1. HTML Introduction

Example:

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

<h1>My First Heading</h1>

<p>My first paragraph.</p>

</body>
</html>
```

Example Explained:

- The DOCTYPE declaration defines the document type
- The text between <html> and </html> describes the web page
- The text between <body> and </body> is the visible page content
- The text between <h1> and </h1> is displayed as a heading
- The text between and is displayed as a paragraph

The <!DOCTYPE html> declaration is the doctype for HTML5.

1.1. What is HTML?

HTML is a language for describing web pages.

- HTML stands for **H**yper **T**ext **M**arkup **L**anguage
- HTML is a **markup** language
- A markup language is a set of markup **tags**
- The tags **describe** document content
- HTML documents contain HTML **tags** and plain **text**
- HTML documents are also called **web pages**

1.2. HTML Tags

HTML markup tags are usually called HTML tags

- HTML tags are keywords (tag names) surrounded by **angle brackets** like <html>
- 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**
- The end tag is written like the start tag, with a **forward slash** before the tag name
- Start and end tags are also called **opening tags** and **closing tags**

```
<tagname>content</tagname>
```

1.3. HTML Elements

"HTML tags" and "HTML elements" are often used to describe the same thing.

But strictly speaking, an HTML element is everything between the start tag and the end tag, including the tags:

HTML Element:

```
<p>This is a paragraph.</p>
```

1.4. Web Browsers

The purpose of a web browser (such as Google Chrome, Internet Explorer, Firefox, Safari) is to read HTML documents and display them as web pages. The browser does not display the HTML tags, but uses the tags to determine how the content of the HTML page is to be presented/displayed to the user:

1.5. HTML Versions

Since the early days of the web, there have been many versions of HTML:

Version	Year
HTML	1991
HTML+	1993
HTML 2.0	1995
HTML 3.2	1997
HTML 4.01	1999
XHTML	2000
HTML5	2012

1.6. The <!DOCTYPE> Declaration

The <!DOCTYPE> declaration helps the browser to display a web page correctly.

There are many different documents on the web, and a browser can only display an HTML page 100% correctly if it knows the HTML type and version used.

Common Declarations

HTML5

```
<!DOCTYPE html>
```

HTML 4.01

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
```

XHTML 1.0

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

For a complete list of document type declarations, go to our DOCTYPE Reference.

2. HTML Editors

2.1. Writing HTML Using Notepad or TextEdit

HTML can be edited by using a professional HTML editor like:

- Adobe Dreamweaver
- Microsoft Expression Web
- CoffeeCup HTML Editor

However, for learning HTML we recommend a text editor like Notepad (PC) or TextEdit (Mac). We believe using a simple text editor is a good way to learn HTML.

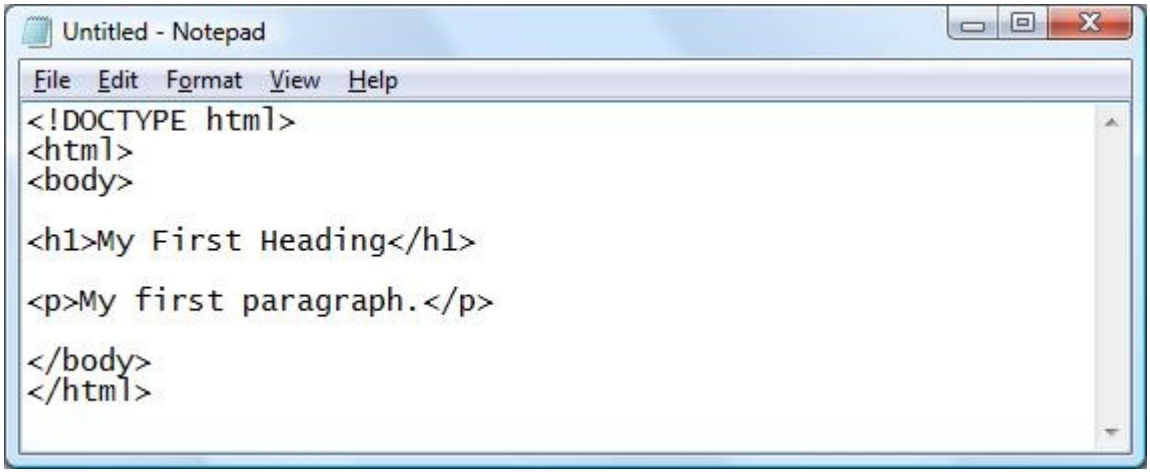
Follow the 4 steps below to create your first web page with Notepad.

Step 1: Start Notepad

To start Notepad go to: **Start > All Programs > Accessories > Notepad**

Step 2: Edit Your HTML with Notepad

Type your HTML code into your Notepad:



Step 3: Save Your HTML

Select **Save as..** in Notepad's file menu.

When you save an HTML file, you can use either the .htm or the .html file extension. There is no difference, it is entirely up to you. Save the file in a folder that is easy to remember, like **web.**

Step 4: Run the HTML in Your Browser

Start your web browser and open your html file from the **File**, **Open** menu, or just browse the folder and double-click your HTML file. The result should look much like this:


C:\Users\Jan Egil Re
C:\Users\Jan Egil Refs...
My First Heading
My first paragraph.
100%

3. HTML Basic Examples

Don't worry if the examples use tags you have not learned. You will learn about them in the next chapters.

3.1. HTML Headings

HTML headings are defined with the <h1> to <h6> tags.

Example:

```
<h1>This is a heading</h1>
<h2>This is a heading</h2>
<h3>This is a heading</h3>
```

3.2. HTML Paragraphs

HTML paragraphs are defined with the <p> tag.

Example:

```
<p>This is a paragraph.</p>
<p>This is another paragraph.</p>
```

3.3. HTML Links

HTML links are defined with the <a> tag.

Example:

```
<a href="http://www.iesmanacor.org">This is a link</a>
```

Note: The link address is specified in the href attribute.

3.4. HTML Images

HTML images are defined with the <img> tag.

Example:

```
<img src="logo.jpg" alt="IESManacor.org" width="104" height="142">
```

Note: The filename and the size of the image are provided as attributes.

4. HTML Elements

HTML documents are defined by HTML elements.

4.1. HTML Elements

An HTML element is everything from the start tag to the end tag:

Start tag *	Element content	End tag *
	This is a paragraph	
	This is a link	

***** The start tag is often called the **opening tag**. The end tag is often called the **closing tag**.

4.2. HTML Element Syntax

- An HTML element starts with a **start tag / opening tag**
- An HTML element ends with an **end tag / closing tag**
- The **element content** is everything between the start and the end tag
- Some HTML elements have **empty content**
- Empty elements are **closed in the start tag**
- Most HTML elements can have **attributes**

Tip: You will learn about attributes in the next chapter of this tutorial.

4.3. Nested HTML Elements

Most HTML elements can be nested (can contain other HTML elements).

HTML documents consist of nested HTML elements.

4.4. HTML Document Example

```
<!DOCTYPE html>
<html>

<body>
<p>This is my first paragraph.</p>
```

```
    </body>

    </html>
```

The example above contains 3 HTML elements.

4.5. HTML Example Explained

The element:

```
    <p>This is my first paragraph.</p>
```

The element defines a paragraph in the HTML document.
The element has a start tag and an end tag .
The element content is: This is my first paragraph.

The <body> element:

```
    <body>
    <p>This is my first paragraph.</p>
    </body>
```

The <body> element defines the body of the HTML document.
The element has a start tag <body> and an end tag </body>.
The element content is another HTML element (a p element).

The <html> element:

```
    <html>

    <body>
    <p>This is my first paragraph.</p>
    </body>

    </html>
```

The <html> element defines the whole HTML document.
The element has a start tag <html> and an end tag </html>.
The element content is another HTML element (the body element).

4.6. Don't Forget the End Tag

Some HTML elements might display correctly even if you forget the end tag:

```
<p>This is a paragraph
<p>This is a paragraph
```

The example above works in most browsers, because the closing tag is considered optional.

Never rely on this. Many HTML elements will produce unexpected results and/or errors if you forget the end tag .

4.7. Empty HTML Elements

HTML elements with no content are called empty elements.

**
** is an empty element without a closing tag (the <br> tag defines a line break).

Tip: In XHTML, all elements must be closed. Adding a slash inside the start tag, like <br />, is the proper way of closing empty elements in XHTML (and XML).

4.8. HTML Tip: Use Lowercase Tags

HTML tags are not case sensitive: <P> means the same as <p>. Many web sites use uppercase HTML tags.

You should use lowercase tags because the World Wide Web Consortium (W3C) **recommends** lowercase in HTML 4, and **demands** lowercase tags in XHTML.

5. HTML Attributes

Attributes provide additional information about HTML elements.

5.1. HTML Attributes

- HTML elements can have **attributes**
- Attributes provide **additional information** about an element
- Attributes are always specified in **the start tag**
- Attributes come in name/value pairs like: **name="value"**

5.2. Attribute Example

HTML links are defined with the <a> tag. The link address is specified in the **href attribute**:

Example:

```
<a href="http://www.iesmanacor.org">This is a link</a>
```

5.3. Always Quote Attribute Values

Attribute values should always be enclosed in quotes.

Double style quotes are the most common, but single style quotes are also allowed.

Tip: In some rare situations, when the attribute value itself contains quotes, it is necessary to use single quotes: name='John "ShotGun" Nelson'

5.4. HTML Tip: Use Lowercase Attributes

Attribute names and attribute values are case-insensitive. However, the World Wide Web Consortium (W3C) recommends lowercase attributes/attribute values in their HTML 4 recommendation. Newer versions of (X)HTML will demand lowercase attributes.

5.5. HTML Attributes Reference

A complete list of legal attributes for each HTML element is listed in: HTML Tag Reference.

Below is a list of some attributes that can be used on any HTML element:

Attribute	Description
class	Specifies one or more classnames for an element (refers to a class in a style sheet)

id	Specifies a unique id for an element
style	Specifies an inline CSS style for an element
title	Specifies extra information about an element (displayed as a tool tip)

For more information about global attributes: HTML Global Attributes Reference.

6. HTML Headings & Lines.

Headings are important in HTML documents.

6.1. HTML Headings

Headings are defined with the <h1> to <h6> tags.

<h1> defines the most important heading. <h6> defines the least important heading.

Example:

```
<h1>This is a heading</h1>
<h2>This is a heading</h2>
<h3>This is a heading</h3>
```

Note: Browsers automatically add some empty space (a margin) before and after each heading.

6.2. Headings Are Important

Use HTML headings for headings only. Don't use headings to make text **BIG** or **bold**. Search engines use your headings to index the structure and content of your web pages.

Since users may skim your pages by its headings, it is important to use headings to show the document structure. H1 headings should be used as main headings, followed by H2 headings, then the less important H3 headings, and so on.

6.3. HTML Lines

The <hr> tag creates a horizontal line in an HTML page.

The hr element can be used to separate content:

Example:

```
<p>This is a paragraph.</p>
<hr>
<p>This is a paragraph.</p>
<hr>
<p>This is a paragraph.</p>
```

6.4. HTML Tip - How to View HTML Source

Have you ever seen a Web page and wondered "Hey! How did they do that?"

To find out, right-click in the page and select "View Source" (IE) or "View Page Source" (Firefox), or

similar for other browsers. This will open a window containing the HTML code of the page.

6.5. HTML Tag Reference

W3Schools' tag reference contains additional information about these tags and their attributes.

You will learn more about HTML tags and attributes in the next chapters of this tutorial.

Tag	Description
<html>	Defines an HTML document
<body>	Defines the document's body
<h1> to <h6>	Defines HTML headings
<hr>	Defines a horizontal line
<!-->	Defines a comment

7. HTML Paragraphs & Breaks

HTML documents are divided into paragraphs.

7.1. HTML Paragraphs

Paragraphs are defined with the <p> tag.

Example:

```
<p>This is a paragraph</p>
<p>This is another paragraph</p>
```

Note: Browsers automatically add an empty line before and after a paragraph.

7.2. Don't Forget the End Tag

Most browsers will display HTML correctly even if you forget the end tag:

Example:

```
<p>This is a paragraph
<p>This is another paragraph
```

The example above will work in most browsers, but don't rely on it. Forgetting the end tag can produce unexpected results or errors.

Note: Future version of HTML will not allow you to skip end tags.

7.3. HTML Line Breaks

Use the <br> tag if you want a line break (a new line) without starting a new paragraph:

Example

```
<p>This is<br>a para<br>graph with line breaks</p>
```

The <br> element is an empty HTML element. It has no end tag.

7.4. HTML Output - Useful Tips

You cannot be sure how HTML will be displayed. Large or small screens, and resized windows will create different results.

With HTML, you cannot change the output by adding extra spaces or extra lines in your HTML code.

The browser will remove extra spaces and extra lines when the page is displayed. Any number of lines count as one line, and any number of spaces count as one space.

7.5. HTML Tag Reference

HTML tag reference contains additional information about HTML elements and their attributes.

Tag	Description
<p>	Defines a paragraph
 	Inserts a single line break

8. HTML Text Formatting

8.1. HTML Text Formatting

```
This text is bold

This text is italic

This is computer output

This is subscript and superscript
```

8.2. HTML Formatting Tags

HTML uses tags like <b> and <i> for formatting output, like **bold** or *italic* text.

These HTML tags are called formatting tags (look at the bottom of this page for a complete reference).

Often renders as <b>, and renders as <i>.

However, there is a difference in the meaning of these tags:

<b> or <i> defines bold or italic text only.

 or means that you want the text to be rendered in a way that the user understands as "important". Today, all major browsers render strong as bold and em as italics. However, if a browser one day wants to make a text highlighted with the strong feature, it might be cursive for example and not bold!

8.3. HTML Text Formatting Tags

Tag	Description
<b>	Defines bold text
	Defines emphasized text
<i>	Defines a part of text in an alternate voice or mood
<small>	Defines smaller text
	Defines important text
<sub>	Defines subscripted text

<sup>	Defines superscripted text
<ins>	Defines inserted text
<del>	Defines deleted text
<mark>	Defines marked/highlighted text

8.4. HTML "Computer Output" Tags

Tag	Description
<code>	Defines computer code text
<kbd>	Defines keyboard text
<samp>	Defines sample computer code
<var>	Defines a variable
<pre>	Defines preformatted text

8.5. HTML Citations, Quotations, and Definition Tags

Tag	Description
<abbr>	Defines an abbreviation or acronym
<address>	Defines contact information for the author/owner of a document
<bdo>	Defines the text direction
<blockquote>	Defines a section that is quoted from another source
<q>	Defines an inline (short) quotation
<cite>	Defines the title of a work
<dfn>	Defines a definition term

9. HTML Comments

Comment tags <!-- and --> are used to insert comments in HTML.

9.1. HTML Comment Tags

You can add comments to your HTML source by using the following syntax:

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

Note: There is an exclamation point (!) in the opening tag, but not in the closing tag.

Comments are not displayed by the browser, but they can help document your HTML.

With comments you can place notifications and reminders in your HTML:

Example:

```
<!-- This is a comment -->

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

<!-- Remember to add more information here -->
```

Comments are also great for debugging HTML, because you can comment out HTML lines of code, one at a time, to search for errors:

Example:

```
<!-- Do not display this at the moment
<img border="0" src="logo.jpg" alt="My Logo" width="304" height="228">
-->
```

9.2. Conditional Comments

You might stumble upon conditional comments in HTML:

```
<!--[if IE 8]>
    .... some HTML here ....
<![endif]-->
```

Conditional comments defines HTML tags to be executed by IE only. We will not use conditional

comments in this tutorial.

9.3. Software Program Tags

HTML comments tags can also be generated by various HTML software programs. For example ***<!--webbot bot-->*** tags wrapped inside HTML comments by FrontPage and Expression Web. As a rule, let these tags stay, to help support the software that created them.

10. HTML Links

Links are found in nearly all Web pages. Links allow users to click their way from page to page.

10.1. HTML Hyperlinks (Links)

The HTML <a> tag defines a hyperlink.

A hyperlink (or link) is a word, group of words, or image that you can click on to jump to another document. When you move the cursor over a link in a Web page, the arrow will turn into a little hand. The most important attribute of the <a> element is the href attribute, which indicates the link's destination.

By default, links will appear as follows in all browsers:

- An unvisited link is underlined and blue
- A visited link is underlined and purple
- An active link is underlined and red

10.2. HTML Link Syntax

The HTML code for a link is simple. It looks like this:

```
<a href="url">Link text</a>
```

The href attribute specifies the destination of a link.

Example:

```
<a href="http://www.iesmanacor.org/">Visit IES Manacor</a>
```

which will display like this: http://www.iesmanacor.org/

Clicking on this hyperlink will send the user to IES Manacor's homepage.

Tip: The "*Link text*" doesn't have to be text. It can be an image or any other HTML element.

10.3. HTML Links - The target Attribute

The target attribute specifies where to open the linked document.

The example below will open the linked document in a new browser window or a new tab:

Example

```
<a href="http://www.iesmanacor.org" target="_blank">Visit IES Manacor</a>
```

10.4. HTML Links - The id Attribute

The id attribute can be used to create a bookmark inside an HTML document.

Tip: Bookmarks are not displayed in any special way. They are invisible to the reader.

Example

An anchor with an id inside an HTML document:

```
<a id="tips">Useful Tips Section</a>
```

Create a link to the "Useful Tips Section" inside the same document:

```
<a href="#tips">Visit the Useful Tips Section</a>
```

Or, create a link to the "Useful Tips Section" from another page:

```
<a href="http://www.iesmanacor.org/links.htm#tips">
        Visit the Useful Tips Section</a>
```

10.5. Basic Notes - Useful Tips

Note: Always add a trailing slash to subfolder references. If you link like this:

```
href="http://www.iesmanacor.com/html"
```

, you will generate two requests to the server, the server will first add a slash to the address, and then create a new request like this:

```
href="http://www.iesmanacor.org/html/".
```

10.6. HTML Link Tags

Tag	Description
<a>	Defines a hyperlink

11. HTML Head

11.1. The HTML <head> Element

The <head> element is a container for all the head elements. Elements inside <head> can include scripts, instruct the browser where to find style sheets, provide meta information, and more.

The following tags can be added to the head section: <title>, <style>, <meta>, <link>, <script>, <noscript>, and <base>.

11.2. The HTML <title> Element

The <title> tag defines the title of the document.

The <title> element is required in all HTML/XHTML documents.

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

A simplified HTML document:

```
<!DOCTYPE html>
<html>
<head>
<title>Title of the document</title>
</head>

<body>
The content of the document......
</body>

</html>
```

11.3. The HTML <base> Element

The <base> tag specifies the base URL/target for all relative URLs in a page:

```
<head>
<base href="http://www.iesmanacor.org/images/" target="_blank">
</head>
```

11.4. The HTML <link> Element

The <link> tag defines the relationship between a document and an external resource.

The <link> tag is most used to link to style sheets:

```
<head>
<link rel="stylesheet" type="text/css"
href="mystyle.css">
</head>
```

11.5. The HTML <style> Element

The <style> tag is used to define style information for an HTML document.

Inside the <style> element you specify how HTML elements should render in a browser:

```
<head>
<style type="text/css">
body {background-color:yellow;}
p {color:blue;}
</style>
</head>
```

11.6. The HTML <meta> Element

Metadata is data (information) about data.

The <meta> tag provides metadata about the HTML document. Metadata will not be displayed on the page, but will be machine parsable.

Meta elements are typically used to specify page description, keywords, author of the document, last modified, and other metadata. The metadata can be used by browsers (how to display content or reload page), search engines (keywords), or other web services.

<meta> tags always go inside the <head> element.

11.7. <meta> Tags - Examples of Use

Define keywords for search engines:

```
<meta name="keywords" content="HTML, XML, XHTML, JavaScript">
```

Define a description of your web page:

```
<meta name="description" content="Free tutorials on HTML">
```

Define the author of a page:

```
<meta name="author" content="Hege Refsnes">
```

Refresh document every 30 seconds:

```
<meta http-equiv="refresh" content="30">
```

11.8. The HTML <script> Element

The <script> tag is used to define a client-side script, such as a JavaScript.

The <script> element will be explained in a later chapter.

11.9. HTML head Elements

Tag	Description
<head>	Defines information about the document
<title>	Defines the title of a document
<base>	Defines a default address or a default target for all links on a page
<link>	Defines the relationship between a document and an external resource
<meta>	Defines metadata about an HTML document
<script>	Defines a client-side script
<style>	Defines style information for a document

12. HTML Styles - CSS

CSS (Cascading Style Sheets) is used to style HTML elements.

12.1. Styling HTML with CSS

CSS was introduced together with HTML 4, to provide a better way to style HTML elements.

CSS can be added to HTML in the following ways:

- **Inline** - using the style **attribute** in HTML elements
- **Internal** - using the <style> **element** in the <head> section
- **External** - using an external CSS **file**

The preferred way to add CSS to HTML, is to put CSS syntax in separate CSS files.

However, in this HTML tutorial we will introduce you to CSS using the style attribute. This is done to simplify the examples. It also makes it easier for you to edit the code and try it yourself.

12.2. Inline Styles

An inline style can be used if a unique style is to be applied to one single occurrence of an element.

To use inline styles, use the style attribute in the relevant tag. The style attribute can contain any CSS property. The example below shows how to change the text color and the left margin of a paragraph:

```
<p style="color:blue;margin-left:20px;">This is a paragraph.</p>
```

12.3. HTML Style Example - Background Color

The background-color property defines the background color for an element:

Example

```
<!DOCTYPE html>
<html>

<body style="background-color:yellow;">
<h2 style="background-color:red;">This is a heading</h2>
<p style="background-color:green;">This is a paragraph.</p>
</body>

</html>
```

The background-color property makes the "old" bgcolor attribute obsolete.

12.4. HTML Style Example - Font, Color and Size

The font-family, color, and font-size properties defines the font, color, and size of the text in an element:

Example

```
<!DOCTYPE html>
<html>

<body>
<h1 style="font-family:verdana;">A heading</h1>
<p style="font-family:arial;color:red;font-size:20px;">A paragraph.</p>
</body>

</html>
```

The font-family, color, and font-size properties make the old <font> tag obsolete.

12.5. HTML Style Example - Text Alignment

The text-align property specifies the horizontal alignment of text in an element:

Example

```
<!DOCTYPE html>
<html>

<body>
<h1 style="text-align:center;">Center-aligned heading</h1>
<p>This is a paragraph.</p>
</body>

</html>
```

The text-align property makes the old tag obsolete.

12.6. Internal Style Sheet

An internal style sheet can be used if one single document has a unique style. Internal styles are defined in the <head> section of an HTML page, by using the <style> tag, like this:

```
<head>
<style>
body {background-color:yellow;}
p {color:blue;}
</style>
</head>
```

12.7. External Style Sheet

An external style sheet is ideal when the style is applied to many pages. With an external style sheet, you can change the look of an entire Web site by changing one file. Each page must link to the style sheet using the <link> tag. The <link> tag goes inside the <head> section:

```
<head>
<link rel="stylesheet" type="text/css" href="mystyle.css">
</head>
```

12.8. HTML Style Tags

Tag	Description
<style>	Defines style information for a document
<link>	Defines the relationship between a document and an external resource

12.9. Deprecated Tags and Attributes

In HTML 4, several tags and attributes were used to style documents. These tags are not supported in newer versions of HTML. Avoid using the elements: <font>, , and <strike>, and the attributes: color and bgcolor.

13. HTML Images

13.1. HTML Images - The <img> Tag and the Src Attribute

In HTML, images are defined with the <img> tag.

The <img> tag is empty, which means that it contains attributes only, and has no closing tag.

To display an image on a page, you need to use the src attribute. Src stands for "source". The value of the src attribute is the URL of the image you want to display.

Syntax for defining an image:

```
<img src="url" alt="some_text">
```

The URL points to the location where the image is stored. An image named "logo.gif", located in the "images" directory on "www.iesmanacor.org" has the URL:

```
http://www.iesmanacor.org/images/logo.gif.
```

The browser displays the image where the <img> tag occurs in the document. If you put an image tag between two paragraphs, the browser shows the first paragraph, then the image, and then the second paragraph.

13.2. HTML Images - The Alt Attribute

The required alt attribute specifies an alternate text for an image, if the image cannot be displayed.

The value of the alt attribute is an author-defined text:

```
<img src="smiley.gif" alt="Smiley face">
```

The alt attribute provides alternative information for an image if a user for some reason cannot view it (because of slow connection, an error in the src attribute, or if the user uses a screen reader).

13.3. HTML Images - Set Height and Width of an Image

The height and width attributes are used to specify the height and width of an image.

The attribute values are specified in pixels by default:

```
<img src="smiley.gif" alt="Smiley face" width="42" height="42">
```

Tip: It is a good practice to specify both the height and width attributes for an image. If these attributes are set, the space required for the image is reserved when the page is loaded. However, without these attributes, the browser does not know the size of the image. The effect will be that the page layout will change during loading (while the images load).

13.4. Basic Notes - Useful Tips

Note: If an HTML file contains ten images - eleven files are required to display the page right. Loading images takes time, so my best advice is: Use images carefully.

Note: When a web page is loaded, it is the browser, at that moment, that actually gets the image from a web server and inserts it into the page. Therefore, make sure that the images actually stay in the same spot in relation to the web page, otherwise your visitors will get a broken link icon. The broken link icon is shown if the browser cannot find the image.

13.5. HTML Image Tags

Tag	Description
<img>	Defines an image
<map>	Defines an image-map
<area>	Defines a clickable area inside an image-map

14. HTML Tables

14.1. HTML Table Example:

Firstname	Lastname	Points
Jill	Smith	50
Eve	Jackson	94
John	Doe	80
Adam	Johnson	67

14.2. HTML Tables

Tables are defined with the **<table>** tag.

A table is divided into rows with the **<tr>** tag. (tr stands for table row)

A row is divided into data cells with the **<td>** tag. (td stands for table data)

A row can also be divided into headings with the **<th>** tag. (th stands for table heading)

The <td> elements are the data containers in the table.

The <td> elements can contain all sorts of HTML elements like text, images, lists, other tables, etc.

The width of a table can be defined using CSS.

Example

```
<table style="width:300px">
<tr>
  <td>Jill</td>
  <td>Smith</td>
  <td>50</td>
</tr>
<tr>
  <td>Eve</td>
  <td>Jackson</td>
  <td>94</td>
</tr>
</table>
```

14.3. An HTML Table with a Border Attribute

If you do not specify a border for the table, it will be displayed without borders.

A border can be added using the border attribute:

Example

```
<table border="1" style="width:300px">
<tr>
  <td>Jill</td>
  <td>Smith</td>
  <td>50</td>
</tr>
<tr>
  <td>Eve</td>
  <td>Jackson</td>
  <td>94</td>
</tr>
</table>
```

However, the border attribute is on its way out of the HTML standard!
It is better to use CSS.

To add borders with CSS, use the border property:

Example

```
<style>
table,th,td { border:1px solid black; }
</style>
```

Remember to define borders for both the table and the table cells.

14.4. An HTML Table with Collapsed Borders

If you want the borders to collapse into one border, add border-collapse to your CSS:

Example

```
<style>
table,th,td {
border:1px solid black;
border-collapse:collapse
}
</style>
```

14.5. An HTML Table with Cell Padding

Cell padding specifies the space between the cell content and its borders.

If you do not specify a padding, the table cells will be displayed without padding.

To set the padding, use the CSS padding property:

Example

```
th,td { padding:15px; }
```

14.6. HTML Table Headings

Table headings are defined with the <th> tag.

By default, all major browsers display table headings as bold and centered:

Example

```
<table style="width:300px">
<tr>
  <th>Firstname</th>
  <th>Lastname</th>
  <th>Points</th>
</tr>
<tr>
  <td>Eve</td>
  <td>Jackson</td>
  <td>94</td>
</tr>
</table>
```

To left-align the table headings, use the CSS text-align property:

Example

```
th { text-align:left; }
```

14.7. An HTML Table with Cell Spacing

Cell spacing specifies the space between the cells.

To set the cell spacing for the table, use the CSS border-spacing property:

Example

```
table { border-spacing:5px; }
```

14.8. HTML Table Tags

Tag	Description
<table>	Defines a table
<th>	Defines a header cell in a table
<tr>	Defines a row in a table
<td>	Defines a cell in a table
<caption>	Defines a table caption
<colgroup>	Specifies a group of one or more columns in a table for formatting
<col>	Specifies column properties for each column within a <colgroup> element
<thead>	Groups the header content in a table
<tbody>	Groups the body content in a table
<tfoot>	Groups the footer content in a table

15. HTML Lists

The most common HTML lists are ordered and unordered lists:

HTML Lists

An ordered list:

1. The first list item
2. The second list item
3. The third list item

An unordered list:

- List item
- List item
- List item

15.1. HTML Unordered Lists

An unordered list starts with the <ul> tag. Each list item starts with the <li> tag.

The list items are marked with bullets (typically small black circles).

```
<ul>
<li>Coffee</li>
<li>Milk</li>
</ul>
```

How the HTML code above looks in a browser:

- Coffee
- Milk

15.2. HTML Ordered Lists

An ordered list starts with the <ol> tag. Each list item starts with the <li> tag.

The list items are marked with numbers.

```
<ol>
<li>Coffee</li>
<li>Milk</li>
</ol>
```

How the HTML code above looks in a browser:

1. Coffee
2. Milk

15.3. HTML Description Lists

A description list is a list of terms/names, with a description of each term/name.

The <dl> tag defines a description list.

The <dl> tag is used in conjunction with <dt> (defines terms/names) and <dd> (describes each term/name):

```
<dl>
<dt>Coffee</dt>
<dd>- black hot drink</dd>
<dt>Milk</dt>
<dd>- white cold drink</dd>
</dl>
```

How the HTML code above looks in a browser:

Coffee
- black hot drink

Milk
- white cold drink

15.4. Basic Notes - Useful Tips

Tip: Inside a list item you can put text, line breaks, images, links, other lists, etc.

15.5. HTML List Tags

Tag	Description
	Defines an ordered list
	Defines an unordered list
	Defines a list item
<dl>	Defines a description list
<dt>	Defines a term/name in a description list
<dd>	Defines a description of a term/name in a description list

16. HTML Blocks

HTML elements can be grouped together with and .

16.1. HTML Block Elements

Most HTML elements are defined as **block level** elements or as **inline** elements.

Block level elements normally start (and end) with a new line when displayed in a browser.

Examples:

```
<h1>, <p>, <ul>, <table>
```

16.2. HTML Inline Elements

Inline elements are normally displayed without starting a new line.

Examples:

```
<b>, <td>, <a>, <img>
```

16.3. The HTML Element

The HTML element is a block level element that can be used as a container for grouping other HTML elements.

The element has no special meaning. Except that, because it is a block level element, the browser will display a line break before and after it.

When used together with CSS, the element can be used to set style attributes to large blocks of content. Another common use of the element, is for document layout. It replaces the "old way" of defining layout using tables. Using <table> elements for layout is not the correct use of <table>. The purpose of the <table> element is to display tabular data.

16.4. The HTML Element

The HTML element is an inline element that can be used as a container for text.

The element has no special meaning. When used together with CSS, the element can be used to set style attributes to parts of the text.

16.5. HTML Grouping Tags

Tag	Description
	Defines a section in a document (block-level)
	Defines a section in a document (inline)

17.HTML Layouts

Web page layout is very important to make your website look good.

Design your webpage layout very carefully.

17.1. Website Layouts

Most websites have put their content in multiple columns (formatted like a magazine or newspaper).

Multiple columns are created by using or <table> elements. CSS are used to position elements, or to create backgrounds or colorful look for the pages.

Even though it is possible to create nice layouts with HTML tables, tables were designed for presenting tabular data - NOT as a layout tool!

17.2. HTML Layouts - Using Elements

The div element is a block level element used for grouping HTML elements.

The following example uses five div elements to create a multiple column layout, creating the same result as in the previous example:

Example

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

<div id="container" style="width:500px">

<div id="header" style="background-color:#FFA500;">
<h1 style="margin-bottom:0;">Main Title of Web Page</h1></div>

<div id="menu"
style="background-color:#FFD700;height:200px;width:100px;float:left;">
<b>Menu</b><br/>
HTML<br/>
CSS<br/>
JavaScript</div>

<div id="content"
style="background-color:#EEEEEE;height:200px;width:400px;float:left;">
Content goes here</div>

<div id="footer"
style="background-color:#FFA500;clear:both;text-align:center;">
Copyright © IESManacor.com</div>

</div>

</body>
</html>
```

The HTML code above will produce the following result:

Main Title of Web Page

Menu
HTML
CSS
JavaScript

Content goes here

Copyright © IESManacor.com

17.3. HTML Layouts - Using Tables

A simple way of creating layouts is by using the HTML <table> tag.

Multiple columns are created by using or <table> elements. CSS are used to position elements, or to create backgrounds or colorful look for the pages.

Using <table> to create a nice layout is NOT the correct use of the element. The purpose of the <table> element is to display tabular data!

The following example uses a table with 3 rows and 2 columns - the first and last row spans both columns using the colspan attribute:

Example

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

<table style="width:500px;" cellpadding="0" cellspacing="0">
<tr>
<td colspan="2" style="background-color:#FFA500;">
<h1 style="margin:0;padding:0;">Main Title of Web Page</h1>
</td>
</tr>

<tr>
<td style="background-color:#FFD700;width:100px;vertical-align:top;">
<b>Menu</b><br>
HTML<br>
```

```
        CSS<br>
        JavaScript
        </td>
        <td
        style="background-color:#eeeeee;height:200px;width:400px;vertical-align:top;">
        Content goes here</td>
        </tr>

        <tr>
        <td colspan="2" style="background-color:#FFA500;text-align:center;">
        Copyright © IESManacor.com</td>
        </tr>
        </table>

        </body>
        </html>
```

17.3. HTML Layout - Useful Tips

Tip: The biggest advantage of using CSS is that, if you place the CSS code in an external style sheet, your site becomes MUCH EASIER to maintain. You can change the layout of all your pages by editing one file.

Tip: Because advanced layouts take time to create, a quicker option is to use a template. Search Google for free website templates (these are pre-built website layouts you can use and customize).

17.4. HTML Layout Tags

Tag	Description
	Defines a section in a document (block-level)
	Defines a section in a document (inline)

18. HTML Forms and Input

HTML Forms are used to select different kinds of user input.

18.1. HTML Forms

HTML forms are used to pass data to a server.

An HTML form can contain input elements like text fields, checkboxes, radio-buttons, submit buttons and more. A form can also contain select lists, textarea, fieldset, legend, and label elements.

The <form> tag is used to create an HTML form:

```
<form> … input elements … </form>
```

18.2. HTML Forms - The Input Element

The most important form element is the <input> element.

The <input> element is used to select user information.

An <input> element can vary in many ways, depending on the type attribute. An <input> element can be of type text field, checkbox, password, radio button, submit button, and more.

The most common input types are described below.

18.3. Text Fields

<input type="text"> defines a one-line input field that a user can enter text into:

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

How the HTML code above looks in a browser:

First name:

Last name:

Note: The form itself is not visible. Also note that the default width of a text field is 20 characters.

18.4. Password Field

<input type="password"> defines a password field:

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

Note: The characters in a password field are masked (shown as asterisks or circles).

18.5. Radio Buttons

<input type="radio"> defines a radio button. Radio buttons let a user select ONLY ONE of a limited number of choices:

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

How the HTML code above looks in a browser:

○Male
○Female

18.6. Checkboxes

<input type="checkbox"> defines a checkbox. Checkboxes let a user select ZERO or MORE options of a limited number of choices.

```
<form>
<input type="checkbox" name="vehicle" value="Bike">I have a bike<br>
<input type="checkbox" name="vehicle" value="Car">I have a car
</form>
```

How the HTML code above looks in a browser:

☐I have a bike
☐I have a car

18.7. Submit Button

<input type="submit"> defines a submit button.

A submit button is used to send form data to a server. The data is sent to the page specified in the form's action attribute. The file defined in the action attribute usually does something with the received input:

```
<form name="input" action="demo_form_action.asp" method="get">
Username: <input type="text" name="user">
<input type="submit" value="Submit">
</form>
```

If you type some characters in the text field above, and click the "Submit" button, the browser will send your input to a page called "demo_form_action.asp". The page will show you the received input.

18.8. HTML Form Tags

= Tag added in HTML5.

Tag	Description
<form>	Defines an HTML form for user input
<input>	Defines an input control
<textarea>	Defines a multiline input control (text area)
<label>	Defines a label for an <input> element
<fieldset>	Groups related elements in a form
<legend>	Defines a caption for a <fieldset> element
<select>	Defines a drop-down list
<optgroup>	Defines a group of related options in a drop-down list
<option>	Defines an option in a drop-down list
<button>	Defines a clickable button
<datalist>	Specifies a list of pre-defined options for input controls
<keygen>	Defines a key-pair generator field (for forms)
<output>	Defines the result of a calculation

19. HTML Iframes

An iframe is used to display a web page within a web page.

Syntax for adding an iframe:

```
<iframe src="URL"></iframe>
```

The URL points to the location of the separate page.

19.1. Iframe - Set Height and Width

The height and width attributes are used to specify the height and width of the iframe.

The attribute values are specified in pixels by default, but they can also be in percent (like "80%").

Example

```
<iframe src="demo_iframe.htm" width="200" height="200"></iframe>
```

19.2. Iframe - Remove the Border

The frameborder attribute specifies whether or not to display a border around the iframe.

Set the attribute value to "0" to remove the border:

Example

```
<iframe src="demo_iframe.htm" frameborder="0"></iframe>
```

19.3. Use iframe as a Target for a Link

An iframe can be used as the target frame for a link. The target attribute of a link must refer to the name attribute of the iframe:

Example

```
<iframe src="myiframe.htm" name="iframe_a"></iframe>
<p><a href="http://www.iesmanacor.org"
target="iframe_a">IESManacor.org</a></p>
```

19.4. HTML iframe Tag

Tag	Description
<iframe>	Defines an inline frame

20. HTML Colors

Colors are displayed combining RED, GREEN, and BLUE light.

20.1. Color Values

CSS colors are defined using a hexadecimal (hex) notation for the combination of Red, Green, and Blue color values (RGB). The lowest value that can be given to one of the light sources is 0 (hex 00). The highest value is 255 (hex FF).

Hex values are written as 3 double digit numbers, starting with a # sign.

20.2. Color Examples

Color	Color HEX	Color RGB
	#000000	rgb(0,0,0)
	#FF0000	rgb(255,0,0)
	#00FF00	rgb(0,255,0)
	#0000FF	rgb(0,0,255)
	#FFFF00	rgb(255,255,0)
	#00FFFF	rgb(0,255,255)
	#FF00FF	rgb(255,0,255)
	#C0C0C0	rgb(192,192,192)
	#FFFFFF	rgb(255,255,255)

20.3. 16 Million Different Colors

The combination of Red, Green and Blue values from 0 to 255 gives a total of more than 16 million different colors to play with (256 x 256 x 256).

Most modern monitors are capable of displaying at least 16384 different colors. If you look at the color table below, you will see the result of varying the red light from 0 to 255, while keeping the green and blue light at zero.

To see a full list of color mixes when the red light varies from 0 to 255, click on one of the hex or rgb values below.

Red Light	HEX	RGB
	#000000	rgb(0,0,0)
	#080000	rgb(8,0,0)
	#100000	rgb(16,0,0)
	#180000	rgb(24,0,0)

	#200000	rgb(32,0,0)
	#280000	rgb(40,0,0)
	#300000	rgb(48,0,0)
	#380000	rgb(56,0,0)
	#400000	rgb(64,0,0)
	#480000	rgb(72,0,0)
	#500000	rgb(80,0,0)
	#580000	rgb(88,0,0)
	#600000	rgb(96,0,0)
	#680000	rgb(104,0,0)
	#700000	rgb(112,0,0)
	#780000	rgb(120,0,0)
	#800000	rgb(128,0,0)
	#880000	rgb(136,0,0)
	#900000	rgb(144,0,0)
	#980000	rgb(152,0,0)
	#A00000	rgb(160,0,0)
	#A80000	rgb(168,0,0)
	#B00000	rgb(176,0,0)
	#B80000	rgb(184,0,0)
	#C00000	rgb(192,0,0)
	#C80000	rgb(200,0,0)
	#D00000	rgb(208,0,0)
	#D80000	rgb(216,0,0)
	#E00000	rgb(224,0,0)
	#E80000	rgb(232,0,0)
	#F00000	rgb(240,0,0)
	#F80000	rgb(248,0,0)
	#FF0000	rgb(255,0,0)

20.4. Shades of Gray

Gray colors are displayed using an equal amount of power to all of the light sources. To make it easier for you to select the right gray color we have compiled a table of gray shades for you:

Gray Shades	HEX	RGB

	#000000	rgb(0,0,0)
	#080808	rgb(8,8,8)
	#101010	rgb(16,16,16)
	#181818	rgb(24,24,24)
	#202020	rgb(32,32,32)
	#282828	rgb(40,40,40)
	#303030	rgb(48,48,48)
	#383838	rgb(56,56,56)
	#404040	rgb(64,64,64)
	#484848	rgb(72,72,72)
	#505050	rgb(80,80,80)
	#585858	rgb(88,88,88)
	#606060	rgb(96,96,96)
	#686868	rgb(104,104,104)
	#707070	rgb(112,112,112)
	#787878	rgb(120,120,120)
	#808080	rgb(128,128,128)
	#888888	rgb(136,136,136)
	#909090	rgb(144,144,144)
	#989898	rgb(152,152,152)
	#A0A0A0	rgb(160,160,160)
	#A8A8A8	rgb(168,168,168)
	#B0B0B0	rgb(176,176,176)
	#B8B8B8	rgb(184,184,184)
	#C0C0C0	rgb(192,192,192)
	#C8C8C8	rgb(200,200,200)
	#D0D0D0	rgb(208,208,208)
	#D8D8D8	rgb(216,216,216)
	#E0E0E0	rgb(224,224,224)
	#E8E8E8	rgb(232,232,232)
	#F0F0F0	rgb(240,240,240)
	#F8F8F8	rgb(248,248,248)
	#FFFFFF	rgb(255,255,255)

20.5. Web Safe Colors?

Some years ago, when computers supported max 256 different colors, a list of 216 "Web Safe Colors" was suggested as a Web standard, reserving 40 fixed system colors.

This is not important now, since most computers can display millions of different colors, but the choice is left to you. The 216 cross-browser color palette was created to ensure that all computers would display the colors correctly when running a 256 color palette:

000000	000033	000066	000099	0000CC	0000FF
003300	003333	003366	003399	0033CC	0033FF
006600	006633	006666	006699	0066CC	0066FF
009900	009933	009966	009999	0099CC	0099FF
00CC00	00CC33	00CC66	00CC99	00CCCC	00CCFF
00FF00	00FF33	00FF66	00FF99	00FFCC	00FFFF
330000	330033	330066	330099	3300CC	3300FF
333300	333333	333366	333399	3333CC	3333FF
336600	336633	336666	336699	3366CC	3366FF
339900	339933	339966	339999	3399CC	3399FF
33CC00	33CC33	33CC66	33CC99	33CCCC	33CCFF
33FF00	33FF33	33FF66	33FF99	33FFCC	33FFFF
660000	660033	660066	660099	6600CC	6600FF
663300	663333	663366	663399	6633CC	6633FF
666600	666633	666666	666699	6666CC	6666FF
669900	669933	669966	669999	6699CC	6699FF
66CC00	66CC33	66CC66	66CC99	66CCCC	66CCFF
66FF00	66FF33	66FF66	66FF99	66FFCC	66FFFF
990000	990033	990066	990099	9900CC	9900FF
993300	993333	993366	993399	9933CC	9933FF
996600	996633	996666	996699	9966CC	9966FF
999900	999933	999966	999999	9999CC	9999FF
99CC00	99CC33	99CC66	99CC99	99CCCC	99CCFF
99FF00	99FF33	99FF66	99FF99	99FFCC	99FFFF
CC0000	CC0033	CC0066	CC0099	CC00CC	CC00FF
CC3300	CC3333	CC3366	CC3399	CC33CC	CC33FF
CC6600	CC6633	CC6666	CC6699	CC66CC	CC66FF
CC9900	CC9933	CC9966	CC9999	CC99CC	CC99FF
CCCC00	CCCC33	CCCC66	CCCC99	CCCCCC	CCCCFF
CCFF00	CCFF33	CCFF66	CCFF99	CCFFCC	CCFFFF
FF0000	FF0033	FF0066	FF0099	FF00CC	FF00FF
FF3300	FF3333	FF3366	FF3399	FF33CC	FF33FF

FF6600	FF6633	FF6666	FF6699	FF66CC	FF66FF
FF9900	FF9933	FF9966	FF9999	FF99CC	FF99FF
FFCC00	FFCC33	FFCC66	FFCC99	FFCCCC	FFCCFF
FFFF00	FFFF33	FFFF66	FFFF99	FFFFCC	FFFFFF

20.6. Color Names Supported by All Browsers

140 color names are defined in the HTML and CSS color specification (17 standard colors plus 123 more). The table below lists them all, along with their hexadecimal values. Colors sorted by HEX values.

Tip: The 17 standard colors are: aqua, black, blue, fuchsia, gray, green, lime, maroon, navy, olive, orange, purple, red, silver, teal, white, and yellow.

21. HTML Scripts

JavaScripts make HTML pages more dynamic and interactive.

21.1. The HTML <script> Tag

The <script> tag is used to define a client-side script, such as a JavaScript.

The <script> element either contains scripting statements or it points to an external script file through the src attribute. Common uses for JavaScript are image manipulation, form validation, and dynamic changes of content.

The script below writes Hello World! to the HTML output:

Example

```
<script> document.write("Hello World!"); </script>
```

21.2. The HTML <noscript> Tag

The <noscript> tag is used to provide an alternate content for users that have disabled scripts in their browser or have a browser that doesn't support client-side scripting.

The <noscript> element can contain all the elements that you can find inside the <body> element of a normal HTML page.

The content inside the <noscript> element will only be displayed if scripts are not supported, or are disabled in the user's browser:

Example

```
<script> document.write("Hello World!"); </script>
<noscript>Sorry, your browser does not support JavaScript!</noscript>
```

JavaScript can write directly into the HTML output stream:

```
document.write("<p>This is a paragraph</p>");
```

JavaScript can react to events:

```
<button type="button" onclick="myFunction()">Click Me!</button>
```

JavaScript can manipulate HTML styles:

```
document.getElementById("demo").style.color="#ff0000";
```

21.3. HTML Script Tags

Tag	Description
<script>	Defines a client-side script
<noscript>	Defines an alternate content for users that do not support client-side scripts

22. HTML Entities & Symbols

Reserved characters in HTML must be replaced with character entities.

Characters, not present on your keyboard, can also be replaced by entities.

22.1. HTML Entities

Some characters are reserved in HTML.

If you use the less than (<) or greater than (>) signs in your text, the browser might mix them with tags.

Character entities are used to display reserved characters in HTML.

A character entity looks like this:

```
&entity_name;  OR  &#entity_number;
```

To display a less than sign we must write: **<** or **<**

The advantage of using an entity name, instead of a number, is that the name is easier to remember.
The disadvantage is that browsers may not support all entity names, but the support for numbers is good.

22.2. Non Breaking Space

A common character entity used in HTML is the non breaking space ( ).

Remember that browsers will always truncate spaces in HTML pages. If you write 10 spaces in your text, the browser will remove 9 of them. To add real spaces to your text, you can use the ** ** character entity.

22.3. Combining Diacritical Marks

A diacritical mark is a "glyph" added to a letter.

Some diacritical marks, like grave (̀) and acute (́) are called accents.

Diacritical marks can appear both above and below a letter, inside a letter, and between two letters.

Diacritical marks can be used in combination with alphanumeric characters, to produce a character that is not present in the character set (encoding) used in the page.

Here are some examples:

Mark	Character	Construct	Result
`	a	à	à
´	a	á	á0
^	a	â	â
~	a	ã	ã
`	O	Ò	Ò
´	O	Ó	Ó
^	O	Ô	Ô
~	O	Õ	Õ

22.4. Some Other Useful HTML Character Entities

Entity names are case sensitive.

Result	Description	Entity Name	Entity Number
	non-breaking space		
<	less than	&lt;	&#60;
>	greater than	&gt;	&#62;
&	ampersand	&amp;	&#38;
¢	cent	&cent;	&#162;
£	pound	&pound;	&#163;
¥	yen	&yen;	&#165;
€	euro	&euro;	&#8364;
©	copyright	&copy;	&#169;
®	registered trademark	&reg;	&#174;

22.5. HTML Symbol Entities

HTML entities was described in the previous chapter. HTML symbols like mathematical operators, arrows, technical symbols and shapes, are not present on a normal keyboard.

To add these symbols to an HTML page, you can use the HTML entity name.

If no entity name exists, you can use the entity number.

If the character does not have an entity name, you can use a decimal (or hexadecimal) reference.

If you use an HTML entity name, or number, the character will always display correctly. This is independent of what character set (encoding) your page uses!

Example

```
<p>I will display &euro;<p>
<p>I will display &#8364;<p>
<p>I will display &#x20AC;<p>
```

Will display as:

```
I will display €
I will display €
I will display €
```

22.6. Some Mathematical Symbols Supported by HTML

Char	Number	Entity	Description
∀	∀	∀	FOR ALL
∂	∂	∂	PARTIAL DEFFERENCIAL
∃	∃	∃	THERE EXISTS
∅	∅	∅	EMPTY SETS
∇	∇	∇	NABLA
∈	∈	∈	ELEMENT OF
∉	∉	∉	NOT AN ELEMENT OF
∋	∋	∋	CONTAINS A MEMBER
∏	∏	∏	N-ARY PRODUCT
∑	∑	∑	N-ARY SUMMATION

Full Math Reference

22.7. Some Greek Letters Supported by HTML

Char	Number	Entity	Description
A	Α	Α	GREEK CAPITAL LETTER ALPHA
B	Β	Β	GREEK CAPITAL LETTER BETA
Γ	Γ	Γ	GREEK CAPITAL LETTER GAMMA
Δ	Δ	Δ	GREEK CAPITAL LETTER DELTA
E	Ε	Ε	GREEK CAPITAL LETTER EPSILON
Z	Ζ	Ζ	GREEK CAPITAL LETTER ZETA

Full Greek Reference

22.8. Some Other Entities Supported by HTML

Char	Number	Entity	Description
©	&#169;	&copy;	REGISTERED SIGN
®	&#174;	&reg;	REGISTERED SIGN
€	&#8364;	&euro;	EURO SIGN
™	&#8482;	&trade;	TRADEMARK
←	&#8592;	&larr;	LEFTWARDS ARROW
↑	&#8593;	&uarr;	UPWARDS ARROW
→	&#8594;	&rarr;	RIGHTWARDS ARROW
↓	&#8595;	&darr;	DOWNWARDS ARROW
♠	&#9824;	&spades;	BLACK SPADE SUIT
♣	&#9827;	&clubs;	BLACK CLUB SUIT
♥	&#9829;	&hearts;	BLACK HEART SUIT
♦	&#9830;	&diams;	BLACK DIAMOND SUIT

Full Currency Reference Full Arrows Reference Full Symbols Reference

23. HTML Encoding (Character Sets)

To display an HTML page correctly, a web browser must know what character set (character encoding) to use.

23.1. What is Character Encoding?

ASCII was the first **character encoding standard** (also called character set). It define 127 different alphanumeric characters that could be used on the internet.

- ASCII supported numbers (0-9), English letters (A-Z), and some special characters like ! $ + - ( ) @ < > .
- ANSI (Windows-1252) was the default character set for Windows (up to Windows 95). It supported 256 different codes.
- ISO-8859-1, an extension to ASCII, was the default character set for HTML 4. It also supported 256 different codes.

Because ANSI and ISO was too limited, the default character encoding was changed to Unicode (UTF-8) in HTML5.

- Unicode covers (almost) all the characters and symbols in the world.


All HTML 4 processors also support UTF-8.

23.2. The HTML charset Attribute

To display an HTML page correctly, a web browser must know the character set used in the page.

This is specified in the <meta> tag:

For HTML4:

```
<meta http-equiv="Content-Type"
content="text/html;charset=ISO-8859-1">
```

For HTML5:

```
<meta charset="UTF-8">
```


If a browser detect ISO-8859-1 in a web page, it normally defaults to ANSI, because ANSI is identical to ISO-8859-1 except that ANSI has 32 extra characters.

23.3. The ASCII Character Set

ASCII uses the values from 0 to 31 (and 127) for control characters.

ASCII uses the values from 32 to 126 for letters, digits, and symbols.

ASCII does not use the values from 128 to 255.

23.4. The ANSI Character Set (Windows-1252)

ANSI is identical to ASCII for the values from 0 to 127.

ANSI has a proprietary set of characters for the values from 128 to 159.

ANSI is identical to UTF-8 for the values from 160 to 255.

23.5. The ISO-8859-1 Character Set

8859-1 is identical to ASCII for the values from 0 to 127.

8859-1 does not use the values from 128 to 159.

8859-1 is identical to UTF-8 for the values from 160 to 255.

23.6. The UTF-8 Character Set

UTF-8 is identical to ASCII for the values from 0 to 127.

UTF-8 does not use the values from 128 to 159.

UTF-8 is identical to both ANSI and 8859-1 for the values from 160 to 255.

UTF-8 continues from the value 256 with more than 10.000 different characters.

For a closer look at ASCII, ANSI, ISO, and UTF-8: Complete HTML Character Set Reference.

24. HTML Uniform Resource Locators

A URL is another word for a web address. A URL can be composed of words, such as "iesmanacor.org", or an Internet Protocol (IP) address: 192.68.20.50. Most people enter the name of the website when surfing, because names are easier to remember than numbers.

24.1. URL - Uniform Resource Locator

Web browsers request pages from web servers by using a URL. When you click on a link in an HTML page, an underlying <a> tag points to an address on the world wide web. A Uniform Resource Locator (URL) is used to address a document (or other data) on the world wide web.

A web address, like this: **http://www.iesmanacor.org/html/default.asp** follows these syntax rules:

scheme://host.domain:port/path/filename

Explanation:

- **scheme** - defines the **type** of Internet service. The most common type is **http**
- **host** - defines the **domain host** (the default host for http is **www**)
- **domain** - defines the Internet **domain name**, like iesmanacor.org
- **port** - defines the **port number** at the host (the default port number for http is **80**)
- **path** - defines a **path** at the server (If omitted, the document must be stored at the root directory of the web site)
- **filename** - defines the name of a document/resource

24.2. Common URL Schemes

The table below lists some common schemes:

Scheme	Short for....	Which pages will the scheme be used for...
http	HyperText Transfer Protocol	Common web pages starts with http://. Not encrypted
https	Secure HyperText Transfer Protocol	Secure web pages. All information exchanged are encrypted
ftp	File Transfer Protocol	For downloading or uploading files to a website. Useful for domain maintenance
file		A file on your computer

24.3. URL Encoding

URLs can only be sent over the Internet using the ASCII character-set.

Since URLs often contain characters outside the ASCII set, the URL has to be converted into a valid ASCII format.

- URL encoding converts characters into a format that can be transmitted over the Internet.
- URL encoding replaces non ASCII characters with a "%" followed by two hexadecimal digits.

- URLs cannot contain spaces. URL encoding normally replaces a space with a + sign.

24.4. URL Encoding Examples

Character	URL-encoding
€	%80
£	%A3
©	%A9
®	%AE
À	%C0
Á	%C1
Â	%C2
Ã	%C3
Ä	%C4
Å	%C5

For a complete reference of all URL encodings: URL Encoding Reference.

25. HTML and XHTML

XHTML is HTML written as XML.

25.1. What Is XHTML?

- XHTML stands for E**X**tensible **H**yper**T**ext **M**arkup **L**anguage
- XHTML is almost identical to HTML 4.01
- XHTML is a stricter and cleaner version of HTML
- XHTML is HTML defined as an XML application
- XHTML is supported by all major browsers.

25.2. Why XHTML?

Many pages on the internet contain "bad" HTML.

The following HTML code will work fine if you view it in a browser (even if it does NOT follow the HTML rules):

```
<html>
<head>
<title>This is bad HTML</title>
<body>
<h1>Bad HTML
<p>This is a paragraph
</body>
```

XML is a markup language where documents must be marked up correctly and "well-formed".

Today's market consists of different browser technologies. Some browsers run on computers, and some browsers run on mobile phones or other small devices. Smaller devices often lack the resources or power to interpret a "bad" markup language.

Therefore - by combining the strengths of HTML and XML, XHTML was developed. XHTML is HTML redesigned as XML.

25.3. The Most Important Differences from HTML:

Document Structure

- XHTML DOCTYPE is **mandatory**
- The XML namespace attribute in <html> is **mandatory**
- <html>, <head>, <title>, and <body> is **mandatory**

XHTML Elements

- XHTML elements must be **properly nested**

- XHTML elements must always be **closed**
- XHTML elements must be in **lowercase**
- XHTML documents must have **one root element**

XHTML Attributes

- Attribute names must be in **lower case**
- Attribute values must be **quoted**
- Attribute minimization is **forbidden**

25.4. <!DOCTYPE ....> Is Mandatory

An XHTML document must have an XHTML DOCTYPE declaration.

A complete list of all the XHTML Doctypes is found in our HTML Tags Reference.

The <html>, <head>, <title>, and <body> elements must also be present, and the xmlns attribute in <html>, must specify the xml namespace for the document.

The example below shows an XHTML document with a minimum of required tags:

```
<!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>
......
</body>

</html>
```

25.5. XHTML Elements Must Be Properly Nested

In HTML, some elements can be improperly nested within each other, like this:

```
<b><i>This text is bold and italic</b></i>
```

In XHTML, all elements must be properly nested within each other, like this:

```
<b><i>This text is bold and italic</i></b>
```

25.6. XHTML Elements Must Always Be Closed

This is wrong:

```
<p>This is a paragraph
<p>This is another paragraph
```

This is correct:

```
<p>This is a paragraph</p>
<p>This is another paragraph</p>
```

25.7. Empty Elements Must Also Be Closed

This is wrong:

```
A break: <br>
A horizontal rule: <hr>
An image: <img src="happy.gif" alt="Happy face">
```

This is correct:

```
A break: <br />
A horizontal rule: <hr />
An image: <img src="happy.gif" alt="Happy face" />
```

25.8. XHTML Elements Must Be In Lower Case

This is wrong:

```
<BODY>
<P>This is a paragraph</P>
</BODY>
```

This is correct:

```
<body>
<p>This is a paragraph</p>
</body>
```

25.9. Attribute Names Must Be In Lower Case

This is wrong:

```
<table WIDTH="100%">
```

This is correct:

```
<table width="100%">
```

25.10. Attribute Values Must Be Quoted

This is wrong:

```
<table width=100%>
```

This is correct:

```
<table width="100%">
```

25.11. Attribute Minimization Is Forbidden

This is wrong:

```
<input checked>
<input readonly>
<input disabled>
<option selected>
```

This is correct:

```
<input checked="checked">
<input readonly="readonly">
<input disabled="disabled">
<option selected="selected">
```

25.13. How to Convert from HTML to XHTML

1. Add an XHTML <!DOCTYPE> to the first line of every page
2. Add an xmlns attribute to the html element of every page
3. Change all element names to lowercase
4. Close all empty elements
5. Change all attribute names to lowercase
6. Quote all attribute values