



# WEB – BASI DI HTML E CSS

Davide Mininni

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## LINKS

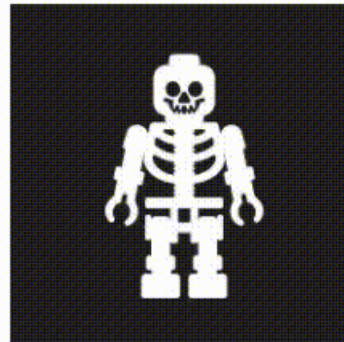
### HTML

- <https://developer.mozilla.org/en-US/docs/Web/HTML>
- <https://www.w3schools.com/html/default.asp>

### CSS

- <https://developer.mozilla.org/en-US/docs/Web/CSS>
- <https://www.w3schools.com/css/default.asp>

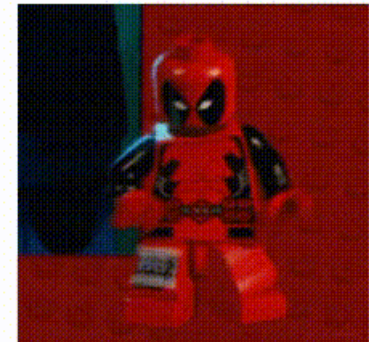
**HTML**  
structure



**CSS**  
presentation/appearance



**JavaScript**  
dynamism/action



# HTML - 1

## DEFINIZIONE

HTML (HyperText Markup Language) è il linguaggio di markup standard per la visualizzazione di pagine web nel browser. Nasce nel 1991 al CERN ad opera di Tim Berners-Lee nell'ambito del progetto 'world wide web'.

L'HTML definisce il contenuto e la struttura di una webpage tramite 'elements' (es. `<ul>/ <ol>` per liste, `<a>` per links, `<h1>` per titoli, ecc..). Essi sono i 'mattoncini' di base delle pagine: possono racchiudere del testo o altri elements innestati.

Lo scopo del browser è leggere il document HTML che arriva dal server e usare i tag per determinare in che modo visualizzare il contenuto.





# HTML - 2

## ELEMENTS

Distinguiamo:

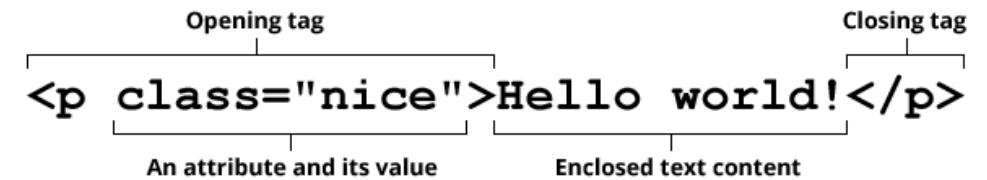
- un tag di apertura
- un tag di chiusura
- potenzialmente degli attributi
- un contenuto, che può essere testuale o un element innestato

Alcuni elements sono 'void', ovvero non hanno tag di chiusura e non hanno contenuto (es. <img/>).

Gli elements non sono case-sensitive.

Si possono inserire commenti all'interno dei caratteri <!-- --> .

*Anatomy of an HTML element*



```
<!doctype html>
<html lang="en-US">
  <head>
    <meta charset="utf-8" />
    <meta name="viewport" content="width=device-width" />
    <title>My test page</title>
  </head>
  <body>
    
  </body>
</html>
```

## ELEMENTS



<header>

<nav>

<section>

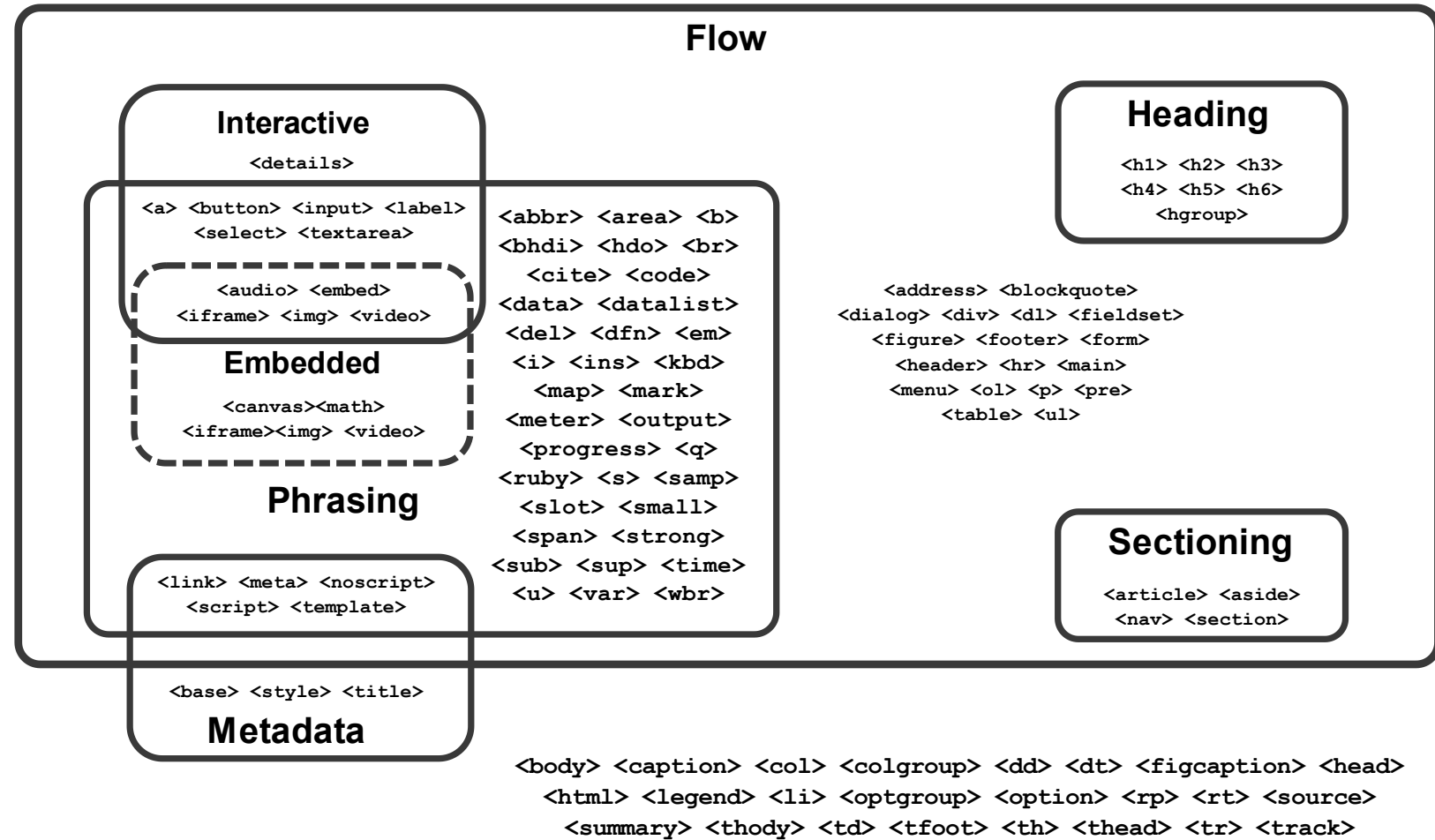
<aside>

<article>

<footer>

## ELEMENTS

### HTML element content categories



## ATTRIBUTES

Gli attributes forniscono informazioni aggiuntive sugli elements; vanno sempre specificati nel tag di apertura, in genere sono del tipo chiave-valore e vanno sempre separati da spazi.

Esempi degli attributes più comuni:

- href per i links (<a>);
- style e class per la definizione dello stile;
- src, width, height e alt per le immagini (<img/>)
- lang per la lingua della page, obbligatorio sul tag html
- custom attributes => data-<...>
- id per l'identificazione
- aria-<...> per l'accessibilità

## HTML Attributes

Attribute	Description
alt	Specifies an alternative text for an image
disabled	Specifies that an input element should be disabled
href	Specifies the URL (web address) for a link
id	Specifies a unique id for an element
src	Specifies the URL (web address) for an image
style	Specifies an inline CSS style for an element
title	Specifies extra information about an element (displayed as a tool tip)
value	Specifies the value (text content) for an input element.

## CUSTOM ELEMENTS

Una delle caratteristiche chiave del web è la possibilità di definire i propri componenti, ovvero dei 'custom elements': essi sono elements creati da zero che estendono il set di elementi standard disponibili nel browser.

Esempio reale:

SBB CFF FFS - Lyne Design System

<https://lyne-storybook.app.sbb.ch/?path=/story/pages-home--home>

```
<sbb-navigation trigger="hamburger-menu" role="navigation" data-state="closed" id="sbb-navigation-0">
  #shadow-root (open)
  <sbb-navigation-marker id="nav-marker" size="l" data-has-active-action style="--sbb-navigation-marker-position-y: 0px;"> </sbb-navigation-marker>
  <sbb-navigation-marker size="s" data-has-active-action style="--sbb-navigation-marker-position-y: 0px;"> </sbb-navigation-marker>
  <sbb-navigation-section title-content="Title one" trigger="nav-1" slot="navigation-section" id="sbb-navigation-section-0" data-state="closed" aria-hidden="true" data-slot-names="unnamed">
    #shadow-root (open)
    <sbb-navigation-list label="Label" data-slot-names="li-0 li-1 li-2">
      #shadow-root (open)
      <sbb-navigation-button aria-current="page" class="sbb-active" data-action role="button" tabindex="0" data-button data-section-action size="m" slot="li-0"> </sbb-navigation-button>
      <sbb-navigation-button data-action role="button" tabindex="0" data-button data-section-action size="m" slot="li-1"> </sbb-navigation-button>
      <sbb-navigation-button data-action role="button" tabindex="0" data-button data-section-action size="m" slot="li-2"> </sbb-navigation-button>
    </sbb-navigation-list>
    <sbb-navigation-list label="Label" data-slot-names="li-0 li-1 li-2"> </sbb-navigation-list>
    <sbb-navigation-list label="Label" data-slot-names="li-0 li-1 li-2"> </sbb-navigation-list>
    <sbb-navigation-list label="Label" data-slot-names="li-0 li-1 li-2"> </sbb-navigation-list>
    <sbb-navigation-list label="Label" data-slot-names="li-0 li-1 li-2"> </sbb-navigation-list>
    <sbb-navigation-list label="Label" data-slot-names="li-0 li-1 li-2"> </sbb-navigation-list>
    <sbb-button size="m" class="navigation-button" data-action role="button" tabindex="0" data-button data-sbb-button data-slot-names="unnamed"> </sbb-button>
  </sbb-navigation-section>
  <sbb-navigation-section title-content="Title two" trigger="nav-2" slot="navigation-section" id="sbb-navigation-section-1" data-state="closed" aria-hidden="true" data-slot-names="unnamed"> </sbb-navigation-section>
  <sbb-navigation-section title-content="Title three" trigger="nav-3" slot="navigation-section" id="sbb-navigation-section-2" data-state="closed" aria-hidden="true" data-slot-names="unnamed"> </sbb-navigation-section>
</sbb-navigation>
```



## DEFINIZIONE

CSS (Cascading Style Sheet) è un linguaggio usato per definire lo stile e il layout degli elements HTML, modificandone ad esempio il font, il colore, le dimensioni, le spaziature ecc, includendo anche le variazioni per device o per display di dimensioni specifiche.

Nasce nel 1996 per ovviare al problema dei tag proprietari per gestire la formattazione dell'HTML (es. tag <font>, ormai deprecato), permettendo quindi la separazione tra contenuto e presentazione.

Il termine 'cascading' deriva dallo schema di priorità usato per determinare quale regola applicare quando più dichiarazioni si applicano allo stesso elemento.



## SINTASSI

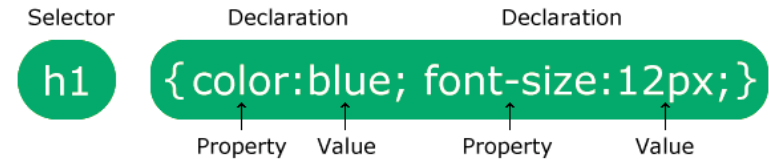
Una regola CSS consiste di:

- un selettore, che indica a quale HTML element si applicherà la regola;
- un blocco con una o più dichiarazioni di tipo chiave/valore separati dai due punti; la chiave è la property da modificare.

Nell'esempio a destra stiamo dicendo che tutti i tag `<h1>` avranno testo di colore blu e font di 12 pixel.

Ci sono tre modi per inserire il CSS nell'HTML:

- puntando a un file esterno tramite il tag `<link>` nell'`<head>` del document;
- aggiungendo le regole direttamente nell'`<head>` tramite il tag `<style>`;
- aggiungendo le regole direttamente sull'elemento da stilare tramite l'attributo `'style'`.



CSS priority scheme (highest to lowest)

Priority	CSS source type	Description
1	Importance	The " !important " annotation overwrites the previous priority types
2	Inline	A style applied to an HTML element via HTML "style" attribute
3	Media Type	A property definition applies to all media types unless a media-specific CSS is defined
4	User defined	Most browsers have the accessibility feature: a user-defined CSS
5	Selector specificity	A specific contextual selector ( #heading p ) overwrites generic definition
6	Rule order	Last rule declaration has a higher priority
7	Parent inheritance	If a property is not specified, it is inherited from a parent element
8	CSS property definition in HTML document	CSS rule or CSS inline style overwrites a default browser value
9	Browser default	The lowest priority: browser default value is determined by W3C initial value specifications

## SELETTORI

I selettori si suddividono in 5 classi:

- selettori semplici, ovvero per id, name, class;
- selettori di gerarchia o di combinazione, ovvero per relazione tra elementi;
- selettori di pseudo-classi, ovvero per stato;
- selettori di pseudo-elementi, ovvero solo per una parte di element;
- selettore di attributo, ovvero per presenza o per valore di un attributo.

### All css selectors

CSS {selectors: cheat-sheet}

Name	CSS	Description	Results
<b>Basic</b>			
Universal Selector	*	Select all elements	
Type Selector	div	Select elements of that type Select div elements	
Class Selector	.c	Select elements with that class Select elements with the c class	
Id Selector	#i	Select elements with that id Select elements with the id i <small>*It is best practice to not use ids in CSS</small>	
<b>Combination</b>			
Descendant Selector	div a	Select elements that are descendants of the first element Select anchors that are inside a div	
Direct Child Selector	div > a	Select elements that are direct children of the first element Select anchors that are direct children of a div	
General Sibling Selector	div ~ a	Select elements that are siblings of the first element and come after the first element Selects all anchors that are siblings of a div and come after the div	
Adjacent Sibling Selector	div + a	Select elements that are siblings of the first element and come directly after the first element Selects all anchors that are siblings of a div and come directly after the div	
Or Selector	div, a	Select elements that match any selector in the list Selects all anchors and all divs	
And Selector	div.c	Select elements that match all the selector combinations Selects all divs with the class c	

## SELETTORI

### Attribute

Name	CSS	Description	Results
Has Attribute	[a]	Select elements that have that attribute Select elements with the a attribute	[a] [a="1"] [c] d
Exact Attribute	[a="1"]	Select elements that have that attribute with exactly that value Select elements with the a attribute with a value of 1	[a] [a="1"] [c] d
Begins With Attribute	[a^="1"]	Select elements that have that attribute which start with that value Select elements with the a attribute with a value that starts with 1	[a="12"] [a="21"]
Ends With Attribute	[a\$="1"]	Select elements that have that attribute which end with that value Select elements with the a attribute with a value that ends with 1	[a="12"] [a="21"]
Substring Attribute	[a*="1"]	Select elements that have that attribute which contain that value anywhere Select elements with the a attribute with a value that contains a 1	[a="12"] [a="21"]

### Pseudo Element

Name	CSS	Description	Results
Before Selector	div::before	Creates an empty element directly before the children of selected element	div before c after
After Selector	div::after	Creates an empty element directly after the children of selected element	div before c after

### Pseudo Class State

Name	CSS	Description
Hover Selector	button:hover	Select elements that are hovered by the mouse Select buttons that are being hovered
Focus Selector	button:focus	Select elements that are focused. Focus is set by either tabbing to an element or clicking an element such as a button or anchor tag
Required Selector	input:required	Select inputs that are required Select inputs with the required attribute
Checked Selector	input:checked	Select checkboxes/radio buttons that are checked Select inputs that are checked
Disabled Selector	input:disabled	Select inputs that are disabled Select inputs with the disabled attribute

### Pseudo Class Position/Other

Name	CSS	Description	Results
First Child Selector	a:first-child	Select elements that are the first child inside a container Select anchors that are the first child	div a b b a
Last Child Selector	a:last-child	Select elements that are the last child inside a container Select anchors that are the last child	div a b b a
Nth Child Selector	a:nth-child(2n)	Select elements that are the nth child inside a container based on the formula Select anchors that are even numbered children	div a a b a
Nth Last Child Selector	a:nth-last-child(3)	Select elements that are the nth child inside a container based on the formula counting from the end Select anchors that are the third to last child	div a a b a
Only Child Selector	a:only-child	Select elements that are the only child inside a container Select anchors that are the only child	div a b a
First Of Type Selector	a:first-of-type	Select elements that are the first of a type inside a container Select the first anchor in a container	div b a a b
Last Of Type Selector	a:last-of-type	Select elements that are the last of a type inside a container Select the last anchor in a container	div b a a b
Nth Of Type Selector	a:nth-of-type(2n)	Select elements that are the nth of a type inside a container based on the formula Select every second anchor	div b a a b
Nth Last Of Type Selector	a:nth-last-of-type(2)	Select elements that are the nth of a type inside a container based on the formula counting from the end Select the second to last anchor	div b a a b
Only Of Type Selector	a:only-of-type	Select elements that are the only of a type inside a container Select anchors that are the only anchor in a container	div b b a b
Not Selector	a:not(.c)	Select all elements that do not match the selector inside the not selector Select all anchor tags that do not have the c class	b a.c a a.d



## SPECIFICITÀ

Due o più regole applicabili allo stesso element si applicano in ordine di specificità: la regola con selettore più specifico 'vince', ovvero viene applicata per ultima, eventualmente sovrascrivendo la regola con selettore meno specifico.

Per il calcolo della specificità si usa una terna numerica a-b-c così calcolata:

- si somma 1 per ogni selettore di tipo id;
- si somma 1 per ogni selettore di tipo classe, attributo e pseudo-classe;
- si somma 1 per ogni selettore di tipo e di pseudo-elemento

Una volta calcolate la terne, si comparano e vince quella con il valore più alto a partire da sinistra.

**ECCEZIONI: !important >>> style='...' >>> everything else**

## CSS SPECIFISHITY

WITH PLANKTON, FISH AND SHARKS

<b>*</b> universal selector 0-0-0	<b>div</b> 1 element 0-0-1	<b>li &gt; ul</b> 2 elements 0-0-2	<b>body div ...ul li p a</b> 12 elements 0-0-12
<b>.myClass</b> 1 class 0-1-0	<b>*.myClass</b> 1 universal selector 1 class 0-1-0	<b>[type=checkbox]</b> 1 attribute selector 0-1-0	<b>:only-of-type</b> 1 pseudo-class 0-1-0
<b>li.myClass</b> 1 element 1 class 0-1-1	<b>li[attr]</b> 1 element 1 attribute 0-1-1	<b>li:nth-of-type(3n)~li</b> 2 elements 1 pseudo-class 0-1-2	<b>form input[type=email]</b> 2 elements 1 attribute 0-1-2
<b>li.class:nth-of-type(3n)</b> 1 element 1 class 1 pseudo-class 0-2-1	<b>input[type]:not(.class)</b> 1 element 1 class 1 attribute 0-2-1	<b>ol:nth-child(4n)chk[type]...</b> 10 class/attribute/pseudo-classes 0-10-0	<b>#myDiv</b> 1 ID Selector 1-0-0
<b>#myDiv li.class a[href]</b> 2 elements 2 class/attribute 1 ID Selector 1-2-2	<b>#divitis #myDiv a</b> 2 ID Selectors 1 type selector 2-0-1	<b>style=""</b> inline style 1-0-0-0	<b>!important</b> important 1-0-0-0

X-0-0: The number of ID selectors

0-Y-0: The number of class selectors, attributes selectors, and pseudo-classes

0-0-Z: The number of element (a.k.a. type) selectors and pseudo-elements

\*, +, >, ~: Universal selector and combinators do not increase specificity

:not(x): Negation selector has no value. Argument increases specificity





# CSS - 6

## PROPERTIES

### Commonly Used CSS Concepts and Properties v1.0

© J.Zajac 2012

#### SYNTAX

```
html element {  
  property: value;  
  another-property: value;  
}
```

#### Given the HTML:

```
<p id="foo">text 1</p>  
<p class="bar">text 2</p>  
<p class="bar">text 3</p>  
<span class="bar">text 4</p>
```

#### You could target with CSS:

```
p { color:red; }      <- affects 1,2,3  
or  
#foo { color:red; }  <- affects 1  
or  
.bar { color:red; }  <- affects 2,3,4  
or  
p.bar { color:red; } <- affects 2,3
```

#### SPECIFICITY

Given multiple rules for the same element, what does the browser apply?

#### Last wins:

```
p { color: red; }  
p { color: blue; } <- all p's would be blue
```

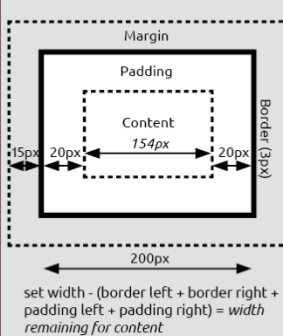
#### Inline CSS trumps stylesheet:

```
HTML: <p style="color:red;">text</p>  
Stylesheet:  
p { color:blue; } <- this will be ignored
```

#### Most specific wins:

```
HTML: <p id="foo" class="bar">text</p>  
CSS:  
#foo { color:red; } <- IDs always win  
.bar { color:blue; }  
p { color:green; } <- least specific
```

#### BOX MODEL



#### TEXT PROPERTIES

<b>color</b>	#000000 hex, name or rgba* of colour
<b>font-family</b>	Georgia, "Times New" comma sep. list

<b>font-size</b>	75% avoid fixed px
<b>font-weight</b>	bold normal

<b>font-style</b>	italic normal
<b>text-transform</b>	uppercase capitalize lowercase none

<b>text-align</b>	left center right
<b>line-height</b>	1.5 150%

<b>letter-spacing</b>	2px px only, neg. ok
<b>text-shadow*</b>	2px 2px 2px #000 "pos right" "pos below" "blur amount" color

<b>background-color</b>	#ffffff hex, name or rgba* of colour
<b>background-image</b>	url(image.png)

<b>background-position</b>	100px 200px "pos left" "pos right" 10% 0% or keywords left top right center
<b>background-repeat</b>	repeat tile in both dirs, or one, or not repeat-x repeat-y no-repeat

<b>background-size</b>	cover contain
<b>background-clip</b>	content-box padding-box border-box

<b>background-origin</b>	border-box padding-box content-box
<b>background-attachment</b>	scroll fixed

<b>background-blend-mode</b>	normal multiply screen overlay darken lighten difference exclusion
<b>background-clip</b>	content-box padding-box border-box

<b>background-size</b>	cover contain
<b>background-clip</b>	content-box padding-box border-box

<b>background-origin</b>	border-box padding-box content-box
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#### BOX PROPERTIES

<b>padding</b>	0px 10px 0px 15px top right bottom left 5px 5px 5px 5px or 1 val for all 5px or 2 vals for t/b r/l 5px 5px px or ems or % 1em 2em
<b>margin</b>	5px 5px 50px auto uses same pattern as padding, neg vals are allowed

<b>border</b>	1px solid #000 width type colour 2px dashed #666
<b>border-radius*</b>	10px curved corner radius

<b>width</b>	500px % or px or em also min-width and max-width
<b>height</b>	500px % or px or em also min-height and max-height

<b>box-shadow*</b>	10px 10px 5px #888 "horizontal offset" "vertical offset" "blur distance" color
<b>border</b>	1px solid #000 width type colour 2px dashed #666

<b>border-radius*</b>	10px curved corner radius
<b>width</b>	500px % or px or em also min-width and max-width

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<b>border</b>	1px solid #000 width type colour 2px dashed #666
<b>border-radius*</b>	10px curved corner radius

#### LAYOUT PROPERTIES

<b>position</b>	static relative absolute fixed
<b>position</b>	static relative absolute fixed

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\* note not all browsers support this property, or you may have to use a vendor specific prefix. check caniuse.com e.g. <http://caniuse.com/border-radius>



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