

## Structure or Syntax of CSS

- ✓ The syntax of CSS is slightly different from that of an HTML.
- ✓ CSS uses (curly braces { }), (colons : ) and (semicolon ; ).

### Syntax:

selector

```
{  
    property : value;  
    property : value;  
    |  
    property : value;  
}
```

## Types of CSS

Type of CSS	Description	Where It Is Written	Syntax (Example)
1. Inline CSS	Used to style a <b>single HTML element</b> directly. It has the <b>highest priority</b> .	Inside the HTML tag using the style attribute.	<h1 style="color:blue; font-size:25px;">Heading</h1>
2. Internal (Embedded) CSS	Used to style elements <b>within the same HTML page</b> .	Inside the <style> tag in the <head> section of the HTML document.	<head><style> p { color: red; font-size: 18px; } </style></head>
3. External CSS	Used to apply styles to <b>multiple web pages</b> using a separate .css file.	In an external stylesheet linked using the <link> tag in the <head> section.	<head><link rel="stylesheet" href="style.css"></head>(style.css file contains CSS rules)

## Various CSS Selectors

Selector Type	Description	Syntax	Example
<b>Element Selector</b>	Selects all elements of a specific type/tag. Lowest specificity (except universal).	<b>element</b>	p { color: black; }
<b>ID Selector</b>	Selects a single element with a specific id attribute. Very high specificity.	<b>#id</b>	#header { color: red; }
<b>Class Selector</b>	Selects elements with a specific class. Medium specificity.	<b>.class</b>	.menu { font-size: 16px; }
<b>Attribute Selector</b>	Selects elements based on an attribute or attribute value.	<b>[attr], [attr=value]</b>	[type="text"] { border: 1px solid #ccc; }
<b>Universal Selector</b>	Selects all elements. Lowest specificity.	<b>*</b>	* { margin: 0; padding: 0; }
<b>Descendant Selector</b>	Selects elements that are descendants (any level) of a specified ancestor.	<b>ancestor descendant</b>	div p { color: blue; }
<b>Child Selector</b>	Selects elements that are direct children of a specified parent.	<b>parent &gt; child</b>	ul > li { list-style: none; }
<b>Grouping Selector</b>	Groups multiple selectors and applies the same styles.	<b>selector1, selector2</b>	h1, h2, h3 { font-family: Arial; }

## CSS Specificity (Priority Order)

When multiple CSS rules target the same element, the browser decides which one to apply based on **specificity** (priority):

Priority Level	Selector Type	Example
<b>1 (Highest)</b>	Inline Styles	<h1 style="color:pink;">Heading</h1>
<b>2</b>	IDs	#title { color: red; }
<b>3</b>	Classes, pseudo-classes, attribute selectors	.title { color: green; }, :hover, [type='text']
<b>4 (Lowest)</b>	Elements and pseudo-elements	h1 { color: blue; }, ::before

## Text Properties

These properties are used to **style, format, and control the appearance** of text on a webpage, including alignment, spacing, transformation, decoration, font type, and size.

### Text Properties

Property	Description	Syntax	Possible Values
<b>color</b>	Sets the color of the text	color: color;	Named colors (e.g., red), HEX (#ff0000), RGB (rgb(255,0,0)), RGBA
<b>text-align</b>	Aligns text inside an element	text-align: value;	left, right, center, justify, start, end
<b>text-indent</b>	Adds indentation to the first line	text-indent: length;	Any length (px, em, %)
<b>text-transform</b>	Controls text capitalization	text-transform: value;	none, capitalize, uppercase, lowercase
<b>text-decoration</b>	Adds decoration like underline or line-through	text-decoration: value;	none, underline, overline, line-through, underline overline
<b>letter-spacing</b>	Controls space between letters	letter-spacing: length;	Normal (normal), or custom spacing (px, em). <b>Negative values are allowed.</b>
<b>word-spacing</b>	Controls space between words	word-spacing: length;	Normal (normal), or custom spacing (px, em). <b>Negative values are allowed.</b>
<b>line-height</b>	Sets space between lines	line-height: value;	normal, number (e.g., 1.5), length (px, em), %. <b>Negative values are not allowed.</b>
<b>text-shadow</b>	Adds shadow to text	text-shadow: h-shadow v-shadow blur color;	none or values like 2px 2px 5px gray (can add multiple shadows separated by commas)

## Font Properties

Property	Description	Syntax	Example	Possible Values
<b>font-family</b>	Specifies the font type	font-family: "FontName", fallback;	font-family: "Arial", sans-serif;	Any font name: "Arial", "Times New Roman", "Courier New", generic families: serif, sans-serif, monospace, cursive, fantasy
<b>font-size</b>	Sets the font size	font-size: size;	font-size: 20px;	Length units: px, em, rem, %; Keywords: xx-small, x-small, small, medium, large, x-large, xx-large, smaller, larger
<b>font-style</b>	Defines style of text	font-style: value;	font-style: italic;	normal, italic
<b>font-weight</b>	Sets font thickness	font-weight: value;	font-weight: bold;	normal, bold, bolder, lighter, 100, 200, 300, 400, 500, 600, 700, 800, 900
<b>font-variant</b>	Displays text in small-caps	font-variant: value;	font-variant: small-caps;	normal, small-caps
<b>font</b> (shorthand)	Sets all font properties in one line	font: [style] [variant] [weight] [size]/[line-height] [family];	font: italic small-caps bold 16px/1.5 "Times New Roman", serif;	Combines all above properties in one; values are the same as individual properties: <style> <variant> <weight> <size>/<line-height> <family>

## Google Fonts

### How to Embed Google Fonts

**Method 1: Using <link> tag (Recommended)**

**Method 2: Using @import in CSS**

## CSS Borders

A **border** is a line that wraps around an HTML element's **content and padding**. It visually separates elements or highlights them on a web page.

Property	Description	Possible Values	Syntax
border-style	Defines the style of the border	none, solid, dashed, dotted, double <b>Note:</b> Multiple values allow to get different border side wise	border-style: solid  border-style: solid dashed
border-width	Sets the thickness of the border	length (px, em, rem)	border-width: 10px
border-color	Sets the color of the border	Named colors (red), hex (#FF0000), RGB (rgb(255,0,0))	border-color: tomato
border (shorthand)	Combines style, width, color in one line	border: 2px solid red;	border: 2px solid red;
border-top	Sets border properties for the top side	border-top: 3px dashed blue;	border-top: 3px dashed blue;
border-right	Sets border properties for the right side	border-right: 2px solid green;	border-right: 2px solid green;
border-bottom	Sets border properties for the bottom side	border-bottom: 4px dotted orange;	border-bottom: 4px dotted orange;
border-left	Sets border properties for the left side	border-left: 5px double purple;	border-left: 5px double purple;

## Box Properties

Property	Description	Possible Values	Syntax / Examples
<b>margin</b>	Creates <b>space outside</b> the element (outside border).  Used <b>separate elements</b> on the page.	<ul style="list-style-type: none"> <li>• auto → browser calculates margin (useful for centering)</li> <li>• length → px, em, %, negative values allowed</li> </ul>	<b>margin: 10px</b>  <b>Shorthand examples:</b> <ul style="list-style-type: none"> <li>• 4 values → margin: 25px 50px 75px 100px; → top=25px, right=50px, bottom=75px, left=100px</li> <li>• 3 values → margin: 25px 50px 75px; → top=25px, right/left=50px, bottom=75px</li> <li>• 2 values → margin: 25px 50px; → top/bottom=25px, right/left=50px</li> <li>• 1 value → margin: 25px; → all sides=25px</li> </ul>
<b>padding</b>	Creates <b>space inside</b> the element (between content & border).	length → px, em, %	<b>padding: 10px</b>  <b>Shorthand examples:</b> <ul style="list-style-type: none"> <li>• 4 values → padding: 25px 50px 75px 100px; → top=25px, right=50px, bottom=75px, left=100px</li> <li>• 3 values → padding: 25px 50px 75px; → top=25px, right/left=50px, bottom=75px</li> <li>• 2 values → padding: 25px 50px; → top/bottom=25px, right/left=50px</li> <li>• 1 value → padding: 25px; → all sides=25px</li> </ul>
<b>width</b>	Specifies the <b>width</b> of an element's content area.	auto, length (px, em, %),	width : 50px
<b>height</b>	Specifies the <b>height</b> of an element's content area.	auto, length (px, em, %),	height: 50px
<b>box-sizing</b>	Defines <b>how width and height are calculated</b> — whether padding and borders are included.  Used to <b>control layout behavior</b> when adding padding/borders.	<ul style="list-style-type: none"> <li>• content-box (default): width/height exclude padding &amp; border.</li> <li>• border-box: width/height include padding &amp; border.</li> </ul>	<b>box-sizing : content-box</b> ( height and width increase by increasing padding and border px)  <b>box-sizing : border-box</b> ( height and width will remain same)
<b>box-shadow</b>	Adds <b>shadow effects</b> around an element's frame. To <b>add depth, hover effects, or visual highlights</b> .	box-shadow: h-offset v-offset blur spread color;	<b>Syntax:</b> box-shadow: h-offset v-offset blur spread color; <b>Example:</b> box-shadow: 2px 2px 5px gray;

## CSS background properties

Property	Description	Key Values / Notes	Syntax
<b>background-color</b>	Sets the background color of an element	Any valid color (red, #ffc0cb, rgb(255,0,0))	background-color: color;
<b>background-image</b>	Sets an image as the background	Use image URL;	background-image: url("image.jpg");
<b>background-repeat</b>	Controls how background image repeats	repeat, repeat-x, repeat-y, no-repeat default repeats if not specified	background-repeat: repeat;
<b>background-position</b>	Sets the starting position of a background image	top, bottom, left, right, center, x% y%	background-position: top;
<b>background-size</b>	Specifies the size of the background image	auto, cover, contain, width height	background-size: auto;
<b>background-attachment</b>	Sets whether background scrolls with content	scroll, fixed, local	background-attachment: scroll;
<b>background-clip</b>	Determines how far the background extends	border-box, padding-box, content-box	background-clip: border-box;
<b>background (shorthand)</b>	Combines color, image, repeat, position, size, attachment	Example: background: pink url("scenary.jfif") no-repeat top right cover fixed;	background: [color] [image] [repeat] [position] [size] [attachment];

## Pseudo classes

Pseudo-class	What It Does
:hover	Changes color when mouse hovers
:active	Changes color when clicked
:focus	Highlights input field when clicked
:checked	Styles label when checkbox is checked
:link / :visited	Colors for unvisited/visited links
:nth-child(2)	Targets the 2nd list item
:not(.special)	Styles all list items except .special

## Pseudo Elements

Pseudo-element	Description	Syntax	Example	Result / Effect
::first-line	Styles the <b>first line</b> of a block-level element.	p::first-line { property: value; }	p::first-line { color: red; font-weight: bold; }	First line of the paragraph appears red and bold.
::first-letter	Styles the <b>first letter</b> of a block-level element.	p::first-letter { property: value; }	p::first-letter { font-size: 50px; color: red; }	First letter of the paragraph becomes large and red.
::before	Inserts content <b>before</b> an element's actual content.	selector::before { content: "..."; }	p::before { content: "Note: "; color: red; }	Adds "Note:" before each paragraph.
::after	Inserts content <b>after</b> an element's actual content.	selector::after { content: "..."; }	p::after { content: "✓"; color: green; }	Adds a green checkmark after the paragraph.
::marker	Styles the <b>marker (bullet or number)</b> of list items.	li::marker { property: value; }	li::marker { color: red; font-size: 20px; }	List bullets or numbers appear red and large.
::selection	Styles the <b>highlighted text</b> selected by the user.	::selection { property: value; }	::selection { background: blueviolet; color: white; }	Selected text appears white on a blue-violet background.



## Display Property

Display Type	Description	Behavior / Use Case	Visual Behavior	Syntax
<b>inline</b>	Displays elements <b>in a line</b> , without starting on a new line.	Does <b>not accept width/height</b> . Common for <span>, <a>, <strong>.	Elements sit <b>side by side</b> in a single line.	display: inline
<b>block</b>	Displays element as a <b>block</b> , starting on a new line.	Takes <b>full width</b> available and allows <b>width/height</b> to be set.	Each element appears <b>on a new line</b> .	display: block
<b>inline-block</b>	Combines features of <b>inline</b> and <b>block</b> .	Appears <b>inline</b> , but allows <b>width and height</b> .	Boxes are <b>side by side</b> , but <b>size-controllable</b> .	display: inline-block
<b>none</b>	<b>Hides</b> the element completely (removed from layout).	Element takes <b>no space</b> on the page.	The element is <b>invisible</b> and <b>does not occupy space</b> .	display: none
<b>flex</b>	Displays element as a <b>flex container</b> .	Allows flexible alignment and distribution of child elements.	Items are <b>arranged in a row</b> (or column) with flexible spacing.	display: flex
<b>grid</b>	Displays element as a <b>grid container</b> .	Divides layout into <b>rows and columns</b> for advanced control.	Elements are placed in a <b>grid layout</b> (rows and columns).	display: grid

## Flexbox

Property	Description	Possible Values	Syntax / Example
<b>display: flex</b>	Defines a flex container to arrange items flexibly.	flex, inline-flex	div { display: flex; }
<b>flex-direction</b>	Defines the direction of flex items.	row (default), row-reverse, column, column-reverse	flex-direction: row;
<b>justify-content</b>	Aligns items horizontally (along the main axis).	flex-start, flex-end, center, space-between, space-around, space-evenly	justify-content: space-between;
<b>align-items</b>	Aligns items vertically (along the cross axis).	stretch (default), flex-start, flex-end, center	align-items: center;
<b>flex-wrap</b>	Determines whether flex items wrap onto multiple lines.	nowrap (default), wrap, wrap-reverse	flex-wrap: wrap;
<b>gap</b>	Defines the space between flex items.	Any CSS length unit (px, em, %)	gap: 15px;
<b>order</b>	Specifies the display order of flex items.	Integer values (0 default, can be positive or negative)	order: 2;
<b>flex</b> (shorthand)	Sets how an item grows, shrinks, and defines its base size.	flex: grow shrink basis; e.g., flex: 1 0 100px;	flex: 1; or flex: 1 0 200px;

## Grid Layout Properties

Property	Description	Possible Values	Default Value	Syntax / Example
<b>grid-template-columns</b>	Defines the number and width of columns in a grid layout.	Fixed units (px, em, %)	none	grid-template-columns: 200px 1fr 2fr;
<b>grid-template-rows</b>	Defines the number and height of rows in a grid layout.	Fixed units (px, em, %),	none	grid-template-rows: 100px auto 100px;
<b>gap (grid-gap)</b>	Defines the space between rows and columns.	Any CSS length (px, em, %)	0	gap: 10px; or gap: 20px 40px;
<b>grid-column</b>	Specifies the horizontal position of an item within the grid columns (start / end lines).	<start-line> / <end-line>	auto	grid-column: 1 / 3; (spans across 2 columns)
<b>grid-row</b>	Specifies the vertical position of an item within the grid rows (start / end lines).	<start-line> / <end-line>	auto	grid-row: 1 / 2; (spans across 1 row)

## CSS Positioning Properties

Property	Description	Possible Values	Default Value	Syntax / Example
<b>position</b>	Defines how an element is positioned in the document.	static, relative, absolute, fixed, sticky	static	position: absolute;
<b>top</b>	Distance between element and top edge of container.	Any CSS length (px, %, auto)	auto	top: 20px;
<b>right</b>	Distance between element and right edge of container.	Any CSS length (px, %, auto)	auto	right: 10px;
<b>bottom</b>	Distance between element and bottom edge of container.	Any CSS length (px, %, auto)	auto	bottom: 15px;
<b>left</b>	Distance between element and left edge of container.	Any CSS length (px, %, auto)	auto	left: 30px;
<b>z-index</b>	Controls stack order of overlapping elements.	Integer (auto, positive or negative values)	auto	z-index: 2; (Higher = on top)

- ✓ **static:** Default, element follows normal document flow.
- ✓ **relative:** Moved relative to its normal position.
- ✓ **absolute:** Positioned relative to the nearest positioned ancestor.
- ✓ **fixed:** Stays fixed in place even when scrolling.
- ✓ **z-index:** Controls which element appears on top of others.

## Default Values

Property	Default Value
color	Browser default (usually black)
background-color	transparent
font-family	Depends on browser (e.g., <i>Times New Roman</i> )
font-size	medium (≈16px)
font-style	normal
font-weight	normal (400)
text-align	start (usually left)
text-decoration	none
text-transform	none
letter-spacing	normal
word-spacing	normal
line-height	normal
border-style	none
border-width	medium
border-color	currentColor
margin	0
padding	0
width	auto
height	auto
box-sizing	content-box
box-shadow	none
display	inline (for inline elements), block (for block elements)
position	static
top	auto
right	auto
bottom	auto
left	auto
z-index	auto
overflow	visible
visibility	visible

Property	Default Value
opacity	1
cursor	auto
flex-direction	row
justify-content	flex-start
align-items	stretch
flex-wrap	nowrap
gap	0
order	0
grid-template-columns	none
grid-template-rows	none
grid-column	auto
grid-row	auto
background-repeat	repeat
background-position	0% 0% (top-left)
background-size	auto
background-attachment	scroll
background-clip	border-box