

VSEC-101-CA: HTML and Webpage Designing

Course Objectives:

- To understand web based application development process.
- To study basics of HTML elements and tag.
- To know usage of CSS in HTML.
- To design and create simple websites.
- To apply JavaScript to websites.

Course Outcomes:

After successful completion of this course, learner will be able to

- Enlist various HTML elements and tags
- Use HTML elements and tags
- Apply CSS and Java script features.
- Design a website using HTML, CSS and JavaScript.

Chapter 1: HTML Introduction

Introduction

HTML (Hyper Text Markup Language) is the standard markup language used to create Web pages. It forms the basic structure of every website you see on the internet.

Key points:

- HTML stands for Hyper Text Markup Language.
- It is the standard language used to create and structure web pages.
- HTML documents are made up of elements, written using tags.
- These elements provide meaning and structure to content.
- Browsers read HTML code and display the webpage accordingly.

HTML does not control the visual design (that is done through CSS), nor does it make pages interactive (that is done through JavaScript). Instead, HTML provides the foundation, acting as the skeleton of a webpage.

HTML Editors

Web pages can be created and modified by using professional HTML editors. However, for learning HTML we recommend a simple text editor like Notepad (PC) or TextEdit (Mac). We believe that using a simple text editor is a good way to learn HTML.

These come pre-installed or are very simple to install.

Basic Text Editors

1. Notepad (Windows)
2. TextEdit (Mac – switch to plain text mode)
3. Notepad++ (Windows)
4. Gedit (Linux)

Code Editors

1. Visual Studio Code (VS Code)
2. Sublime Text
3. Atom (legacy but still used)
4. Brackets

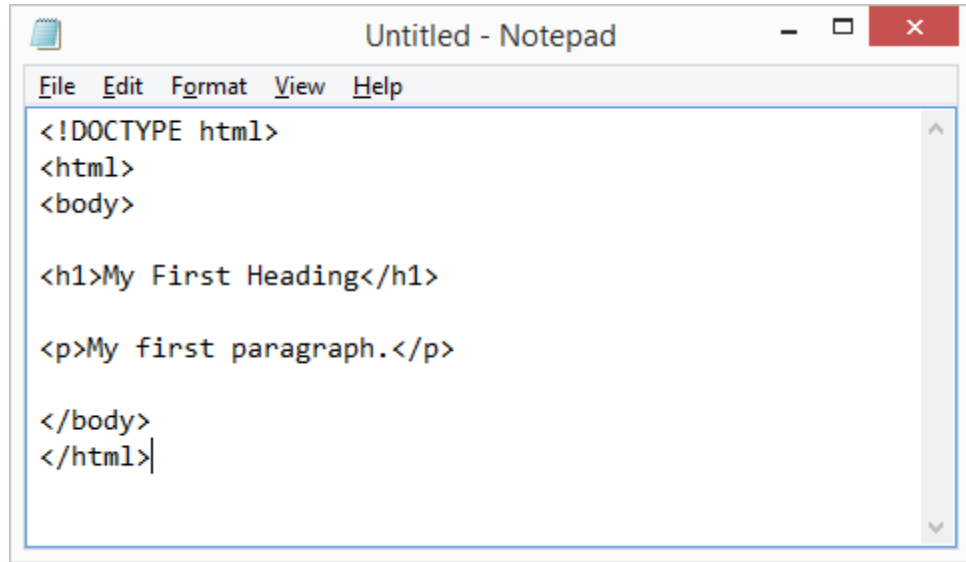
Create Your First Web Page

Step 1: Open Notepad (PC)

On Windows: Open Start > Programs > Accessories > Notepad

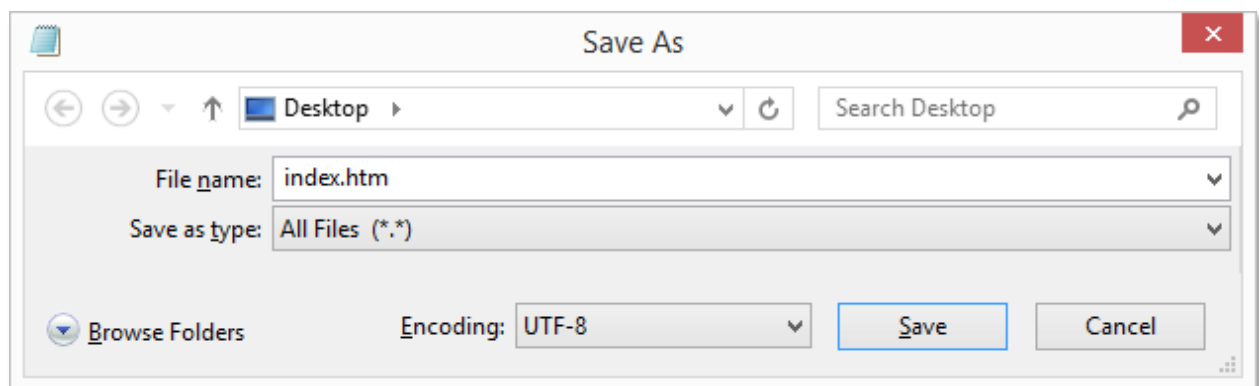
Step 2: Write Some HTML

Write or copy the following HTML code into Notepad:



Step 3: Save the HTML Page

Save the file on your computer. Select File > Save as in the Notepad menu. Name the file "index.htm" and set the encoding to UTF-8 (which is the preferred encoding for HTML files)



Step 4: View the HTML Page in Your Browser

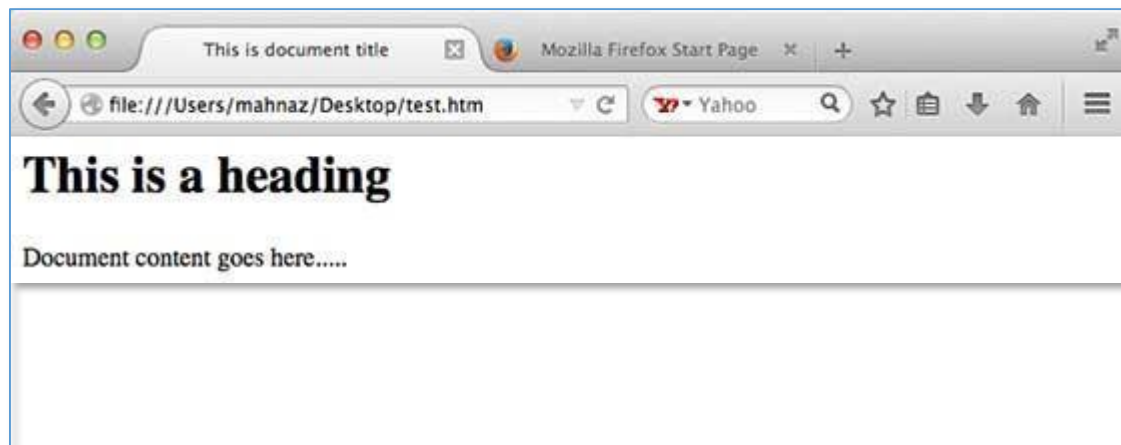
Open the saved HTML file in your favorite browser (double click on the file, or right-click - and choose "Open with").

Basic HTML Document

In its simplest form, following is an example of an HTML document:

```
<!DOCTYPE html>
<html>
  <head>
    <title>This is document title</title>
  </head>
  <body>
    <h1>This is a heading</h1>
    <p>Document content goes here</p>
  </body>
</html>
```

Either you can use Try it option available at the top right corner of the code box to check the result of this HTML code, or let's save it in an HTML file test.htm using your favorite text editor. Finally open it using a web browser like Internet Explorer or Google Chrome, or Firefox etc. It must show the following output:



HTML Tags

<Tag Name>

As told earlier, HTML is a markup language and makes use of various tags to format the content. These tags are enclosed within angle braces <Tag Name>.

Except few tags, most of the tags have their corresponding closing tags. For example, <html> has its closing tag </html> and <body> tag has its closing tag </body> tag etc.

Above example of HTML document uses the following tags:

Tag	Description
<!DOCTYPE...>	This tag defines the document type and HTML version.
<html>	This tag encloses the complete HTML document and mainly comprises of document header which is represented by <head>...</head> and document body which is represented by <body>...</body> tags.
<head>	This tag represents the document's header which can keep other HTML tags like <title>, <link> etc.
<title>	The <title> tag is used inside the <head> tag to mention the document title.
<body>	This tag represents the document's body which keeps other HTML tags like <h1>, <div>, <p> etc.
<h1>	This tag represents the heading.
<p>	This tag represents a paragraph.

To learn HTML, you will need to study various tags and understand how they behave, while formatting a textual document. Learning HTML is simple as users have to learn the usage of different tags in order to format the text or images to make a beautiful webpage.

HTML Elements

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

<tagname>Content goes here...</tagname>

Examples of some HTML elements:

```
<h1>My First Heading</h1>
<p>My first paragraph.</p>
```

Nested HTML Elements

HTML elements can be nested (this means that elements can contain other elements). All HTML documents consist of nested HTML elements.

The following example contains four HTML elements (<html>, <body>, <h1> and <p>):

```
<!DOCTYPE html>
<html>
  <body>
    <h1>My First Heading</h1>
    <p>My first paragraph.</p>
  </body>
</html>
```

The <html> element is the root element and it defines the whole HTML document. It has a start tag <html> and an end tag </html>. Then, inside the <html> element there is a <body> element:

```
<body>
  <h1>My First Heading</h1>
  <p>My first paragraph.</p>
</body>
```

The <body> element defines the document's body. It has a start tag <body> and an end tag </body>. Then, inside the <body> element there are two other elements: <h1> and <p>:

```
<h1>My First Heading</h1>
<p>My first paragraph.</p>
```

Never Skip the End Tag, Some HTML elements will display correctly, even if you forget the end tag.

Some HTML elements have no content (like the
 element). These elements are called empty elements. Empty elements do not have an end tag!

HTML Document Structure

A typical HTML document will have the following structure:

```
Document declaration tag
<html>
  <head>
    Document header related tags
  </head>

  <body>
    Document body related tags
  </body>
</html>
```

We will study all the header and body tags in subsequent chapters, but for now let's see what is document declaration tag.

The <!DOCTYPE> Declaration

The <!DOCTYPE> declaration tag is used by the web browser to understand the version of the HTML used in the document. Current version of HTML is 5 and it makes use of the following declaration:

```
<!DOCTYPE html>
```

There are many other declaration types which can be used in HTML document depending on what version of HTML is being used.

Chapter 2: HTML – BASIC TAGS

Heading Tags

Any document starts with a heading. You can use different sizes for your headings. HTML also has six levels of headings, which use the elements `<h1>`, `<h2>`, `<h3>`, `<h4>`, `<h5>`, and `<h6>`. While displaying any heading, browser adds one line before and one line after that heading.

Example:

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

Output:

This is heading 1

This is heading 2

This is heading 3

This is heading 4

This is heading 5

This is heading 6

Paragraph Tag

The <p> tag offers a way to structure your text into different paragraphs. Each paragraph of text should go in between an opening <p> and a closing </p> tag as shown below in the example:

Example:

```
<!DOCTYPE html>
<html>
  <head>
    <title>Paragraph Example</title>
  </head>
  <body>
    <p>Here is a first paragraph of text.</p>
    <p>Here is a second paragraph of text.</p>
    <p>Here is a third paragraph of text.</p>
  </body>
</html>
```

Output:

Here is a first paragraph of text.

Here is a second paragraph of text.

Here is a third paragraph of text.

Horizontal Rules & Line Breaks

The `<hr>` tag defines a thematic break in an HTML page, and is most often displayed as a horizontal rule. The `<hr>` element is used to separate content (or define a change) in an HTML page.

The HTML `
` element defines a line break. Use `
` if you want a line break (a new line) without starting a new paragraph:

Example:

```
<!DOCTYPE html>
<html>
<body>
    <h1>This is heading 1</h1>
    <p>This is some text.</p>
    <hr>
    <h2>This is heading 2</h2>
    <p>This is some other text.</p>
    <hr>
    <h2>This is break</h2>
    <p>This is<br>a paragraph<br>with line breaks.</p>
</body>
</html>
```

Output:

This is heading 1

This is some text.

This is heading 2

This is some other text.

This is break

This is
a paragraph
with line breaks.

The `<hr>` and `
` tag is an empty tag, which means that it has no end tag.

HTML Comment Tag

HTML comments are not displayed in the browser, but they can help document your HTML source code. You can add comments to your HTML source by using the following syntax:

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

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:

```
<!-- This is a comment -->  
<p>This is a paragraph.</p>  
<!-- Remember to add more information here -->
```

Comments can be used to hide content. This can be helpful if you hide content temporarily:

```
<p>This is a paragraph.</p>  
<!-- <p>This is another paragraph </p> -->  
<p>This is a paragraph too.</p>
```

Comments can be used to hide parts in the middle of the HTML code.

```
<p>This <!-- great text --> is a paragraph.</p>
```

Exercise 1

The poem currently displays on a single line. Your task is to rewrite the HTML so the poem appears with proper line breaks and a horizontal rule between the two stanzas.

```
<!DOCTYPE html>
<html>
<body>
  <p> Exercise 1:</p>
  <p>
    My Bonnie lies over the ocean.

    My Bonnie lies over the sea.

    My Bonnie lies over the ocean.

    Oh, bring back my Bonnie to me.
  </p>
</body>
</html>
```

Expected Output:

```
My Bonnie lies over the ocean.
My Bonnie lies over the sea.



---


My Bonnie lies over the ocean.
Oh, bring back my Bonnie to me.
```

Chapter 3: Text Formatting

 and Elements:

- element defines bold text, without any extra importance.
- element defines text with strong importance. The content inside is typically displayed in bold.

Example:

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

    <p>This text is normal.</p>

    <p><b>This text is bold.</b></p>

    <p><strong>This text is important!</strong></p>

  </body>
</html>
```

Output:

This text is normal.

This text is bold.

This text is important!

<i> and Elements:

- <i> element defines a part of text in an alternate voice or mood. The content inside is typically displayed in italic.
- element defines emphasized text. The content inside is typically displayed in italic.

Example:

```
<!DOCTYPE html>
<html>
  <body>
    <p>This text is normal.</p>
    <p><i>This text is italic.</i></p>
    <p><em>This text is emphasized</em></p>
  </body>
</html>
```

Output:

This text is normal.

This text is italic.

This text is emphasized

<u> Element

Anything that appears within <u>...</u> element, is displayed with underline as shown below:

Example:

```
<!DOCTYPE html>
<html>
  <head>
    <title>Underlined Text Example</title>
  </head>
  <body>
    <p>The following word uses a <u>underlined</u> typeface.</p>
  </body>
</html>
```

Output:

The following word uses a underlined typeface.

HTML <small> Element

The HTML <small> element defines smaller text:

Example:

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

    <p>This text is normal.</p>

    <p><small>This is some smaller text.</small></p>

  </body>
</html>
```

Output:

This text is normal.

This is some smaller text.

HTML <mark> Element

The HTML <mark> element defines text that should be marked or highlighted:

Example:

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

    <p>This text is normal.</p>

    <p>Do not forget to buy <mark>milk</mark> today.</p>

  </body>
</html>
```

Output:

This text is normal.

Do not forget to buy **milk** today.

HTML Element

The HTML element defines text that has been deleted from a document. Browsers will usually strike a line through deleted text:

Example:

```
<!DOCTYPE html>
<html>
  <body>
    <p>My favorite color is <del>blue</del> red.</p>
  </body>
</html>
```

Output:

My favorite color is ~~blue~~ red.

HTML <ins> Element

The HTML <ins> element defines a text that has been inserted into a document. Browsers will usually underline inserted text:

Example:

```
<!DOCTYPE html>
<html>
  <body>
    <p>My favorite color is <del>blue</del> <ins>red</ins>.</p>
  </body>
</html>
```

Output:

My favorite color is ~~blue~~ red.

<sub> Element & <sup> Element

The HTML <sub> element defines subscript text. Subscript text appears half a character below the normal line, and is sometimes rendered in a smaller font. Subscript text can be used for chemical formulas, like H₂O.

The HTML <sup> element defines superscript text. Superscript text appears half a character above the normal line, and is sometimes rendered in a smaller font. Superscript text can be used for footnotes, like WWW^[1]:

Example:

```
<!DOCTYPE html>
<html>
  <body>
    <p>This is <sub>subscripted</sub> text.</p>
    <p>This is <sup>superscripted</sup> text.</p>
  </body>
</html>
```

Output:

This is subscripted text.

This is superscripted text.

Formatting elements:

- - Bold text
- - Important text
- <i> - Italic text
- - Emphasized text
- <mark> - Marked text
- <small> - Smaller text
- - Deleted text
- <ins> - Inserted text
- <sub> - Subscript text
- <sup> - Superscript text

Exercise 1:

The sentence below appears normally. Make notice bold & Make carefully italic.

```
<p> Please read the notice carefully before entering the lab. </p>
```

Exercise 2:

The formula appears on one line without formatting. Write H₂SO₄, CO₂ & mc² correctly

```
<p> H2SO4 is a strong acid. CO2 is released during combustion. E = mc2 is a famous  
formula. </p>
```

Exercise 3:

You are given a sentence. Highlight the phrase "text more readable" using html tag.

```
<p> HTML formatting tags help make the text more readable and attractive. </p>
```

Chapter 4: Lists

HTML offers web authors three ways for specifying lists of information. All lists must contain one or more list elements.

- `` - An unordered list. This will list items using plain bullets.
- `` - An ordered list. This will use different schemes of numbers to list your items.
- `<dl>` - A definition list. This arranges your items in the same way as they are arranged in a dictionary.

HTML Unordered Lists

An unordered list is a collection of related items that have no special order or sequence. This list is created by using HTML `` tag. Each item in the list is marked with a bullet.

Example:

```
<!DOCTYPE html>
<html>
  <head>
    <title>HTML Unordered List</title>
  </head>
  <body>
    <ul>
      <li>Beetroot</li>
      <li>Ginger</li>
      <li>Potato</li>
      <li>Radish</li>
    </ul>
  </body>
</html>
```

Output:

- Beetroot
- Ginger
- Potato
- Radish

You can use type attribute for tag to specify the type of bullet you like. By default, it is a disc. Following are the possible options:

Examples:

<pre><ul type="square"> Beetroot Ginger Potato Radish </pre>	<pre><ul type=" disc "> Beetroot Ginger Potato Radish </pre>	<pre><ul type=" circle "> Beetroot Ginger Potato Radish </pre>
---	---	---

Output:

- Beetroot
- Ginger
- Potato
- Radish

- Beetroot
- Ginger
- Potato
- Radish

- Beetroot
- Ginger
- Potato
- Radish

HTML Ordered Lists

If you are required to put your items in a numbered list instead of bulleted, then HTML ordered list will be used. This list is created by using `` tag. The numbering starts at one and is incremented by one for each successive ordered list element tagged with ``.

Example:

```
<!DOCTYPE html>
<html>
  <head>
    <title>HTML Ordered List</title>
  </head>
  <body>
    <ol>
      <li>Beetroot</li>
      <li>Ginger</li>
      <li>Potato</li>
      <li>Radish</li>
    </ol>
  </body>
</html>
```

Output:

1. Beetroot
2. Ginger
3. Potato
4. Radish

You can use **type attribute for ``** tag to specify the type of numbering you like. By default, it is a number. Following are the possible options:

```
<ol type="1"> - Default-Case Numerals.
<ol type="I"> - Upper-Case Roman Numerals.
<ol type="i"> - Lower-Case Roman Numerals.
<ol type="a"> - Lower-Case Letters.
<ol type="A"> - Upper-Case Letters.
```

You can use **start attribute for ``** tag to specify the starting point of numbering you need. Following are the possible options:

```
<ol type="1" start="4"> - Numerals starts with 4.
<ol type="I" start="4"> - Numerals starts with IV.
<ol type="i" start="4"> - Numerals starts with iv.
<ol type="a" start="4"> - Letters starts with d.
<ol type="A" start="4"> - Letters starts with D.
```

HTML Definition Lists

HTML and XHTML supports a list style which is called definition lists where entries are listed like in a dictionary or encyclopedia. The definition list is the ideal way to present a glossary, list of terms, or other name/value list.

Definition List makes use of following three tags.

- `<dl>` - Defines the start of the list
- `<dt>` - A term
- `<dd>` - Term definition
- `</dl>` - Defines the end of the list

Example:

```
<!DOCTYPE html>
<html>
  <head>
    <title>HTML Definition List</title>
  </head>
  <body>
    <dl>
      <dt><b>HTML</b></dt>
      <dd>This stands for Hyper Text Markup Language</dd>
      <dt><b>HTTP</b></dt>
      <dd>This stands for Hyper Text Transfer Protocol</dd>
    </dl>
  </body>
</html>
```

Output:

HTML
This stands for Hyper Text Markup Language
HTTP
This stands for Hyper Text Transfer Protocol

Exercise 1:

Create a webpage that displays any 5 fruits in an unordered list. Use three different bullet types:

- disc
- circle
- square

Exercise 2:

Create a webpage that shows your daily routine (at least 5 items) using an ordered list.

Then create three more ordered lists using these styles:

- Uppercase Roman numerals
- Lowercase letters
- Start numbering from 4

Exercise 3:

Make a webpage that contains a definition list (dl) with three computer-related terms, such as:

- CPU
- RAM
- Operating System

Each term should have a short definition.

Chapter 5: Images and Hyperlinks

Images

You can insert any image in your web page by using `` tag. Following is the simple syntax to use this tag.

```

```

The `` tag is an empty tag, which means that, it can contain only list of attributes and it has no closing tag

Attribute	Use / Purpose	Possible Values / Examples
src	Specifies the path or URL of the image.	"image.jpg" "images/pic.png" "https://example.com/photo.jpg"
alt	Provides alternate text if the image fails to load; also used by screen readers (accessibility).	"Logo" "Picture of a flower"
width	Sets the width of the image.	Pixel value: "200" → 200px
		Percentage: "50%" → 50% of size
height	Sets the height of the image.	Pixel value: "150"
		Percentage: "40% "
align	Aligns the image relative to text. By default, Left.	"left" , "right" , "center"

Hyperlinks

Links are used on almost every webpage. They allow users to move from one page to another with a single click. An HTML link is called a hyperlink. When you point your mouse at a link, the pointer changes from an arrow to a hand, indicating that it is clickable.

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

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

The Target Attribute

By default, the linked page will be displayed in the current browser window. To change this, you must specify another target for the link. The target attribute specifies where to open the linked document.

The target attribute can have one of the following values:

- **_self** - Default. Opens the document in the same window/tab as it was clicked
- **_blank** - Opens the document in a new window or tab
- **_parent** - Opens the document in the parent frame
- **_top** - Opens the document in the full body of the window

Use the mailto: scheme inside the href attribute to create a link that opens the user's email program

Type of URL

There are two ways to specify the URL in the src or href attribute:

1. Absolute URL - Links to an external image that is hosted on another website. Example: `src="https://www.w3schools.com/images/img_girl.jpg"`.

2. Relative URL - Links to an image that is hosted within the website. Here, the URL does not include the domain name. If the URL begins without a slash, it will be relative to the current page. Example: `src="img_girl.jpg"`. If the URL begins with a slash, it will be relative to the domain. Example: `src="/images/img_girl.jpg"`.

Tip: It is almost always best to use relative URLs. They will not break if you change domain.

Chapter 6: Tables

The HTML tables allow web authors to arrange data like text, images, links, other tables, etc. into rows and columns of cells.

The HTML tables are created using the `<table>` tag in which the `<tr>` tag is used to create table rows and `<td>` tag is used to create data cells.

Example:

```
<!DOCTYPE html>
<html>
  <head>
    <title>HTML Tables</title>
  </head>
  <body>
    <table border="1">
      <tr>
        <td>Row 1, Column 1</td>
        <td>Row 1, Column 2</td>
      </tr>
      <tr>
        <td>Row 2, Column 1</td>
        <td>Row 2, Column 2</td>
      </tr>
    </table>
  </body>
</html>
```

Output:

Row 1, Column 1	Row 1, Column 2
Row 2, Column 1	Row 2, Column 2

Here, the border is an attribute of `<table>` tag and it is used to put a border across all the cells. If you do not need a border, then you can use `border="0"`.

Table Heading

HTML tables can have headers for each column or row, or for many columns/rows. Table heading can be defined using <th> tag.

Table Caption

You can add a caption that serves as a heading for the entire table. To add a caption to a table, use the <caption> tag.

Example:

```
<!DOCTYPE html>
<html>
  <head>
    <title>HTML Table Header</title>
  </head>
  <body>
    <table border="1">
      <caption>Monthly Salary</caption>
      <tr>
        <th>Name</th>
        <th>Salary</th>
      </tr>
      <tr>
        <td>Ramesh Raman</td>
        <td>5000</td>
      </tr>
      <tr>
        <td>Shabbir Hussein</td>
        <td>7000</td>
      </tr>
    </table>
  </body>
</html>
```

Output:

Name	Salary
Ramesh Raman	5000
Shabbir Hussein	7000

Cellpadding and Cellspacing Attributes

```
<table border="1" cellpadding="5" cellspacing="5" >
```

The *cellspacing* attribute defines the width of the border, while *cellpadding* attribute represents the distance between cell borders and the content within a cell.

With Padding

hello	hello	hello
hello	hello	hello
hello	hello	hello

With Spacing

hello	hello	hello
hello	hello	hello
hello	hello	hello

Tables Backgrounds

```
<table border="1" bordercolor="green" bgcolor="yellow" background="/images/test.png" >
```

You can set table background using one of the following two ways:

- *bgcolor* attribute - You can set background color for whole table or just for one cell.
- *background* attribute - You can set background image for whole table or just for one cell.
- *bordercolor* attribute- You can also set border color also using bordercolor attribute.

Table Height and Width

```
<table border="1" width="400" height="150">
```

You can set a table width and height using width and height attributes. You can specify table width or height in terms of pixels or in terms of percentage of available screen area.

Tags in Table

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

Chapter 7: CSS

What is CSS?

Cascading Style Sheets (CSS) is used to format the layout of a webpage.

With CSS, you can control the color, font, the size of text, the spacing between elements, how elements are positioned and laid out, what background images or background colors are to be used, different displays for different devices and screen sizes, and much more!

The word cascading means that a style applied to a parent element will also apply to all children elements within the parent. So, if you set the color of the body text to "blue", all headings, paragraphs, and other text elements within the body will also get the same color (unless you specify something else)!

Using CSS

CSS can be added to HTML documents in 3 ways:

- Inline - by using the style attribute inside HTML elements
- Internal - by using a <style> element in the <head> section
- External - by using a <link> element to link to an external CSS file

The most common way to add CSS, is to keep the styles in external CSS files.

Inline CSS

An inline CSS is used to apply a unique style to a single HTML element. An inline CSS uses the style attribute of an HTML element.

Example:

```
<h1 style="color:blue;">A Blue Heading</h1>
```

Internal CSS

An internal CSS is used to define a style for a single HTML page. An internal CSS is defined in the <head> section of an HTML page, within a <style> element.

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


External CSS

An external style sheet is used to define the style for many HTML pages. To use an external style sheet, add a link to it in the <head> section of each HTML page:

home.html

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

styles.css

```
body {
  background-color: powderblue;
}
h1 {
  color: blue;
}
p {
  color: red;
}
```

With an external style sheet, you can change the look of an entire web site, by changing one file!

If some properties have been defined for the same selector (element) in different style sheets, the value from the last read style sheet will be used. Inline style has the highest priority, and will override external and internal styles and browser defaults.

CSS Comments

A CSS comment is placed inside the HTML <style> element, and starts with /* and ends with */:

```
/* This is a single-line comment */
body {
  background-color: powderblue;
}
```

CSS Errors

1. Missing Semicolons
2. Invalid Property Names
3. Invalid Values
4. Unclosed Braces
5. Extra Colons or Braces

CSS Selectors

CSS selectors are used to "find" (or select) the HTML elements you want to style.

The Element Selector

The element selector selects HTML elements based on the element name.

```
p {  
  text-align: center;  
  color: red;  
}
```

The ID Selector

The id selector uses the id attribute of an HTML element to select a specific element. The id of an element is unique within a page, so the id selector is used to select one unique element! To select an element with a specific id, write a hash (#) character, followed by the id of the element.

```
<!DOCTYPE html>  
<html>  
  <head>  
    <style>  
      #para1 {  
        text-align: center;  
        color: red;  
      }  
    </style>  
  </head>  
  <body>  
    <p id="para1">Hello World!</p>  
    <p>This paragraph is not affected by the style.</p>  
  </body>  
</html>
```

The Class Selector

The class selector selects HTML elements with a specific class attribute. To select elements with a specific class, write a period (.) character, followed by the class name.

```
<!DOCTYPE html>  
<html>  
  <head>  
    <style>  
      .center {  
        text-align: center;  
        color: red;  
      }  
    </style>  
  </head>  
  <body>  
    <h1 class="center">Red and center-aligned heading</h1>  
    <p class="center">Red and center-aligned paragraph.</p>  
  </body>  
</html>
```

You can also specify that only specific HTML elements should be affected by a class.

```
P.center {  
  text-align: center;  
  color: red;  
}
```

HTML elements can also refer to more than one class.

```
<p class="center large">This paragraph refers to two classes.</p>
```

The Universal Selector

The universal selector (*) selects all HTML elements on the page.

```
* {  
  text-align: center;  
  color: red;  
}
```

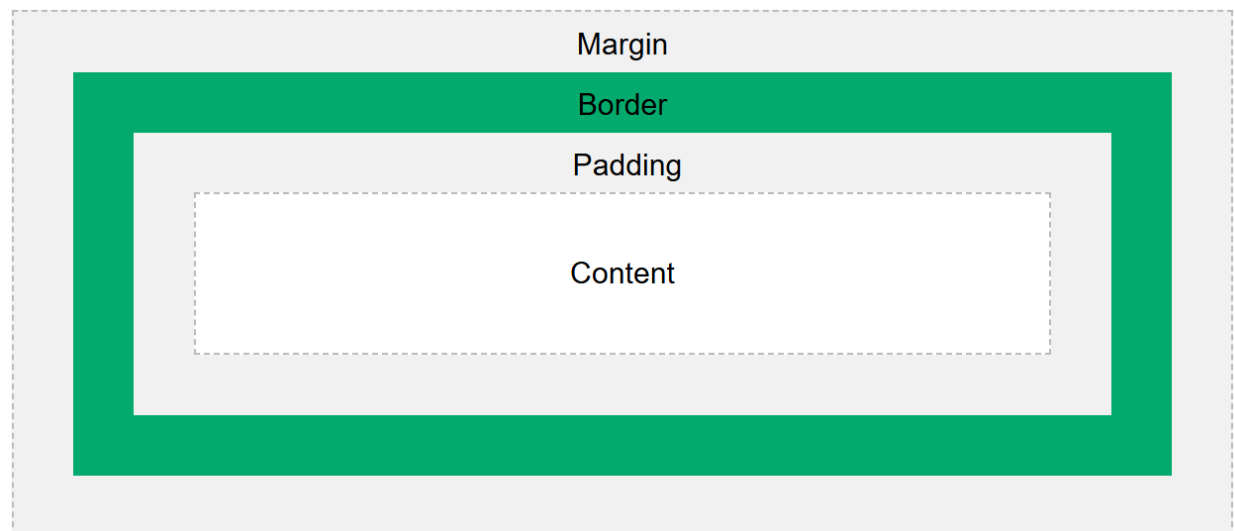
The Grouping Selector

The grouping selector selects all the HTML elements with the same style definitions.

```
h1, h2, p {  
  text-align: center;  
  color: red;  
}
```

Box Model

Box model is essentially a box that wraps around every HTML element.



Topic	Details	Syntax	Value
Opacity / Transparency	Opacity / transparency	opacity: 0.3;	a value from 0.0 - 1.0. The lower value, the more transparent:
Background	Background color	background-color: lightblue;	
	Background image	background-image: url("paper.gif");	
	Repeat an image only horizontally, vertically,	background-repeat: repeat-x;	repeat-x, repeat-y, no-repeat
	Background image should scroll or be fixed	background-attachment: value;	Fixed, scroll
	Shorthand property	background: value1 value2 value3;	
Borders	Specifies what kind of border to display.	border-style: value;	dotted, dashed, solid, double, groove, ridge, inset, outset, none, hidden
	Border sides: styling for individual sides	border-top-style border-right-style border-bottom-style border-left-style	
	Border width	border-width: 5px; border-width: medium; border-width: Top Right Bottom Left;	
	Border color	border-color: red;	
	Rounded borders	border-radius: 5px;	
	Shorthand property	Border: value1 value2 value3; border: 2px solid Tomato;	
Margins	Used to create space around elements, outside of any defined borders.	margin-top: 100px; margin-bottom: 100px; margin-right: 150px; margin-left: 80px; margin: Top Right Bottom Left;	Auto value used to horizontally center the element within its container.

Topic	Details	Syntax	Value
Padding	Used to generate space around an element's content, inside of any defined borders.	padding-top: 50px; padding-right: 30px; padding-bottom: 50px; padding-left: 80px; padding: Top Right Bottom Left;	
Height, Width and Max-width	Height and width properties are used to set the height and width of an element. Max-width property is used to set the maximum width of an element.	height: 200px; width: 50%; max-height: 500px; max-width: 500px; min-height: 200px; min-width: 50%;	
Text	Text color	color: green;	
	Text alignment: horizontal alignment of a text.	text-align: center;	left, right, center, justify
	Text align last: how to align the last line of a text.	text-align-last: right;	Auto, left, right, center, justify, start, end
	Vertical alignment	vertical-align: baseline;	baseline, length/%, sub, super, top, text-top, middle, bottom, text-bottom
	Text transformation	text-transform: uppercase;	none, capitalize, uppercase, lowercase
	Text indentation	text-indent: 50px;	
	Letter spacing	letter-spacing: 5px;	
	Line height	line-height: 0.8;	
	Word spacing	word-spacing: 10px;	
	How white-space inside an element is handled.	white-space: nowrap;	normal, nowrap, pre, pre-line, pre-wrap
	Text shadow	text-shadow: 2px 2px 5px red;	Horizontal and vertical shadow, with color and blur effect, multiple shadows

Topic	Details	Syntax	Value
			with comma-separated list of values.
Fonts	Font-family property	font-family: "Times New Roman", Times, serif;	
	Font style	font-style: normal;	Normal, italic, oblique
	Font weight	font-weight: normal;	normal, bold, bolder, lighter, 100-900
	Font variant	font-variant: normal;	Normal, small-caps
	Font size	font-size: 40px;	xx-small, x-small, small, medium, large, x-large, xx-large
	Shorthand property	Font: value1;	
Links	Links can be styled with many css properties	color: green; background-color: lightblue; font-style: normal; font-weight: normal; font-size: 40px; font-family: "Times New Roman", Times, serif;	
	Styling links depending on state	A:value {}	:link - a normal, unvisited link :visited - a link the user has visited :hover - a link when the user mouses over it :active - a link the moment it is clicked
Lists	Type of list-item marker in a list. (ol)	list-style-type: upper-roman;	upper-roman, lower-roman, lower-alpha, decimal, none
	Type of list-item marker in a list. (ul)	list-style-type: circle;	circle, disc, square, none

Topic	Details	Syntax	Value
	Replace the list-item marker with an image.	<code>list-style-image: url('sqpurple.gif');</code>	
	Specifies the position of the list-item markers	<code>list-style-position: outside;</code>	
		<code>list-style-position: inside;</code>	
	Margin and padding	<code>margin:0;</code> <code>padding:0</code>	
	Shorthand property	<code>list-style: value1;</code>	
Tables	Table Borders	<code>border: 1px solid;</code> <code>border-style: value;</code> <code>border-width: 5px;</code> <code>border-color: red;</code>	
	a single border or be separated	<code>border-collapse: collapse;</code>	Separate, collapse
	Border Spacing	<code>border-spacing: 15px;</code>	
	Width and Height	<code>table{width: 100%;}</code> <code>th{height: 70px;}</code> <code>td{height: auto;}</code>	
	Table Horizontal Alignment	<code>text-align: center</code>	left, right, center
	Table Vertical Alignment	<code>vertical-align: bottom;</code>	top, bottom, middle by default
	Table Padding	<code>padding: 10px;</code>	
	Horizontal Dividers	<code>border-bottom: 1px solid #ddd;</code>	
	Hoverable Table: highlight table rows on mouse over.	<code>tr:hover {background-color: coral;}</code>	
	Table Color	<code>background-color: #04AA6D;</code> <code>color: white;</code>	

Topic	Details	Syntax	Value
	Responsive Tables	overflow-x: auto;	
Positioning	Positioning type for an element.	position: static;	Static, relative, fixed, absolute, sticky
	The z-index property specifies the stack order of positioned elements.	z-index: -1;	