

Web Development Using HTML

Internet Programming I: Chapter 2 Part I



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The core Web development technologies



- HTML, CSS and JavaScript are the basic building block and core web development technologies.



Structure

- Create the structure of the website



Presentation

- Stylize the layout of the website



Behavior

- Add interactivity to the website



What is the Difference



source: <https://admin.brytdesigns.com/>



HTML
Hypertext Markup Language

Create the structure

- Controls the layout of the content
- Provides structure for the web page design
- The fundamental building block of any web page



CSS
Cascading Style Sheet

Stylize the website

- Applies style to the web page elements
- Targets various screen sizes to make web pages responsive
- Primarily handles the "look and feel" of a web page



Javascript

Increase interactivity

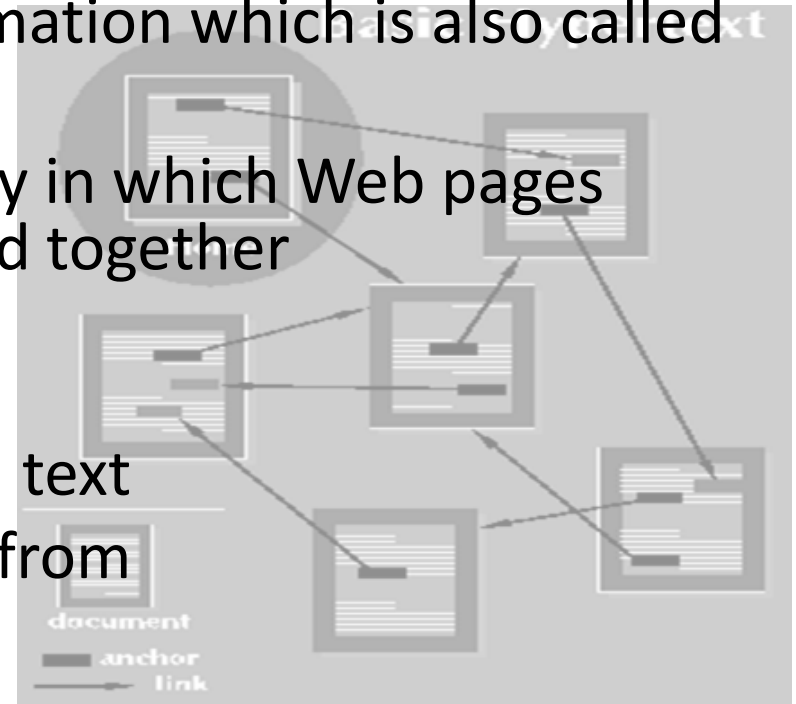
- Adds interactivity to a web page
- Handles complex functions and features
- Programmatic code which enhances functionality

Hypertext

- HTML Stands for Hypertext Markup Language
- Hypertext basically refers to Non-sequentially linked pieces of text or other information which is also called “Nodes”
- More specifically it is the way in which Web pages (HTML documents) are linked together

Goal

Allow to access and read text and other information from multiple perspectives



Markup Language



- Markup originally refers to the handwritten indicators on an author's manuscripts.
- The idea of markup Notify a typesetter the layout of a document and the typeface to use
- A markup language is a set of characters or symbols that **define a document's logical structure.**
- In other words, it refers to the use of set of characters within a piece of information that can be used to process or identify that information in a particular way
- It composed of set of symbols called markup tags.

HTML (Hypertext Markup Language)

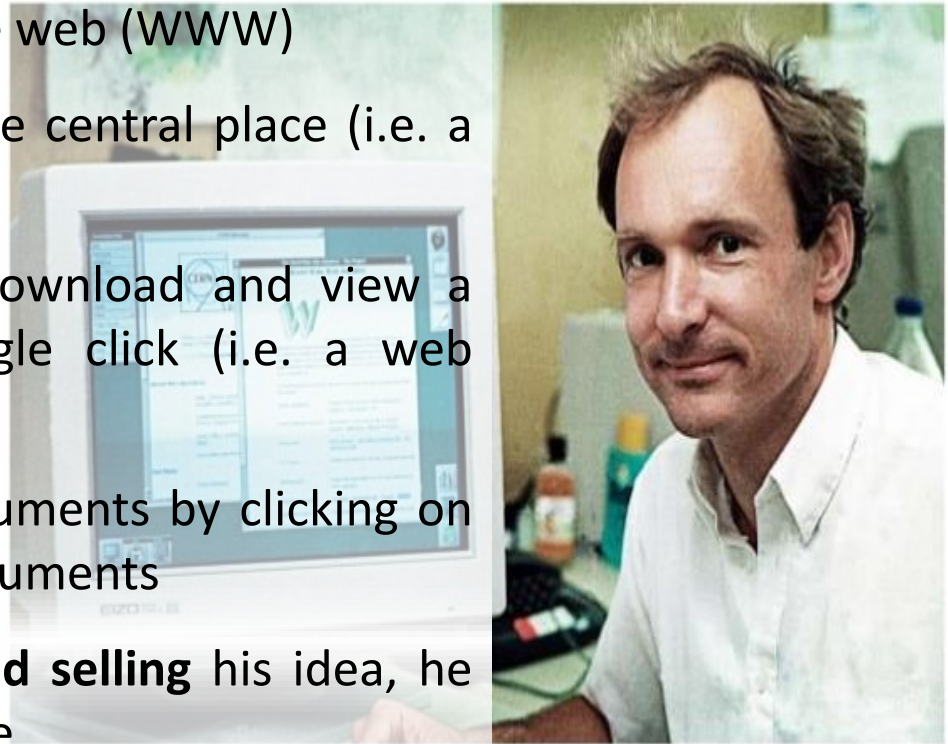


- It is a markup language which based on Standard Generalized Markup Language (SGML)
- SGML is a standard for specifying a markup language or tag set
- SGML Itself is not a document language, but a description of how to specify one and create a document type definition (DTD)
- It define the structure of information on the Web page
- It doesn't describe the actual presentation of a document
- It tells the web browser what content to display
- Use a pre-defined set of tags to identify the webpage content types
- It is not a programming language

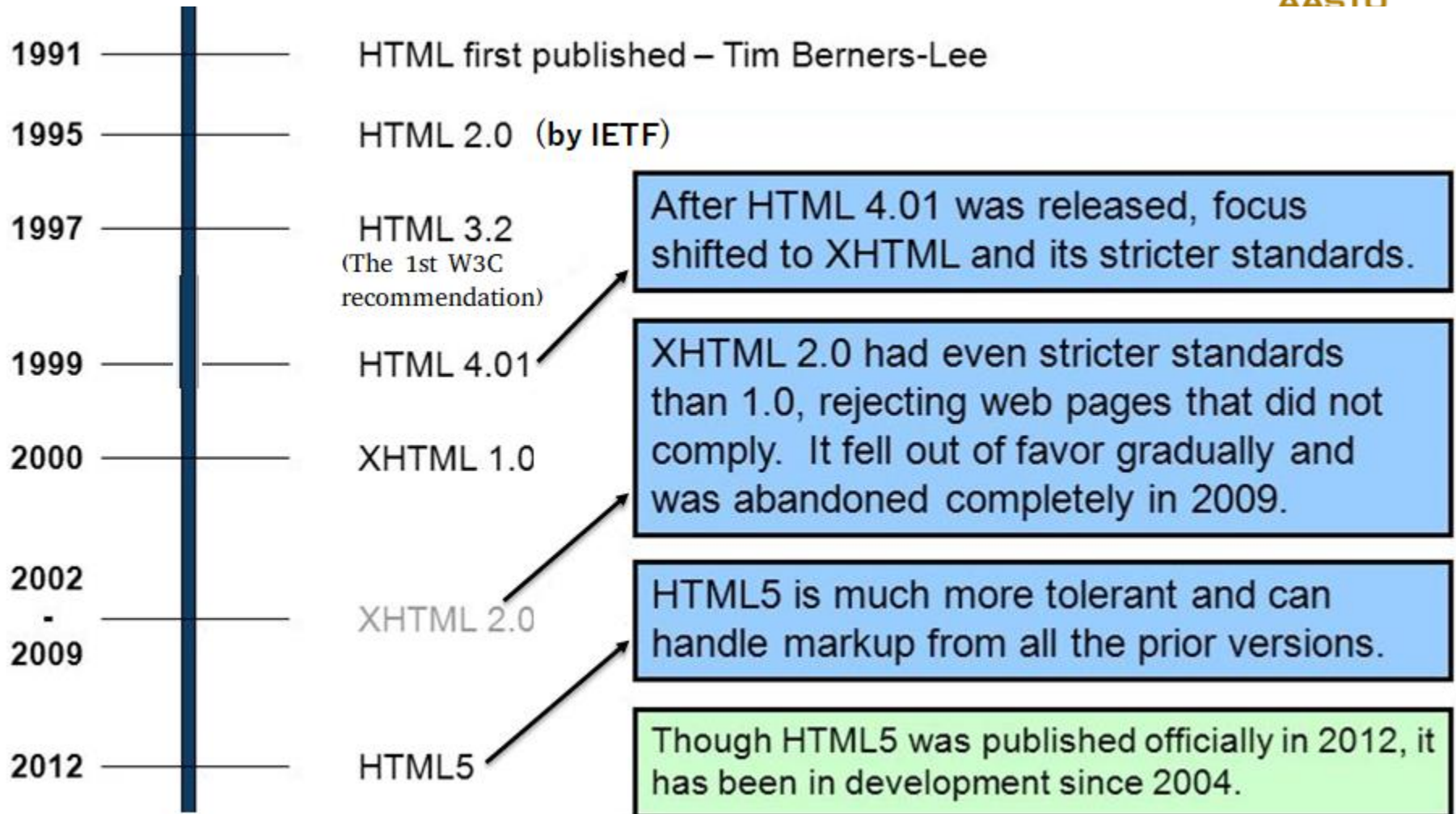
The evolution of HTML



- Before 1990 there was no easy way to find, download and view documents over the internet
- HTML, initially invented by in 1991 by Tim Berners Lee
- **Tim** invented a system – the web (WWW)
 - Store documents in one central place (i.e. a web server)
 - Make it possible to download and view a document with a single click (i.e. a web browser)
 - Allow to find new documents by clicking on “links” inside other documents
 - Instead of **licensing and selling** his idea, he made free for every one



The evolution of HTML cont'd

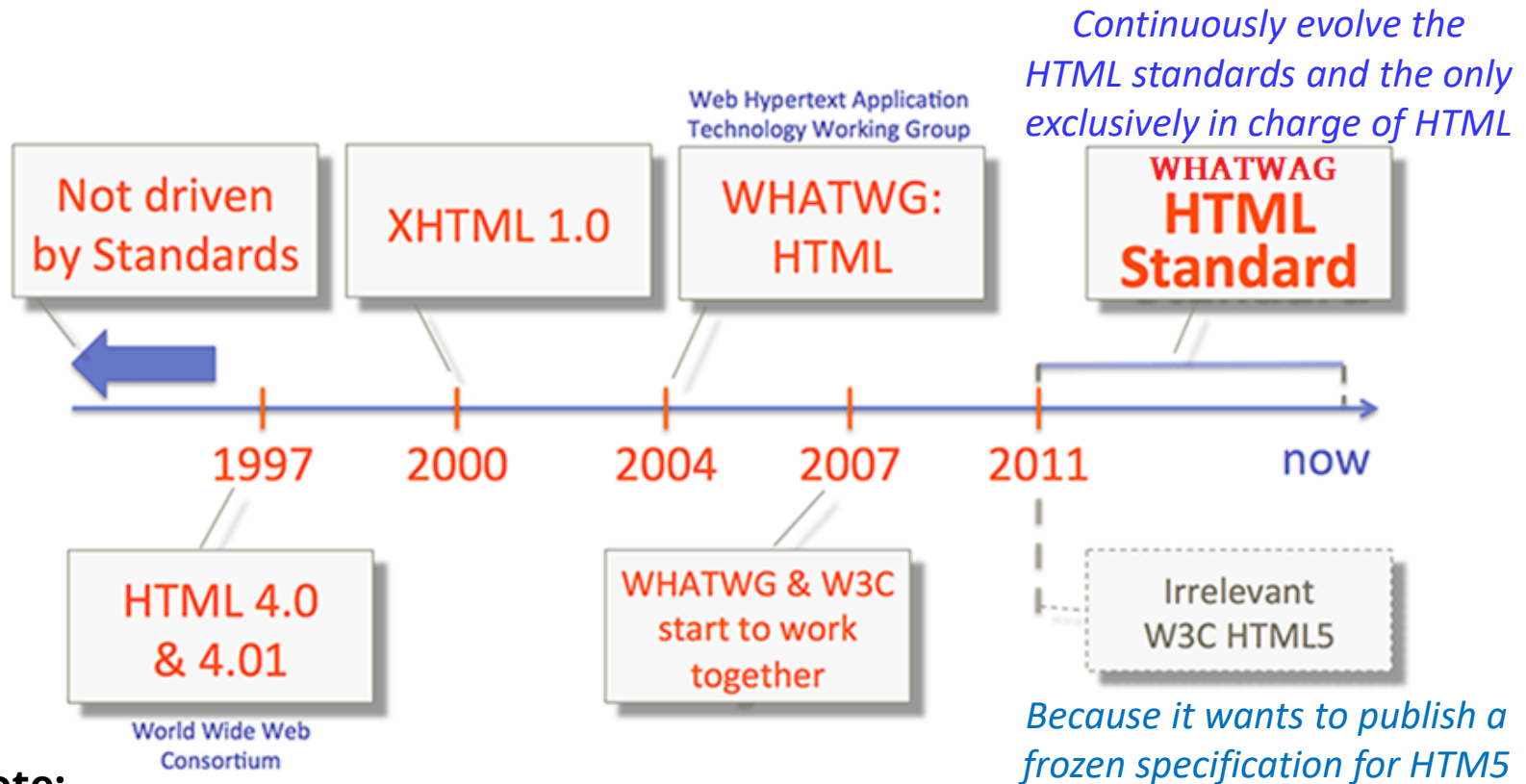


HTML Standardization history



- Before 1997, there were no HTML standards, so browsers basically did whatever they wanted
- Particularly 1993 – 1997 (The “War” Years), HTML was being defined by the elements that browser software developers chose to implement
- They invented new tags or implemented the same tags differently which was kind of the wild west of the web
- Around 1997, the W3C came up with the first standard that browsers started to pay attention to
- The W3C defined HTML version 4 (or HTML4) which it shortly thereafter updated to HTML4.01

HTML Standardization history cont'd



Note:

- **W3C** is the main international standards organization for the Web
- **WHATWG** – established in 2004 by the browser vendors

HTML5



- Current version of standard HTML which was defined in 2012 by WHATWAG
- It is cross-platform. It will display content on a desktop computer, laptop, a tablet, smartphone, a notebook or a Smart TV
- All major browsers support most of the HTML5 elements
- Key features
 - Multimedia elements
 - Graphics elements
 - Offline support
 - Semantics markups

HTML



- HTML is a language made up of elements, which can be applied to pieces of text to give them different meaning in a document
 - Is it a paragraph?
 - Is it a bulleted list?
 - Is it part of a table?
- Structure a document into logical sections
 - Does it have a header?
 - Three columns of content?
 - A navigation menu?
- Embed content such as images and videos into a page

Basic Structure of HTML Document



`<!DOCTYPE>`

- *Tell the browser the type of HTML standard*
- *Must appear first*

`<html>`

`<head>`

`</head>`

`<body>`

`</body>`

`</html>`

- *Contain html document meta info, links, style sheet and scripts etc.*
- *These are non web displayable info*

- *Contains the content that displays in the browser*

Basic HTML Page Example



```
<html>
```

```
<head>
```

```
<title>Hello World </title>
```

```
</head>
```

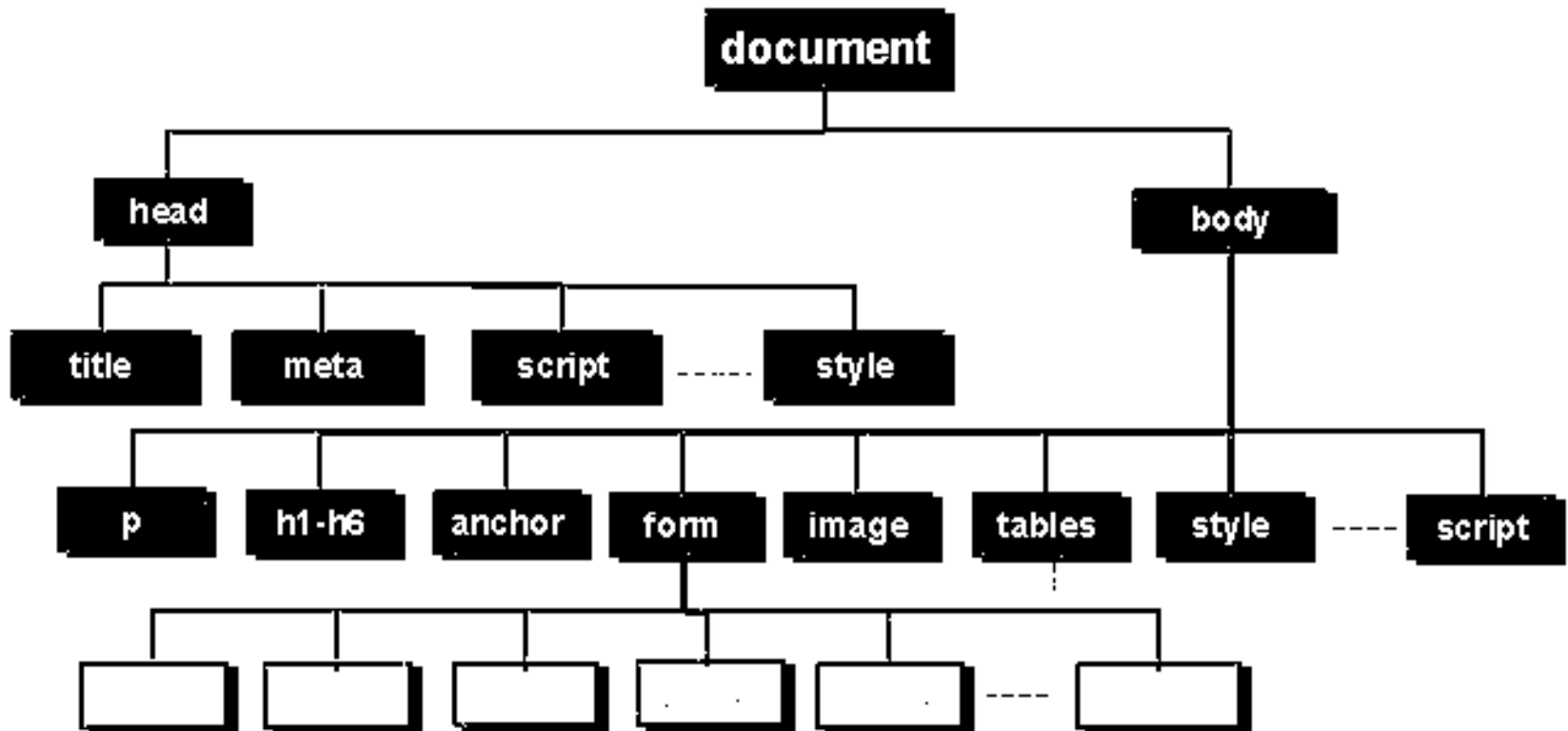
```
<body>
```

```
<p>Welcome to the World </p>
```

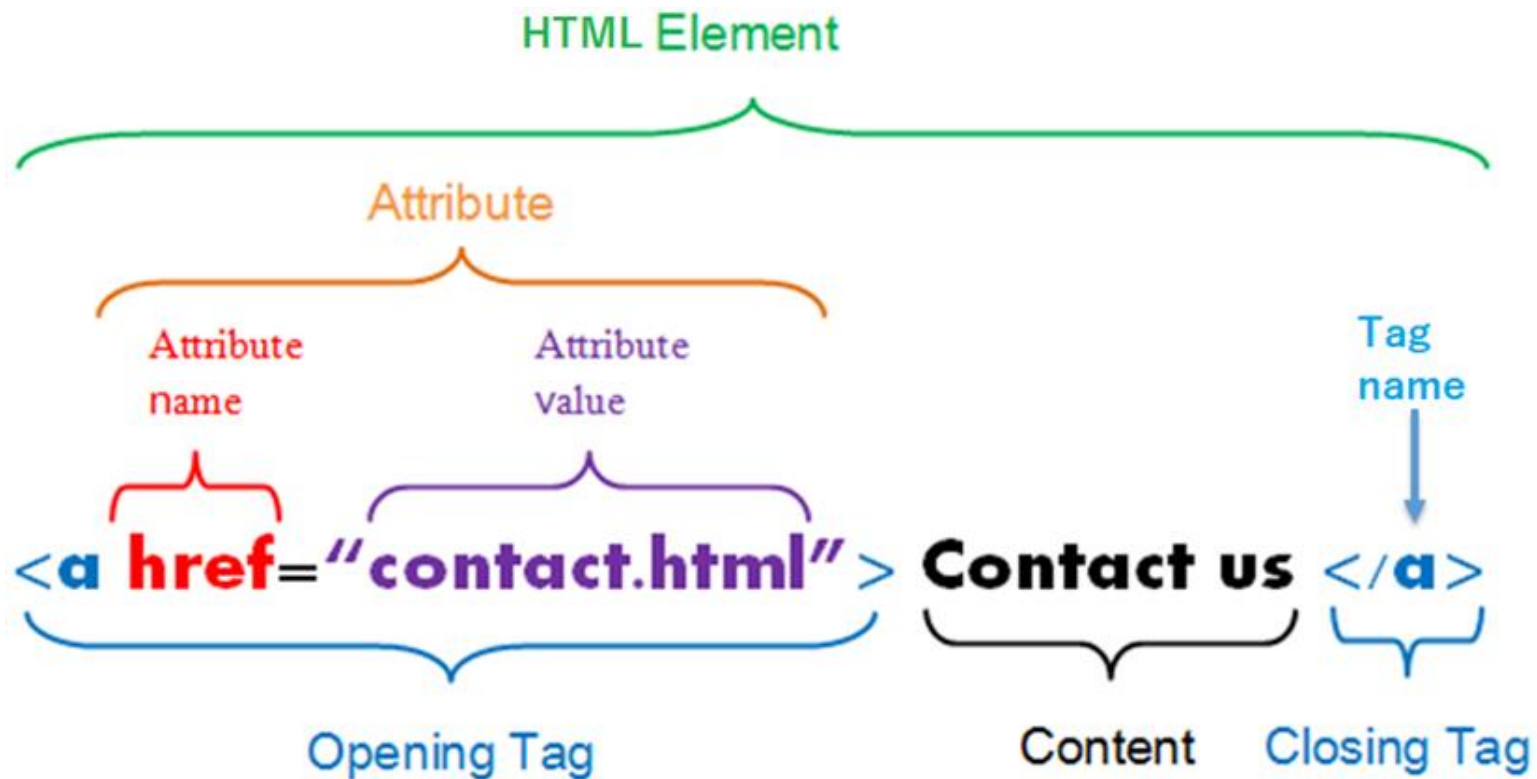
```
</body>
```

```
</html>
```

Tree structure of HTML Document



Anatomy of HTML Elements/Tags



- **Syntax:**

`<tag attribute = "Value"> Content </tag>`

Anatomy of HTML Elements/Tags cont'd



HTML elements

- Represent some kind of structure
- It is a combination of a tag and its character data (content)
- HTML can be Empty element or Nested element also

Nested Element

- An element that contain other HTML elements

Empty Element

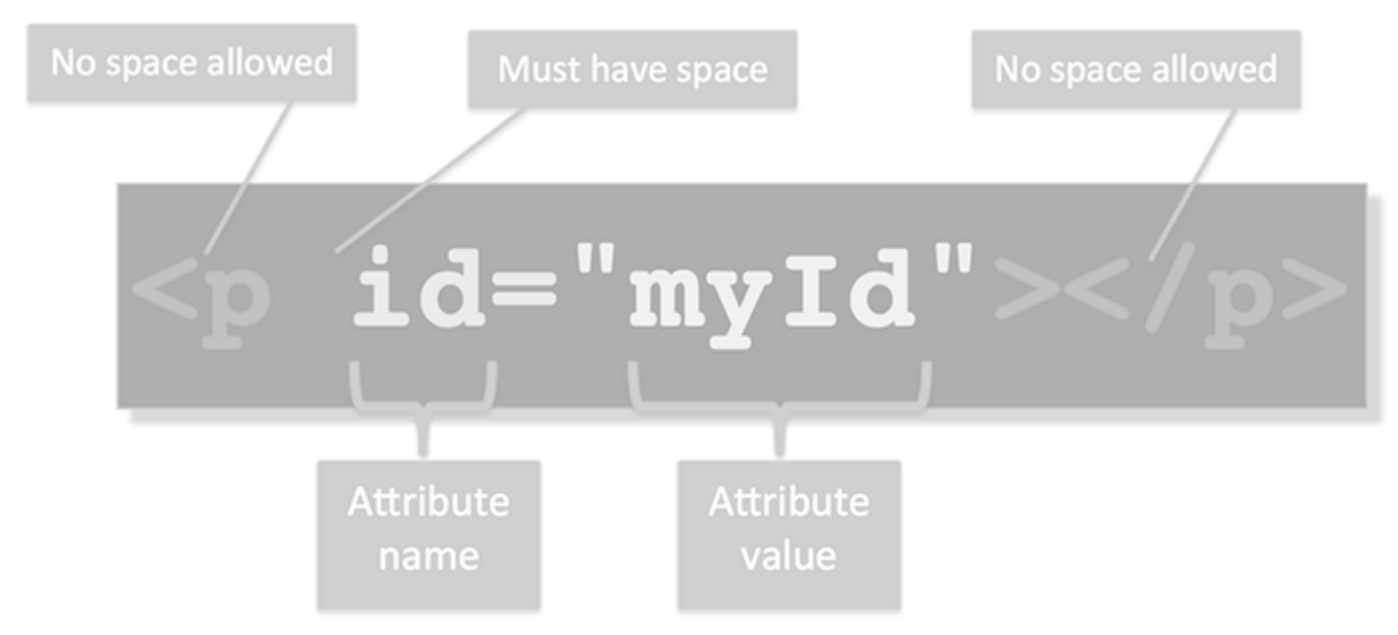
- An element with no character data (content)
- Also called Non-container tags or self closing tags
- Syntax: `<self-closing-tag-name/>`

Anatomy of HTML Elements/Tags cont'd



- HTML Tags
 - Used to markup the text (content)
 - Most of the tags come in as start and end tag pairs
 - However, empty element tags doesn't come in pairs
 - The start tag may contain an attribute
- HTML attributes
 - Defines a property for an elements
 - It is a way to describe the tags
 - It must enclosed within the start tag
 - It comes in a name/value pairs
 - The value should enclosed within double quote
 - An element can have one or more attributes
 - Global attributes - common to all HTML elements

Simple Rule



Also:

- Don't forget the End tag.
- Even though HTML is case insensitive use lowercase Tags

HTML elements reference



- The HTML elements are grouped by function to help you find what you have in mind easily
- For details of each element under the below mentioned group just **ctrl +click** on the element category

- [Document metadata](#)
- [Sectioning root](#)
- [Content sectioning](#)
- [Text content](#)
- [Inline text semantics](#)
- [Image and multimedia](#)
- [Embedded content](#)
- [SVG and MathML](#)
- [Scripting](#)
- [Demarcating edits](#)
- [Table content](#)
- [Forms](#)
- [Interactive elements](#)
- [deprecated elements](#)

HTML Document Elements



This meta element defines a description of your page:

```
<META name="description" content="Free Web tutorials on HTML, CSS, XML, and XHTML" />
```

This meta element defines keywords for your page: (for search engine)

```
<META name="keywords" content="HTML, DHTML, CSS, XML, XHTML, JavaScript" />
```

This demonstrates how to redirect a user if your site address has changed:

```
<META http-equiv="Refresh" content="5;url=http://www.w3schools.com" />
```

This meta element defines character set:

```
<META http-equiv="Content-Type" content="text/html; charset=UTF-8" />
```

Heading element

- In the same way that a book has the main title, chapter titles, and subtitles, an HTML document can too.

```
<h1>How to Make a Cake</h1> ← ----- Main heading
<h2>Ingredients</h2> ← ----- Sub heading
    <h3>Ingredients for Sponge</h3>
    <h3>Ingredients for Toppings</h3> } Sub sub heading
<h2>Instructions</h2>
    <h3>Preparation</h3>
    <h3>Process</h3>
<h2>Serving the Cake</h2>
```


Heading element cont'd

- Heading elements allow you to specify that certain parts of your content are headings
- HTML contains 6 section heading levels, <h1> to <h6>
- The heading element importance level
 - <h1> define the most important (highest) heading level
 - <h6> define the lowest (less important) headings
- Commonly 3 to 4 heading elements are used at most
- The heading Tags are block level elements.
- It's content model categories are flow content and heading content
- These elements only include the global attributes

Heading 1

Heading 2

Heading 3

Heading 4

Heading 5

Heading 6

Heading element cont'd

- Heading information
 - Allow search engines to index the structure and content of your web pages
 - Users often skim a page by its headings and determine the content layout of web page automatically.
 - Also it is a common navigation technique for users of screen reading software to jump from heading to heading and quickly determine the content of the page.
- As a result,
 - Avoid skipping heading levels: always start from <h1>, followed by <h2> and so on
 - Use only one <h1> per page or view (considered a best practice)
 - <h1> should concisely describe the overall purpose of the content.
 - It is important to use headings to show the document structure.
 - Avoid using heading elements to resize text (i.e. to make text BIG or bold).

Paragraph elements



- HTML paragraphs include any structural grouping of related content, such as texts, images or form fields
- The <p> HTML element represents a paragraph
- Paragraphs are block-level elements and
 - Always starts on a new line
 - Browsers automatically add white space (margin) before and after a paragraph
- This element only includes the global attributes
- Breaking up content into paragraphs helps make a page more accessible
- Allow screen-readers to provide shortcuts that let their users skip to the next or previous paragraph, and skim the content

Paragraph elements cont'd



- **HTML <p> content display**

- Large or small screens, and resized windows will create different results.
- With HTML, you cannot change the display by adding extra spaces or extra lines in HTML code.
- The browser will automatically remove any extra spaces and lines.

- **Note:**

- Don't use empty <p> which is problematic for people who use screen-reading technology.

```
<p>
This paragraph contains a lot of
in the source code, but the browser
ignores it.
</p>

<p>
This paragraph
contains      a lot of spaces
in the source   code,
but the   browser
ignores it.
</p>
```

Output of the example

This paragraph contains a lot of lines in the source code, but the browser ignores it.

This paragraph contains a lot of spaces in the source code, but the browser ignores it.

<pre> elements

- Represents preformatted text which is to be presented exactly as written in the HTML file
- The text is typically rendered using a non-proportional, or "monospaced", font
- Unlike <p> element, it preserves whitespace both spaces and line breaks:
- Provide an alternate description for any images or diagrams
- It is a block-level element which belongs to flow content category

```
<pre>
```

```
&lt; I'm an expert in my field. &gt;
```

```

      ^ ^
      (oo)\_____
      (__) \       )\/\
           ||-----w ||
           ||           ||

```

```
</pre>
```

Output

```
< I'm an expert in my field. >
```

```

      ^ ^
      (oo)\_____
      (__) \       )\/\
           ||-----w ||
           ||           ||

```

<hr> and
 Elements

<hr/>

- Represents a thematic break between paragraph-level elements:
- E.g., a change of scene in a story, or a shift of topic within a section.
- Displayed as a horizontal rule in visual browsers

- Produces a line break in text (carriage-return)
- It is useful for writing a poem or an address, where the division of lines is significant
- Only enter line breaks, not to add space between paragraphs

- Both <hr> and
 support both global attributes and event attributes
- Both are block-level elements,
- <hr> is flow content whereas
 is phrasing content

<hr> and
 Elements example



`<p>` §1: The first rule of Fight Club is: You do not talk about Fight Club. `</p>`

`<hr/>`

`<p>` §2: The second rule of Fight Club is: Always bring cupcakes. `</p>`

```
<h3>A Poem</h3>
```

```
<p> O'er all the hilltops<br>
Is quiet now,<br>
In all the treetops<br>
Hearest thou<br>
Hardly a breath;<br>
The birds are asleep in the trees:<br>
Wait, soon like these<br>
Thou too shalt rest.
</p>
```

§1: The first rule of Fight Club is: You do not talk about Fight Club.

Output

§2: The second rule of Fight Club is: Always bring cupcakes.

A Poem

Output

O'er all the hilltops
Is quiet now,
In all the treetops
Hearest thou
Hardly a breath;
The birds are asleep in the trees:
Wait, soon like these
Thou too shalt rest.

List Elements

- HTML offers web developers mechanisms to group a set of related items in lists
- HTML lists are used to present list of information in well-formed and semantic way
- There are three main types of list in HTML, each one has a specific purpose

➤ Used to create a list of related items, in no particular order

Unordered List

- The first item
- The second item
- The third item
- The fourth item

➤ Used to create a list of terms and their descriptions.

Ordered List

1. The first item
2. The second item
3. The third item
4. The fourth item

➤ Used to create a list of related items, in a specific order.

Description List

The first item
Description of item
The second item
Description of item

List Elements cont'd



No	List element	Attribute(s)	Attribute value(s)
1		type	Circle / disc / square / triangle
2		reversed	Boolean
		type	1 (default), A / a / I / i
		start	integer - indicates the current ordinal value of list item
3		value	Integer - start counting from for the list items.
		type	1 (default) A / a / I / i
4	<dd>	nowrap	Yes/no (default), If the value is set to yes, the definition text will not wrap

List Elements cont'd



Example: Ordered list

```
<h2>Hot Drink</h2>
<ol>
  <li>Coffee</li>
  <li>Tea</li>
  <li>Milk</li>
  <li>macchiato</li>
</ol>
```

```
<h2>Hot Drink</h2>
<ol type="a" start = "4">
  <li>Coffee</li>
  <li>Tea</li>
  <li>Milk</li>
  <li>macchiato</li>
</ol>
```

```
<h2>Hot Drink</h2>
<ol type="a" reversed = "1">
  <li>Coffee</li>
  <li>Tea</li>
  <li>Milk</li>
  <li>macchiato</li>
</ol>
```

Hot Drink

1. Coffee
2. Tea
3. Milk
4. macchiato

Hot Drink

- d. Coffee
- e. Tea
- f. Milk
- g. macchiato

Hot Drink

- d. Coffee
- c. Tea
- b. Milk
- a. macchiato

List Elements cont'd

Example: Unordered list

```

<ul>
  <li>Fruit
    <ul>
      <li>Bananas</li>
      <li>Apples
        <ul>
          <li>Green</li>
          <li>Red</li>
        </ul>
      <li>Pears</li>
    </ul>
  <li>Vegetables</li>
  <li>Meat</li>
</ul>

```

- Fruit
 - Bananas
 - Apples
 - Green
 - Red
 - Pears
- Vegetables
- Meat

Nested list

```

<ol>
  <li>Fruit
    <ul type = "disc">
      <li>Bananas</li>
      <li>Apples
        <ul type = "circle">
          <li>Green</li>
          <li>Red</li>
        </ul>
      <li>Pears</li>
    </ul>
  <li>Vegetables</li>
  <li>Meat</li>
</ol>

```

1. Fruit
 - Bananas
 - Apples
 - Green
 - Red
 - Pears
2. Vegetables
3. Meat

List Elements cont'd

Example: Description list

```
<h2>Acronym List</h2>

<dl>
  <dt>HTML</dt>
  <dd>- Hypertext Markup Language</dd>
  <dt>CSS</dt>
  <dd>- Cascading Style Sheet</dd>
  <dt>PHP</dt>
  <dd>- Hypertext Preprocessor</dd>
</dl>
```

Acronym List

HTML

- Hypertext Markup Language

CSS

- Cascading Style Sheet

PHP

- Hypertext Preprocessor

Text formatting elements

- HTML provides several tags that you can use to make some text on your web pages to appear differently than normal text
- Formatting elements were designed to display special types of text:

Tag	Description
<u></u>	Defines bold text
<u><big></u>	Defines big text
<u></u>	Defines emphasized text
<u><i></u>	Defines italic text
<u><small></u>	Defines small text
<u></u>	Defines strong text

Tag	Description
<u><sub></u>	Defines subscripted text
<u><sup></u>	Defines superscripted text
<u><s></u>	Renders text with a strikethrough but not important when indicating document edits
<u><u></u>	Deprecated. But in use for different purpose

Text formatting elements cont'd



Demarcating and Quotation Elements

Tag	Description
<ins>	Defines inserted text
	Defines deleted text
<mark>	Marked text
<samp>	sample output of a computer program
<code>	To show the computer code - Like a programming code
<kbd>	keyboard input text
<var>	To display the text as a variable - Like Programming variable

Text formatting elements cont'd



Example

<code><i>Italic</i></code>	<i>Italic</i>
<code>Bold</code>	Bold
<code>Emphasized</code>	<i>Emphasized</i>
<code>Strong</code>	Strong
<code><small>small</small></code>	small
<code>Deleted</code>	Deleted
<code><ins>Inserted</ins></code>	<u>Inserted</u>
<code>v<sub>f</sub></code>	v _f
<code>a<sup>2</sup></code>	a ²
<code><mark>Marked</mark></code>	Marked

w

Text formatting elements cont'd



HTML Citations and Definition Elements

Tag	Description
<u><abbr></u>	Defines an abbreviation
<u><acronym></u>	Defines an acronym
<u><address></u>	Defines contact information for the author/owner of a document
<u><bdo></u>	Defines the text direction
<u><blockquote></u>	Defines a long quotation
<u><q></u>	Defines a short quotation
<u><cite></u>	Defines a citation
<u><dfn></u>	Defines a definition term

HTML Entity



- A piece of text ("string") that begins with an ampersand (&) and ends with a semicolon (;)
- Frequently used to display
- Reserved characters (which would otherwise be interpreted as HTML code)
- Invisible characters (like non-breaking spaces).
- Characters that are difficult to type with a standard keyboard.
- Syntax:
 - &entity_name; OR &#entity_number;
- An entity name is easy to remember but browsers may not support all entity names. Therefore, the support for entity numbers is good.

HTML Entity cont'd

- HTML reserved character Entities

Character	Description	Entity Name	Entity Number
	non-breaking space	 	
<	less than	<	<
>	greater than	>	>
&	ampersand	&	&
"	double quotation mark	"	"
'	single quotation mark (apostrophe)	'	'
«	Left-pointing double angle quotation mark	«	«
»	Right-pointing double angle quotation mark	»	»

HTML Entity cont'd

- HTML reserved character Entities

Character	Entity Name	Entity Number	Description
¢	¢	¢	Cent
£	£	£	Pound
¤	¤	¤	General currency
€	€	€	Euro
¢	¢	¢	Cent
©	©	©	Copyright
®	®	®	Registered
™	™	™	Trademark

HTML Comment



- The syntax to add comments to your HTML source is as follow

`<!-- Write your comments
 goes here -->`

- Notice that there is an exclamation point (!) in the start tag, but not in the end tag.
- Used to hide content - comments are not displayed by the browser, but they can help document your HTML source code.
- With comments you can place notifications and reminders in your HTML code and improve code readability.

HTML Comment cont'd



- Example: Comment

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

<p>This is a paragraph.</p>
<!--
<p>Look at this cool image:</p>

-->
<p>This is a paragraph too.</p>

</body>
</html>
```

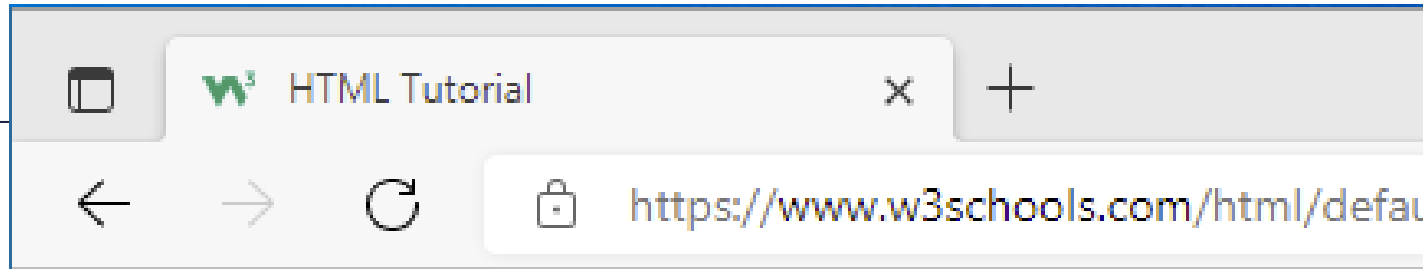
This is a paragraph.

This is a paragraph too.

HTML Favicon



- A favicon is a small image displayed next to the page title in the browser tab
- You can use any image you like as your favicon



```
<!DOCTYPE html>
<html>
<head>
  <title>My Page Title</title>
  <link rel="icon" type="image/x-icon" href="/images/favicon.ico">
</head>
<body>
  <h1>This is a Heading</h1>
  <p>This is a paragraph.</p>
</body>
</html>
```


HTML Page Title



- The **<title>** element adds a title to your page
- The title should describe the content and the meaning of the page
- The page title is very important for search engine optimization (SEO)
- The text is used by search engine algorithms to decide the order when listing pages in search results.
- The **<title>** element:
 - defines a title in the browser toolbar
 - provides a title for the page when it is added to favorites
 - displays a title for the page in search engine-results
- So, try to make the title as accurate and meaningful as possible!

HTML Page Title

A screenshot of a web browser displaying the 'HTML Tutorial' page. The browser's address bar shows 'w3schools.com/html/default.asp'. The page title is 'HTML Tutorial'. A code overlay on the right side of the page shows the HTML structure of the document, highlighting the title tag.

HTML Tutorial

```
<!DOCTYPE html>
<html>
<head>
  <title>HTML Tutorial</title>
  .....
</head>
<body>

The content of the document.....

</body>
</html>
```