Web Development Manual

1. What is mean by Web Development?

Web development is the building and maintenance of websites; it's the work that happens behind the scenes to make a **website** look great, work fast and perform well with a seamless user experience. **Web** developers, or 'devs', do this by using a variety of coding languages.

2. Languages Used in Web development

- **Hyper Hypertext Markup Language (HTML)**:
    a. It's make up the layout and structure for your website.
- **Cascading Style Sheets (CSS)**:
    a. The developers use this language to make website look good.
    b. To add different styles in the website.
- **JavaScript (Js):**
    a. It is used in many aspects of web development.
    b. It's mainly used to add different motions/effects in a website.

3. What is HTML?

- HTML stands for Hyper Text Markup Language.
- HTML is the standard markup language for creating Web pages.
- HTML describes the structure of a Web page.
- HTML consists of a series of elements.
- HTML elements tell the browser how to display the content.
- HTML elements label pieces of content such as "this is a heading", "this is a paragraph", "this is a link", etc.

4. Learn HTML Using Notepad
- 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).
- We believe in that using a simple text editor is a good way to learn HTML.
- Follow the steps below to create your first web page with Notepad.

✓ **Open Notepad (PC)**

- Windows 8 or later:
- Open the Start Screen (the window symbol at the bottom left on your screen). Type Notepad.
- Windows 7 or earlier:
- Open Start > Programs > Accessories > Notepad

5. HTML Documents

- All HTML documents must start with a document type declaration: <!DOCTYPE html>.
- The HTML document itself begins with <html> and ends with </html>.
- The visible part of the HTML document is between <body> and </body>.

5.1 The <!DOCTYPE> Declaration

- The <!DOCTYPE> declaration represents the document type, and helps browsers to display web pages correctly.
- It must only appear once, at the top of the page (before any HTML tags).
- The <!DOCTYPE> declaration is not case sensitive.
- The <!DOCTYPE> declaration for HTML5 is:

Syntax:

```
<!DOCTYPE html>
```

5.2 The <html > Element

- 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.

5.3 The <body > Element

- The <body> element defines the document's body.
- It has a start tag <body> and an end tag </body>.

Example

```
<!DOCTYPE html>
<html>
<body>
<Here we define our body ie other HTML elements.>
</body>
</html>
```

5.4   HTML Headings

- The `<h1>` element defines a heading.
- It has a start tag `<h1>` and an end tag `</h1>`:

Example

<h1>This is heading 1</h1>

5.5   HTML Paragraphs

- The `<p>` element defines a paragraph.
- It has a start tag `<p>` and an end tag `</p>`:

Example

<p>My first paragraph.</p>

5.6   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>):

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

5.7   HTML is not Case Sensitive

- HTML tags are not case sensitive: `<P>` means the same as `<p>`.
- The HTML standard does not require lowercase tags, but **recommends** you to use lowercase in HTML.

6. HTML Attributes

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

6.1 The href Attribute

- The `<a>` tag defines a hyperlink. The href attribute specifies the URL of the page the link goes to:

  Example

  ```
  <a href="https://www.w3schools.com">Visit W3Schools</a>
  ```

6.2 HTML Link

The HTML `<a>` tag defines a hyperlink. It has the following syntax:

link text

- The most important attribute of the `<a>` element is the href attribute, which indicates the link's destination. The *link text* is the part that will be visible to the reader.
- Clicking on the link text, will send the reader to the specified URL address.

Example

This example shows how to create a link to google.com:

Visit Google.com!

6.3   The src Attribute

- The <img> tag is used to embed an image in an HTML page.
  The src attribute specifies the path to the image to be displayed:

Example

```
<img src="img_girl.jpg">
```

There are two ways to specify the URL in the src attribute:
1. Absolute URL - Links to an external image that is hosted on another website.
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".

Notes: You cannot control external images; it can suddenly be removed or changed.

6.4   The Width & Height Attributes

- The <img> tag should also contain the width and height attributes, which specifies the width and height of the image (in pixels):

Example

```
<img src="img_girl.jpg" width="500" height="600">
```

6.5   The alt Attributes

- The required alt attribute for the <img> tag specifies an alternate text for an image, if the image for some reason cannot be displayed. This can be due to slow connection, or an error in the src attribute, or if the user uses a screen reader.

Example

```
<img src="img_girl.jpg" alt="Girl with a jacket">
```

6.6   The style Attributes

- The HTML style attribute is used to add styles to an element, such as color, font, size, and more.
- Setting the style of an HTML element, can be done with the style attribute.
- The HTML style attribute has the following syntax:

Syntax:

```
<tagname style="property:value;">
```

6.6.1 Background Color

- The CSS background-color property defines the background color for an HTML element.

   Example

   ```html
   <body style="background-color:powderblue;">

   <h1>This is a heading</h1>
   <p>This is a paragraph.</p>

   </body>
   ```

6.6.2 Text Color

- The CSS color property defines the text color for an HTML element:

   Example

   ```html
   <h1 style="color:blue;">This is a heading</h1>
   <p style="color:red;">This is a paragraph.</p>
   ```

6.6.3 Fonts

- The CSS font-family property defines the font to be used for an HTML element:

   Example

   ```html
   <h1 style="font-family:verdana;">This is a heading</h1>
   <p style="font-family:courier;">This is a paragraph.</p>
   ```

6.6.4 Text Alignment

- The CSS text-align property defines the horizontal text alignment for an HTML element:

   Example

   ```html
   <h1 style="text-align:center;">Centered Heading</h1>
   <p style="text-align:center;">Centered paragraph.</p>
   ```

6.7 The lang Attributes

- You should always include the lang attribute inside the <html> tag, to declare the language of the Web page. This is meant to assist search engines and browsers.
- The following example specifies English as the language:

Example

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

- Country codes can also be added to the language code in the lang attribute. So, the first two characters define the language of the HTML page, and the last two characters define the country.
- The following example specifies English as the language and United States as the country:

Example

```html
<!DOCTYPE html>
<html lang="en-US">
<body>
...
</body>
</html>
```

6.8   The title Attributes

- The title attribute defines some extra information about an element.

- The value of the title attribute will be displayed as a tooltip when you mouse over the element:

Example

```html
<p title="I'm a tooltip">This is a paragraph</p>
```

7. HTML Formatting Elements

Formatting elements were designed to display special types of text:

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

8. HTML Images

The HTML <img> tag is used to embed an image in a web page.

Images are not technically inserted into a web page; images are linked to web pages. The <img> tag creates a holding space for the referenced image.

The <img> tag is empty, it contains attributes only, and does not have a closing tag.

The <img> tag has two required attributes:

- src - Specifies the path to the image
- alt - Specifies an alternate text for the image

Syntax:

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

8.1   The src Attribute

The required src attribute specifies the path (URL) to the image.

Note: When a web page loads; it is the browser, at that moment, that gets the image from a web server and inserts it into the page. Therefore, make sure that the image

actually stays in the same spot in relation to the web page, otherwise your visitors will get a broken link icon. The broken link icon and the alt text are shown if the browser cannot find the image.

Example

```
<img src="image_name.jpg" alt="In place of Image text...">
```

8.2 The alt Attribute

The required alt attribute provides an alternate text for an image, if the 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).
The value of the alt attribute should describe the image:

Example

```
<img src="image_name.jpg" alt="In place of Image text...">
```

If a browser cannot find an image, it will display the value of the alt attribute.

8.3 Image Size - Width and Height

- You can use the style attribute to specify the width and height of an image.

Example

```
<img src="img_girl.jpg" alt="abc" style="width:500px;height:600px;">
```

- Alternatively, you can use the width and height attributes without style attribute:

Example

```
<img src="img_girl.jpg" alt="abc" width="500" height="600">
```

- The width and height attributes always define the width and height of the image in pixels.

8.4 Width and Height, or Style?

- The width, height, and style attributes are all valid in HTML.

- However, we suggest using the style attribute. It prevents styles sheets from changing the size of images:

Example

```html
<!DOCTYPE html>
<html>
<head>
<style>
img {
  width: 100%;
}
</style>
</head>
<body>

<img src="html5.gif" alt="HTML5 Icon" width="128" height="128">

<img src="html5.gif" alt="HTML5
Icon" style="width:128px;height:128px;">

</body>
</html>
```

8.5   Image as a Link

To use an image as a link, put the `<img>` tag inside the `<a>` tag:

Example

```html
<a href="default.asp">
  <img src="smiley.gif" alt="HTML
tutorial" style="width:42px;height:42px;">
</a>
```

8.6   Image Float

Use the CSS float property to let the image float to the right or to the left of a text:

Example

```html
<p><img src="smiley.gif" alt="Smileyface" style="float:right; width:42px;
height:42px; ">
The image will float to the right of the text.</p>
```

```
<p><img src="smiley.gif" alt="Smileyface" style="float:left; width:42px;
height:42px; ">
The image will float to the left of the text.</p>
```

8.7   Common Image Formats

Here are the most common image file types, which are supported in all
browsers (Chrome, Edge, Firefox, Safari, Opera):

Abbreviation	File Format	File Extension
APNG	Animated Portable Network Graphics	.apng
GIF	Graphics Interchange Format	.gif
ICO	Microsoft Icon	.ico, .cur
JPEG	Joint Photographic Expert Group image	.jpg, .jpeg, .jfif, .pjpeg, .pjp
PNG	Portable Network Graphics	.png
SVG	Scalable Vector Graphics	.svg

8.8   HTML Background Images

To add a background image on an HTML element, use the HTML style attribute and
the CSS background-image property:

Example

Add a background image on a HTML element:

```
<div style="background-image: url('img_girl.jpg');">
```

- **Background Cover**
  1. If you want the background image to cover the entire element, you can set the
     background-size property to cover.
  2. Also, to make sure the entire element is always covered, set the background-
     attachment property to fixed:
  3. This way, the background image will cover the entire element, with no
     stretching (the image will keep its original proportions):

9. HTML Tables

HTML tables allow web developers to arrange data into rows and columns.

9.1   Define an HTML Table

- The **<table>** tag defines an HTML table.
- Each table row is defined with a **<tr>** tag. Each table header is defined with a **<th>** tag. Each table data/cell is defined with a **<td>** tag.
- By default, the text in **<th>** elements are bold and centered.
- By default, the text in **<td>** elements are regular and left-aligned.

Example:

A simple HTML table:

```
<table style="width:100%">
  <tr>
    <th>Firstname</th>
    <th>Lastname</th>
    <th>Age</th>
  </tr>
  <tr>
    <td>Jill</td>
    <td>Smith</td>
    <td>50</td>
  </tr>
  <tr>
    <td>Eve</td>
    <td>Jackson</td>
    <td>94</td>
  </tr>
</table>
```

Basic HTML Table

Firstname	Lastname	Age
Jill	Smith	50
Eve	Jackson	94
John	Doe	80

9.2　Add a Border

To add a border to a table, use the CSS **border** property:

Example:

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

</style>
</head>
  <body>

<table style="width:100%">
  <tr>
    <th>Firstname</th>
    <th>Lastname</th>
    <th>Age</th>
  </tr>
  <tr>
    <td>Jill</td>
    <td>Smith</td>
    <td>50</td>
  </tr>
  <tr>
    <td>Eve</td>
    <td>Jackson</td>
    <td>94</td>
  </tr>
</table>
</body>
</html>
```

Table With Border

Use the CSS border property to add a border to the table.

Firstname	Lastname	Age
Jill	Smith	50
Eve	Jackson	94
John	Doe	80

9.3 Collapsed Borders

To let the borders collapse into one border, add the CSS **border-collapse** property:

Example:

```html
<html>
<head>
<style>
 table, th, td {
    border: 1px solid black;
    border-collapse: collapse;
 }
 th, td {
    padding: 15px;
 }
</style>
</head>
 <body>

<table style="width:100%">
  <tr>
    <th>Firstname</th>
    <th>Lastname</th>
    <th>Age</th>
  </tr>
  <tr>
    <td>Jill</td>
    <td>Smith</td>
    <td>5`0</td>
  </tr>
  <tr>
    <td>Eve</td>
    <td>Jackson</td>
    <td>94</td>
  </tr>
</table>
</body>
</html>
```

Collapsed Borders

If you want the borders to collapse into one border, add the CSS border-collapse property.

Firstname	Lastname	Age
Jill	Smith	50
Eve	Jackson	94
John	Doe	80

9.4 Add 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:

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

 th, td {
   padding: 15px;
 }

</style>
</head>
 <body>

<table style="width:100%">
  <tr>
    <th>Firstname</th>
    <th>Lastname</th>
    <th>Age</th>
  </tr>
  <tr>
    <td>Jill</td>
    <td>Smith</td>
    <td>5`0</td>
  </tr>
  <tr>
    <td>Eve</td>
    <td>Jackson</td>
    <td>94</td>
  </tr>
</table>
</body>
</html>
```

Cellpadding

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

Firstname	Lastname	Age
Jill	Smith	50
Eve	Jackson	94
John	Doe	80

Tip: Try to change the padding to 5px.

9.5   Left-align Headings

- By default, table headings are bold and centered.
- To left-align the table headings, use the CSS **text-align** property:

Example:

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

th, td {
  padding: 5px;
}

th {
  text-align: left;
}

</style>
</head>
<body>

<table style="width:100%">
  <tr>
    <th>Firstname</th>
    <th>Lastname</th>
```

```html
      <th>Age</th>
    </tr>
    <tr>
      <td>Jill</td>
      <td>Smith</td>
      <td>5`0</td>
    </tr>
    <tr>
      <td>Eve</td>
      <td>Jackson</td>
      <td>94</td>
    </tr>
  </table>
  </body>
  </html>
```

Left-align Headings

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

Firstname	Lastname	Age
Jill	Smith	50
Eve	Jackson	94
John	Doe	80

9.6   Add Border Spacing

- Border spacing specifies the space between the cells.
- To set the border spacing for a table, use the CSS **border-spacing** property:

Example

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

th, td {
  padding: 5px;
}
```

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

      table {
        border-spacing: 15px;
      }

    </style>
    </head>
    <body>

    <table style="width:100%">
      <tr>
        <th>Firstname</th>
        <th>Lastname</th>
        <th>Age</th>
      </tr>
      <tr>
        <td>Jill</td>
        <td>Smith</td>
        <td>5`0</td>
      </tr>
      <tr>
        <td>Eve</td>
        <td>Jackson</td>
        <td>94</td>
      </tr>
    </table>
    </body>

    </html>
```

Border Spacing

Border spacing specifies the space between the cells.

Firstname	Lastname	Age
Jill	Smith	50
Eve	Jackson	94
John	Doe	80

Tip: Try to change the border-spacing to 5px.

9.7 Cell that Span Many Columns

To make a cell span more than one column, use the colspan attribute:

Example:

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

th, td {
  padding: 5px;
}

th {
  text-align: left;
}

table {
  border-spacing: 15px;
}

</style>
</head>
<body>
<table style="width:100%">
  <tr>
    <th>Name</th>
    <th colspan="2">Telephone</th>
  </tr>
  <tr>
    <td>Bill Gates</td>
    <td>55577854</td>
    <td>55577855</td>
  </tr>
</table>
</body>
</html>
```

Cell that spans two columns

To make a cell span more than one column, use the colspan attribute.

Name	Telephone	
Bill Gates	55577854	55577855

9.8   Cell that Span Many Rows

To make a cell span more than one row, use the rowspan attribute:

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

th, td {
   padding: 5px;
}

th {
   text-align: left;
}

table {
   border-spacing: 15px;
}

</style>
</head>
<body>
<table style="width:100%">
   <tr>
      <th>Name</th>
      <th rowspan="2">Telephone</th>
   </tr>
   <tr>
      <td>Bill Gates</td>
      <td>55577854</td>
      <td>55577855</td>
   </tr>
</table>
</body></html>
```

Cell that spans two rows

To make a cell span more than one row, use the rowspan attribute.

Name:	Bill Gates
Telephone:	55577854
	55577855

9.9 Add a Caption

To add a caption to a table, use the **<caption>** tag:

Example:

```
<table style="width:100%">
  <caption>Monthly savings</caption>
  <tr>
    <th>Month</th>
    <th>Savings</th>
  </tr>
  <tr>
    <td>January</td>
    <td>$100</td>
  </tr>
  <tr>
    <td>February</td>
    <td>$50</td>
  </tr>
</table>
```

Table Caption

To add a caption to a table, use the caption tag.

Monthly savings	
Month	**Savings**
January	$100
February	$50

9.10 A Special Style for One Table

To define a special style for one particular table, add an **id** attribute to the table:

Example:

```html
<html>
<head>
<style>


table {
width: 100%;

}
table, th, td {
  border: 1px solid black;
}

th, td {
  padding: 15px;
  text-align: left;
}
#t01 tr:nth-child(even) {
  background-color: #eee;
}
#t01 tr:nth-child(odd) {
  background-color: #fff;
}
#t01 th {
  color: white;
  background-color: black;
}

</style>
</head>
<body>
    <table style="width:100%">
      <tr>
        <th>Firstname</th>
        <th>Lastname</th>
        <th>Age</th>
      </tr>
      <tr>
        <td>Jill</td>
        <td>Smith</td>
        <td>5`0</td>
      </tr>
      <tr>
        <td>Eve</td>
```

```
            <td>Jackson</td>
            <td>94</td>
        </tr>
    </table>
    <table id="t01">
        <tr>
            <th>Firstname</th>
            <th>Lastname</th>
            <th>Age</th>
        </tr>
        <tr>
            <td>Jill</td>
            <td>Smith</td>
            <td>5`0</td>
        </tr>
        <tr>
            <td>Eve</td>
            <td>Jackson</td>
            <td>94</td>
        </tr>
    </table>
    </body>
    </html>
```

Styling Tables

Firstname	Lastname	Age
Jill	Smith	50
Eve	Jackson	94
John	Doe	80

Firstname	Lastname	Age
Jill	Smith	50
Eve	Jackson	94
John	Doe	80

Topic Summary:

- Use the HTML `<table>` element to define a table
- Use the HTML `<tr>` element to define a table row
- Use the HTML `<td>` element to define a table data
- Use the HTML `<th>` element to define a table heading
- Use the HTML `<caption>` element to define a table caption
- Use the CSS `border` property to define a border
- Use the CSS `border-collapse` property to collapse cell borders
- Use the CSS `padding` property to add padding to cells
- Use the CSS `text-align` property to align cell text
- Use the CSS `border-spacing` property to set the spacing between cells
- Use the `colspan` attribute to make a cell span many columns
- Use the `rowspan` attribute to make a cell span many rows
- Use the `id` attribute to uniquely define one table