language for its content. Here we're using it for the html element, so it means that the entire web page uses French.

- For web pages written in English, use <html lang="en">.
- Why would you want to specify an element's language? The W3C's Internationalization
- Activity group (https://www.w3.org/International/questions/qa-lang-why.en) provides quite a few good reasons, and here are a few of them:
- Help search engines find web pages that use a particular language.
- Help spell-checker and grammar-checker tools work more effectively.
- Help browsers use appropriate fonts.
- Help speech synthesizers pronounce words correctly.

meta charset Element

- When a web server transmits a web page's source code to an end-user's computer, the web server doesn't transmit the source code's characters the way you see them in this book or on a keyboard. Instead, it transmits coded representations of the source code's characters.
- The coded representations are in *binary*, which means a sequence of 0's and 1's, where each 0 and 1 is a *bit* (so 10110011 is a binary sequence of 8 bits).
- There are different encoding schemes, and in order for the receiving end of a transmission to understand the transmitted binary data, the receiver has to know the encoding scheme used by the sender.
- For web page transmissions, the meta charset element specifies the encoding scheme.
- charset value of "utf-8"
- because all modern browsers understand that value.3 The encoding scheme is sometimes referred to as a character set, and that's what charset stands for

meta name Element

- Common values for the meta name attribute are author, description, and keywords.
- Here's an example with an author value for a name attribute:
- <meta name="author" content="John Dean">
- The name and content attributes go together.
- The name attribute's value specifies the type of thing that the content attribute's value specifies.
- So in this example, with the name attribute
- specifying "author," the content attribute specifies the author's name ("John Dean").

- In the following examples, the name attribute uses the values “description” and “keywords”:
- <meta name="description" content="Kansas City weather conditions"
- <meta name="keywords" content="KC, weather, meteorology, forecast"
- The meta description element and also the meta keywords element help web search engines find your web page.
- The meta description element helps the person reading the code learn the purpose of the web page.
- The meta description element isn’t as important as the meta author and meta charset elements.

body Elements: hr, p, br, div

- In FIGURE 1.7, which shows the body container code, note the h1, hr, p, br, and div elements.

```
<body>
<h1>Kansas City Weather</h1>
<hr>
<p>
  It should be pleasant today with a high of 95 degrees.<br>
  With a humidity reading of 30%, it should feel like 102 degrees.
</p>
<div>
  Tomorrow's temperatures:<br>
  high 96, low 65
</div>
</body>
```

FIGURE 1.7 body container for Kansas City Weather web page

- h1 is a heading element, hr element is used to *render* a horizontal line. When a browser renders an element, it figures out how the element's code should be displayed.
- The "h" in hr stands for horizontal. The "r" in hr stands for rule, presumably because a rule is another name for a ruler, which can be used to make a straight line.
- The hr element is a void element, so it uses just one tag, <hr>.
- The p element is a container for a group of words that form a paragraph. start tag and the end tag.

Coding Conventions

- Whenever you write a program, including an HTML program, it's important to follow standard coding-style conventions, so your program is easy to read by you.
- Programmers get used to certain conventions, such as when to use uppercase versus lowercase, when to insert blank lines, and when to indent.

Coding Conventions

- Even though it's a container, the HTML standard allows p's start tag to appear without its end tag. However, that's considered to be bad style, so don't do it.

- You should never omit end tags for container elements because then it's more difficult for the browser and for people reading your source code to figure out where the container element ends.

Div Tag

- A div element is also a container for a group of words, but it's more generic, so the words don't have to form sentences in a paragraph.
- div stands for division because a division can refer to a part of something that has been divided, and a div element is indeed a part of a web page.
- Normally, the div element causes its enclosed text to have single line breaks above and below it.
- If a div element's enclosed text is greater than one line, then proper style suggests putting the tags on separate lines and indenting the enclosed text.

- Except for single line breaks instead of blank lines, the characteristics for a div element are the same as for a p element.
- **So when should you use a p element versus a div element?**
- Use a p element if the enclosed text forms something that would normally be considered a paragraph.
- On the other hand, use a div element if the enclosed text is related in some way, but the text would not normally be considered a paragraph.

- If you use the p element only for bona fide paragraphs, then the rest of the web page can process p elements as paragraphs, and you avoid including no paragraphs in that processing.
- For example, you could use Cascading Style Sheets to indent each paragraph’s first line.

- Finally, there's the br element, which is used to render a new line. In the program, there is br in the following line

**"It should be pleasant today with a high of 95 degrees"
**

- br element's new line can be seen on browser window

Differences Between Old HTML and HTML5

- In the real world, you'll see a lot of old HTML code. The old code you'll see the most of will probably be XHTML 1.0 because it was the most popular precursor to HTML5.

- But in the interest of long-term stability and following your company's coding conventions, you'll sometimes need to convert old HTML code to HTML5.

Differences

- With HTML5, there's no longer a requirement to have a quoted value for every attribute. So for some HTML5 attributes, it's legal to include an attribute by itself, without an equals sign or value attached to it. However, standard coding conventions suggest always including the quotation marks.

- With HTML5, there's no longer a requirement to have a / for all void elements. For example, the XHTML specification requires writing the br void element with a slash,
. The HTML5 specification says you can include or omit the slash. Standard coding conventions suggest always omitting the /.

- ▸▸ With HTML5, there's no longer a requirement to have an end tag for every container. The XHTML specification requires including a </p> end tag for every p container element. The HTML5 specification says you can include or omit the end tag. Standard coding conventions suggest always including the end tag.

- Old versions of HTML (including XHTML 1.0) include some elements that are deemed outdated.

- In particular, elements whose purpose is to provide formatting are deemed outdated. This is because formatting is supposed to be taken care of by CSS, not HTML elements. To clean things up, such outdated elements are not a part of the HTML5 standard.

- For example, the <font> and elements are not supported by HTML5 because they were used to specify font and alignment, which are format-oriented characteristics.

- Structural organization elements—Two examples are the header and footer elements.

- Audio and video—The audio and video elements allow users to play music and video files directly from their browsers without the need of a plug-in.

- Canvas—The canvas element provides a drawing area and a set of commands that a web programmer can use to draw two-dimensional shapes and animate them.

- Drag and drop functionality—The drag and drop constructs provide the ability to drag elements within a web page.

- Web storage functionality—The web storage constructs provide the ability to permanently store data on the browser's computer.

- Geolocation functionality—The geolocation constructs provide the ability to locate the browser's computer.

HTML Coding Conventions

- For every container element, include both a start tag and an end tag. So even though it's legal to omit a p element's end tag, don't do it.
- Use lowercase for all tag names (e.g., div, meta) and attributes (e.g., name).
- Use lowercase for attribute values unless there's a reason for uppercase. For a meta author element, use title case for the author's name because that's how people's names are normally spelled (e.g., name="Dan Connolly").
- For attribute-value assignments, surround the value with quotes, and omit spaces around the equals sign.
- The capitalization rule for the doctype instruction is

  Example:<!DOCTYPE html> should be <!doctype html>.

Comments

- Usually, HTML code is fairly easy to understand, so there is no need for extensive comments.
- However, sometimes comments are appropriate. The general rule is to include a comment whenever information is needed to clarify something about nearby HTML code. Here's an example:
- <!-- The following image should be updated once a month -->
- <img src="januaryPicture.gif" width="400" height="250">
- In this code fragment, which displays a picture on a web page, the first line is a comment, surround commented text with <!-- and --> markers

- For comments that are too long to fit on one line, proper style suggests putting the <!-- and --> markers on lines by themselves and indenting the enclosed comment text. **Here's an example:**

```
<!—-
If the user clicks one of the color buttons, that will cause the following paragraph's font color to change to the button's color.
-->
```

Block Elements

- Every HTML element has a default display value, depending on what type of element it is.
- There are two display values: block and inline.

- A block element always starts on a new line, and the browsers automatically add some space (a margin) before and after the element.
- A block element always takes up the full width available (stretches out to the left and right as far as it can).

Two commonly used block elements are:
<p> and .

The <p> element defines a paragraph in an HTML document.

The element defines a division or a section in an HTML document.

The <p> element is a block element.

The element is a block element.

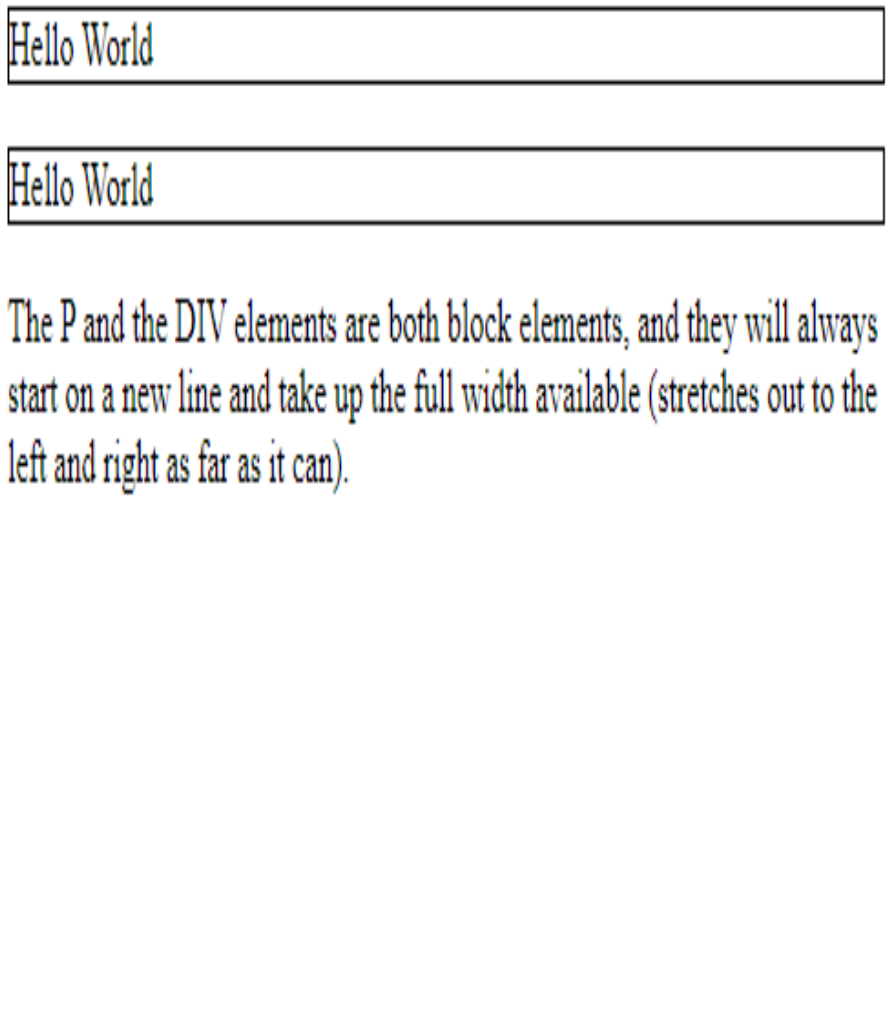
Example For Block Elements and Inline Elements

```
<!DOCTYPE html>
<html>
<body>

<p style="border: 1px solid black">Hello World</p>
<div style="border: 1px solid black">Hello World</div>

<p>The P and the DIV elements are both block elements, and they will always start on a new line and take up the full width available (stretches out to the left and right as far as it can).</p>

</body>
</html>
```



"Block-level element," was part of the HTML4 standard, but it's been omitted from the HTML5 standard. Why?

- It's because the **World Wide Web Consortium** (W3C) feels that HTML should focus exclusively on content and not on formatting.

The tag

- This is the very important block level tag which plays a big role in grouping various other HTML tags and applying CSS on group of elements.
- Even now tag can be used to create webpage layout where we define different parts (Left, Right, Top etc.) of the page using tag.
- This tag does not provide any visual change on the block but this has more meaning when it is used with CSS.

Div tag and output

```
<!DOCTYPE html>
<html>
   <head>
      <title>HTML div Tag</title>
   </head>
   <body>
      <!-- First group of tags -->
      <div style = "color:red">
         <h4>This is first group</h4>
         <p>Following is a list of vegetables</p>
         <ul>
            <li>Beetroot</li>
            <li>Ginger</li>
            <li>Potato</li>
            <li>Radish</li>
         </ul>
      </div>
      <!-- Second group of tags -->
      <div style = "color:green">
         <h4>This is second group</h4>
         <p>Following is a list of fruits</p>
         <ul>
            <li>Apple</li>
            <li>Banana</li>
            <li>Mango</li>
            <li>Strawberry</li>
         </ul>
            </div>    </body>      </html>
```

This is first group

Following is a list of vegetables

- Beetroot
- Ginger
- Potato
- Radish

This is second group

Following is a list of fruits

- Apple
- Banana
- Mango
- Strawberry

Span tag and Example

```
<!DOCTYPE html>
<html>

    <head>
        <title>HTML span Tag</title>
    </head>

    <body>
        <p>This is <span style = "color:red">red</span> and
            this is
            <span style = "color:green">green</span></p>
    </body>

</html>
```

This is red and this is green

blockquote Element