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# **Intro to Web Development Documentation**

***Release 0.0.1***

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## 1.1 Intro to HTML

### 1.1.1 Introduction

HTML (HyperText Markup Language) is a standard developed over the years to convey information over the internet by using “hyperlinks” - or just links as we know them today. As opposed to a PDF, an HTML page is much more dynamic in nature, letting you browse the web by clicking on links and interacting with the page. Links could take you either to a different location within the current page, or to a different page over the internet.

The last version of HTML is HTML 5.0, which has a LOT more capabilities than what the web originally had in mind. HTML 5 is an extremely comprehensive platform that allows creating a high-end user interface together with the power of CSS and JavaScript.

### 1.1.2 Code sample

```
1  <!DOCTYPE html>
2  <html>
3    <head>
4      <title>My First Web Page</title>
5    </head>
6    <body>
7
8      <h1>My first day as a programmer</h1>
9      <p>It is exciting.</p>
10
11    </body>
12  </html>
```

### 1.1.3 Instruction

1. create a folder in your computer
2. open Visual Studio Code Editor
3. create a file “index.html”
4. copy & paste the code above
5. edit & view in browsers

### 1.1.4 References for HTML Study

1. <https://www.w3schools.com/html/>
2. <https://www.learn-html.org/>

## 1.2 Basic HTML elements

### 1.2.1 HTML Headings

A text header, denoted using the <h1>, <h2>, <h3>, <h4>, <h5>, <h6> tags.

```
1 <!DOCTYPE html>
2 <html>
3   <head>
4     <title>HTML Headings</title>
5   </head>
6   <body>
7
8     <h1>Heading 1</h1>
9     <h2>Heading 2</h2>
10    <h3>Heading 3</h3>
11    <h4>Heading 4</h4>
12    <h5>Heading 5</h5>
13    <h6>Heading 6</h6>
14
15   </body>
16 </html>
```

### 1.2.2 HTML Paragraphs

A paragraph, denoted using the <p> tag.

```
1 <!DOCTYPE html>
2 <html>
3   <head>
4     <title> HTML Paragraphs </title>
5   </head>
6   <body>
7
8     <p>This is a paragraph.</p>
9     <p>This is a paragraph.</p>
10    <p>This is a paragraph.</p>
```

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```
10     </body>
11 </html>
```

## 1.2.3 HTML Formatting Elements

HTML uses elements like `<b>` and `<i>` for formatting output, like bold or italic text. 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>` - Small text
- `<del>` - Deleted text
- `<ins>` - Inserted text
- `<sub>` - Subscript text
- `<sup>` - Superscript text

## 1.2.4 HTML Comment Tags

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

```
1  <!DOCTYPE html>
2  <html>
3    <head>
4      <title> HTML Comment </div>
5    </head>
6    <body>
7      <!-- add heading here -->
8      <h1> Learning how to use comment in html </h1>
9      <!--
10         explain about comment
11         1. single line comment
12         2. multi lines comment
13       -->
14      <p>
15        Single line comment is used when comment stays in single line.
16      </p>
17      <p>
18        Multi lines comment is used when comment take more than one line.
19      </p>
20
21    </body>
22  </html>
```

## 1.2.5 HTML Links

HTML links are hyperlinks. You can click on a link and jump to another document.

```
1  <!DOCTYPE html>
2
3  <html>
4    <head>
5      <title> HTML Links </title>
6    </head>
7    <body>
8
9      <h2>HTML Links</h2>
10     <h3> This link connect to external link </h3>
11     <p>
12       Visit linkedin profile to
13       <a href="https://www.linkedin.com/in/sannminwin/"> learn more </a>
14       about the author.
15     </p>
16
17   </body>
18 </html>
```

```
1  <!DOCTYPE html>
2  <html>
3    <head>
4      <title> HTML Links </title>
5    </head>
6    <body>
7
8      <h2>HTML Links</h2>
9      <h3> This link connect to internal link (link within your website) </h3>
10     <p>
11       Visit homepage
12       <a href="./index.html"> visit home page </a>
13       about the author.
14     </p>
15
16   </body>
17 </html>
```

```
1  <!DOCTYPE html>
2  <html>
3    <head>
4      <title> HTML Links </title>
5    </head>
6    <body>
7
8      <h2>HTML Links</h2>
9      <h3> This link connect to elements within same page</h3>
10     <a href="about"> go to about session </a>
11     <div id="about">
12       This is about session.
13     </div>
14
15   </body>
16 </html>
```



## 1.2.6 HTML Images

In HTML, images are defined with the `<img>` tag. The `<img>` tag is empty, it contains attributes only, and does not have a closing tag. The `src` attribute specifies the URL (web address) of the image.

```

1  <!DOCTYPE html>
2  <html>
3      <head>
4          <title> HTML Images </title>
5      </head>
6      <body>
7
8          <h2>Lorem Ipsum</h2>
9          <h3> This code serves image from the web </h3>
10
11         <p>
12             Lorem ipsum dolor sit amet, consectetur adipiscing elit.
13             Nunc eu augue laoreet urna mollis tincidunt et a nisi.
14             Cras ante purus, egestas sit amet pellentesque eget,
15             ullamcorper nec turpis. Donec in nibh risus.
16             of what the image contains:
17         </p>
18
19         
26
27     </body>
</html>

```

```

1  <!DOCTYPE html>
2  <html>
3      <head>
4          <title> HTML Images </title>
5      </head>
6      <body>
7
8          <h2>Lorem Ipsum</h2>
9          <h3> This code serves image from website folder </h3>
10
11         <p>
12             Lorem ipsum dolor sit amet, consectetur adipiscing elit.
13             Nunc eu augue laoreet urna mollis tincidunt et a nisi.
14             Cras ante purus, egestas sit amet pellentesque eget,
15             ullamcorper nec turpis. Donec in nibh risus.
16             of what the image contains:
17         </p>
18
19         
25
26     </body>
27 </html>
```

## 1.2.7 HTML Table

An HTML table is defined with the `<table>` tag. Each table row is defined with the `<tr>` tag. A table header is defined with the `<th>` tag. By default, table headings are bold and centered. A table data/cell is defined with the `<td>` tag.

```
1  <!DOCTYPE html>
2  <html>
3    <head>
4      <title> HTML Table </title>
5    </head>
6    <body>
7      <h2>Lorem Ipsum</h2>
8      <table style="width:100%">
9        <tr>
10         <th>Firstname</th>
11         <th>Lastname</th>
12         <th>Age</th>
13       </tr>
14       <tr>
15         <td>Jill</td>
16         <td>Smith</td>
17         <td>50</td>
18       </tr>
19       <tr>
20         <td>Eve</td>
21         <td>Jackson</td>
22         <td>94</td>
23       </tr>
24       <tr>
25         <td>John</td>
26         <td>Doe</td>
27         <td>80</td>
28       </tr>
29     </table>
30   </body>
31 </html>
```

## 1.2.8 Unordered HTML List

An unordered list starts with the `<ul>` tag. Each list item starts with the `<li>` tag. The list items will be marked with bullets (small black circles) by default.

```
1  <!DOCTYPE html>
2  <html>
3    <head>
4      <title> HTML List </title>
5    </head>
6    <body>
```

(continues on next page)

(continued from previous page)

```

7      <h2>An unordered HTML list</h2>
8      <h3> Unordered link doesn't include number for items </h3>
9      <ul>
10         <li>Coffee</li>
11         <li>Tea</li>
12         <li>Milk</li>
13     </ul>
14
15     </body>
16 </html>
17

```

## 1.2.9 Ordered HTML List

An ordered list starts with the `<ol>` tag. Each list item starts with the `<li>` tag. The list items will be marked with numbers by default.

```

1  <!DOCTYPE html>
2  <html>
3      <head>
4          <title> HTML List </title>
5      </head>
6      <body>
7
8          <h2>An unordered HTML list</h2>
9          <h3> Ordered link does include number for items </h3>
10         <ol>
11             <li>Coffee</li>
12             <li>Tea</li>
13             <li>Milk</li>
14         </ol>
15
16     </body>
17 </html>

```

## 1.2.10 HTML Block and Inline Elements

Every HTML element has a default display value depending on what type of element it is. The default display value for most elements is block or inline.

### Block-level Elements

A block-level element always starts on a new line and takes up the full width available (stretches out to the left and right as far as it can).

```

1  <!DOCTYPE html>
2  <html>
3      <head>
4          <title> HTML Block Elements </title>
5      </head>
6      <body>
7

```

(continues on next page)

(continued from previous page)

```
8      <div>Hello</div>
9      <div>World</div>
10
11      <p>The DIV element is a block element, and will start on a new line.</p>
12
13      </body>
14  </html>
```

Block level elements in HTML:

<address><article><aside><blockquote><canvas><dd><div><dl><dt><fieldset><figcaption>  
<figure><footer><form><h1><h2><h3><h4><h5><h6><header><hr><li><main><nav><noscript><ol><p><pre>  
tion><table><tfoot><ul><video> <sec-

## Inline Elements

An inline element does not start on a new line and only takes up as much width as necessary.

```
1  <!DOCTYPE html>
2  <html>
3      <head>
4          <title> HTML Inline Elements </title>
5      </head>
6      <body>
7
8          <span>Hello</span>
9          <span>World</span>
10
11      <p>The SPAN element is an inline element, and will not start on a new_
12  ↳line.</p>
13
14      </body>
15  </html>
```

Inline elements in HTML:

<a><abbr><acronym><b><bdo><big><br><button><cite><code><dfn><em><i><img> <in-  
put><kbd><label><map><object><output><q><samp><script><select><small> <span><strong><sub><sup><textarea><time><tt><v-

### 1.2.11 HTML Attributes

Attributes provide additional information about HTML elements.

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

#### The href Attribute

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

```

1  <!DOCTYPE html>
2  <html>
3    <head>
4      <title> href Attribute </title>
5    </head>
6    <body>
7      <h2>The href Attribute</h2>
8      <p>HTML links are defined with the a tag. The link address is specified
9        in the href attribute:</p>
10
11      <a href="https://www.w3schools.com">This is a link</a>
12
13    </body>
14  </html>

```

## The src Attribute

HTML images are defined with the <img> tag. The filename of the image source is specified in the src attribute.

```

1  <!DOCTYPE html>
2  <html>
3    <head>
4      <title> src Attribute </title>
5    </head>
6    <body>
7
8      <h2>The src Attribute</h2>
9      <p>HTML images are defined with the img tag, and the filename of the image
10       source is specified in the src attribute:</p>
11
12      
13
14    </body>
15  </html>

```

## The width and height Attributes

Images in HTML have a set of size attributes, which specifies the width and height of the image.

```

1  <!DOCTYPE html>
2  <html>
3    <head>
4      <title> width and height Attribute </title>
5    </head>
6    <body>
7
8      <h2>Size Attributes</h2>
9      <p>Images in HTML have a set of size attributes, which specifies the_
↪width and
10      height of the image:</p>
11
12      
13
14    </body>
15  </html>

```

## The alt Attribute

The alt attribute specifies an alternative text to be used, when an image cannot be displayed.

```
1  <!DOCTYPE html>
2  <html>
3      <head>
4          <title> alt Attribute </title>
5      </head>
6      <body>
7
8          <h2>The alt Attribute</h2>
9          <p>The alt attribute should reflect the image content, so users who cannot
10             see the image gets an understanding of what the image contains:</p>
11
12             
13
14      </body>
15  </html>
```

### 1.2.12 The HTML Style Attribute

Setting the style of an HTML element, can be done with the style attribute. The HTML style attribute has the following syntax.

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

#### HTML Background Color

The background-color property defines the background color for an HTML element. This example sets the background color for a page to powderblue.

```
1  <!DOCTYPE html>
2  <html>
3      <head>
4          <title> href Background Color </title>
5      </head>
6      <body style="background-color: powderblue;">
7
8          <h1>This is a heading</h1>
9          <p>This is a paragraph.</p>
10
11      </body>
12  </html>
```

#### HTML Text Color

The color property defines the text color for an HTML element.

```
1  <!DOCTYPE html>
2  <html>
3      <head>
4          <title> HTML Text Color</title>
```

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(continued from previous page)

```
5     </head>
6     <body style="background-color:powderblue;">
7
8         <h1 style="color:blue;">This is a heading</h1>
9         <p style="color:red;">This is a paragraph.</p>
10
11     </body>
12 </html>
```

## HTML Fonts

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

```
1  <!DOCTYPE html>
2  <html>
3      <head>
4          <title> HTML Fonts</title>
5      </head>
6      <body style="background-color:powderblue;">
7          <h1 style="font-family:verdana;">This is a heading</h1>
8          <p style="font-family:courier;">This is a paragraph.</p>
9      </body>
10 </html>
```

## HTML Text Size

The font-size property defines the text size for an HTML element.

```
1  <!DOCTYPE html>
2      <head>
3          <title> HTML Text Size</title>
4      </head>
5  <html>
6      <body style="background-color:powderblue;">
7          <h1 style="font-size:300%;">This is a heading</h1>
8          <p style="font-size:32px;">This is a paragraph.</p>
9      </body>
10 </html>
```

## HTML Text Alignment

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

```
1  <!DOCTYPE html>
2  <html>
3      <head>
4          <title> HTML Text Alignment</title>
5      </head>
6      <body style="background-color:powderblue;">
7
8          <h1 style="text-align:center;">Centered Heading</h1>
9          <p style="text-align:center;">Centered paragraph.</p>
```

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```
10     </body>
11 </html>
12
```

### Complete list of CSS properties:

<https://www.w3schools.com/cssref/>

## 1.2.13 Exercises

1. Create a webpage that prints your todo list to the screen.
2. Create a webpage that prints short biography of the person you admired most.
3. Create a webpage that prints a table of your weekly expense (no, date, title, cost).

## 1.3 HTML Form

### 1.3.1 HTML <form>

The HTML <form> element defines a form that is used to collect user input:

```
1  <!DOCTYPE html>
2  <html>
3      <body>
4          <h2>HTML Forms</h2>
5
6          <form action="/action_page.php">
7
8              First name: <br>
9              <input type="text" name="firstname" value="Mickey"> <br>
10
11              Last name: <br>
12              <input type="text" name="lastname" value="Mouse"> <br>
13
14              <input type="submit" value="Submit">
15
16          </form>
17
18          <p>
19              If you click the "Submit" button, the form-data will be sent to a page_
↳ called "/action_page.php".
20          </p>
21
22      </body>
23  </html>
```

### 1.3.2 The <input> Element

The <input> element is the most important form element. The <input> element can be displayed in several ways, depending on the type attribute.



Here are some examples:

Type	Description
<code>&lt;input type="text"&gt;</code>	Defines a one-line text input field
<code>&lt;input type="radio"&gt;</code>	Defines a radio button (for selecting one of many choices)
<code>&lt;input type="submit"&gt;</code>	Defines a submit button (for submitting the form)

## Text Input

`<input type="text">` defines a one-line input field for **text input**:

```

1  <!DOCTYPE html>
2  <html>
3    <head>
4      <title> HTML text Input Element </title>
5    </head>
6    <body>
7
8      <form>
9        First name:<br>
10       <input type="text" name="firstname"><br>
11
12       Last name:<br>
13       <input type="text" name="lastname">
14     </form>
15
16   </body>
17 </html>

```

## Radio Button Input

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

```

1  <!DOCTYPE html>
2  <html>
3    <head>
4      <title> HTML Radio Button Input Element </title>
5    </head>
6    <body>
7
8      <form>
9        <input type="radio" name="gender" value="male" checked> Male<br>
10       <input type="radio" name="gender" value="female"> Female<br>
11       <input type="radio" name="gender" value="other"> Other
12     </form>
13
14   </body>
15 </html>

```

## The Submit Button

`<input type="submit">` defines a button for **submitting** the form data to a **form-handler**. The form-handler is typically a server page with a script for processing input data. The form-handler is specified in the form's **action** attribute:

```
1 <!DOCTYPE html>
2 <html>
3   <head>
4     <title> HTML Radio Button Input Element </title>
5   </head>
6   <body>
7
8     <form action="/action_page.php">
9
10      First name:<br>
11      <input type="text" name="firstname" value="Mickey"><br>
12
13      Last name:<br>
14      <input type="text" name="lastname" value="Mouse"><br>
15
16      <input type="submit" value="Submit">
17
18    </form>
19
20  </body>
21 </html>
```

## 1.4 HTML Form elements

### 1.4.1 The <input> Element

The most important form element is the <input> element. The <input> element can be displayed in several ways, depending on the type attribute.

```
1 <!DOCTYPE html>
2 <html>
3   <body>
4
5     <h2>HTML input Element</h2>
6
7     <form action="/action_page.php">
8       <input name="firstname" type="text">
9     </form>
10
11     <br>
12     <input type="submit">
13
14   </body>
15 </html>
```

### 1.4.2 The <select> Element

The <select> element defines a **drop-down list**:

```
1 <!DOCTYPE html>
2 <html>
3   <body>
```

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```

4      <h2>HTML input Element</h2>
5
6      <form action="/action_page.php">
7
8          <select name="cars">
9              <option value="volvo">Volvo</option>
10             <option value="saab">Saab</option>
11             <option value="fiat">Fiat</option>
12             <option value="audi">Audi</option>
13         </select>
14         <br>
15         <input type="submit">
16
17     </form>
18
19 </body>
20 </html>
21

```

**Note:** The `<option>` element defines an option that can be selected. By default, the first item in the drop-down list is selected. To define a pre-selected option, add the `selected` attribute to the option.

Example:

```

1 <option value="fiat" selected>Fiat</option>

```

**Note: Visible Values:** Use the `size` attribute to specify the number of visible values.

Example:

```

1 <select name="cars" size="3">
2     <option value="volvo">Volvo</option>
3     <option value="saab">Saab</option>
4     <option value="fiat">Fiat</option>
5     <option value="audi">Audi</option>
6 </select>

```

**Note: Allow Multiple Selections:** Use the `multiple` attribute to allow the user to select more than one value.

Example:

```

1 <select name="cars" size="4" multiple>
2     <option value="volvo">Volvo</option>
3     <option value="saab">Saab</option>
4     <option value="fiat">Fiat</option>
5     <option value="audi">Audi</option>
6 </select>

```

### 1.4.3 The <textarea> Element

The <textarea> element defines a multi-line input field (**a text area**)

Example:

```
1  <!DOCTYPE html>
2  <html>
3    <body>
4
5      <h2>Textarea</h2>
6      <p>The textarea element defines a multi-line input field.</p>
7
8      <form action="/action_page.php">
9        <textarea name="message" rows="10" cols="30">The cat was playing in the_
↪ garden.</textarea>
10       <br>
11       <input type="submit">
12     </form>
13
14   </body>
15 </html>
```

---

**Note:**

- The `rows` attribute specifies the visible number of lines in a text area.
  - The `cols` attribute specifies the visible width of a text area.
- 

### 1.4.4 The <button> Element

The <button> element defines a clickable **button**.

```
1  <!DOCTYPE html>
2  <html>
3    <body>
4
5      <h2>The button Element</h2>
6
7      <button type="button" onclick="alert('Hello World!')">Click Me!</button>
8
9    </body>
10 </html>
```

---

**Note:** Always specify the type attribute for the button element. Different browsers may use different default types for the button element.

---

## 1.5 HTML Input Types

Here are the different input types you can use in HTML.

- <input type="button">

- `<input type="checkbox">`
- `<input type="color">`
- `<input type="date">`
- `<input type="datetime-local">`
- `<input type="email">`
- `<input type="file">`
- `<input type="hidden">`
- `<input type="image">`
- `<input type="month">`
- `<input type="number">`
- `<input type="password">`
- `<input type="radio">`
- `<input type="range">`
- `<input type="reset">`
- `<input type="search">`
- `<input type="submit">`
- `<input type="tel">`
- `<input type="text">`
- `<input type="time">`
- `<input type="url">`
- `<input type="week">`

### 1.5.1 Input Type Text

`<input type="text">` defines a **one-line text input field**.

Example:

```

1  <!DOCTYPE html>
2  <html>
3    <body>
4
5    <h2>Text field</h2>
6    <p>The <strong>input type="text"</strong> defines a one-line text input
↪field:</p>
7
8    <form action="/action_page.php">
9
10     First name:<br>
11     <input type="text" name="firstname">
12     <br>
13
14     Last name:<br>
15     <input type="text" name="lastname">

```

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```
16         <br>
17         <input type="submit">
18
19     </form>
20
21     <p>Note that the form itself is not visible.</p>
22     <p>Also note that the default width of a text field is 20 characters.</p>
23
24 </body>
25 </html>
```

## 1.5.2 Input Type Password

`<input type="password">` defines a **password field**.

```
1 <form>
2   User name:<br>
3   <input type="text" name="username"><br>
4
5   User password:<br>
6   <input type="password" name="psw">
7 </form>
```

---

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

---

## 1.5.3 Input Type Submit

`<input type="submit">` defines a button for **submitting** form data to a **form-handler**. The form-handler is typically a server page with a script for processing input data. The form-handler is specified in the form's `action` attribute.

Example:

```
1 <form action="/action_page.php">
2
3   First name:<br>
4   <input type="text" name="firstname" value="Mickey"><br>
5
6   Last name:<br>
7   <input type="text" name="lastname" value="Mouse"><br>
8
9   <input type="submit" value="Submit">
10
11 </form>
```

## 1.5.4 Input Type Reset

`<input type="reset">` defines a **reset button** that will reset all form values to their default values.

```

1 <form action="/action_page.php">
2
3     First name:<br>
4     <input type="text" name="firstname" value="Mickey"><br>
5
6     Last name:<br>
7     <input type="text" name="lastname" value="Mouse"><br>
8
9     <input type="submit" value="Submit">
10
11     <input type="reset">
12
13 </form>

```

**Note:** If you change the input values and then click the **Reset button**, the form-data will be reset to the default values.

### 1.5.5 Input Type Radio

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

```

1 <form>
2
3     <input type="radio" name="gender" value="male" checked> Male<br>
4     <input type="radio" name="gender" value="female"> Female<br>
5     <input type="radio" name="gender" value="other"> Other
6
7 </form>

```

### 1.5.6 Input Type Checkbox

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

```

1 <form>
2
3     <input type="checkbox" name="vehicle1" value="Bike"> I have a bike<br>
4     <input type="checkbox" name="vehicle2" value="Car"> I have a car
5
6 </form>

```

### 1.5.7 Input Type Button

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

```

1 <input type="button" onclick="alert('Hello World!')" value="Click Me!">

```

### 1.5.8 HTML5 Input Types

HTML5 added several new input types:

- color
- date
- datetime-local
- email
- month
- number
- range
- search
- tel
- time
- url
- week

---

**Note:** New input types that are not supported by older web browsers, will behave as `<input type="text">`.

---

```
1 <form>
2
3     <input type="color" name="favcolor">
4     <br>
5
6     Birthday:<br>
7     <input type="date" name="bday">
8     <br>
9
10    Enter a date before 1980-01-01:<br>
11    <input type="date" name="bday" max="1979-12-31">
12    <br>
13
14    Enter a date after 2000-01-01:<br>
15    <input type="date" name="bday" min="2000-01-02">
16    <br>
17
18    Birthday (date and time):<br>
19    <input type="datetime-local" name="bdaytime">
20    <br>
21
22    E-mail:<br>
23    <input type="email" name="email">
24    <br>
25
26    Select a file:<br>
27    <input type="file" name="myFile">
28    <br>
29
30    Birthday (month and year):<br>
31    <input type="month" name="bdaymonth">
32    <br>
33
34    Quantity (between 1 and 5):<br>
```

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```

35     <input type="number" name="quantity" min="1" max="5">
36     <br>
37
38     <input type="range" name="points" min="0" max="10">
39     <br>
40
41     Search Google:<br>
42     <input type="search" name="googlesearch">
43     <br>
44
45     Telephone:<br>
46     <input type="tel" name="phone" pattern="[0-9]{3}-[0-9]{2}-[0-9]{3}">
47     <br>
48
49     Select a time:<br>
50     <input type="time" name="usr_time">
51     <br>
52
53     Add your homepage:<br>
54     <input type="url" name="homepage">
55     <br>
56 </form>

```

## 1.5.9 Input Restrictions

Here is a list of some common input restrictions:

Attribute	Description
disabled	Specifies that an input field should be disabled
max	Specifies the maximum value for an input field
maxlength	Specifies the maximum number of character for an input field
min	Specifies the minimum value for an input field
pattern	Specifies a regular expression to check the input value against
readonly	Specifies that an input field is read only (cannot be changed)
required	Specifies that an input field is required (must be filled out)
size	Specifies the width (in characters) of an input field
step	Specifies the legal number intervals for an input field
value	Specifies the default value for an input field

The following example displays a numeric input field, where you can enter a value from 0 to 100, in steps of 10. The default value is 30:

```

1  <!DOCTYPE html>
2  <html>
3    <body>
4
5    <h2>Numeric Steps</h2>
6    <p>Depending on browser support:<br>Fixed steps will apply in the input field.</p>
7
8    <form action="/action_page.php">
9
10     Quantity:

```

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```
11     <input type="number"  
12         name="quantity"  
13         min="0"  
14         max="100"  
15         step="10"  
16         value="30"  
17     >  
18  
19     <input type="submit">  
20  
21 </form>  
22  
23 <p>  
24     <b>Note:</b>type="number" is not supported in IE9 and earlier.  
25 </p>  
26  
27 </body>  
28 </html>
```

## 1.6 HTML Layout

### 1.6.1 HTML Layout Elements

Websites often display content in multiple columns (like a magazine or newspaper). HTML offers several semantic elements that define the different parts of a web page:

- `<header>` - Defines a header for a document or a section
- `<nav>` - Defines a container for navigation links
- `<section>` - Defines a section in a document
- `<article>` - Defines an independent self-contained article
- `<aside>` - Defines content aside from the content (like a sidebar)
- `<footer>` - Defines a footer for a document or a section
- `<details>` - Defines additional details
- `<summary>` - Defines a heading for the `<details>` element

Fig. 1: Fig. Semantic HTML markup

### 1.6.2 HTML Layout Techniques

There are five different ways to create multicolumn layouts. Each way has its pros and cons:

- HTML tables (not recommended)
- CSS float property
- CSS flexbox
- CSS framework

- CSS grid

## HTML Tables

The `<table>` element was not designed to be a layout tool! The purpose of the `<table>` element is to display tabular data. So, do not use tables for your page layout! They will bring a mess into your code. And imagine how hard it will be to redesign your site after a couple of months.

[learn more about HTML Tables](#)

## CSS Floats

It is common to do entire web layouts using the CSS float property. Float is easy to learn - you just need to remember how the float and clear properties work. **Disadvantages:** Floating elements are tied to the document flow, which may harm the flexibility.

[learn more about CSS Floats](#)

## CSS Flexbox

Use of flexbox ensures that elements behave predictably when the page layout must accommodate different screen sizes and different display devices. **Disadvantages:** Does not work in IE10 and earlier.

[learn more about CSS Flexbox](#)

## CSS Grid View

The CSS Grid Layout Module offers a grid-based layout system, with rows and columns, making it easier to design web pages without having to use floats and positioning. **Disadvantages:** Does not work in IE nor in Edge 15 and earlier.

[learn more about CSS Grid View](#)

Example: HTML layout with CSS float

```
1 <!DOCTYPE html>
2 <html lang="en">
3   <head>
4     <title>CSS Template</title>
5     <meta charset="utf-8">
6     <meta name="viewport" content="width=device-width, initial-scale=1">
7     <style>
8       * {
9         box-sizing: border-box;
10      }
11
12      body {
13        font-family: Arial, Helvetica, sans-serif;
14      }
15
16      /* Style the header */
17      header {
18        background-color: #666;
19        padding: 30px;
20        text-align: center;
```

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```

21         font-size: 35px;
22         color: white;
23     }
24
25     /* Create two columns/boxes that floats next to each other */
26     nav {
27         float: left;
28         width: 30%;
29         height: 300px; /* only for demonstration, should be removed */
30         background: #ccc;
31         padding: 20px;
32     }
33
34     /* Style the list inside the menu */
35     nav ul {
36         list-style-type: none;
37         padding: 0;
38     }
39
40     article {
41         float: left;
42         padding: 20px;
43         width: 70%;
44         background-color: #f1f1f1;
45         height: 300px; /* only for demonstration, should be removed */
46     }
47
48     /* Clear floats after the columns */
49     section:after {
50         content: "";
51         display: table;
52         clear: both;
53     }
54
55     /* Style the footer */
56     footer {
57         background-color: #777;
58         padding: 10px;
59         text-align: center;
60         color: white;
61     }
62
63     /* Responsive layout - makes the two columns/boxes stack on top of each
64     ↳ other instead of next to each other, on small screens */
65     @media (max-width: 600px) {
66         nav, article {
67             width: 100%;
68             height: auto;
69         }
70     }
71 </style>
72 </head>
73 <body>
74
75     <h2>CSS Layout Float</h2>
76     <p>
77         In this example, we have created a header, two columns/boxes and a
78         ↳ footer. On smaller screens,
79         (continues on next page)

```

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```
77         the columns will stack on top of each other.
78     </p>
79     <p>
80         Resize the browser window to see the responsive effect (you will learn
81         ↪more about this in our
82         next chapter - HTML Responsive.)
83     </p>
84
85     <header>
86     <h2>Cities</h2>
87     </header>
88
89     <section>
90         <nav>
91             <ul>
92                 <li><a href="#">London</a></li>
93                 <li><a href="#">Paris</a></li>
94                 <li><a href="#">Tokyo</a></li>
95             </ul>
96         </nav>
97
98         <article>
99             <h1>London</h1>
100             <p>London is the capital city of England. It is the most populous
101             ↪city in the United Kingdom, with a metropolitan area of over 13 million
102             ↪inhabitants.</p>
103             <p>Standing on the River Thames, London has been a major settlement
104             ↪for two millennia, its history going back to its founding by the Romans, who named
105             ↪it Londinium.</p>
106         </article>
107     </section>
108
109     <footer>
110     <p>Footer</p>
111     </footer>
112
113 </body>
114 </html>
```



## 2.1 Intro to CSS

### 2.1.1 CSS BOX Model

All HTML elements can be considered as boxes. In CSS, the term “box model” is used when talking about design and layout. The CSS box model is essentially a box that wraps around every HTML element. It consists of: margins, borders, padding, and the actual content. The image below illustrates the box model:

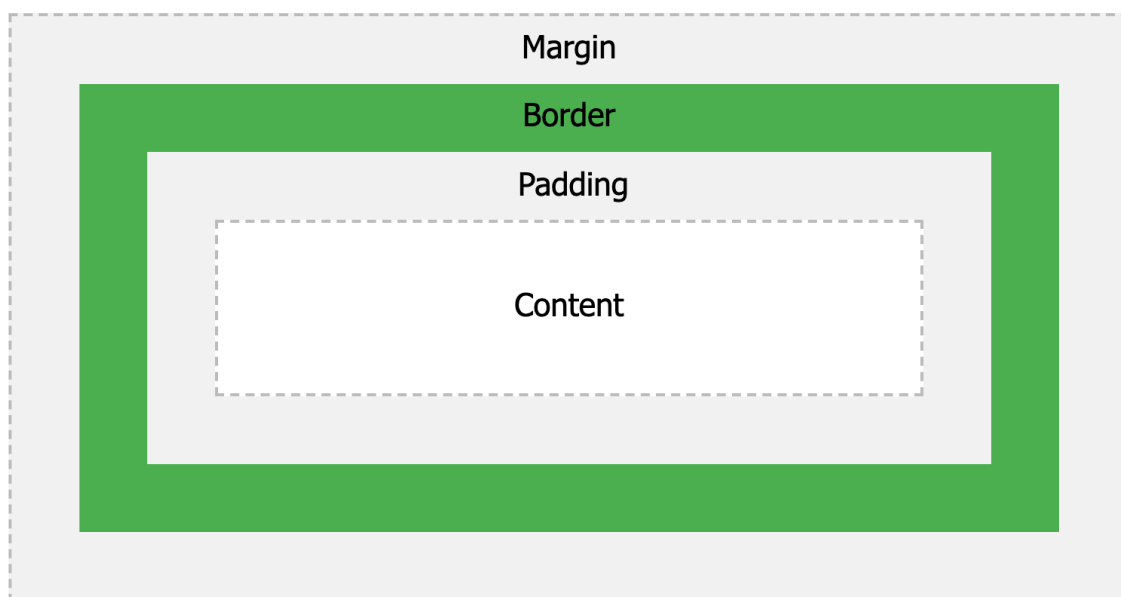


Fig. 1: Fig. CSS box model

Explanation of the different parts:

- Content - The content of the box, where text and images appear
- Padding - Clears an area around the content. The padding is transparent
- Border - A border that goes around the padding and content
- Margin - Clears an area outside the border. The margin is transparent

The box model allows us to add a border around elements, and to define space between elements.

### Exercise

1. Calculate total width and height of the element from given markup

```
1  <!DOCTYPE html>
2  <html>
3    <head>
4      <style>
5        div {
6          background-color: lightgrey;
7          width: 300px;
8          border: 15px solid green;
9          padding: 50px;
10         margin: 20px;
11       }
12     </style>
13   </head>
14   <body>
15
16     <h2>Demonstrating the Box Model</h2>
17
18     <p>
19       The CSS box model is essentially a box that wraps around every HTML
↪element.
20       It consists of: borders, padding, margins, and the actual content.
21     </p>
22
23     <div>
24       This text is the content of the box. We have added a 50px padding, 20px
↪margin
25       and a 15px green border. Ut enim ad minim veniam, quis nostrud
↪exercitation ullamco
26       laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor
↪in reprehenderit
27       in voluptate velit esse cillum dolore eu fugiat nulla pariatur.
↪Excepteur sint occaecat
28       cupidatat non proident, sunt in culpa qui officia deserunt mollit anim
↪id est laborum.
29     </div>
30
31   </body>
32 </html>
```



## CHAPTER 3

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### Indices and tables

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- `genindex`
- `modindex`
- `search`