Computer practicum

6. CSS

CSS

- **Cascading Style Sheet (CSS)** was created in 1996.
- CSS is a presentation (style) language.
- CSS allows the styling ob web pages written in HTML.
- It offers control over colors, fonts, positioning, background, images, etc.

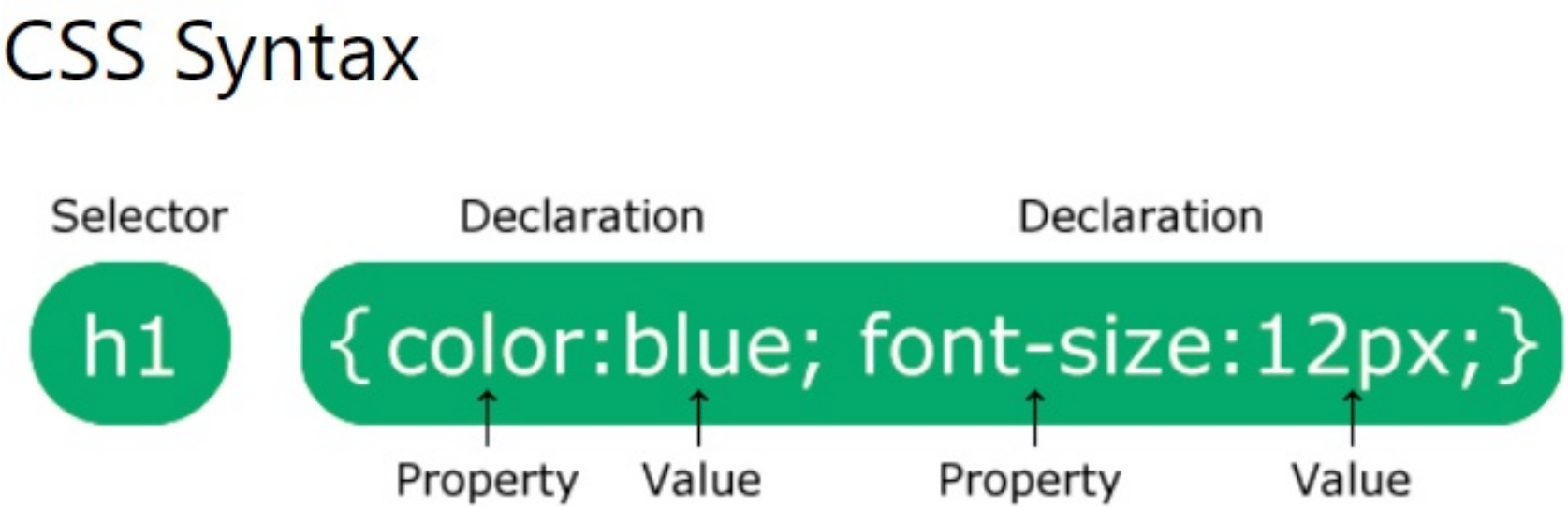
Example: CSS-Example.html

Why CSS?

- **Time saver** - CSS file can be written once and applied to different web pages.
- **Faster page loading time** - no need for each HTML element to load its style, we can instead use one CSS rule for multiple elements at the same time.
- **Easy maintenance** - we need only to change one CSS file to apply the change to all web pages using that CSS file.
- **Better than HTML** - it offers far more styling and attributes than HTML.
- **Compatibility** - it offers optimal look on various devices and browsers.

CSS syntax

- Uses styling rules that browsers interpret and apply to desired elements.
- Rules are composed from three parts: **Selector**, **Property**, and **Value**.
- **Selector** - selects elements on which the style will be applied.
- **Property** - e.g.: color, border, background, etc.
- **Value** - of the property.
- One selector can define multiple properties, separated with a semicolon.



CSS comments

- Comments are written between /* and */
- The same is true both for one line and multiple line comments.
- Browsers will skip those when loading the style.
- **Example:** /* This is a comment. */

CSS Selector

We know different CSS selectors:

- Element selector
- Universal selector
- Class selector
- ID selector
- Descendant selector
- Child selector

Element selector

Chooses elements based on HTML tag. It finds all the elements with given tag.

In the following example all elements p will be colored red.
Example: p{ color: red;}

Universal selector

Chooses every element on our web page.

Example: `*{ color: #000000;}`

Class selector

Elements are chosen based on property **class** that can be defined for each HTML element.

The following rule defines color for all elements with class **black**.
Example: .black{ color: #000000;}

We can be more specific and also define the names of the elements with a certain class, elements p with class **center** in the following example.
Example: p.center{ text-align: center;}

Both above styles will apply to the following element:
This is black centered.

ID selector

Chooses elements based on ID property. ID of elements must be unique within one web page. Therefore, we can use it to style a single particular element.

Example: #black{ color: #000000;}

The above style will apply to the following element:

This is black.

Descendant selector

We use it when we want to style certain elements inside another element.

In the example the style will apply to elements **em** only if they are positioned inside the element **ul**.
Example: ul em{ color: #000000;}

Child selector

We use it when we want to style certain elements that are right underneath another element (they are child to that element).

In the example the style will apply to elements **p** only if it will be right underneath the element **body**. Other **p** elements, even those further under the element **body** will not be changed.
Example: body > p{ color: #000000;}

Nesting selectors (&)

Offers us to nest rules inside another rule. We must follow parent-child relation between elements.

In the example from a file, the element with ID **sample** is set a font and size and then inside that element the element **a** is set a color **crimson**.
Example: CSS-NestingSelectors.html

Multiple selectors together

One style can be applied to multiple elements by using multiple selectors separated by a comma.

Example: h1, h2, h3 { color: #36C;}

Including CSS styles in HTML

- CSS can be included in the following four ways.
- **Embedded** - included inside the **head** element.
- **Inline** - with property **style** of each element.
- **External Link** - rules are written in a separate file and included inside **head** element in the **link** element.
- **External Import** - similarly as External Link, but with import.

CSS order of included rules

- Inline has the highest priority and overrides the other rules.
- Embedded and external are next, depending on the order in which they are given.
- Default browser rules are last.

Inline CSS rules

- We use the property **style** at each element separately.
- Styling is applied only to that element.
- **Example:** <h1 style = "color: red;">This is inline CSS</h1>

Embedded CSS rules

- In the head of HTML file we add the element <style> which needs to be closed.
- Inside the element we write CSS rules.
- **Example:** most files that we have and will look at contains embedded CSS styling.

External Link CSS rules

- CSS rules are written in a separate file with extension .css.
- Inside it we only write the CSS rules.
- CSS is then included in HTML file with a link inside the head element with the element <link>.
- **Example:** <link rel="stylesheet" type = "text/css" href = "file_path" / >
- We can also include the CSS file with @import (we will skip it).

Example: CSS-External_Link.html and MyStyle.css

CSS properties

- color (text, background, border,...),
- background (color, image, repeat,...),
- border (style, width, color,...),
- margin,
- padding,
- size (width, heigth),
- text (color, align, transformation,...),
- font,
- list-style
- table border
- ...

CSS - colors

- Colors are given with names or RGB, HEX, HSL, RGBA, HSLA.
- RBG red, blue, green (0 to 255). HEX hexadecimal for RGB colors (00 to ff). HSL (hue, saturation, lightness), hue is degrees (0 to 360) of color wheel, saturation (0% is shade of gray, 100% is full color), ligthness (0% is black, 50% not dark nor light, 100% is white).
- RGBA and HSLA have additionally alpha channel for transparency between 0.0 (transparent) and 1.0 (full opacity).
- **Example:** color Tomato, rgb(255, 99, 71), #ff6347, hsl(9, 100%, 64%). With 50% transparency rgba(255, 99, 71, 0.5), hsla(9, 100%, 64%, 0.5).

Example: CSS-ColorExample.html

CSS - background

- background-color sets the color. Elements also have property opacity for transparency.
- background-image sets image as background. By default it repeats to cover the whole element.
- **Example:** <body style="background-image: url('example.jpg')</body>
- background-repeat sets repeat of the image when it is set. Values are: repeat-x, repeat-y, and no-repeat.
- We can also use shorthand background where we must follow the given order of values (some may be omitted): color, image, repeat, attachment, position.

Example: CSS-BackgroundExample.html, CSS-BackgroundExample2.html, CSS-BackgroundExample3.html

CSS - borders

- border-style sets style of borders. Values are: dotted, dashed, solid, double, groove, ridge, inset, outset, none, hidden.
- We may set style for top, right, bottom, and left separately giving up to 4 values separated with a space.
- border-width sets width of border. We must give a number and measure (no space) in px, pt, cm, em,... or with one of three options: thin, medium, thick.
- border-color sets color of border.
- We may use shorthand border where style is necessary in the order: width, style, color.
- border-radius rounds the corners in a similar way.

Example: CSS-BorderExample.html, CSS-BorderExample2.html, CSS-BorderExample3.html

CSS - margin

- We may set all 4 margins separately: margin-top, margin-right, margin-bottom, margin-left.
- We may also use shorthand margin where we give up to 4 values (similarly as for borders).
- Values are in px, pt, cm,... or percentage based on element (negative values allowed).
- margin: auto; aligns the element horizontaly to center.

Example: CSS-MarginExample.html

CSS - padding

- We may set all 4 paddings separately: padding-top, padding-right, padding-bottom, padding-left.
- We may also use shorthand padding where we give up to 4 values (as before).
- Values are in px, pt, cm,... or percentage based on element we are in (negative values are not allowed).

Example: CSS-PaddingExample.html

CSS - element sizes

- We use heigth and width.
- Values are in px, pt, cm,... or percentage value.
- We can also set: min-width, min-heigth, max-width, max-heigth.

Example: CSS-WidthHeightExample.html

CSS - text

- color changes text color.
- text-align changes alignment. Values are: left, right, center, justify (both sided alignment).
- text-transform with values: uppercase (changes all letters to uppercase), lowercase (changes all letters to lowercase), capitalize (changes all first letters of words to uppercase).
- text-shadow sets a shadow to a text. We must set horizontal and vertical offset, we may add blur and finally we may add color.

Example: CSS-TextExample.html

CSS - fonts

- font-family sets font of the text. It is smart to use backup fonts in case the chosen one is not supported. We separate them with a comma.
- **Example:** we want font Georgia which is in Serif family. Thus we write font-family: Georgia, serif; which means that the browser will try to use Georgia font and if it cannot it will find a similar font among Serif family.
- Look up into other font families and their differences (serif, sans-serif, etc).
- font-size sets the size of the text in px or em (pixels/16 = em) default in browsers is 16px (1em).
- Good practice is to use em which offers adjustments in all browsers and to give percentage size for the whole HTML body (usually 100%) and then for each element define size separately.

Example: CSS-FontExample.html

CSS - list styles

- list-style-type sets labels of lists.
- Values for ul are: circle, disk, square, none
- Values for ol are: upper-roman, lower-roman, upper-alpha, lower-alpha, decimal and several others.
- Look also at HTML slides.

Example: CSS-ListExample.html

CSS - table borders

- Borders can be set for the whole table or separate elements of the table.
- **Example:** table, th, td {border: 1px solid;} sets border to the table, table heading and table data elements.
- border-collapse: collapse; collapses borders so only a single line is visible.
- border-bottom for elements th and td could set horizontal lines between rows. More is possible with playing around.

Example: CSS-TableExample.html, CSS-TableExample2.html, CSS-TableExample3.html