

# Basic styling of HTML content by cascading styles (CSS)

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# Lecture content

- CSS, syntax, selector, declarations, composite selectors
- Comments, stylesheet attachment to the content
- Units, box model
- Margin, border, padding, background
- Colors, text, letters, fonts

# Cascading Style Sheets (CSS)

- The stylesheet defines how to display the content of HTML elements at screen, paper or other medium
- Example

```
body {background-color: lightblue;}
h1 {color: white; text-align: center;}
p {font-family: verdana; font-size: 1.25em;}
```
- One stylesheet can style several web pages at once
- External stylesheet are stored as **CSS** type files

# Syntax: (rule set of a stylesheet)

- Two parts:
  - selector
  - Declarations block



A diagram illustrating the syntax of a CSS rule set. It shows the selector 'h1' in a green oval, followed by an opening curly brace '{'. The declarations 'color: blue;' and 'font-size: 12px;' are each enclosed in a yellow rectangular box. These boxes are contained within a larger blue oval, which is also enclosed by a closing curly brace '}'.

```
h1 {  
  color: blue;  
  font-size: 12px;  
}
```

- Selector:
  - Specifies HTML elements which we want to style
- Declarations block:
  - One or more declarations
  - Separated by ;
  - Closed in {}
- Declarations:
  - Name of CSS property
  - One or more values (separated by , )
  - Terminated by ;

# Syntax: basic selectors

- Element type
  - h2, p, body, html, article, ...
- Class (.card)
  - There exists an element with class="card " in HTML document
  - Several such elements may exist in the document
  - `.card {width: 35em; height: 22em;}`
- Instance (#firstParagraph)
  - There exists an element with id="firstParagraph" in HTML document
  - One such element exists in the document
  - `#firstParagraph {text-align: center; color: red;}`

# Syntax: composite selectors

- A rule set holds:
  - For several elements .. separated by comma .. **h1, h2, p {}**
  - For elements which belong to the class .. separated by dot .. **p.card {}**
  - For elements contained in an element .. separated by space
    - **.card p {}**
    - Nesting is allowed: **.card footer p {}**
- More selector composition ways exist

```
<div class=„card“>
  <p>text1</p>
  <footer>
    <p>text</p>
  </footer>
</div>
```

# Comments

- In HTML
  - Beginning: `<!--`
  - End: `-->`
  - Can span several rows

`<!-- this is a comment  
in HTML -->`

- In CSS
  - Beginning: `/*`
  - End: `*/`
  - Can span several rows

`/* this is a comment  
in CSS */`

# Stylesheet attaching to HTML document

- 3 options:
  - External stylesheet
  - Internal stylesheet
  - Styles specified in the style attributed of an element



# External stylesheet

- Reference to stylesheet file in the <link> element.
- <link> element is given in the <head> part.
- Example:
- ```
<head>  
<link rel="stylesheet" type="text/css" href=„sablona.css">  
</head>
```

# Internal stylesheet

- Specific style for one page only
- Debugging purposes
- Definition in `<style>` HTML element.
- `<style>` element is given in the `<head>` section.
- Example:
  - ```
<head>
  <style>
    body {background-color: linen;}
    h1 {color: maroon; margin-left: 40px;}
  </style>
</head>
```

# Style specified at element

- Specific style for one element.
- Given as value of the style attribute of the element
- Any CSS property can be styles
- Example:
- `<h1 style="color:blue;margin-left:30px;">This is a heading</h1>`
- !!! Should be used rarely because content and style are mixed !!!

# Order of cascading styles

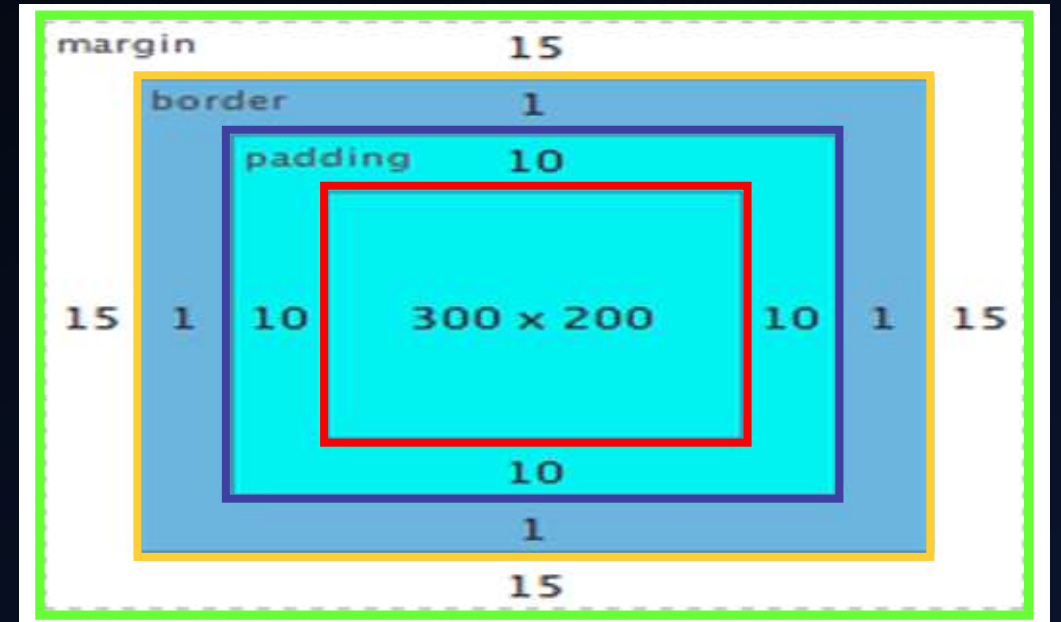
- Styling from several stylesheets or rule sets can hold for one element
- „The winner is the last one “ rule:
  1. Browser's built-in styling
  2. External and internal stylesheets (specified in the head element) in the order of reading
  3. Style specified at the HTML element

# Units

- Absolute:
  - Cm, mm, in (1in = 96px = 2.54cm)
  - Px (pixel), pt (point, 1pt = 1/72 of 1in), pc (pica, 1pc = 12 pt)
  - Px size depends on the device
  - Quantity and unit is written together (without spaces): 2.3in, 5.3cm, .875em
- Relative:
  - percent, em
  - others
- Unit convertor [https://www.w3schools.com/cssref/css\\_pxtoemconversion.asp](https://www.w3schools.com/cssref/css_pxtoemconversion.asp)
- Details: [https://www.w3schools.com/cssref/css\\_units.asp](https://www.w3schools.com/cssref/css_units.asp)

# Box model of HTML elements

- External margin (**margin**)
- Border (**border**)
- Internal margin (**padding**)
- Setting width and height of element we set width and height of the **content only**.
- In the overall size of the element **padding**, **border** and **margin** is included, too.



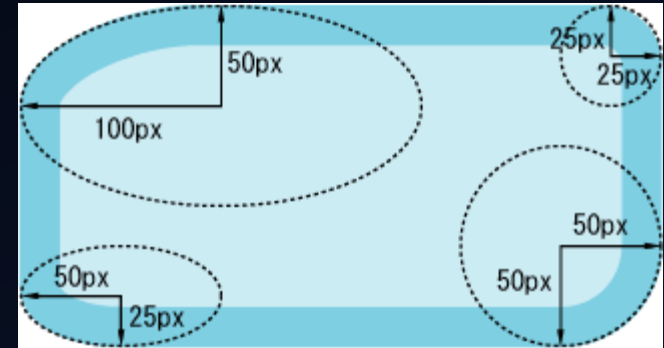
# Border

**Border** property = shortened variant of several properties (**border-width border-style border-color**)

- **border-width**
  - Numeric value (in px, pt, cm, em units) or one of predefined values **thin, medium, thick**.
- **border-style**
  - **dotted, dashed, solid, double**, and others
- **border-color**
  - Named color (**red**), hex value (**#ff0000**), RGB value (**rgb(255,0,0)**) or **transparent**

# Rounded corners (border-radius)

- New in CSS3
- Four values of rounding radius (in px, pt, cm, em units) for corners in the order **top-left**, **top-right**, **bottom-right**, **bottom-left**.
- A ratio of two radii can be also given (for elliptic rounding)
  - Example: **border-radius: 100px/50px;**
- The four values are not necessarily given all





# Image as border (border-image)

- New in CSS3
- A specific image can be given to be used as a border of elements
- The property has three parts:
  - Image
  - Image cut
  - Whether the parts between borders should be repeated or extended



- The border property has to be specified as well!

- Example:

- `border: 10px solid transparent;`
- `border-image: url(border.png) 20% round;`



- Details at: [https://www.w3schools.com/css/css3\\_border\\_images.asp](https://www.w3schools.com/css/css3_border_images.asp)

# Margin

- Free space **OUTSIDE** of the border of the element
- For each side of the element a margin can be given:
  - **margin-top**, **margin-right**, **margin-bottom**, **margin-left**
- Possible values:
  - **auto** – the browser will calculate the margin
  - **length** – length of the margin (in px, pt, cm, em)
  - **%** - margin in % of the width of the containing element
  - **inherit** – inherited from the parent element
- Hint: negative values are allowed

```
p {  
    margin-top: 100px;  
    margin-bottom: 100px;  
    margin-right: 150px;  
    margin-left: 80px;  
}
```

# Padding

- Free space **INSIDE** of the border of the element
- For each side of the element a padding can be specified:
  - **padding-top, padding-right, padding-bottom, padding-left**
- Possible values:
  - **length** – thickness of the padding (in px, pt, cm, em)
  - **%** - padding as % of the width of the containing element
  - **inherit** – inherited from the parent element
- Example: **p {padding: 50px 30px 50px 80px;}**

# Size of the element (height, width)

- Size of the element as height and width
- Not including padding, border and margin
- Values:
  - auto .. initial, calculated by the browser
  - In length units (px, cm, etc.)
  - In % of the containing element
- If the element size of an element exceeds the size of the browser window, a scroll bar will be added for content scrolling
- Solution: to use max-width (as well as max-height)

# Element background

- **background-color**
- **background-image**
  - Image is repeated to cover the element completely, if not stated otherwise
- **background-repeat**
  - Way of repetition (vertical, horizontal, none)
- **background-attachment**
  - The background will scroll together with the content of the page or not
- **background-position**
  - Position of the background, e.g. when the image is not repeated

# Element background in CSS3

- **Background-image**
  - Several background images, separated by comma
  - The first image is the closest to the user
- **Background-size**
  - Length units, %, cover, contain
  - **Cover**: the size is changed to the size of the smaller dimension (only part of the image is displayed)
  - **Contain**: the size is changed to the size of the bigger dimension (a free place is displayed next to the image)
- **Background-origin**
  - From which place the image starts
  - Values: **border-box** , **padding-box** or **content-box**



## Background of element (background-image)

- It sets one or more images as background of HTML element
- Background of the element includes padding and border (but not margin).
- Background of element is placed aligned to the upper left corner of the element and it is repeated vertically and horizontally, if not stated otherwise
- Hint: always specify the background color (background-color property), for the case that the background image is not available

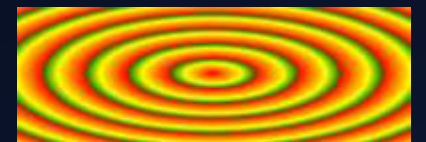
# Colors

- HTML colors can be set using predefined color names (140 standard names) or as RGB, HEX values
- In CSS3 HSL, RGBA, or HSLA values can be also used.
- Setting the background color .. **background-color**
- Setting the font color .. **color**
- Transparency, hue, saturation, lightness can be specified
- Details:
- [https://www.w3schools.com/css/css\\_colors.asp](https://www.w3schools.com/css/css_colors.asp)



# Color functions (CSS3)

- Creates an „image“ that is a gradual color transition
- **linear-gradient()**
  - In a direction: right, left, up, down, diagonally, in some angle
- Example:  
**background: linear-gradient(to right, red, orange, yellow, green, blue, indigo, violet);**
- **radial-gradient()**
  - Transition from the center to borders
- With color repetition:
  - **repeating-linear-gradient(), repeating-radial-gradient()**
- More possibilities and details: [https://www.w3schools.com/css/css3\\_gradients.asp](https://www.w3schools.com/css/css3_gradients.asp)



# Text

## Property

- color
- line-height
- text-decoration
- text-indent
- text-transform
- word-spacing
- letter-spacing

## Description

color of text characters

line height

text decoration `a{text-decoration: none}`

indentation of the first line of the text block

small and big letters, capitals

spaces between words in the text

spaces between characters

## TEXT FORMATTING

This text is styled with some of the text formatting properties. The heading uses the text-align, text-transform, and color properties. The paragraph is indented, aligned, and the space between characters is specified. The underline is removed from this colored "Try it Yourself" link.

# Text (more properties)

Property	Description
• <b>direction</b>	direction of the text flow
• <b>text-align</b>	horizontal aligning
• <b>text-shadow</b>	shadow effects
• <b>text-overflow</b>	notification of (hidden) overflowing content
• <b>vertical-align</b>	vertical aligning
• <b>white-space</b>	white space handling between words

More possibilities and details:

[https://www.w3schools.com/css/css\\_text.asp](https://www.w3schools.com/css/css_text.asp)

# Text (CSS3)

- Property **text-overflow**
  - How to notify the user that the content does not fit the element
  - Values: **clip** (cut), **ellipsis** (three dots)
- Example:
  - **overflow: hidden;**
  - **text-overflow: clip;**
- Property **word-wrap**
  - Enforces word division if it is wider than the containing element
  - Values: **break-word**
- Details: [https://www.w3schools.com/css/css3\\_text\\_effects.asp](https://www.w3schools.com/css/css3_text_effects.asp)

# Font (font-family)

- Two names for font families:
  - **General family** - a group of similarly looking font families ("Serif" , "Sans-serif" , "Monospace")
  - **Font family** - a specific font family (e.g. "Times New Roman", "Arial")
- **SERIF**      **SANS-SERIF**      **COURIER**
- Example:
- **font-family:** **'Helvetica neue', Arial, 'sans serif'** ;
- Examples of suitable combinations:  
[https://www.w3schools.com/cssref/css\\_websafe\\_fonts.asp](https://www.w3schools.com/cssref/css_websafe_fonts.asp)

# Font size (font-size)

- Absolute, relative
- Em size units:
  - Recommended by W3C
  - 1em = font size set by browser, initial value = 16px; size of a common text font (paragraph)
  - Size in em = size in px / 16
- Example: `p{font-size: .875em;}`
- Suitable initial size of some other elements:
- h1 .. 22px = 1.375em      h2 .. 15px = .9375em
- p .. 14px = .875em      a .. 12px = .75em

# More font properties

- Line-height (height of line)
- Font-variant (small capitals)
- Font-weight (bold)
- Font-style (italic)
- Color: `body {color: white}`
  - Initial text color on the page in a rule for body selector
  - Together with its setting, a background color has also to be set

# Fonts in CSS3

- It is possible to use fonts which are not installed at user's PC (are not web-safe)
- We add **@font-face rule** to the stylesheet
- **@font-face {**  
    font-family: mojePismo;  
    src: url(sansation\_light.woff);  
    **}**
- Usage:  
    **div {**  
        font-family: mojePismo;  
    **}**
- Letters with special national fonts: e.g. select at <https://www.fontsquirrel.com/fonts/list/language>



# Fonts in CSS3

- For other variants of the same font (e.g. bold) more font face rules have to be added
- Example:
- ```
@font-face {  
    font-family: mojePismo;  
    src: url(sansation_bold.woff);  
    font-weight: bold;  
}
```
- How to use fonts (Google fonts example):  
[https://developers.google.com/fonts/docs/getting\\_started](https://developers.google.com/fonts/docs/getting_started)