

Programming of Web Pages

Lecture 3 - CSS

What is CSS?

CSS – ang. **C**ascading **S**tyl**S**heets

CSS is a stylesheet language that describes **the presentation** of a HTML document

Advantages of CSS

Separation of the site structure and form of its presentation

CSS provides more options for formatting than pure HTML

Reduction of the amount of code used for the visualization

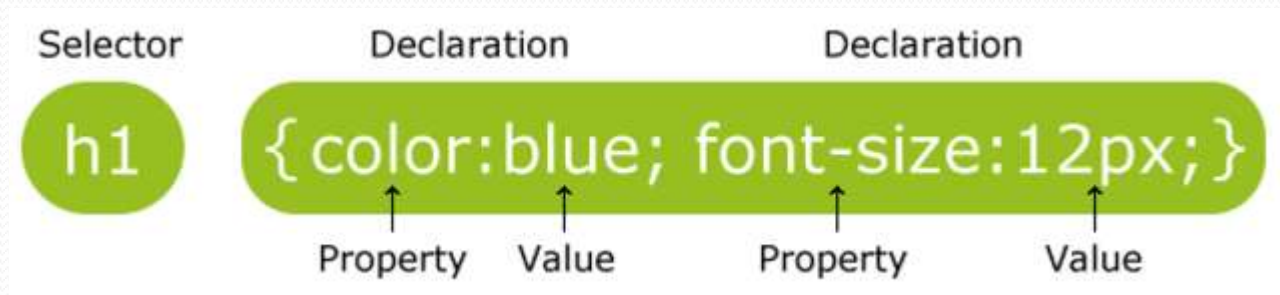
Easy manipulation of entire complexes of pages

Style rule

Rule – consists of two parts:
selector and **declaration**

Selector points to the HTML element you want to style

Declaration contains one or more declarations
separated by semicolons



CSS syntax - Selectors

The element Selector

```
p { color: green }  
/* wszystkie akapity przyjmą kolor zielony */
```

The id Selector

```
p#uwaga { color: red }  
/* Reguła obowiązywać będzie dla (unikalnego) elementu:  
*   <p id="uwaga">treść uwagi unikalnej</p>  
*/
```

CSS syntax - Selectors

The class Selector

```
p.uwaga { color: red }  
/* Reguła obowiązywać będzie dla elementów:  
   <p class="uwaga">treść uwagi pierwszej</p>  
   <p class="uwaga">treść uwagi drugiej</p>  
*/
```

CSS syntax - Selectors

Independent classes

```
.news {color:blue;  
        text-decoration:underline;}
```

```
...  
<h1 class="news">Jakiś tytuł 1</h1>  
<p class="news">Jakiś paragraf 1</p>  
<h1>Jakiś tytuł 2</h1>  
<p>Jakiś paragraf 2</p>  
...
```

CSS syntax - Selectors

Dependent classes

```
h1.news {color:blue;
        text-decoration:underline;}
p.news {color:black;
        text-style:italic;}
```

```
...
<h1 class="news">Jakiś tytuł 1</h1>
<p class="news">Jakiś paragraf 1</p>
<h1>Jakiś tytuł 2</h1>
<p>Jakiś paragraf 2</p>
...
```


CSS syntax - Selectors

Pseudo-class selector

A pseudo-class is used to define
a special state of an element

For example, it can be used to:

- (-) Style an element when a user mouse is over it,
- (-) Style visited and unvisited links differently.

**The syntax of
pseudo-classes:**

```
selector:pseudo-class {  
    property:value;  
}
```

CSS syntax - Selectors

Anchor pseudo-classes

```
/* unvisited link */  
a:link {  
    color: #FF0000;  
}
```

```
/* visited link */  
a:visited {  
    color: #00FF00;  
}
```

```
/* mouse over link */  
a:hover {  
    color: #FF00FF;  
}
```

```
/* selected link */  
a:active {  
    color: #0000FF;  
}
```

CSS syntax - Selectors

Universal Selector

It selects all elements

```
* {color: black;}  
/*Każdy element ma przypisany kolor czarny.*/  
  
*.szara {color: gray;}  
.szara {color: gray;}  
/*Obie notacje są poprawne i równoważne.*/>
```

CSS syntax - Selectors

Grouping Selectors

```
h1, h2, h3, h4 {font-weight: bold;}  
/* Pasuje do czterech różnych elementów */
```

CSS syntax - Combinators

A combinator is something that explains the relationship between the selectors

Descendant selector

The descendant selector matches all elements **that are descendants** of a specified element

```
table tr { background-color: gray }  
/* <tr><td>treść z szarym tłem</td></tr> */
```

CSS syntax - Combinators

Child selector

The child selector selects all elements that are **the immediate children** of a specified element

```
div#main > p { background-color: gray }
```

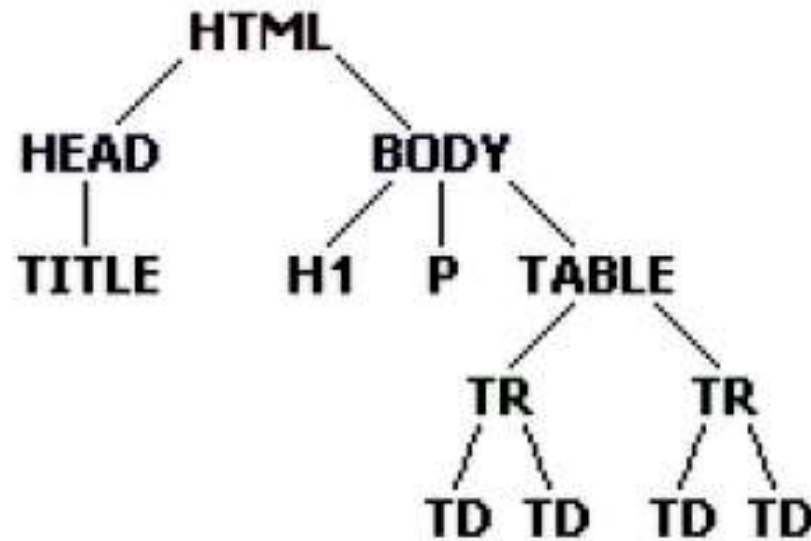
Sequence of combinators

```
div#menu ul li a:hover {font-weight: bold;}  
/* Można też łączyć wiele kombinatorów ze sobą i kombinatory z selektorami */
```

Document tree

The document tree is a tree of elements placed in the HTML document

Each element in this tree has exactly one parent (except for the **root of the tree**)



Inheritance in CSS

Inheritance - elements lower in the tree hierarchy inherit style of elements lying higher in the hierarchy

Thus, in the style sheet we **do not have to assign** all the properties of all elements (e.g. we can set preferred typeface of the text only for the <body>)

Other elements receive their properties by inheritance - the transfer of properties **from the parent to the child**

Inheritance in CSS

Inheritance - elements lower in the tree hierarchy inherit style of elements lying higher in the hierarchy

```
p {color: gray}
strong {color: black;}
/* <p>treść szara <em>kolejna treść szara</em>
 * <strong>treść czarna</strong></p>
 */
```

Cascading in CSS

Cascading - prioritization of styles sources

If several rules fit into a given element in the document, then the **hierarchy of importance** decides which properties will be used

Styles defined **in the document header** (ie. **nested styles**) are higher in the hierarchy than **external style sheets**

Styles defined **directly in the body** of the document (ie. **local styles**) are higher in the hierarchy than **nested styles**

Cascading in CSS

External styles

Included

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

Imported

```
<head>  
  <style>  
    @import url("http://www.adres.pl/style/arkusz.css");  
  </style>  
</head>
```

Cascading in CSS

Nested styles

```
<head>
...
<style type="text/css">
    tutaj {reguły: css;}
</style>
...
</head>
```

Local styles

```
<p style="color:red; font-size:15pt;">styl lokalny</p>
```

Units of measurement in CSS

Absolute units

in – inches

cm – centimeters

mm - millimeters

pt – points (1pt = 1/72in)

pc - pica (1pc = 12pt)

```
h1 {margin-left:20pt;}
```

Units of measurement in CSS

Relative units

px – pixels

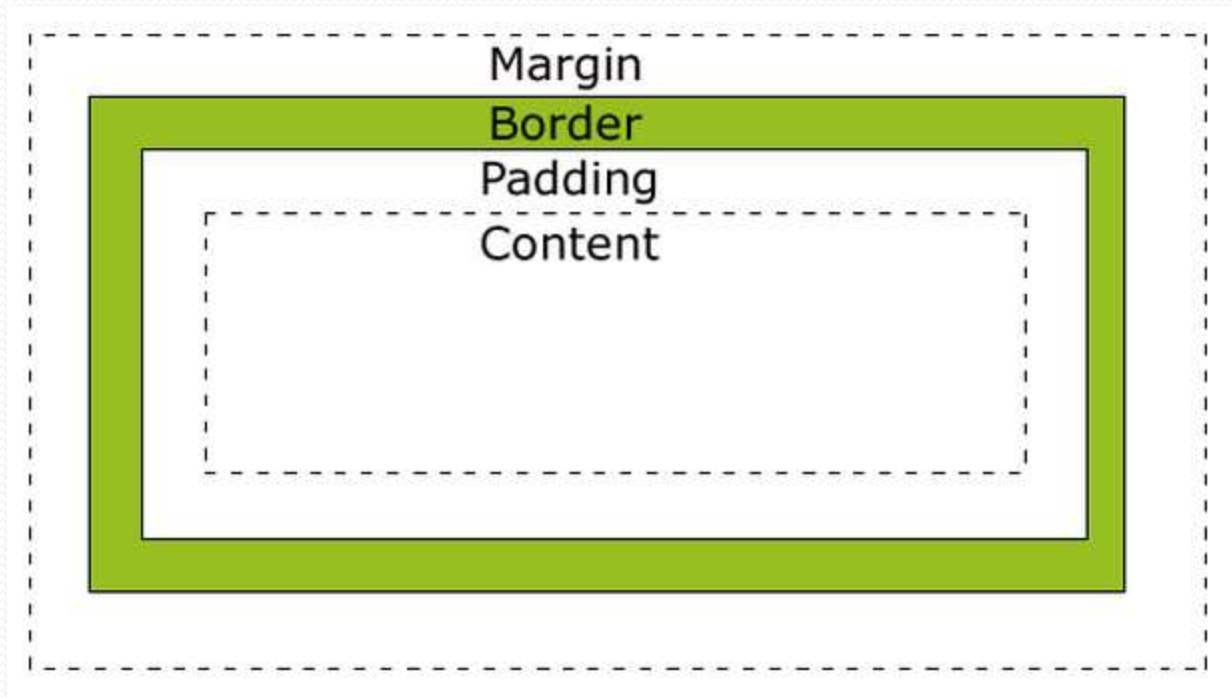
em – font height of the element
(1em is equal to the current size.
2em means doubling the current size.
For example, if the item is displayed using font
size 12 pt, then '2em' means the 24 pt.)

ex – height of the 'x' letter
(usually its height is half of the size of the font)

```
p {margin-left:20px; }
```

Box model

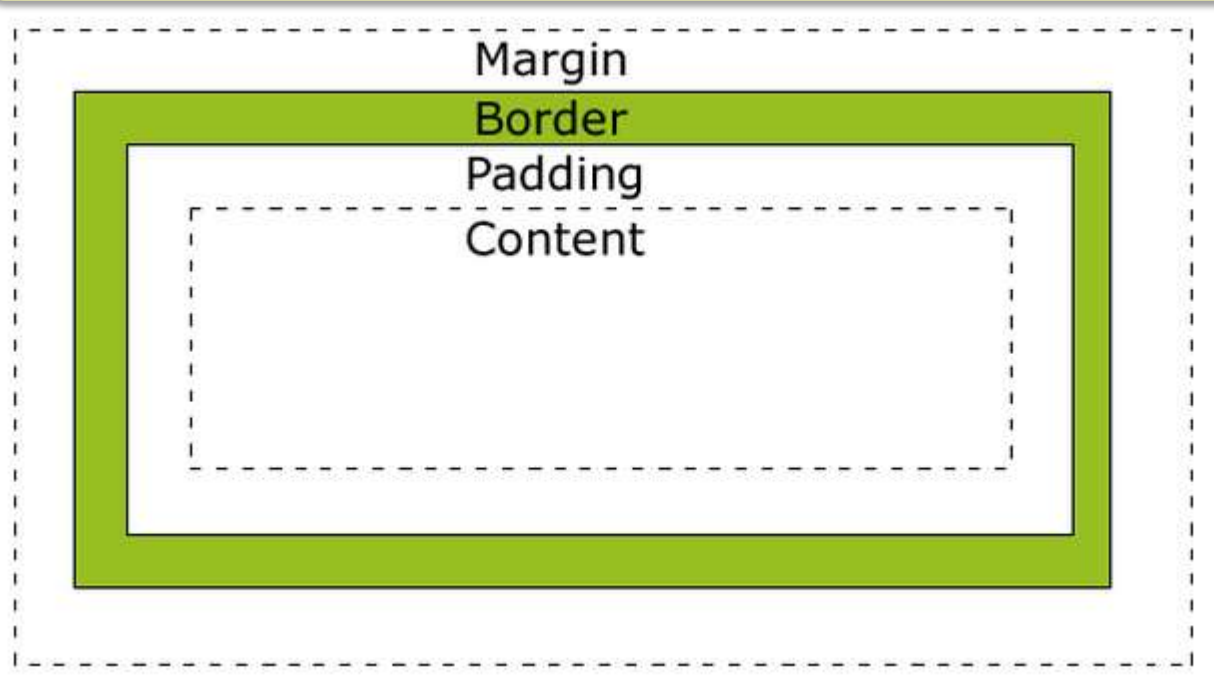
All HTML elements can be considered as **boxes**



Box model

When you set the **width** and **height** properties of an element with CSS, you just set the width and height of the **content area**

To calculate **the full size** of an element, you must also **add** padding, borders and margins

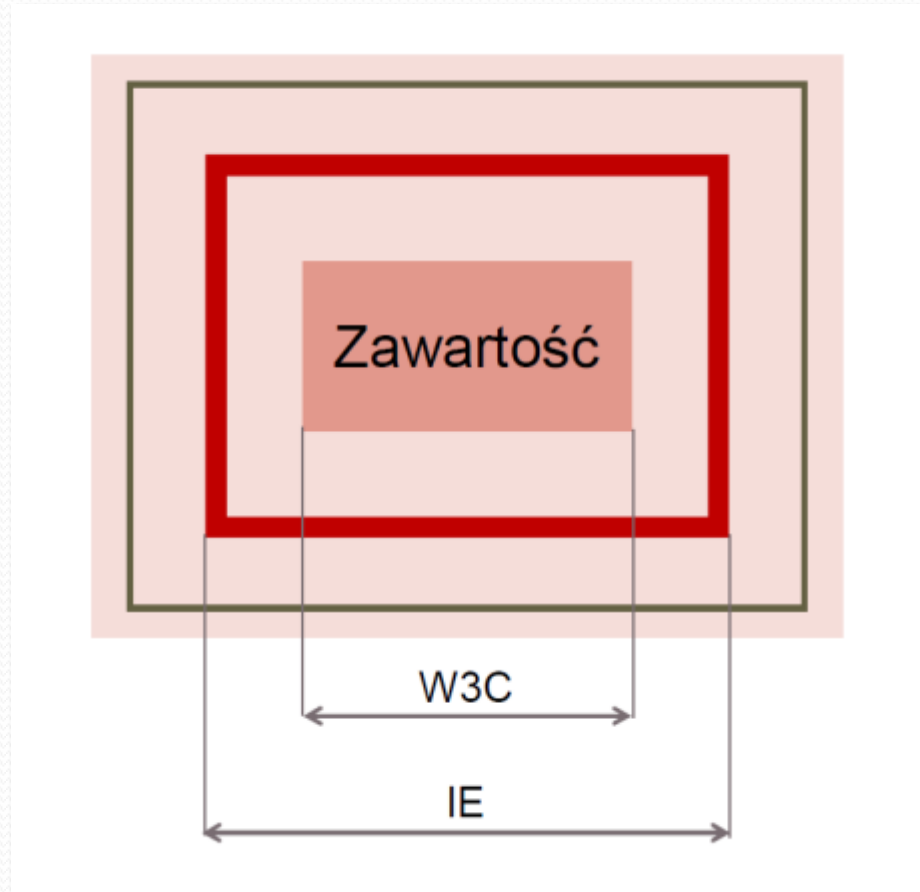


```
width:250px;  
padding:10px;  
border:5px solid gray;  
margin:10px;
```

250px (width)
+ 20px (left + right padding)
+ 10px (left + right border)
+ 20px (left + right margin)
= 300px

Box model

IE 8.0 and older...



Block and inline elements

Block

Block elements always starts on a new line

They always takes up the full width available

Examples of block elements: <h1>, <p>, **<div>**

Inline

Inline elements are displayed side by side in a line

Height and **width** of these elements **can't be specified**

Examples of inline elements : , <i>, ****

Positioning of elements

Attribute *positioning*

It specifies **the type** of positioning method used for an element

This type defines **the interaction** of an element with the others

Attributes *top, bottom, left, right*

They sets margin edges for a positioned box

Positioning of elements

position: static

It is **a default value**

Elements with *position:static* are always positioned according to **the normal flow of the page**

Static positioned elements **are not affected** by the top, bottom, left, and right properties

Positioning of elements

positioning: static

Source Code:

```
<!DOCTYPE html>
<html>
<head>
<style>
p.pos_fixed
{
position:static;
top:300px;
left:50px;
}
</style>
</head>
<body>

<p class="pos_fixed">Some more text</p>
<p>Some text</p>
<p>Some text</p>
<p>Some text</p>
<p>Some text</p>
</body>
</html>
```

Result:

Some more text

Some text

Some text

Some text

Some text

Positioning of elements

position: fixed

Elements with *position: fixed*
are positioned **relative to the viewport**

They **always stay in the same place**
even if the page is scrolled

„Fixed” elements can **overlap** other elements

Source Code:

```
<!DOCTYPE html>
<html>
<head>
<style>
p.pos fixed
```

```
{
position:fixed;
top:30px;
right:50px;
}
```

```
</style>
</head>
<body>
```

```
<p class="po
<p>Some text
Some text
<p>Some text
Some text
<p>Some text
Some text
<p>Some text</p><p>Some text</p>
<p>Some text</p><p>Some text</p>
<p>Some text</p><p>Some text</p>
<p>Some text</p><p>Some text</p>
</body>
</html>
```

Result:

DOING LOCAL

Some text

Some text

Some text

Some text

Some text

Some text

$\langle p \rangle < \langle p \rangle_{SC}$

$\frac{1}{p} < \frac{1}{q} < \frac{1}{r}$

$\frac{1}{p} \wedge \frac{1}{p} \leq \frac{1}{2}$

positioning: fixed

Some more text

overlapping of the elements:

Some ~~Some~~ more text

Positioning of elements

position: relative

Elements with *position: relative* are positioned relative to their **normal position**

They are usually used as a container for items marked as **"absolute"**

Setting the top, right, bottom, and left properties of a relatively-positioned element will cause it to be adjusted away from its **normal position**

In this case other content **will not be adjusted** to fit into any gap left by the element

positioning: relative

Source Code:

```
<!DOCTYPE html>
```

```
<html>
```

```
<head>
```

```
<styl
```

```
h2.po
```

```
{
```

```
posit
```

```
left:
```

```
}
```

```
h2.po
```

```
{
```

```
posit
```

```
left:
```

```
}
```

```
</styl
```

```
</hea
```

```
<body
```

```
<h2>T
```

```
<h2 class="pos_left">This heading is moved left according to its normal  
position</h2>
```

```
<h2 class="pos_right">This heading is moved right according to its normal  
position</h2>
```

```
</body>
```

```
</html>
```

Result:

This is a heading with no position

This heading is moved left according to its normal position

This heading is moved right according to its normal position

positioning: relative

This is a heading with no position

h2



This heading is moved upwards according to its normal position

Note: Even if the content of the relatively positioned element is moved, the reserved space for the element is still preserved in the normal flow.

```
h2 {  
  position: relative;  
  top: -50px;  
}
```

This heading is moved upwards according to its normal position

Note: Even if the content of the relatively positioned element is moved, the reserved space for the element is still preserved in the normal flow.

Positioning of elements

position: absolute

Elements with *position: absolute* are positioned relative to the **nearest positioned ancestor** (which is not „static”)

If an absolute positioned element has no positioned ancestors, it uses the **document body**

positioning: absolute

Source Code:

```
<!DOCTYPE html>
<html>
<head>
<style>
h2
```

Result:

With absolute positioning, an element can be placed anywhere on a page. The heading below is placed 100px from the left of the page and 150px from the top of the page.

This is a heading with an absolute position

Positioning of elements

Attribute *z-index*

It specifies **the stack order** of an element

Source Code:

```
<!DOCTYPE html>
<html>
<head>
<style>
img
{
position:absolute;
left:0px;
top:0px;
z-index:-1;
}
</style>
</head>

<body>
<h1>This is a heading</h1>

<p>Because the image has a z-index of -1, it will be placed behind the text.</p>
</body>
</html>
```

Result:



This is a heading

Because the image has a z-index of -1, it will be placed behind the text.

Positioning of elements


Attribute *float*

This property specifies whether or not an element should float, **elements after a floating element will flow around it**

The float property can be used to wrap text around images and **work with layouts**

[illegible]

```
img
{
float:left;
}
```

 This is some text. This is some text. This
is some text. This is some text. This is so
some text. This is some text. This is som
text. This is some text. This is some text
This is some text. This is some text. This
is some text. This is some text. This is some text. This i
some text. This is some text. This is some text. This is s



This is some text. This is some
is some text. This is some text. This is some t
some text. This is some text. This is some tex
some text. This is some text. This is some tex
~~some text. This is some text. This is some tex~~

Page Elements



It is used to

elements

The clear

element

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Phasellus imperdiet, vitae scelerisque enim ligula venenatis dolor. Maecenas nisl est, ultrices nec vestibulum augue ut aliquet. Mauris ante ligula, facilisis sed ornare eu, lobortis ut hendrerit risus congue. Nunc sagittis dictum nisi, sed ullamcorper ipsum dolor sed ornare turpis. Donec vitae dui eget tellus gravida venenatis. Integer fringilla pulvinar nibh tempor porta. Cras ac leo purus. Mauris quis diam velit.

```
img {  
  float: left;  
  margin: 0 10px 10px 10px;  
}  
  
p {  
  clear: left;  
}
```

```
  
<p>Lorem ipsum dolor sit amet, consectetur adipiscing elit. Phasellus  
interdum, nisi lorem egestas odio, vitae scelerisque enim ligula venenatis  
ultrices nec congue eget, auctor vitae massa. Fusce luctus vestibulum  
ligula, facilisis sed ornare eu, lobortis in odio. Praesent convallis  
hendrerit risus congue. Nunc sagittis dictum nisi, sed ullamcorper  
sed nunc venenatis imperdiet sed ornare turpis. Donec vitae dui eget  
Integer fringilla congue eros non fermentum. Sed dapibus pulvinar  
purus. Mauris quis diam velit.  
</p>
```


Feature Overview

Background

```
h1 {  
  background-color: #6495ed;  
}  
  
p {  
  background-color: #e0ffff;  
}  
  
div {  
  background-color: #b0c4de;  
}
```

```
<h1>CSS background-color example!</h1>  
<div>  
  This is a text inside a div element.  
  <p>This paragraph has its own background color.</p>  
  We are still in the div element.  
</div>
```

CSS background-color example!

This is a text inside a div element.

This paragraph has its own background color.

We are still in the div element.

Feature Overview

Background

```
<head>
<style>
body {
  background-image: url("paper.gif");
}
</style>
</head>
<body>

<h1>Hello World!</h1>

</body>
```



Hello World!



Feature Overview

Background

```
<head>
<style>
body {
  background-image: url("gradient_bg.png");
}
</style>
</head>
<body>

<h1>Hello World!</h1>

</body>
```



Hello World!

Feature Overview

Background

```
<head>
<style>
body {
  background-image: url("gradient_bg.png");
  background-repeat: repeat-x;
}
</style>
</head>
<body>

<h1>Hello World!</h1>

</body>
```



Hello World!

Feature Overview

Background

```
body {  
  background-image: url("img_tree.png");  
  background-repeat: no-repeat;  
}
```

Hello World!

W3Schools background image example.

The background image is only showing once, but it is disturbing the reader!



Feature Overview

Background

```
body {  
  background-image: url("img_tree.png");  
  background-repeat: no-repeat;  
  background-position: right top;  
  margin-right: 200px;  
}
```

Hello World!

W3Schools background no-repeat, set position example.

Now the background image is only shown once, and positioned away from the text.

In this example we have also added a margin on the right side, so the background image will never disturb the text.



Feature Overview

Text

```
body {  
    color: red;  
}  
  
h1 {  
    color: #00ff00;  
}  
  
p.ex {  
    color: rgb(0,0,255);  
}
```

```
<h1>This is heading 1</h1>  
<p>This is an ordinary paragraph. Notice that this  
defined in the body selector.</p>  
<p class="ex">This is a paragraph with class="ex"
```

This is heading 1

This is an ordinary paragraph. Notice that this text is red. The default text-color for a page is defined in the body selector.

This is a paragraph with class="ex". This text is blue.

Feature Overview

Text

```
h1 {  
    text-align: center;  
}  
  
p.date {  
    text-align: right;  
}  
  
p.main {  
    text-align: justify;  
}
```

```
<h1>CSS text-align Example</h1>  
<p class="date">May, 2009</p>  
<p class="main">In my younger and more vulnerable years my father gave me some advice that I've been turning over in my mind ever since. 'just remember that all the people  
<p><b>Note:</b> Resize the browser
```

CSS text-align Example

May, 2009

In my younger and more vulnerable years my father gave me some advice that I've been turning over in my mind ever since. 'Whenever you feel like criticizing anyone,' he told me, 'just remember that all the people in this world haven't had the advantages that you've had.'

Note: Resize the browser window to see how the value "justify" works.

Feature Overview

Text

```
h1 {  
  text-decoration: overline;  
}
```

```
h2 {  
  text-decoration: line-through;  
}
```

```
h3 {  
  text-decoration: underline;  
}
```

```
<h1>This is heading 1</h1>  
<h2>This is heading 2</h2>  
<h3>This is heading 3</h3>
```

This is heading 1

~~This is heading 2~~

This is heading 3

Feature Overview

Text

```
p.uppercase {  
  text-transform: uppercase;  
}
```

```
p.lowercase {  
  text-transform: lowercase;  
}
```

```
p.capitalize {  
  text-transform: capitalize;  
}
```

```
<p class="uppercase">This is some text.</p>  
<p class="lowercase">This is some text.</p>  
<p class="capitalize">This is some text.</p>
```

THIS IS SOME TEXT.

this is some text.

This Is Some Text.

Feature Overview

Font

```
p.serif {  
    font-family: Times New Roman;  
}  
  
p.sansserif {  
    font-family: Arial;  
}
```

```
<h1>CSS font-family</h1>
```

```
<p class="serif">This is a paragraph, shown in the Times New Roman font.</p>
```

```
<p class="sansserif">This is a paragraph, shown in the Arial font.</p>
```

CSS font-family

This is a paragraph, shown in the Times New Roman font.

This is a paragraph, shown in the Arial font.

Feature Overview

Font

```
p.normal {  
    font-style: normal;  
}  
  
p.italic {  
    font-style: italic;  
}  
  
p.bold {  
    font-weight: bold;  
}
```

```
<p class="normal">This is a paragraph in normal style.</p>  
<p class="italic">This is a paragraph in italic style.</p>  
<p class="bold">This is a paragraph in oblique style.</p>
```

This is a paragraph in normal style.

This is a paragraph in italic style.

This is a paragraph in oblique style.

Feature Overview

Font

```
h1 {  
  font-size: 40px;  
}  
  
h2 {  
  font-size: 30px;  
}  
  
p {  
  font-size: 14px;  
}
```

```
<h1>This is heading 1</h1>  
<h2>This is heading 2</h2>  
<p>This is a paragraph.</p>  
<p>This is another paragraph.</p>
```

This is heading 1

This is heading 2

This is a paragraph.

This is another paragraph.

Feature Overview

List

```
ul {  
  list-style-type: none;  
  padding: 0px;  
  margin: 0px;  
}  
  
ul li {  
  background-image: url(sqpurple.gif);  
  background-repeat: no-repeat;  
  background-position: 0px center;  
  padding-left: 15px;  
}
```

```
<ul>  
  <li>Coffee</li>  
  <li>Tea</li>  
  <li>Coca Cola</li>  
</ul>
```

- Coffee
- Tea
- Coca Cola

Feature Overview

List

```
ul {  
    list-style-type: none;  
    margin: 0;  
    padding: 0;  
}  
  
li {  
    display: inline;  
}
```

```
<ul>  
  <li><a href="#home">Home</a></li>  
  <li><a href="#news">News</a></li>  
  <li><a href="#contact">Contact</a></li>  
  <li><a href="#about">About</a></li>  
</ul>
```

[Home](#) [News](#) [Contact](#) [About](#)

Feature Overview

Border

```
p.one {  
  border-style: solid;  
  border-width: 5px;  
}  
  
p.two {  
  border-style: dotted;  
  border-width: 2px;  
  border-color: red;  
}
```

```
<p class="one">Some text.</p>  
<p class="two">Some text.</p>
```

Some text.

Some text.

Feature Overview

Margin

```
p {  
    background-color: yellow;  
}  
  
p.ex {  
    margin-top: 100px;  
    margin-bottom: 100px;  
    margin-right: 150px;  
    margin-left: 50px;  
}
```

```
<p>This is a paragraph with no specified margins.</p>
```

```
<p class="ex">This is a paragraph with specified margins.</p>
```

This is a paragraph with no specified margins.

This is a paragraph with specified margins.

Feature Overview

Padding

```
p {  
    background-color: yellow;  
}  
  
p.padding {  
    padding-top: 25px;  
    padding-right: 50px;  
    padding-bottom: 25px;  
    padding-left: 50px;  
}
```

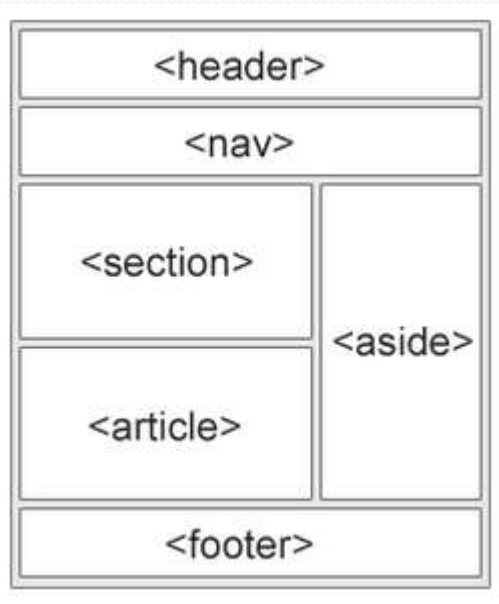
```
<p>This is a paragraph with no specified padding.</p>
```

```
<p class="padding">This is a paragraph with specified paddings.</p>
```

This is a paragraph with no specified padding.

This is a paragraph with specified paddings.

Layout creation



PSI

HTML

CSS

Java Script

HTML

HTML pozwala opisać strukturę informacji zawartych wewnątrz strony internetowej, nadając znaczenie poszczególnym fragmentom tekstu (...)

HTML umożliwia określenie wyglądu dokumentu w przeglądarce internetowej. Do szczegółowego opisu formatowania akapitów, nagłówków, użytych czcionek i kolorów (...)

Layout creation

```
<header>
<h1>PSI</h1>
</header>

<nav>
HTML<br>
CSS<br>
Java Script<br>
</nav>

<section>
<h2>HTML</h2>
<p>
HTML pozwala opisać strukturę informacji zawartych wewnątrz strony
poszczególnym fragmentom tekstu (...)
</p>
<p>
HTML umożliwia określenie wyglądu dokumentu w przeglądarce internetowej
formatowania akapitów, nagłówków, użytych czcionek i kolorów (...)
</p>
</section>

<footer>
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</footer>
```

Layout creation

PSI

HTML

CSS

Java Script

HTML

HTML pozwala opisać strukturę informacji zawartych wewnątrz strony internetowej, nadając znaczenie poszczególnym fragmentom tekstu (...)

HTML umożliwia określenie wyglądu dokumentu w przeglądarce internetowej. Do szczegółowego opisu formatowania akapitów, nagłówków, użytych czcionek i kolorów (...)

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Layout creation

```
header {  
  background-color:green;  
  color:white;  
  text-align:center;  
  padding:5px;  
  width: 500px;  
}
```



PSI

HTML

CSS

Java Script

HTML

HTML pozwala opisać strukturę informacji zawartych wewnątrz strony internetowej, nadając znaczenie poszczególnym fragmentom tekstu (...)

HTML umożliwia określenie wyglądu dokumentu w przeglądarce internetowej. Do szczegółowego opisu formatowania akapitów, nagłówków, użytych czcionek i kolorów (...)

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Layout creation

```
nav {  
  line-height:30px;  
  background-color:#eeeeee;  
  height:300px;  
  width:100px;  
  padding:5px;  
}
```

PSI

HTML

CSS

Java Script

HTML

HTML pozwala opisac strukture informacji zawartych wewnatrz strony internetowej
fragmentom tekstu (...)

Layout creation

```
nav {  
  line-height:30px;  
  background-color:#eeeeee;  
  height:300px;  
  width:100px;  
  padding:5px;  
  float: left;  
}
```

PSI

HTML

CSS

Java Script

HTML

HTML pozwala opisac strukture informacji zawartych wewnatrz strony internetowej, poprzez przypisanie znaczników do poszczególnym fragmentom tekstu (...)

HTML umożliwia określenie wyglądu dokumentu w przeglądarce internetowej, poprzez opis formatowania akapitów, nagłówków, użytych czcionek i kolorów (...)

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Layout creation

```
section {  
  width:380px;  
  float:left;  
  padding:10px;  
}
```

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HTML

CSS

Java Script

HTML

HTML pozwala opisac strukture informacji zawartych wewnatrz strony internetowej, nadajac znaczenie poszczegolnym fragmentom tekstu (...)

HTML umozliwia okreslenie wygladu dokumentu w przegladarce internetowej. Do szczegolowego opisu formatowania akapitow, naglowkow, uzytych czcionek i kolorow (...)

Layout creation

```
footer {  
    background-color:green;  
    color:white;  
    text-align:center;  
    padding:5px;  
    width: 500px;  
    clear: both;  
}
```

PSI	
HTML	
CSS	HTML
Java Script	<p>HTML pozwala opisać strukturę informacji zawartych wewnątrz strony internetowej, nadając znaczenie poszczególnym fragmentom tekstu (...)</p> <p>HTML umożliwia określenie wyglądu dokumentu w przeglądarce internetowej. Do szczegółowego opisu formatowania akapitów, nagłówków, użytych czcionek i kolorów (...)</p>
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Literature

Professional CSS: Cascading Style Sheets for Web Design, C. Schmitt, T. Dominey, C. Li, E. Marcotte, D. Orchard, M. Trammell, Wiley Publishing

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