

# Web Technologies

**WWW, HTML, CSS**

## WWW, HTML, CSS

### Syllabus

- ☒ Introduction: Concept of WWW, Internet and WWW, HTTP Protocol: Request and response, Web browser and Web servers, Features of Web 2.0.
- ☒ Web Design: Concepts of effective web design, Introduction to CSS, CSS Selectors and Properties, CSS Box Model, Styling Text and Fonts, Colors and Backgrounds, CSS Layout Techniques, Responsive Design.
- ☒ JavaScript : Client side scripting with JavaScript, variables, functions, conditions, loops and repetition, Pop up boxes, Advance JavaScript: JavaScript and objects, JavaScript own objects, the DOM and web browser environments, Manipulation using DOM, forms and validations.

## WWW, HTML, CSS

### Syllabus

- ☒ DHTML : Combining HTML, CSS and JavaScript, Events and buttons.
- ☒ PHP : Introduction and basic syntax of PHP, decision and looping with examples, PHP and HTML, Arrays, Functions, Browser control and detection, string, Form processing, Files, Advance Features: Cookies and Sessions, Object Oriented Programming with PHP.
- ☒ PHP and MySQL : Basic commands with PHP examples, Connection to server, creating database, selecting a database, listing database, listing table names, creating a table, inserting data, altering tables, queries, deleting database, deleting data and tables, PHP MyAdmin and database bugs.

## WWW, HTML, CSS

### What is the Internet?

A global system of interconnected computers, using a standardized Internet Protocol suite for communication and sharing information is called the Internet.



## WWW, HTML, CSS

What is the World Wide Web?

World Wide Web or 'www' is a collection of webpages which can easily be published on the Internet and read by millions of its users.



## WWW, HTML, CSS

### What is ISP?

ISP stands for Internet Service Provider. This helps in providing direct access for using the internet from your office or home, connected through landlines. With the introduction of Wi-fi and broadband, connecting to the Internet has become wireless.

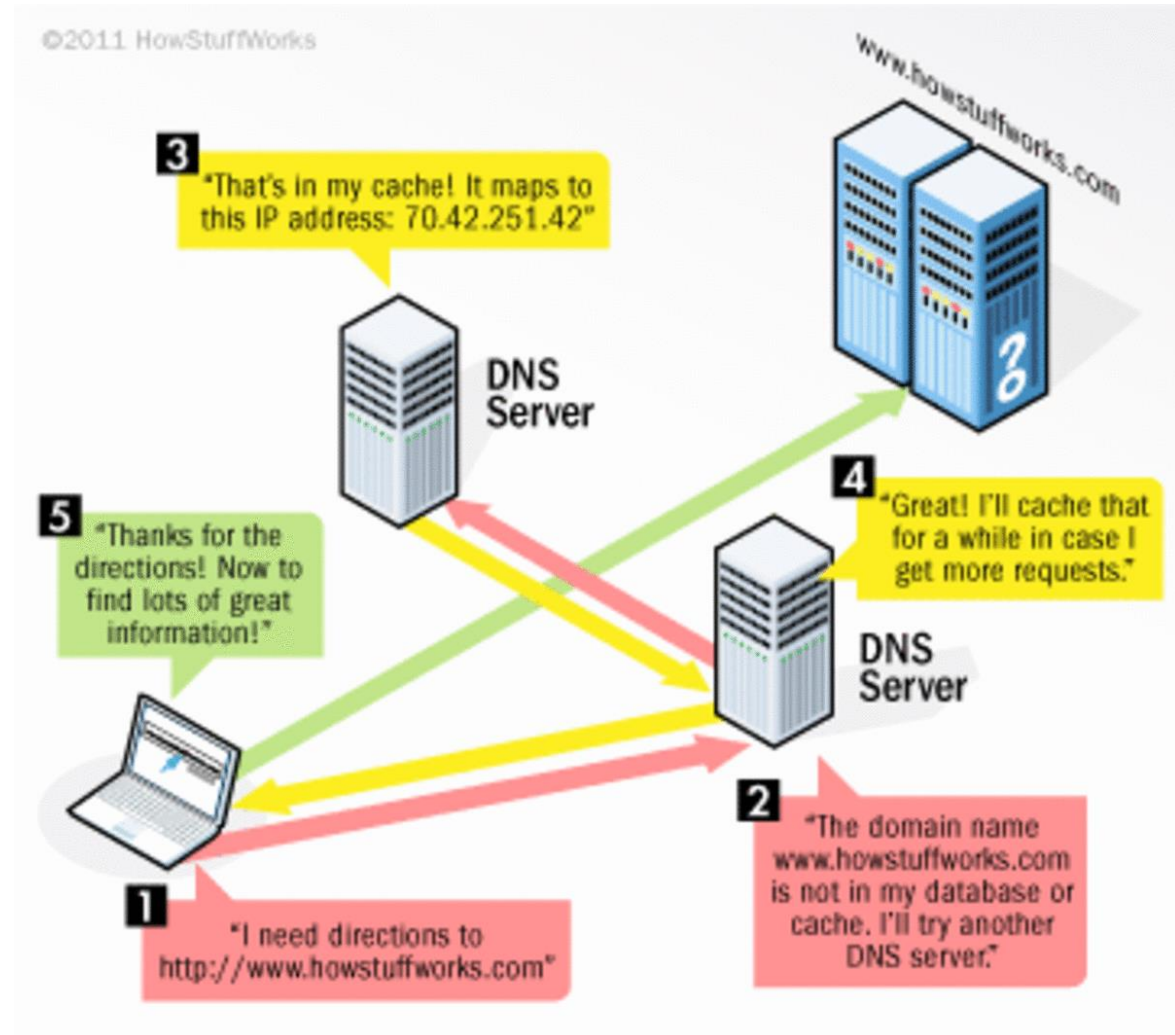
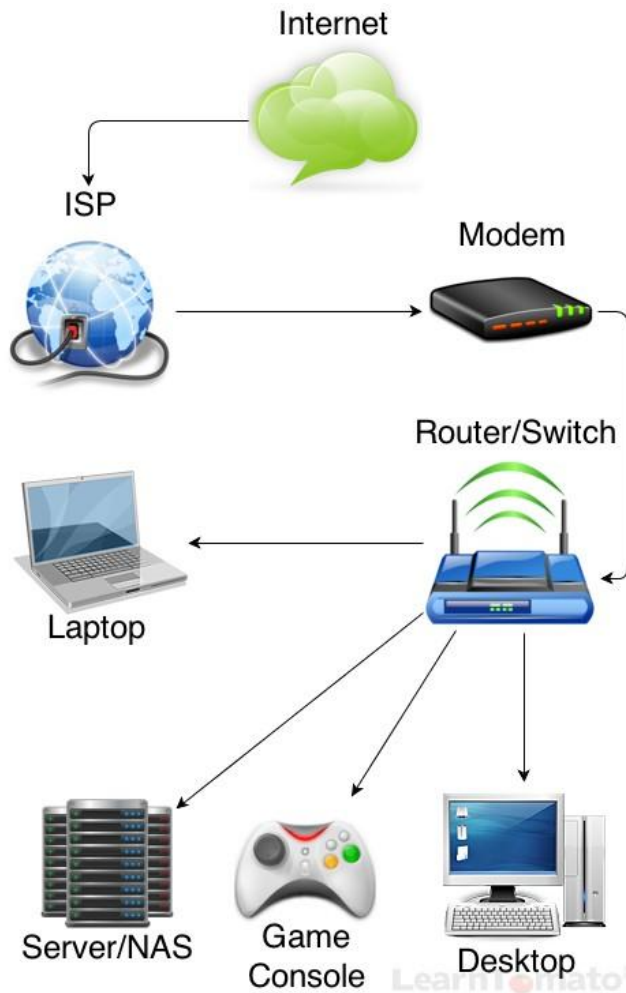
## WWW, HTML, CSS

What is an IP address?

The Internet Protocol address is a numerical identification code assigned for any device connected to a network. It acts as an identification interface for Internet users.

## WWW, HTML, CSS

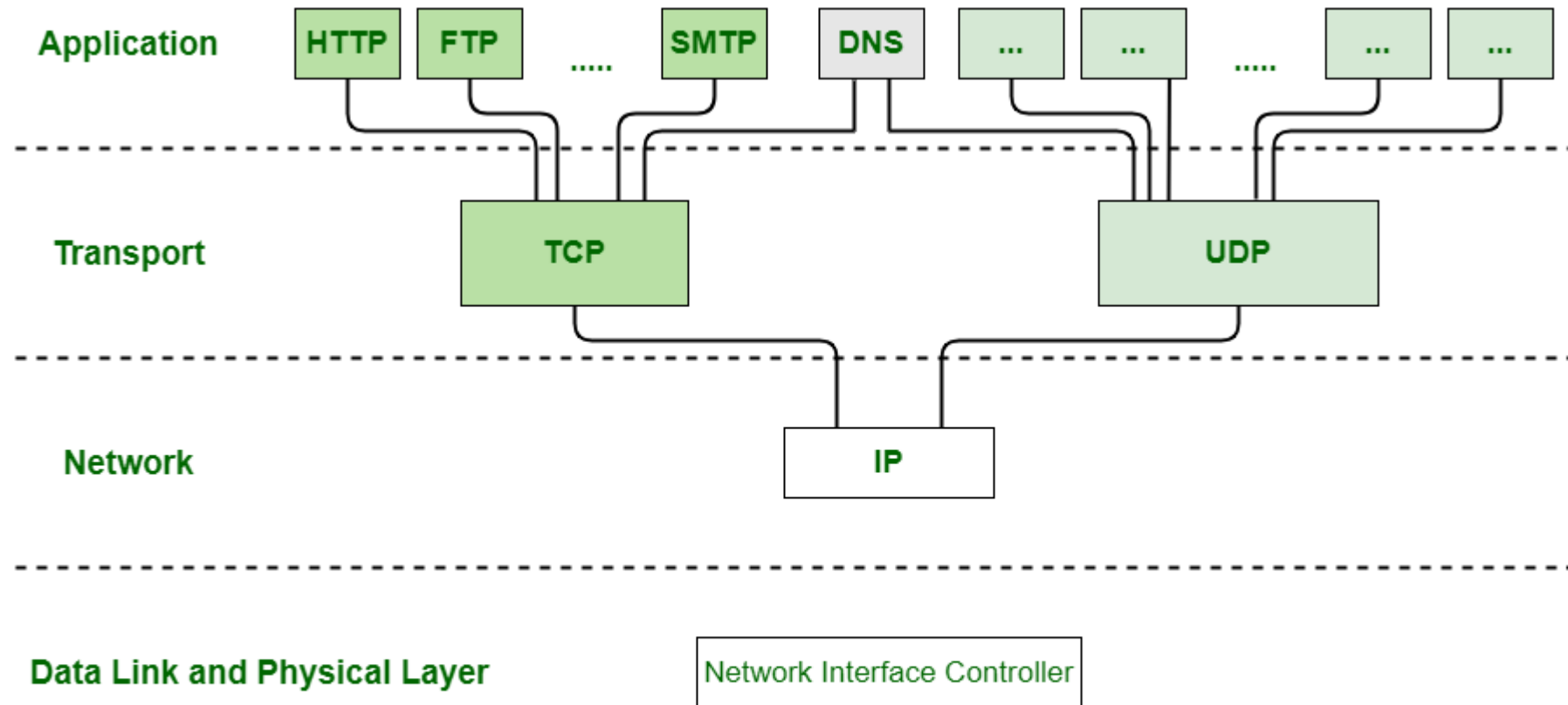
### How Internet Works





## WWW, HTML, CSS

### Internet Protocols



Protocol Hierarchy, modified according to (BADACH et al. 2003)

## WWW, HTML, CSS

### Internet Protocols

#### IP

The Internet Protocol. This protocol is almost never used directly by applications. It provides the basic packet delivery and routing infrastructure of the Internet. Much like the phone company's switching centers or the Post Office's trucks, it is not of much day-to-day interest to the regular user (or programmer). There are two versions of this protocol in use:

- **IPv4**

The original version of the Internet Protocol, with 32-bit addresses, on which most of the current Internet is based.

- **IPv6**

The “next generation” of the Internet Protocol, with 128-bit addresses. This protocol is in wide use in certain parts of the world, but has not yet replaced IPv4.2

## WWW, HTML, CSS

### Internet Protocols

#### UDP

UDP is the Datagram oriented protocol. This is because there is no overhead for opening a connection, maintaining a connection, and terminating a connection. UDP is efficient for broadcast and multicast type of network transmission.

#### TCP

TCP is a connection-oriented protocol. Connection-orientation means that the communicating devices should establish a connection before transmitting data and should close the connection after transmitting the data.

All other user-level protocols use either TCP or UDP to do their basic communications. Examples are SMTP (Simple Mail Transfer Protocol), FTP (File Transfer Protocol), and HTTP (HyperText Transfer Protocol).

## WWW, HTML, CSS

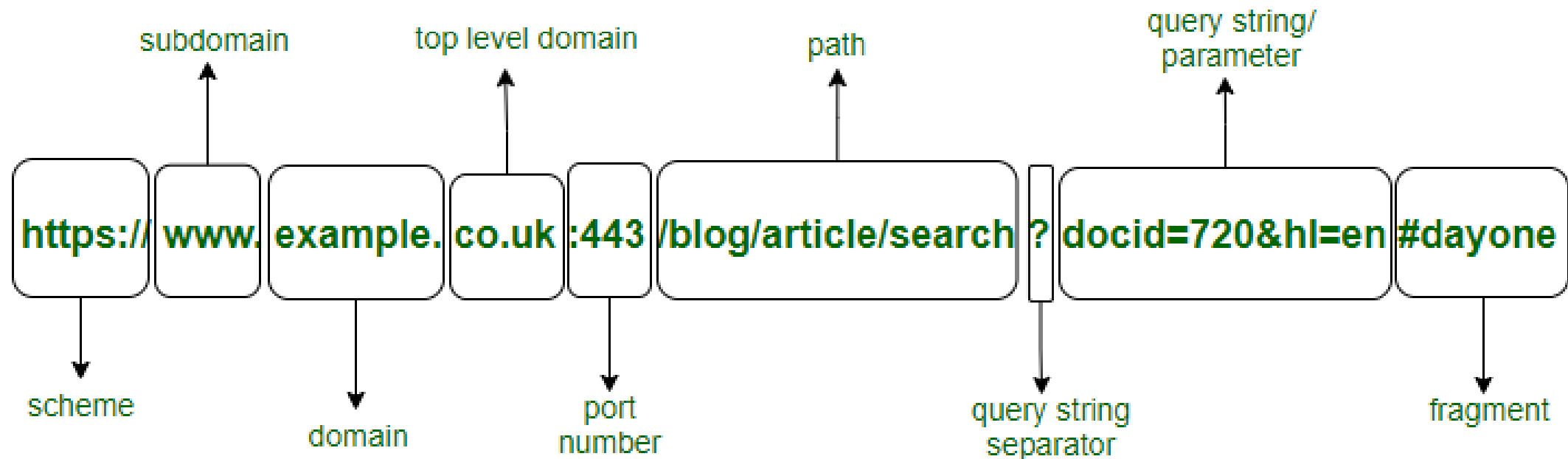
### URL: Uniform Resource Locator

If your website is structured like a house, then your website's URL is like that house's address. It defines where your website lives online, similar to how your home address determines where you live in a neighborhood, helping your visitors easily find your site. URLs also help Google understand what your website's pages are about.

## WWW, HTML, CSS

URL: Uniform Resource Locator

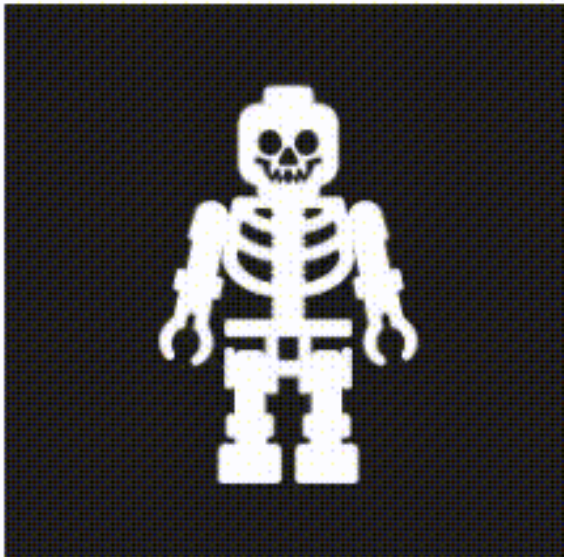
URL : <https://www.example.co.uk:443/blog/article/search?docid=720&hl=en#dayone>



## WWW, HTML, CSS

### HTML vs CSS vs Scripting

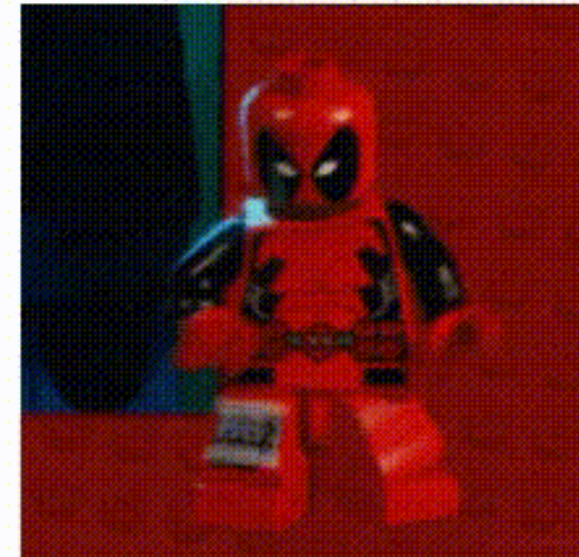
**HTML**  
structure



**CSS**  
presentation/appearance



**JavaScript**  
dynamism/action

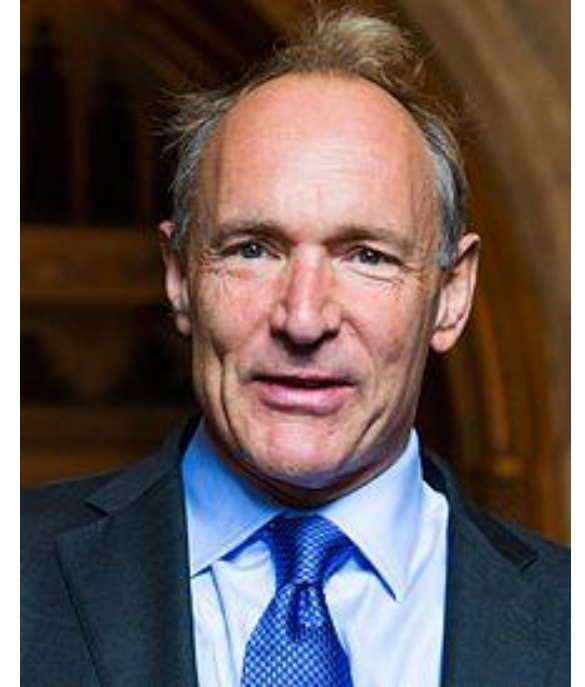


## WWW, HTML, CSS

### History of HTML

**Sir Timothy John Berners-Lee AKA Tim Berners-Lee** or **TimBL** English computer scientist best known as the inventor of the World Wide Web.

HTML was created by Sir Tim Berners-Lee in late 1991 but was not released officially, published in 1995 as HTML 2.0. HTML 4.01 was published in late 1999 and was a major version of HTML. Which includes HTML tags and plain text.



## WWW, HTML, CSS

### History of HTML

- HTML 1.0 was released in 1993 with the intention of sharing information that can be readable and accessible via web browsers. But not many of the developers were involved in creating websites. So the language was also not growing.
- Then comes the **HTML 2.0**, published in 1995, which contains all the features of HTML 1.0 along with that few additional features, which remained as the standard markup language for designing and creating websites until January 1997 and refined various core features of HTML.
- Then comes the **HTML 3.0**, where Dave Raggett who introduced a fresh paper or draft on HTML. It included improved new features of HTML, giving more powerful characteristics for webmasters in designing web pages. But these powerful features of new HTML slowed down the browser in applying further improvements.
- Then comes **HTML 4.01**, which is widely used and was a successful version of HTML before HTML 5.0, which is currently released and used worldwide. HTML 5 can be said for an extended version of HTML 4.01, which was published in the year 2012.



## WWW, HTML, CSS

### What is Hypertext

"Hypertext is text which is not constrained to be linear."

What does this mean?

- **Linear text:** You read from start to end in a fixed sequence (like a novel or printed book).
- **Hypertext:** You can **jump** to different parts of the content via links — there's **no fixed reading path**.

## WWW, HTML, CSS

### What is Hypertext

Linear Text (like a textbook):

1. Introduction
2. The Sun
3. Mercury
4. Venus
5. Earth
6. Mars

...

You must read in order from 1 to 6.

## WWW, HTML, CSS

### What is Hypertext

Hypertext (like a webpage):

Welcome to the Solar System!

Click on a planet to learn more:

 [The Sun] |  [Saturn] |  [Earth] |  [Mars]

If you click "Mars", you jump directly to the Mars section.

No need to read the intro or the Sun if you don't want to.  
This is nonlinear reading, you choose the path.  
be linear.

## WWW, HTML, CSS

### What is Hypertext

**Linear text:** Fixed sequence. One direction only.

**Hypertext:** Offers links (hyperlinks) to other content.

Result: Hypertext allows nonlinear navigation, it's not constrained to be linear.

## WWW, HTML, CSS

### What is Hypertext

**Hypertext is text which is not constrained to be linear.**

Hypertext is text which contains links to other texts. The term was coined by Ted Nelson around 1965. Nowadays it includes other media apart from text and is sometimes called hypermedia.

Hypertext is text displayed on a computer display or other electronic devices with references to other text that the reader can immediately access.

Hypertext documents are interconnected by hyperlinks, which are typically activated by a mouse click, keypress set, or screen touch.

## WWW, HTML, CSS

### What is HTML

HTML (Hypertext Markup Language) is a markup language made up of tags that define the content of a document which includes HTML tags and plain text.

What is a markup language?

In computer text processing, a markup language is a system for annotating a document in a way that is visually distinguishable from the content. It is used only to format the text, so that when the document is processed for display, the markup language does not appear.

```
<!DOCTYPE html>
<html>
<head>
<title>Page Title</title>
</head>
<body>

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

</body>
</html>
```

## My First Heading

My first paragraph.

## WWW, HTML, CSS

### What is HTML



Hypertext Markup Language is a specification language for document layout and hyperlinks. HTML is a markup language that is used to build a document's layout and hyperlinks.

- ✓ Tags and attributes make up HTML
- ✓ HTML documents combine HTML tags with plain text to create a document
- ✓ HTML tags are commonly used to refer to markup tags
- ✓ Tag names are surrounded by angle brackets, such as `<html>`
- ✓ Opening tags and closing tags are other terms for start and end tags
- ✓ There are two types of HTML Tags which are used that are Paired Tags (Open and Close Tags) and Unpaired Tags (Singular Tag)
- ✓ Empty HTML elements are those that have no content such as `<br>`

## WWW, HTML, CSS

### 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>`.



## WWW, HTML, CSS

### The <!DOCTYPE> Declaration

The <!DOCTYPE> declaration represents the document type, and helps browsers to display web pages correctly. The DOCTYPE declaration is an instruction to the web browser about what version of HTML the page is written in. This ensures that the web page is parsed the same way by different web browsers.

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:

```
<!DOCTYPE html>
```

## WWW, HTML, CSS

### HTML Tags

HTML Tags can be of two types:

1. Paired Tags
2. Singular Tags (Unpaired)

## WWW, HTML, CSS

### HTML Attributes

HTML attributes provide additional information about HTML elements:

- 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"

```

```

## WWW, HTML, CSS

### Creating HTML Document

<html> tag

<head> tag

<body> tag

## WWW, HTML, CSS

### HTML Headings

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

Example

```
<h1>This is heading 1</h1>
```

```
<h2>This is heading 2</h2>
```

```
<h3>This is heading 3</h3>
```

## WWW, HTML, CSS

### HTML Paragraphs

HTML paragraphs are defined with the `<p>` tag

Example

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

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

## WWW, HTML, CSS

### HTML Links

HTML links are defined with the `<a>` tag:

Example

```
<a href="https://www.w3schools.com">This is a link</a>
```

Attribute name	Values	Description
download		Directs the browser to download the linked resource rather than opening it.
target	<code>_blank</code> <code>_parent</code> <code>_self</code> <code>_top</code> frame name	Specifies the context in which the linked resource will open.

## WWW, HTML, CSS

### HTML Links

Attribute name	Values	Description
title	text	Defines the title of a link, which appears to the user as a tooltip.
href	url	Specifies the linked document, resource, or location.
name		
id		



## WWW, HTML, CSS

### HTML Images

HTML images are defined with the `<img>` tag.

The source file (`src`), alternative text (`alt`), width, and height are provided as attributes:

Example

```

```

Attribute	Value	Description
alt	<i>text</i>	Specifies an alternate text for an image
height	<i>pixels</i>	Specifies the height of an image
src	<i>URL</i>	Specifies the path to the image
width	<i>pixels</i>	Specifies the width of an image

## WWW, HTML, CSS

### Image Maps

The HTML `<map>` tag defines an image map. An image map is an image with clickable areas. The areas are defined with one or more `<area>` tags.

#### The Image

The image is inserted using the `<img>` tag. The only difference from other images is that you must add a `usemap` attribute:

```

```

## WWW, HTML, CSS

### Image Maps

```

```

```
<map name="workmap">
```

```
  <area shape="rect" coords="34,44,270,350" alt="Computer" href="computer.htm">
```

```
  <area shape="circle" coords="337,300,44" alt="Coffee" href="coffee.htm">
```

```
  <area shape="poly"  
    coords="140,121,181,116,204,160,204,222,191,270,140,329,85,355,58,352,37,322,40,259,103,161,128,147" href="croissant.htm">
```

```
</map>
```

## WWW, HTML, CSS

### HTML Tables

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

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.

*Note: The `<td>` elements are the data containers of the table.*

*They can contain all sorts of HTML elements; text, images, lists, other tables, etc.*

## WWW, HTML, CSS

### HTML Tables

An HTML table may also include `<caption>`, `<colgroup>`, `<thead>`, `<tfoot>`, and `<tbody>` elements.

The `<thead>` tag is used to group header content in an HTML table.

The `<thead>` element is used in conjunction with the `<tbody>` and `<tfoot>` elements to specify each part of a table (header, body, footer).

Browsers can use these elements to enable scrolling of the table body independently of the header and footer. Also, when printing a large table that spans multiple pages, these elements can enable the table header and footer to be printed at the top and bottom of each page.

## WWW, HTML, CSS

### HTML Tables

*Note: The `<thead>` element must have one or more `<tr>` tags inside.*

The `<thead>` tag must be used in the following context: As a child of a `<table>` element, after any `<caption>` and `<colgroup>` elements, and before any `<tbody>`, `<tfoot>`, and `<tr>` elements.

*Tip: The `<thead>`, `<tbody>`, and `<tfoot>` elements will not affect the layout of the table by default. However, you can use CSS to style these elements*

## WWW, HTML, CSS

### HTML Tables

Example

```
<table border="1" width="300px">
  <tr>
    <th>Month</th>
    <th>Savings</th>
  </tr>
  <tr>
    <td>January</td>
    <td>$100</td>
  </tr>
  <tr>
    <td>February</td>
    <td>$80</td>
  </tr>
</table>
```

## WWW, HTML, CSS

### HTML Tables

#### HTML <td> align Attribute

The HTML <td> align attribute is used to set the horizontal alignment of text content. It uses the align attribute in HTML <td> to horizontally align text content within a table cell and it sets “left,” “center,” or “right” to control horizontal alignment.

Note: The <td> align attribute is not supported by HTML5 instead uses CSS.

Syntax:

```
<td align ="left | right | center | justify ">
```



## WWW, HTML, CSS

### HTML Tables

#### HTML <td> valign Attribute

The HTML <td> valign attribute specifies the vertical alignment of content within a table cell. It can accept values such as top, middle, bottom, or baseline to control the positioning of content. If not explicitly set, the content in a table cell is vertically aligned to the middle by default.

Note: The <td> valign Attribute is not supported by HTML5.

Syntax:

```
<td valign="top | middle | bottom ">
```

## WWW, HTML, CSS

### HTML Tables

#### How to merge table cells in HTML?

We use the **colspan** and **rowspan** attribute, to merge cells in HTML. The rowspan attribute is for the number of rows a cell should merge, whereas the colspan attribute is for the number of columns a cell should merge.

The attribute should be placed inside the <td> tag.

#### Syntax

Following is the syntax to merge table cells in HTML.

```
<td rowspan="2">cell data</td>
```

```
<table style="width: 100%">
  <tr>
    <th>First Name </th>
    <th>Job role</th>
  </tr>
  <tr>
    <td>Tharun</td>
    <td rowspan="2">Content writer</td>
  </tr>
  <tr>
    <td>Akshaj</td>
  </tr>
</table>
```

## WWW, HTML, CSS

### HTML Tables

#### How to merge table cells in HTML?

We can merge the column cells of the table by using below syntax.

Syntax

For colspan we use below syntax.

```
<td colspan="2">cell data</td>
```

```
<table style="width: 100%">
  <tr>
    <th >First Name </th>
    <th>Last Name</th>
    <th>Job role</th>
  </tr>
  <tr>
    <td colspan="2" >Tharun chandra</td>
    <td >Content writer</td>
  </tr>
  <tr>
    <td colspan="2">Akshaj Vank</td>
    <td >Content writer</td>
  </tr>
</table>
```

## WWW, HTML, CSS

### HTML Multimedia

Multimedia on the web is sound, music, videos, movies, and animations.

#### **Multimedia Formats**

Multimedia elements (like audio or video) are stored in media files.

The most common way to discover the type of a file, is to look at the file extension.

Multimedia files have formats and different extensions like: .wav, .mp3, .mp4, .mpg, .wmv, and .avi.

### Common Video Formats

Format	File	Description
MPEG	.mpg .mpeg	MPEG. Developed by the Moving Pictures Expert Group. The first popular video format on the web. Not supported anymore in HTML.
AVI	.avi	AVI (Audio Video Interleave). Developed by Microsoft. Commonly used in video cameras and TV hardware. Plays well on Windows computers, but not in web browsers.
WMV	.wmv	WMV (Windows Media Video). Developed by Microsoft. Commonly used in video cameras and TV hardware. Plays well on Windows computers, but not in web browsers.
QuickTime	.mov	QuickTime. Developed by Apple. Commonly used in video cameras and TV hardware. Plays well on Apple computers, but not in web browsers.
RealVideo	.rm .ram	RealVideo. Developed by Real Media to allow video streaming with low bandwidths. Does not play in web browsers.
Flash	.swf .flv	Flash. Developed by Macromedia. Often requires an extra component (plug-in) to play in web browsers.
Ogg	.ogg	Theora Ogg. Developed by the Xiph.Org Foundation. Supported by HTML.
WebM	.webm	WebM. Developed by Mozilla, Opera, Adobe, and Google. Supported by HTML.
MPEG-4 or MP4	.mp4	MP4. Developed by the Moving Pictures Expert Group. Commonly used in video cameras and TV hardware. Supported by all browsers and recommended by YouTube.

### Common Audio Formats

Format	File	Description
MIDI	.mid .midi	MIDI (Musical Instrument Digital Interface). Main format for all electronic music devices like synthesizers and PC sound cards. MIDI files do not contain sound, but digital notes that can be played by electronics. Plays well on all computers and music hardware, but not in web browsers.
RealAudio	.rm .ram	RealAudio. Developed by Real Media to allow streaming of audio with low bandwidths. Does not play in web browsers.
WMA	.wma	WMA (Windows Media Audio). Developed by Microsoft. Plays well on Windows computers, but not in web browsers.
AAC	.aac	AAC (Advanced Audio Coding). Developed by Apple as the default format for iTunes. Plays well on Apple computers, but not in web browsers.
WAV	.wav	WAV. Developed by IBM and Microsoft. Plays well on Windows, Macintosh, and Linux operating systems. Supported by HTML.
Ogg	.ogg	Ogg. Developed by the Xiph.Org Foundation. Supported by HTML.
MP3	.mp3	MP3 files are actually the sound part of MPEG files. MP3 is the most popular format for music players. Combines good compression (small files) with high quality. Supported by all browsers.
MP4	.mp4	MP4 is a video format, but can also be used for audio. Supported by all browsers.

## WWW, HTML, CSS

### HTML Video

The HTML `<video>` element is used to show a video on a web page.

Example

```
<video width="320" height="240" controls>  
  <source src="movie.mp4" type="video/mp4">  
  <source src="movie.ogv" type="video/ogg">  
Your browser does not support the video tag.  
</video>
```

To start a video automatically, use the `autoplay` attribute.

Add `muted` after `autoplay` to let your video start playing automatically (but muted).

## WWW, HTML, CSS

### HTML Audio

The HTML `<audio>` element is used to play an audio file on a web page.

Example

```
<audio controls>
```

```
  <source src="horse.ogg" type="audio/ogg">
```

```
  <source src="horse.mp3" type="audio/mpeg">
```

Your browser does not support the audio element.

```
</audio>
```

To start a audio automatically, use the `autoplay` attribute.

Add `muted` after `autoplay` to let your audio start playing automatically (but muted).



## WWW, HTML, CSS

### CSS Introduction

CSS is the language we use to style a Web page.

What is CSS?

- CSS stands for Cascading Style Sheets
- CSS describes how HTML elements are to be displayed on screen, paper, or in other media
- CSS saves a lot of work. It can control the layout of multiple web pages all at once
- External stylesheets are stored in CSS files

Why Use CSS?

CSS is used to define styles for your web pages, including the design, layout and variations in display for different devices and screen sizes.

CSS Saves a Lot of Work!

The style definitions are normally saved in external .css files.

With an external stylesheet file, you can change the look of an entire website by changing just one file!

## WWW, HTML, CSS

### Types of CSS Styles

- Inline
- Internal
- External

## WWW, HTML, CSS

### Inline CSS

Inline CSS is used to style a specific HTML element. For this CSS style, you'll only need to add the style attribute to each HTML tag, without using selectors.

This CSS type is not really recommended, as each HTML tag needs to be styled individually. Managing your website may become too hard if you only use inline CSS.

```
<h1 style="color:white;padding:30px;">Hostinger Tutorials</h1>  
<p style="color:white;">Something usefull here.</p>
```

## WWW, HTML, CSS

### Internal CSS

Internal or embedded CSS requires you to add <style> tag in the <head> section of your HTML document.

This CSS style is an effective method of styling a single page. However, using this style for multiple pages is time-consuming as you need to put CSS rules on every page of your website.

```
<style type="text/css">
```

```
body {  
    background-color: blue;  
}  
h1 {  
    color: red;  
    padding: 60px;  
}  
</style>
```

## WWW, HTML, CSS

### External CSS

With external CSS, you'll link your web pages to an external .css file, which can be created by any text editor in your device (e.g., Notepad++).

This CSS type is a more efficient method, especially for styling a large website. By editing one .css file, you can change your entire site at once.

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

## WWW, HTML, CSS

### Types of CSS Selectors

CSS Selectors are used to find (or Select) the HTML Elements on which you want to apply CSS (or Style).

- The CSS element Selector
- The CSS id Selector
- The CSS class Selector
- The CSS Universal Selector
- The CSS Grouping Selector

## WWW, HTML, CSS

### The CSS element Selector

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

#### Example

Here, all `<p>` elements on the page will be center-aligned, with a red text color:

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

## WWW, HTML, CSS

### The CSS 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.

Example

The CSS rule below will be applied to the HTML element with **id="para1"**:

```
#para1 {  
  text-align: center;  
  color: red;  
}
```



## WWW, HTML, CSS

### The CSS 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.

#### Example

In this example all HTML elements with **class="center"** will be red and center-aligned:

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

## WWW, HTML, CSS

### The CSS class Selector

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

Example

In this example only `<p>` elements with `class="center"` will be red and center-aligned:

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

In this example the `<p>` element will be styled according to `class="center"` and to `class="large"`:

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

## WWW, HTML, CSS

### CSS Universal Selector

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

Example

The CSS rule below will affect every HTML element on the page:

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

## WWW, HTML, CSS

### The CSS Grouping Selector

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

In this example we have grouped the selectors from the code above:

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

## WWW, HTML, CSS

### CSS for different task

CSS Colors  
CSS Backgrounds  
CSS Borders  
CSS Margins  
CSS Padding  
CSS Height/Width  
CSS Box Model  
CSS Outline  
CSS Text  
CSS Fonts  
CSS Icons  
CSS Links  
CSS Lists  
CSS Tables

CSS Display  
CSS Max-width  
CSS Position  
CSS Z-index  
CSS Overflow  
CSS Float  
CSS Inline-block  
CSS Align  
CSS Combinators  
CSS Pseudo-class  
CSS Pseudo-element  
CSS Opacity

CSS Rounded Corners  
CSS Border Images  
CSS Backgrounds  
CSS Colors  
CSS Color Keywords  
CSS Gradients  
CSS Shadows  
CSS Text Effects  
CSS Web Fonts  
CSS 2D Transforms  
CSS 3D Transforms  
CSS Transitions  
CSS Animations

Click [CSS Properties](#) to explore.

## WWW, HTML, CSS

### CSS Box Model

All HTML elements can be considered as boxes, and every box consists of four parts: content, padding, borders and margins.

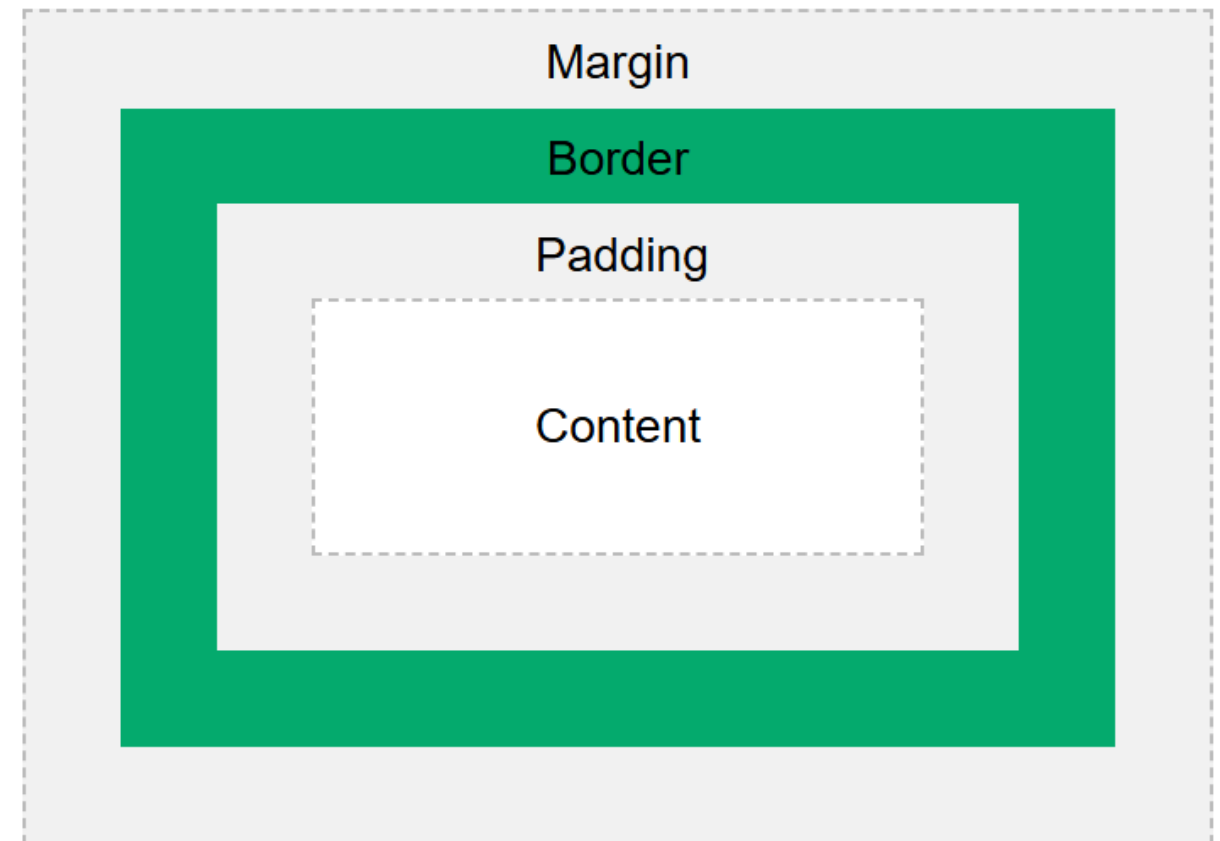
In CSS, the term "box model" is used when talking about web design and layout. The CSS box model is essentially a box that wraps around every HTML element. It consists of: content, padding, borders and margins.

## WWW, HTML, CSS

### CSS Box Model

- **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.



## WWW, HTML, CSS

### CSS Font

#### Font-family

- **Definition:** Specifies the typeface of the text.
- **Values:**
  - Specific font names: "Arial", "Times New Roman", "Courier New", etc.
  - Generic family names:
    - serif (e.g., Times New Roman)
    - sans-serif (e.g., Arial, Helvetica)
    - monospace (e.g., Courier)
    - cursive (e.g., Comic Sans)
    - fantasy (e.g., Papyrus)

```
p {  
  font-family: "Arial", sans-serif;  
}
```



## WWW, HTML, CSS

### CSS Font

#### font-size

- **Definition:** Controls the size of the text.
- **Values:**
  - Absolute units: px, pt, cm, etc.
  - Relative units: em, rem, %, vh, vw
  - Keywords: xx-small, x-small, small, medium, large, x-large, xx-large, smaller, larger

#### Example:

```
h1 {  
    font-size: 2em; /* relative to parent */  
}
```

## WWW, HTML, CSS

### CSS Font

#### font-weight

- **Definition:** Defines the thickness (boldness) of text.
- **Values:**
  - Keywords: normal, bold, lighter, bolder
  - Numeric: 100 (thin) → 900 (extra black)

#### Example:

```
strong {  
    font-weight: bold;  
}
```

## WWW, HTML, CSS

### CSS Font

#### **font-style**

- **Definition:** Defines the style of the text.
- **Values:**
  - normal → Standard text
  - italic → Italicized text
  - oblique → Slanted text (like italic, but different rendering)

#### **Example:**

```
em {  
    font-style: italic;  
}
```

### CSS Font

#### **font-variant**

- **Definition:** Controls small-caps formatting.
- **Values:**
  - normal
  - small-caps

#### **Example:**

```
h2 {  
    font-variant: small-caps;  
}
```

## WWW, HTML, CSS

### CSS Font

#### **text-transform**

- **Definition:** Controls capitalization.
- **Values:**
  - none
  - uppercase
  - lowercase
  - capitalize

#### **Example:**

```
h2 {  
    text-transform: uppercase;  
}
```

## WWW, HTML, CSS

### CSS Font

#### font

- **Definition:** A shorthand for multiple font properties.
- **Order:** font-style font-variant font-weight font-stretch font-size/line-height font-family

#### Example:

```
p {  
    font: italic small-caps bold 16px/1.5 "Times New  
    Roman", serif;  
}
```

## WWW, HTML, CSS

### HTML Layout Elements and Techniques



## WWW, HTML, CSS

### HTML Layout

Websites often display content in multiple columns (like a magazine or a newspaper).

### HTML Layout Elements



- `<header>` - Defines a header for a document or a section
- `<nav>` - Defines a set of navigation links
- `<section>` - Defines a section in a document
- `<article>` - Defines independent, self-contained content
- `<aside>` - Defines content aside from the content (like a sidebar)
- `<footer>` - Defines a footer for a document or a section
- `<details>` - Defines additional details that the user can open and close on demand
- `<summary>` - Defines a heading for the `<details>` element



## HTML Layout Techniques

There are four different techniques to create multicolumn layouts. Each technique has its pros and cons:

- CSS flexbox
- CSS grid
- CSS float property
- CSS framework

## CSS Flexbox Layout

Use of flexbox ensures that elements behave predictably when the page layout must accommodate different screen sizes and different display devices.



## What is CSS Flexbox?

- Flexbox is short for the Flexible Box Layout module.
- Flexbox is a layout method for arranging items in rows or columns.
- Flexbox makes it easier to design a flexible responsive layout structure, without using float or positioning.
- CSS flexbox is supported in all modern browsers.

## WWW, HTML, CSS

### HTML Layout

## CSS Flexible Box Layout Module

Before the Flexible Box Layout module, there were four layout modes:

- Block, for sections in a webpage
- Inline, for text
- Table, for two-dimensional table data
- Positioned, for explicit position of an element

## CSS Flexbox Components

A flexbox always consists of:

- a Flex Container - the parent (container) `<div>` element
- Flex Items - the items inside the container `<div>`

## WWW, HTML, CSS

### HTML Layout

You create a flex container by setting:

```
.container {
```

```
display: flex;
```

```
}
```

All direct child elements inside **.container** become flex items that follow flexbox rules.

### HTML Layout

## Main Properties of Flexbox

### For the Container (**display: flex;**)

- flex-direction → sets the direction of items
  - row (default) → items left to right
  - row-reverse → right to left
- column → top to bottom
- column-reverse → bottom to top

```
.container { display: flex; flex-direction: row; /* horizontal */ }
```

## WWW, HTML, CSS

### HTML Layout

justify-content → aligns items horizontally

*flex-start (default), flex-end, center, space-between, space-around, space-evenly*

```
.container {  
  justify-content: space-between;  
}
```

align-items → aligns items vertically in the container

*stretch (default), flex-start, flex-end, center, baseline*

```
.container {  
  
  align-items: center;  
  
}
```

## WWW, HTML, CSS

### HTML Layout

flex-wrap → controls wrapping of items  
*nowrap (default), wrap, wrap-reverse*

```
.container {  
flex-wrap: wrap;  
}
```



# CSS Grid

- CSS Grid is a two-dimensional layout system in CSS.
- Flexbox = one dimension (row OR column).
- Grid = two dimensions (rows AND columns).
- Think of Grid like a spreadsheet: rows × columns.
- You can place elements precisely where you want.

## Creating a Grid Container

To start using Grid:

```
.container {  
display: grid;  
}
```

Now all direct children of `.container` become grid items.

### HTML Layout

## Defining Rows & Columns

You define the grid using **grid-template-columns** and **grid-template-rows**.

```
.container {  
display: grid;  
grid-template-columns: 200px 1fr 200px; /* 3 columns */  
grid-template-rows: 100px auto 50px; /* 3 rows */
```

200px → fixed width

1fr → fraction of remaining space

auto → based on content

## WWW, HTML, CSS

### HTML Layout

## Adding Gaps

```
.container { gap: 10px; /* space between rows & columns */ }
```

You can also use:

- row-gap
- column-gap

### HTML Layout

### Placing Grid Items

By default, items are placed in order. But you can control them:

```
.item1 {  
  grid-column: 1 / 3; /* spans column 1 to 2 */  
  grid-row: 1 / 2; /* first row */  
}
```

Example: spanning across multiple columns.

### HTML Layout

### Float Layout

- The CSS float property was originally designed for wrapping text around images.
- Developers later used it to build multi-column layouts (before Grid & Flexbox existed).
- Today, float layout is mostly replaced by modern techniques, but it's still useful to understand.

## WWW, HTML, CSS

### HTML Layout

### Float Layout

- `float: left; /* element floats to the left */`
- `float: right; /* element floats to the right */`
- `float: none; /* default, no floating */`



**THANK YOU**