



**DCGI**

**KATEDRA POČÍTAČOVÉ GRAFIKY A INTERAKCE**

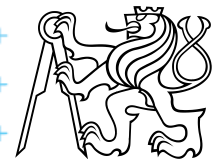
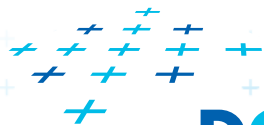
# CSS – Kaskádní styly

*Založeno na přednášce Lukáše Bařinky*

# Obsah

---

- Základní principy
- Syntaxe
- Selektory
- Dědičnost
- Formátovací model
- Generovaný obsah
- Média, UI
- Co se nevešlo...



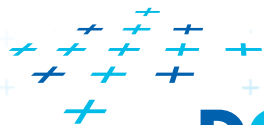
# Co to je CSS

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- CSS = Cascading Style Sheets

Česky Kaskádové styly

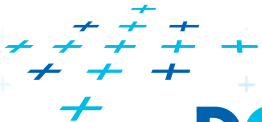
- Jazyk popisující, jak se mají vykreslovat jednotlivé značky.
- Je aplikovatelný na libovolný značkovací jazyk.
- My ho budeme používat na HTML.



# Základní principy

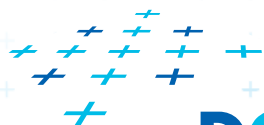
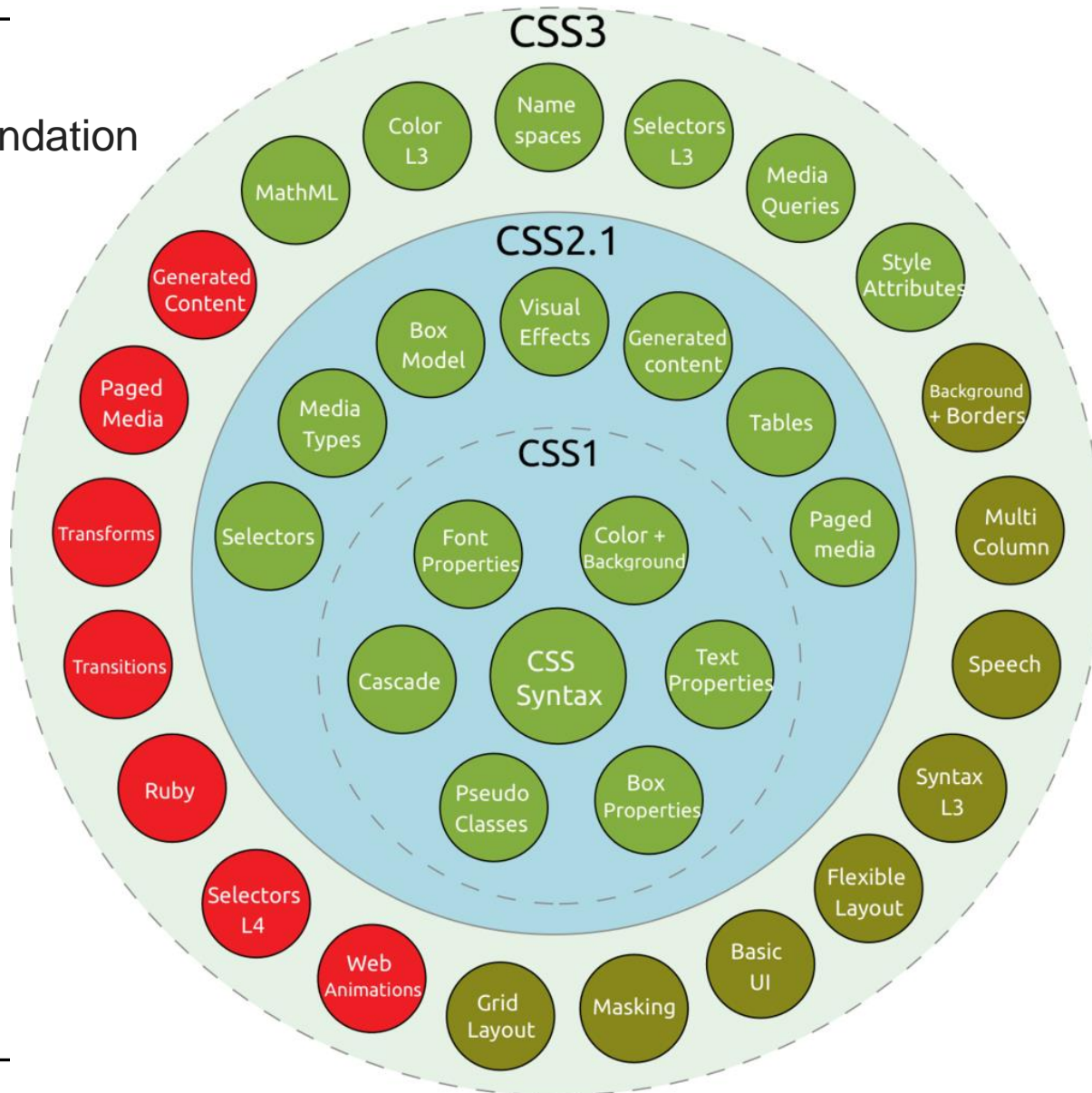
---

- Dopřená i zpětná kompatibilita
- Doplněk ke strukturovanému dokumentu
- Nezávislost na platformě/zařízení
- Udržovatelnost
- Jednoduchost
- Síťová šetrnost
- Flexibilita
- Bohatost jazyka
- Návaznost s alternativními jazyky
- Přístupnost [accessibility]
- Od CSS3 se specifikace dělí na moduly například css3-background, css3-box, atd.



# CSS Historie

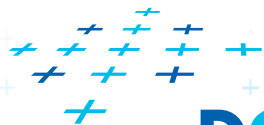
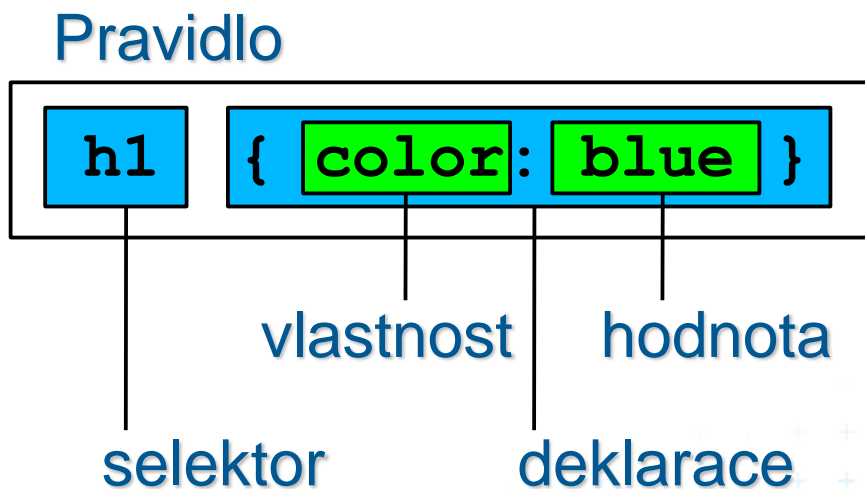
- Recommendation
- Candidate Recommendation
- Last Call
- Working Draft.



# Syntaxe I

---

- Styl je skupina pravidel, které určují vzhled dokumentu.



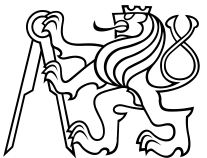
# Co se stane?

## ■ Mějme dokument

### Pravidlo CSS

```
h1 { color: red }
```

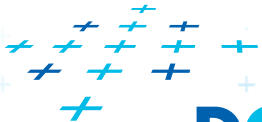
```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <title>CSS pokusy</title>
  <style type="text/css">
    @import url("styly.css");
  </style>
</head>
<body>
<h1>1. Hlavní kapitola</h1>
<p>Lorem ipsum dolor sit amet, consectetur adipiscing elit.
  Nunc dapibus tortor vel mi dapibus sollicitudin.
  Duis condimentum augue id magna semper rutrum.
  Vivamus porttitor tunc ac leo. Nunc dapibus tortor vel mi dapibus sollicitudin.
  Nullam dapibus fermentum ipsum. </p>
<h2>1.1. Podkapitola </h2>
<p>Praesent in mauris eu tortor porttitor accumsan. Neque porro quisquam est,
  qui dolorem ipsum quia dolor sit amet, consectetur, adipisci velit,
  sed quia non numquam eius modi tempora incidunt ut labore et dolore
  magnam aliquam quaerat voluptatem. Praesent dapibus. </p>
<h1>2. Druhá hlavní kapitola</h1>
<p> Maecenas lorem. Pellentesque sapien. Morbi imperdiet, mauris ac auctor dictum,
  nisl ligula egestas nulla, et sollicitudin sem purus in lacus.
  Donec iaculis gravida nulla.</p>
<h2>2.1. Druhá hlavní kapitola</h2>
<p>Curabitur vitae diam non enim vestibulum interdum. Etiam posuere lacus quis dolor.
  Duis risus. Nullam justo enim, consectetur nec,
  ullamcorper ac, vestibulum in, elit. </p>
</body>
</html>
```



# Umístění v HTML

---

```
<html>
  <head>
    <title>title</title>
    <link rel="stylesheet" type="text/css"
          href="http://style.com/cool" title="cool">
    <style type="text/css">
      @import url("http://style.com/basic");
      h1 { color: blue }
      p.yellow { color: yellow }
      #colg { color: green }
    </style>
  </head>
  <body>
    <h1>headline is blue</h1>
    <p style="color: green">while the paragraph is green.
    <p class="yellow">this paragraph is yellow
    <p id="colg">while the paragraph is green.
  </body>
</html>
```



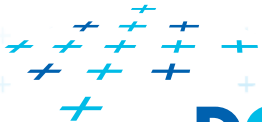


# Syntaxe

---

- Case insensitive (kromě částí mimo CSS – např. selektor)
- Klíčová slova (**red**) / Řetězce ("**red**")
- Blok uzavřen do "{ " }
- Sada pravidel v bloku oddělená ";"
- Pravidla je možné seskupovat [grouping]

```
h1 { color: red }           h1 { font-size: 12pt }
h2 { color: red }           h1 { font-weight: bold }
h1, h2 { color: red }       h1 { font-family:
                             "Helvetica" }
                             h1 { font: bold 12pt
                             "Helvetica" }
```
- Komentáře uvnitř "/\*" a "\*/" (povoleny jsou "<!--" a "-->", nejsou však CSS komentářem)
- Kódování CSS: @charset "ISO-8859-2"



# Několik příkladů

```
<body>
<h1>1. Hlavní kapitola</h1>
<p>Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nunc dapibus tortor vel mi dapibus sollicitudin. Duis condimentum augue id magna semper rutrum. Vivamus porttitor turpis ac leo. Nunc dapibus tortor vel mi dapibus sollicitudin. Nullam dapibus fermentum ipsum. </p>
<h2>1.1. Podkapitola </h2>
<p>Praesent in mauris eu tortor porttitor accumsan. Neque porro quisquam est, qui dolorem ipsum quia dolor sit amet, consectetur, adipisci velit, sed quia non numquam eius modi tempora incidunt ut labore et dolore magnam aliquam quaerat voluptatem. Praesent dapibus. </p>
<h1>2. Druhá hlavní kapitola</h1>
<p>Maecenas lorem. Pellentesque sapien. Morbi imperdiet, mauris ac auctor dictum, nisl ligula egestas nulla, et sollicitudin sem purus in lacus. Donec iaculis gravida nulla.</p>
<h2>2.1. Druhá hlavní kapitola</h2>
<p>Curabitur vitae diam non enim vestibulum interdum. Etiam posuere lacus quis dolor. <span>Duis risus</span>. Nullam justo enim, consectetur nec, ullamcorper ac, vestibulum in, elit. </p>
<span>Samostatně stojící span.</span>
</body>
```

```
h1 {color: red}
h2 {color: tomato}
h1, h2 {font-family: Arial}
body {color: blue; font-family: "Arial Narrow"}
/* obecný span kdekoli */
span {font-size: 3em; color: gold}
/* jen takový span, který je v odstavci p */
p span {font-size: 1.5em; color: #32ff31}
```

## 1. Hlavní kapitola

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nunc dapibus tortor vel mi dapibus sollicitudin. Duis condimentum augue id magna semper rutrum. Vivamus porttitor turpis ac leo. Nunc dapibus tortor vel mi dapibus sollicitudin. Nullam dapibus fermentum ipsum.

### 1.1. Podkapitola

Praesent in mauris eu tortor porttitor accumsan. Neque porro quisquam est, qui dolorem ipsum quia dolor sit amet, consectetur, adipisci velit, sed quia non numquam eius modi tempora incidunt ut labore et dolore magnam aliquam quaerat voluptatem. Praesent dapibus.

## 2. Druhá hlavní kapitola

Maecenas lorem. Pellentesque sapien. Morbi imperdiet, mauris ac auctor dictum, nisl ligula egestas nulla, et sollicitudin sem purus in lacus. Donec iaculis gravida nulla.

### 2.1. Druhá hlavní kapitola

Curabitur vitae diam non enim vestibulum interdum. Etiam posuere lacus quis dolor. **Duis risus.** Nullam justo enim, consectetur nec, ullamcorper ac, vestibulum in, elit.

## Samostatně stojící span.



# Hodnoty

---

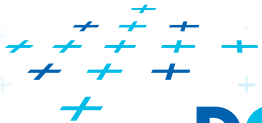
## ■ Délkové:

### – RELATIVNÍ

- em – velikost fontu, tj velikost řádku
- ex – velikost písmena x
- % - relativně k rodiči
- ch – relativně k šířce „0“
- rem – relativně k velikosti fontu kořenového elementu
- lh – relativně k výšce řádky elementu
- rlh – relativně k výšce řádky kořenového elementu
- vw – relativně k procentu šířky viewportu – v %
- vh – relativně k procentu výšky viewportu – v %
- vmin, vmax

... a další vb, vi, svw, svh, lww, lvh, dwv, dvh

hezky vysvětleno například [zde](#).



# Hodnoty

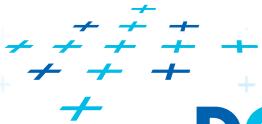
---

## ■ Délkové:

### – ABSOLUTNÍ

- in – palce
- cm
- mm
- pt – body (1/72 in)
- pc – 12pt
- px – obrazový bod – je to relativní nebo absolutní?  
z definice je to 1/96 palce
- Q – ¼ mm

Potomek od svého rodiče nedědí relativní hodnotu,  
ale dědí vypočítanou absolutní hodnotu!



# Hodnoty II

---

## ■ URI

- RELATIVNÍ
  - `url("bg.jpg")`
- ABSOLUTNÍ
  - `url("http://faraon.felk.cvut.cz/img/bg.jpg")`

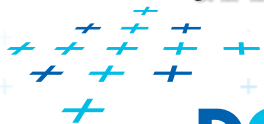
## ■ Barvy

- red (klíčové slovo)
- #f00 (#rgb)
- #ff0000 (#rrggbb)
- rgb(255, 0, 0)
- rgb(100%, 0%, 0%)
- rgb(2 121 139 / .3)
- hsl(188, 97%, 28%)
- hsl(321 47% 57% / .7)

alpha

## ■ Pozadí / obrázek

- `url("bg.jpg")`



# Hodnoty III

## ■ Obrázky

```
.image {  
  background-image: url(star.png);  
}
```

```
.gradient {  
  background-image: linear-gradient(  
    úhel
```

45deg,

počátek rgba(119,0,255,1)

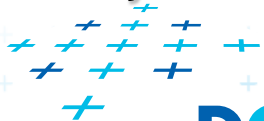
začíná od 50%,

konec rgba(255,250,5,1)

končí v 100%

```
);
```

```
}
```



# Funkce

---

- `calc ()` /\* umí +, -, \*, / \*/

`width: calc(10px + 100px);`

`width: calc(2em * 5);`

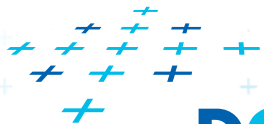
- `min, max`

`width: max(20vw, 400px);`

`width: min(150vw, 100px);`

- `trigonometric, exponencial, abs, counter, ...`

Hezky vysvětleno např. [zde](#).



# Písmo

---

- Písmo
  - “Helvetica”
  - serif
  - sans-serif
  - cursive
  - fantasy
  - monospace

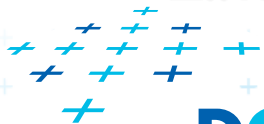




# Selektory

---

*	Univerzální selektor
E	Selektor typu
E F	Selektor potomka
E > F	Selektor přímého potomka (syna)
E + F	Selektor sourozence
E:first-child	Pseudotřída „first-child“
E:link	Pseudotřída „link“
E:hover	Dynamická pseudotřída
E:lang(x)	Pseudotřída „lang“
E[atr="val"]	Selektor atributu ( = ~ =   = )
E.class	Selektor třídy
E#id	Selektor ID



# Mnoho dalších selektorů v CSS 3

---

E[foo^="bar"]	an E element whose "foo" attribute value begins exactly with the string "bar"
E[foo\$="bar"]	an E element whose "foo" attribute value ends exactly with the string "bar"
E[foo*="bar"]	an E element whose "foo" attribute value contains the substring "bar"
E:root	an E element, root of the document
E:nth-child(n)	an E element, the n-th child of its parent
E:nth-last-child(n)	an E element, the n-th child of its parent, counting from the last one
E:nth-of-type(n)	an E element, the n-th sibling of its type
E:nth-last-of-type(n)	an E element, the n-th sibling of its type, counting from the last one
E:last-child	an E element, last child of its parent
E:first-of-type	an E element, first sibling of its type
E:last-of-type	an E element, last sibling of its type
E:only-child	an E element, only child of its parent
E:only-of-type	an E element, only sibling of its type
E:empty	an E element that has no children (including text nodes)
E:target	an E element being the target of the referring URI
E:enabled	a user interface element E that is enabled
E:disabled	a user interface element E that is disabled
E:checked	a user interface element E that is checked (for instance a radio-button or checkbox)
E:not(s)	an E element that does not match simple selector s
E ~ F	an F element preceded by an E element

# Pseudotřídy

---

Definují speciální vlastnosti pro některé prvky.  
Příslušnost ke třídě může vznikat dynamicky.

## ■Potomka

:first-child

## ■Linku

:link

:visited

## ■Dynamické

:hover

:active

:focus

## ■Jazyka

:lang



# Pseudoelementy

---

Neexistující elementy, které vznikají z logiky uspořádání dokumentu

## :first-line

```
p:first-line { text-transform: uppercase }
```

## :first-letter

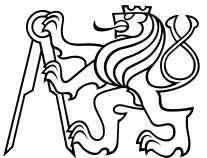
```
p:first-letter { text-transform: uppercase;
                 font-size: 200%;
                 font-style: italic;
                 font-weight: bold;
                 float: left;
                 }
```

## :before

```
p.special:before { content: "Special! " }
```

:after

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# Dědičnost I

---

## ■ Hodnota se určí pomocí:

- Výsledku posloupnosti pravidel (kaskády)
- Jinak se použije zděděná hodnota (rodiče)
- Jinak se použije počáteční (inicializační) hodnota

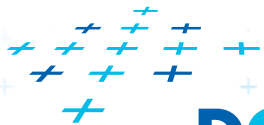
## ■ Některé hodnoty se dědí, jiné ne

- `body { color: black; background: white; }`
  - hodnota se dědí
  - hodnota se nedědí

`h1 { font-height: 120% }`      120% hodnoty rodiče

## ■ Styly mohou pocházet od

- autora
- uživatele
- UA (user agent) – např. prohlížeče



# Dědičnost II

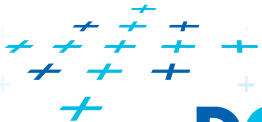
---

Pro určení výsledku posloupnosti stylů (kaskády) je potřeba:

1. Najít všechny deklarace vázané na element (pro dané médium)
2. Seřadit je podle důležitosti  
UA < uživatel < autor < autor !important < uživatel !important
3. Seřadit je podle specifičnosti  
pravidla přesněji určující selektory mají přednost před obecnými
4. Seřadit je podle pořadí výskytu  
použije se pozdější pravidlo

Pro ovlivnění důležitosti pravidla slouží **!important**

```
p { font: normal 12pt sans-serif !important }
```



# Dědičnost - Výpočet

---

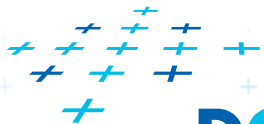
a – atribut style

b – počet ID atributů

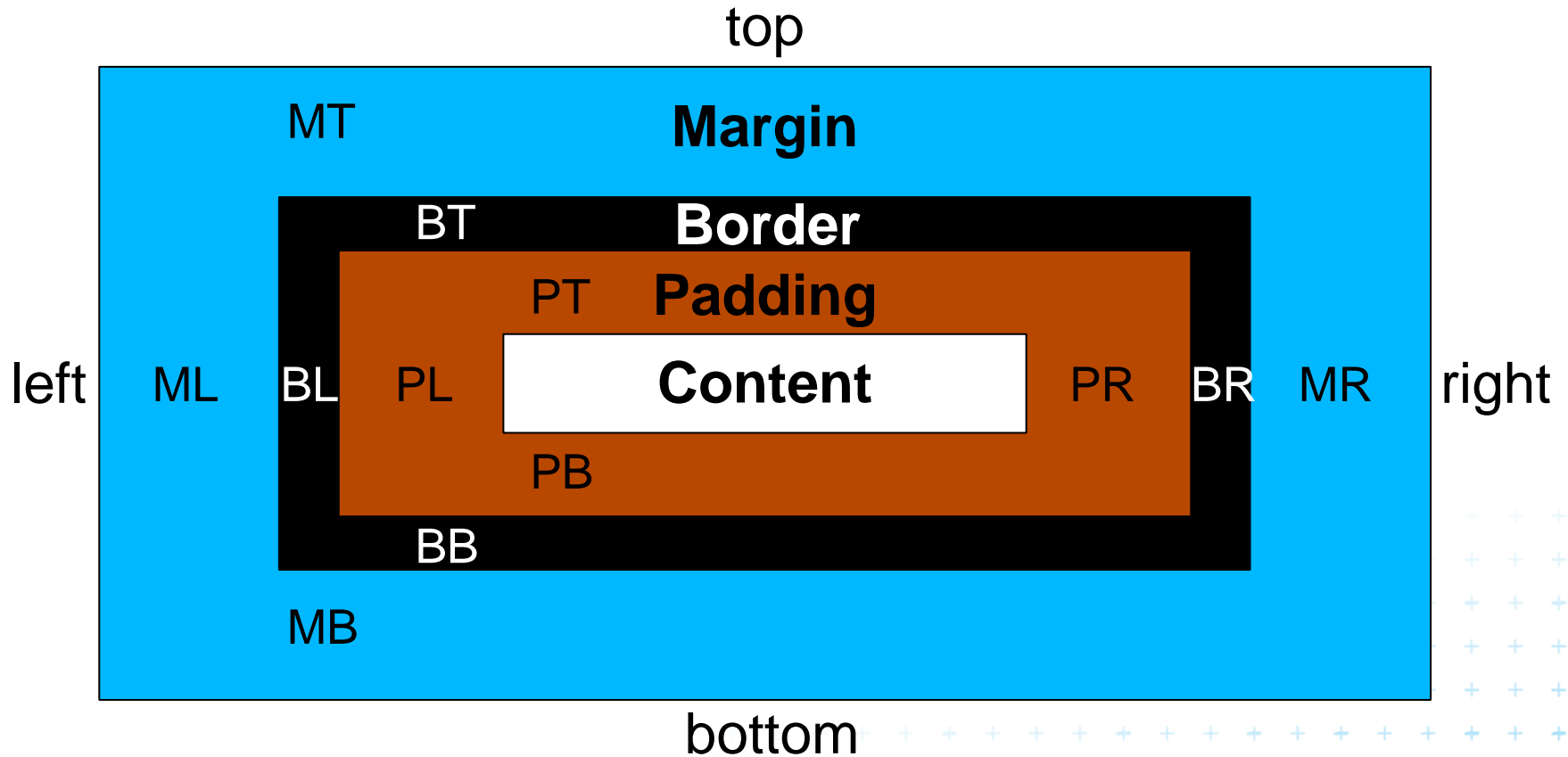
c – počet ostatních atributů a pseudotříd

d – počet jmen elementů a pseudoelementů

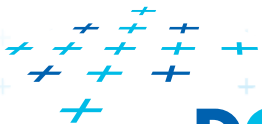
```
*          {} /* a=0 b=0 c=0 d=0 -> specificity = 0,0,0,0 */
li         {} /* a=0 b=0 c=0 d=1 -> specificity = 0,0,0,1 */
li:first-line {} /* a=0 b=0 c=0 d=2 -> specificity = 0,0,0,2 */
ul li      {} /* a=0 b=0 c=0 d=2 -> specificity = 0,0,0,2 */
ul ol+li   {} /* a=0 b=0 c=0 d=3 -> specificity = 0,0,0,3 */
h1 + *[rel=up] {} /* a=0 b=0 c=1 d=1 -> specificity = 0,0,1,1 */
ul ol li.red {} /* a=0 b=0 c=1 d=3 -> specificity = 0,0,1,3 */
li.red.level {} /* a=0 b=0 c=2 d=1 -> specificity = 0,0,2,1 */
#x34y      {} /* a=0 b=1 c=0 d=0 -> specificity = 0,1,0,0 */
style=""    {} /* a=1 b=0 c=0 d=0 -> specificity = 1,0,0,0 */
```



# Formátovací model – Box model

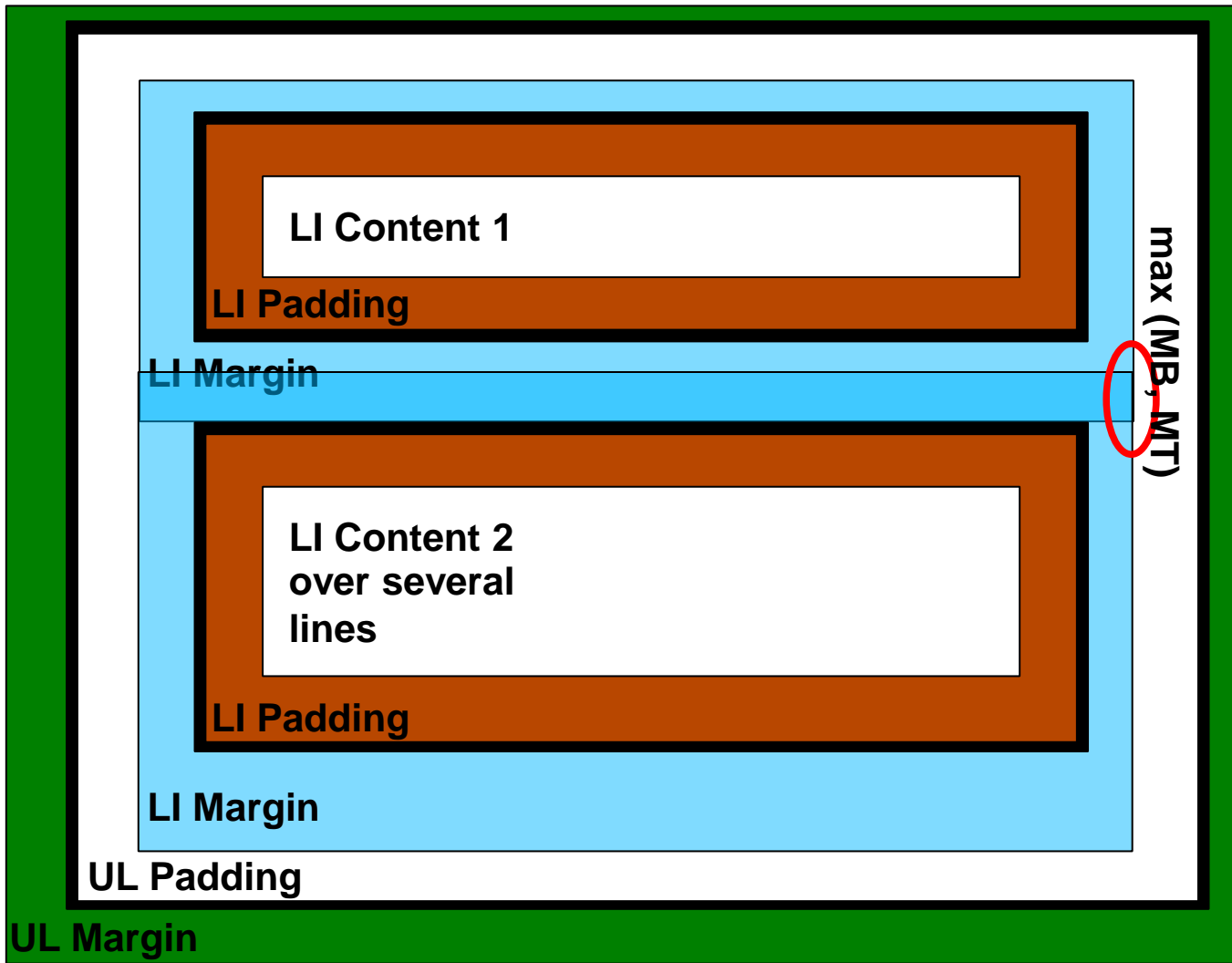


- Pozadí zasahuje až do orámování (border), okraje (margin) jsou vždy průhledné.

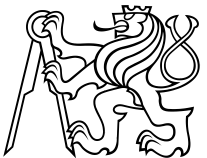
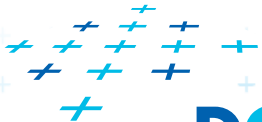




# Formátovací model II



```
<ul>  
  <li>  
    LI 1  
  </li>  
  <li>  
    LI 2  
    over...  
  </li>  
</ul>
```



# Orámování - Borders

## ■ border-width

- <délka>
- thin
- medium
- thick

```
h1 { border: 0.5em solid silver }
```

## ■ border-color

- <color>
- transparent

```
h1 { border-width: thin }
```

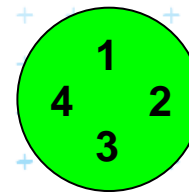
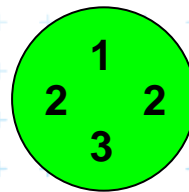
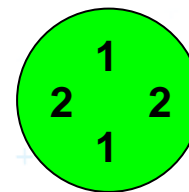
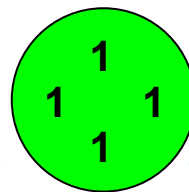
```
h1 { border-width: thin thick }
```

```
h1 { border-width: thin thick medium }
```

```
h1 { border-width: thin thick medium 5px }
```

## ■ border-style

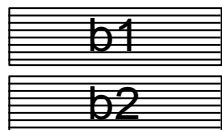
- hidden
- solid
- groove
- inset
- none
- dotted
- double
- ridge
- outset



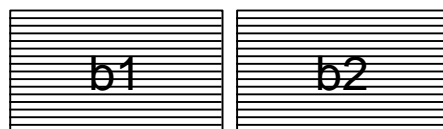
# Vizuální formátování I

## ■ vlastnost `display`

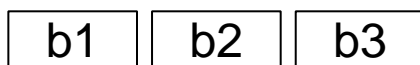
- block



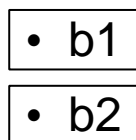
- inline-block



- inline

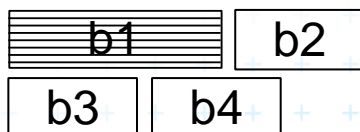


- list-item



- none

- run-in



- table

- inline-table

- table-column

- table-caption

- table-row

- table-cell ...



# Pozice elementu

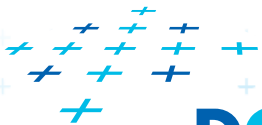
---

## ■ pozice jsou

- static
  - základní, obvyklé rozložení
- relative
  - relativně od obvyklé polohy
- fixed
  - relativně od viewportu (pohledu na dokument)
- absolute
  - relativně od svého rodiče
- sticky
  - relative a fixed dohromady podle scroll pozice

## ■ pozice je určena vlastnostmi

- *top*
- *bottom*
- *left*
- *right*



# Pozice elementu relative

```
<!DOCTYPE html>
<html>
<head>
  <style>
    div.pozice {
      position: relative;
      border: 3px solid #73AD21;
      left: 3em;
      top: 2em;
    }
  </style>
</head>
<body>

<h2>Pozice</h2>

<p>Lorem ipsum dolor sit amet, consectetur
adipiscing elit. Integer in sapien. Cum sociis
natoque penatibus et magnis dis parturient
montes, nascetur ridiculus mus. Donec quis nibh
at felis congue commodo.</p>

<div class="pozice">
  Pozice relative
</div>

<p>Fusce tellus. Donec vitae arcu. Pellentesque
ipsum. Nulla non lectus sed nisl molestie
malesuada. Suspendisse nisl. </p>
</body>
</html>
```

## Pozice

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Integer in sapien. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Donec quis nibh at felis congue commodo.

Fusce tellus. Donec vitae arcu. Pellentesque ipsum. Nulla non lectus sed nisl molestie malesuada. Suspendisse nisl.

*div* je posunutý oproti svojí původní pozici. Jeho původní prostor je stále obsazen, i když on je vykreslen jinde



# Pozice elementu fixed

```
<!DOCTYPE html>
<html>
<head>
  <style>
    div.pozice {
      position: fixed;
      border: 3px solid #73AD21;
      left: 3em;
      top: 2em;
    }
  </style>
</head>
<body>

<h2>Pozice</h2>

<p>Lorem ipsum dolor sit amet, consectetur
adipiscing elit. Integer in sapien. Cum sociis
natoque penatibus et magnis dis parturient
montes, nascetur ridiculus mus. Donec quis nibh
at felis congue commodo.</p>

<div class="pozice">
  Pozice fixed
</div>

<p>Fusce tellus. Donec vitae arcu. Pellentesque
ipsum. Nulla non lectus sed nisl molestie
malesuada. Suspendisse nisl. </p>
</body>
</html>
```

## Pozice

Pozice fixed

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Integer in sapien. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Donec quis nibh at felis congue commodo.

Fusce tellus. Donec vitae arcu. Pellentesque ipsum. Nulla non lectus sed nisl molestie malesuada. Suspendisse nisl.

*div* je posunutý oproti svému viewportu, tj. výřezu dokumentu v okně prohlížeče. Jeho původní prostor není obsazen.



# Pozice elementu absolute

```
<!DOCTYPE html>
<html>
<head>
  <style>
    div.pozice {
      position: absolute;
      border: 3px solid #73AD21;
      left: 3em;
      top: 2em;
    }
  </style>
</head>
<body>

<h2>Pozice</h2>

<p>Lorem ipsum dolor sit amet, consectetur
adipiscing elit. Integer in sapien. Cum sociis
natoque penatibus et magnis dis parturient
montes, nascetur ridiculus mus. Donec quis nibh
at felis congue commodo.</p>

<div class="pozice">
  Pozice absolute
</div>

<p>Fusce tellus. Donec vitae arcu. Pellentesque
ipsum. Nulla non lectus sed nisl molestie
malesuada. Suspendisse nisl. </p>
</body>
</html>
```

## Pozice

Pozice absolute

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Integer in sapien. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Donec quis nibh at felis congue commodo.

Fusce tellus. Donec vitae arcu. Pellentesque ipsum. Nulla non lectus sed nisl molestie malesuada. Suspendisse nisl.

*div* je posunutý oproti svému rodiči – v tomto případě elementu *body*. Jeho původní prostor není obsazen.



# Pozice elementu sticky

```
<!DOCTYPE html>
<html>
<head>
  <style>
    div.sticky {
      position: sticky;
      top: 0;
      padding: 5px;
      background-color: #cae8ca;
      border: 2px solid #4CAF50;
    }
  </style>
</head>
<body>

<p>Nějaký text na začátku</p>
<p>podívejte se, jak funguje scroll.</p>

<div class="sticky">Div sticky</div>

<div>
  <p>Fusce tellus. Donec vitae arcu. Pellentesque ipsum. Nulla non lectus sed nisl molestie malesuada. </p>
  <p>Fusce tellus. Donec vitae arcu. Pellentesque ipsum. Nulla non lectus sed nisl molestie malesuada. </p>
  <p>Fusce tellus. Donec vitae arcu. Pellentesque ipsum. Nulla non lectus sed nisl molestie malesuada. </p>
  <p>Fusce tellus. Donec vitae arcu. Pellentesque ipsum. Nulla non lectus sed nisl molestie malesuada. </p>
  <p>Fusce tellus. Donec vitae arcu. Pellentesque ipsum. Nulla non lectus sed nisl molestie malesuada. </p>
  <p>Fusce tellus. Donec vitae arcu. Pellentesque ipsum. Nulla non lectus sed nisl molestie malesuada. </p>
  <p>Fusce tellus. Donec vitae arcu. Pellentesque ipsum. Nulla non lectus sed nisl molestie malesuada. </p>
</div>

</body>
</html>
```

Nějaký text na začátku

podívejte se, jak funguje scroll.

Div sticky

Fusce tellus. Donec vitae arcu. Pellentesque ipsum. Nulla non lectus sed nisl molestie malesuada.

Fusce tellus. Donec vitae arcu. Pellentesque ipsum. Nulla non lectus sed nisl molestie malesuada.

Sticky – pokud se vejde na svoji pozici, je tam.

Fusce tellus. Donec vitae arcu. Pellentesque ipsum. Nulla non lectus sed nisl molestie malesuada.

Div sticky

nisl molestie malesuada.

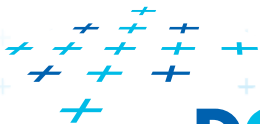
Fusce tellus. Donec vitae arcu. Pellentesque ipsum. Nulla non lectus sed nisl molestie malesuada.

Fusce tellus. Donec vitae arcu. Pellentesque ipsum. Nulla non lectus sed nisl molestie malesuada.

Sticky – pokud je “odscrollován” chová se jako fixed.

Fusce tellus. Donec vitae arcu. Pellentesque ipsum. Nulla non lectus sed nisl molestie malesuada.

Fusce tellus. Donec vitae arcu. Pellentesque ipsum. Nulla non lectus sed nisl molestie malesuada.





# Pozice elementu float none

```
<!DOCTYPE html>
<html>
<head>
  <style>
    img {
      float: none;
    }
  </style>
</head>
<body>
```

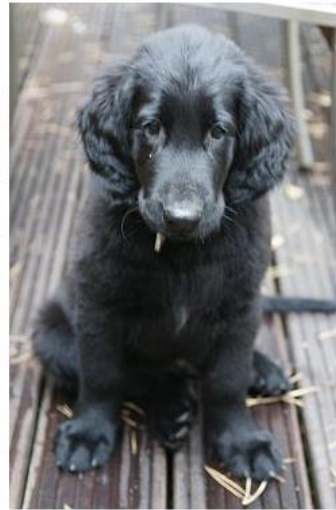
```
<p>Toto je pejsek Kevin, když byl ještě malý.</p>
```

```
<p>
```

```
  Lorem ipsum dolor sit amet, consectetur adipiscing elit. Phasellus imperdiet, nulla et dictum interdum, nisi lorem egestas odio, vitae scelerisque enim ligula venenatis dolor. Maecenas nisl est, ultrices nec congue eget, auctor vitae massa. Fusce luctus vestibulum augue ut aliquet. Mauris ante ligula, facilisis sed ornare eu, lobortis in odio. Praesent convallis urna a lacus interdum ut hendrerit risus congue. Nunc sagittis dictum nisi, sed ullamcorper ipsum dignissim ac. In at libero sed nunc venenatis imperdiet sed ornare turpis. Donec vitae dui eget tellus gravida venenatis. Integer fringilla congue eros non fermentum. Sed dapibus pulvinar nibh tempor porta. Cras ac leo purus. Mauris quis diam velit.</p>
```

```
</body>
</html>
```

Toto je pejsek Kevin, když byl ještě malý.



Lorem ipsum dolor sit amet, consectetur adipiscing elit. Phasellus imperdiet, nulla et dictum interdum, nisi lorem egestas odio, vitae scelerisque enim ligula venenatis dolor. Maecenas nisl est, ultrices nec congue eget, auctor vitae massa. Fusce luctus vestibulum augue ut aliquet. Mauris ante ligula, facilisis sed ornare eu, lobortis in odio. Praesent convallis urna a lacus interdum ut hendrerit risus congue. Nunc sagittis dictum nisi, sed ullamcorper ipsum dignissim ac. In at libero sed nunc venenatis imperdiet sed ornare turpis. Donec vitae dui eget tellus gravida venenatis. Integer fringilla congue eros non fermentum. Sed dapibus pulvinar nibh tempor porta. Cras ac leo purus. Mauris quis diam velit.

Text pokračuje za obrázkem



# Pozice elementu float left

```
<!DOCTYPE html>
```

```
<html>
```

```
<head>
```

```
  <style>
```

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

```
    }
```

```
  </style>
```

```
</head>
```

```
<body>
```

```
<p>Toto je pejsek Kevin, když byl ještě  
malý.</p>
```

```
<p>
```

```
  Lorem ipsum dolor sit amet, consectetur  
  adipiscing elit. Phasellus imperdiet,  
  nulla et dictum interdum, nisi lorem  
  egestas odio, vitae scelerisque enim  
  ligula venenatis dolor. Maecenas  
  nisl est, ultrices nec congue eget,  
  auctor vitae massa. Fusce luctus  
  vestibulum augue ut aliquet. Mauris  
  ante ligula, facilisis sed ornare eu,  
  lobortis in odio. Praesent convallis  
  urna a lacus interdum ut hendrerit  
  risus congue. Nunc sagittis dictum  
  nisi, sed ullamcorper ipsum dignissim  
  ac. In at libero sed nunc venenatis  
  imperdiet sed ornare turpis. Donec  
  vitae dui eget tellus gravida  
  venenatis. Integer fringilla congue  
  eros non fermentum. Sed dapibus  
  pulvinar nibh tempor porta. Cras ac  
  leo purus. Mauris quis diam velit.</p>
```

```
</body>
```

```
</html>
```

Toto je pejsek Kevin, když byl ještě malý.



Lorem ipsum dolor sit amet, consectetur adipiscing elit. Phasellus imperdiet, nulla et dictum interdum, nisi lorem egestas odio, vitae scelerisque enim ligula venenatis dolor. Maecenas nisl est, ultrices nec congue eget, auctor vitae massa. Fusce luctus vestibulum augue ut aliquet. Mauris ante ligula, facilisis sed ornare eu, lobortis in odio. Praesent convallis urna a lacus interdum ut hendrerit risus congue. Nunc sagittis dictum nisi, sed ullamcorper ipsum dignissim ac. In at libero sed nunc venenatis imperdiet sed ornare turpis. Donec vitae dui eget tellus gravida venenatis. Integer fringilla congue eros non fermentum. Sed dapibus pulvinar nibh tempor porta. Cras ac leo purus. Mauris quis diam velit.

Text obtéká obrázek. Obrázek je vlevo od ostatních elementů.



# Pozice elementu float right

```
<!DOCTYPE html>
<html>
<head>
  <style>
    img {
      float: right;
    }
  </style>
</head>
<body>
```

```
<p>Toto je pejsek Kevin, když byl ještě malý.</p>
```

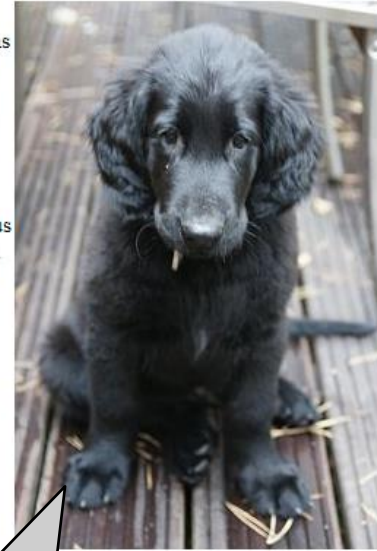
```
<p>
```

```
  Lorem ipsum dolor sit amet, consectetur
  adipiscing elit. Phasellus imperdiet,
  nulla et dictum interdum, nisi lorem
  egestas odio, vitae scelerisque enim
  ligula venenatis dolor. Maecenas
  nisl est, ultrices nec congue eget,
  auctor vitae massa. Fusce luctus
  vestibulum augue ut aliquet. Mauris
  ante ligula, facilisis sed ornare eu,
  lobortis in odio. Praesent convallis
  urna a lacus interdum ut hendrerit
  risus congue. Nunc sagittis dictum
  nisi, sed ullamcorper ipsum dignissim
  ac. In at libero sed nunc venenatis
  imperdiet sed ornare turpis. Donec
  vitae dui eget tellus gravida
  venenatis. Integer fringilla congue
  eros non fermentum. Sed dapibus
  pulvinar nibh tempor porta. Cras ac
  leo purus. Mauris quis diam velit.</p>
```

```
</body>
</html>
```

Toto je pejsek Kevin, když byl ještě malý.

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Phasellus imperdiet, nulla et dictum interdum, nisi lorem egestas odio, vitae scelerisque enim ligula venenatis dolor. Maecenas nisl est, ultrices nec congue eget, auctor vitae massa. Fusce luctus vestibulum augue ut aliquet. Mauris ante ligula, facilisis sed ornare eu, lobortis in odio. Praesent convallis urna a lacus interdum ut hendrerit risus congue. Nunc sagittis dictum nisi, sed ullamcorper ipsum dignissim ac. In at libero sed nunc venenatis imperdiet sed ornare turpis. Donec vitae dui eget tellus gravida venenatis. Integer fringilla congue eros non fermentum. Sed dapibus pulvinar nibh tempor porta. Cras ac leo purus. Mauris quis diam velit.



Text obtéká obrázek. Obrázek je vpravo od ostatních elementů.



# Pozice elementu float, clear

```
<!DOCTYPE html>
<html>
<head>
  <style>
    img {
      float: left;
    }
    p#p2 {clear: left;}
  </style>
</head>
<body>
```

```
<p>Toto je pejsek Kevin, když byl ještě malý.</p>
```

```

<p id="p1">
```

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Phasellus imperdiet, nulla et dictum interdum, nisi lorem egestas odio, vitae scelerisque enim ligula venenatis dolor. Maecenas nisl est, ultrices nec congue eget, auctor vitae massa. Fusce luctus vestibulum augue ut aliquet. Mauris ante ligula, facilisis sed ornare eu, lobortis in odio.</p>

```
<p id="p2">Praesent convallis urna a lacus interdum ut hendrerit risus congue. Nunc sagittis dictum nisi, sed ullamcorper ipsum dignissim ac. In at libero sed nunc venenatis imperdiet sed ornare turpis. Donec vitae dui eget tellus gravida venenatis. Integer fringilla congue eros non fermentum. Sed dapibus pulvinar nibh tempor porta. Cras ac leo purus. Mauris quis diam velit.</p>
```

```
</body>
</html>
```

Toto je pejsek Kevin, když byl ještě malý.



Lorem ipsum dolor sit amet, consectetur adipiscing elit. Phasellus imperdiet, nulla et dictum interdum, nisi lorem egestas odio, vitae scelerisque enim ligula venenatis dolor. Maecenas nisl est, ultrices nec congue eget, auctor vitae massa. Fusce luctus vestibulum augue ut aliquet. Mauris ante ligula, facilisis sed ornare eu, lobortis in odio.

Praesent convallis urna a lacus interdum ut hendrerit risus congue. Nunc sagittis dictum nisi, sed ullamcorper ipsum dignissim ac. In at libero sed nunc venenatis imperdiet sed ornare turpis. Donec vitae dui eget tellus gravida venenatis. Integer fringilla congue eros non fermentum. Sed dapibus pulvinar nibh tempor porta. Cras ac leo purus. Mauris quis diam velit.

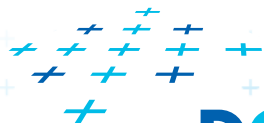
Zatímco p#p1 obtéká obrázek, p#p2 nesnese nic vlevo od sebe.



# Vizuální formátování III

---

- `width`, `min-width`, `max-width`
- `height`, `min-height`, `max-height`
- `line-height`, `text-indent`, `text-align`
- `text-decoration`, `letter-spacing`, `word-spacing`
- `vertical-align` (`baseline`, `middle`, `sub`, `super`, `text-top`, `text-bottom`, `top`, `bottom`)
- `overflow` (`visible`, `hidden`, `scroll`, `auto`)
- `clip` (`auto`, `rect1(T,R,L,B)`)
- `visibility` (`visible`, `hidden`, `collapse`)



# Vizuální formátování IV - Flexbox

---

## ■ Formátování boxů vedle sebe

- přetékaní
- mezery
- zarovnání nahoru i dolů
- vyplňování prostoru

– pěkně vysvětleno zde

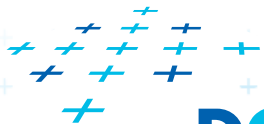
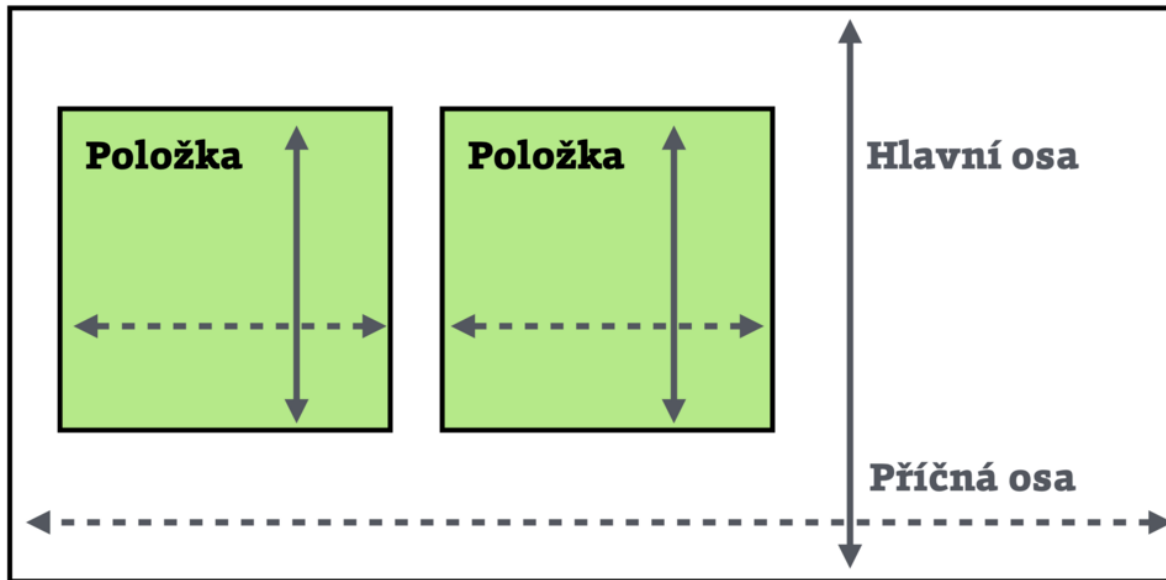
<https://www.vzhurudolu.cz/prirucka/css-flexbox>



# Základy flexbox

- Hlavní kontejner pozicuje svoje potomky
- Kontejner má hodnotu *display: flex*

**Flex kontejner**

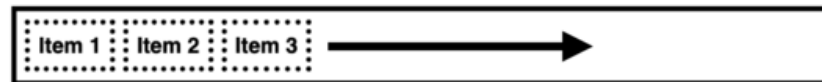


# Flexbox vlastnosti

flex-direction: row | row-reverse | column | column-reverse

## flex-direction

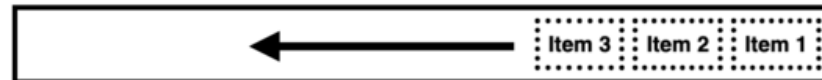
row



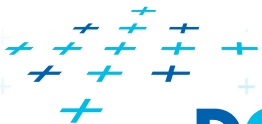
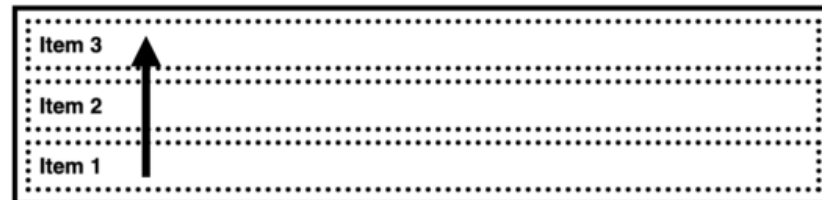
column



row-reverse



column-reverse



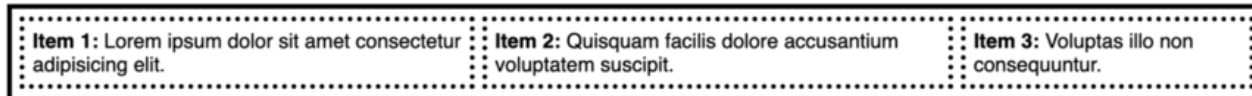


# Flex vlastnosti

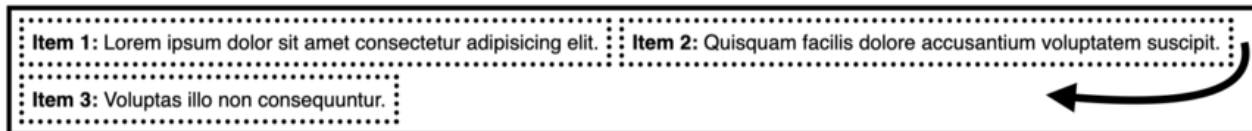
## flex-wrap: nowrap | wrap | wrap-reverse

### flex-wrap

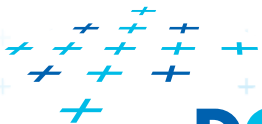
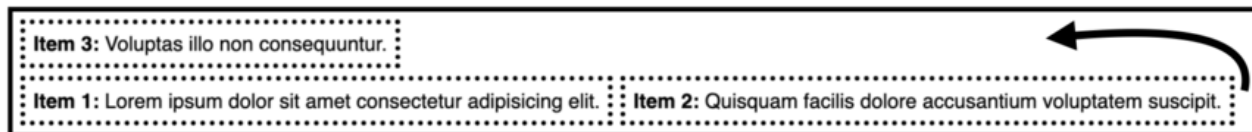
#### nowrap



#### wrap



#### wrap-reverse

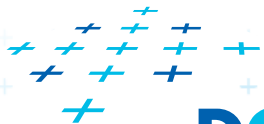


# Flex vlastnosti

## Pořadí elementů lze určit explicitně order: číslo

```
.box {  
  display: flex;  
  flex-direction: row;  
}  
.box :nth-child(1) { order: 2; }  
.box :nth-child(2) { order: 3; }  
.box :nth-child(3) { order: 1; }  
.box :nth-child(4) { order: 3; }  
.box :nth-child(5) { order: 1; }
```

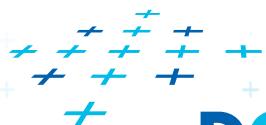
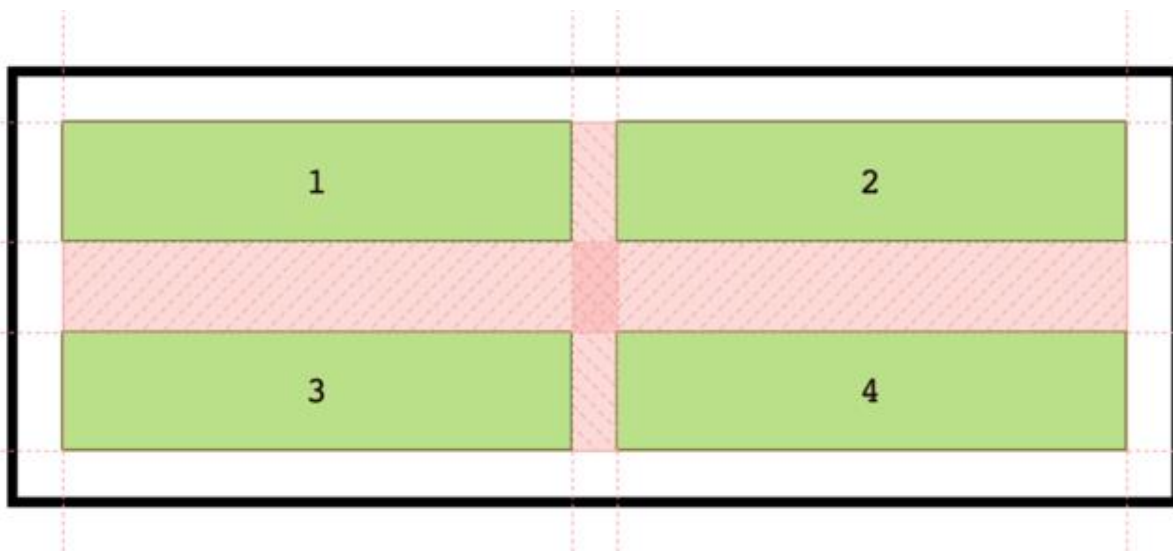
```
<div class="box">  
  <div><a href="#">1</a></div>  
  <div><a href="#">2</a></div>  
  <div><a href="#">3</a></div>  
  <div><a href="#">4</a></div>  
  <div><a href="#">5</a></div>  
</div>
```



# Flex vlastnosti

gap: *hodnota*

gap: 2em 1em;



DCGI



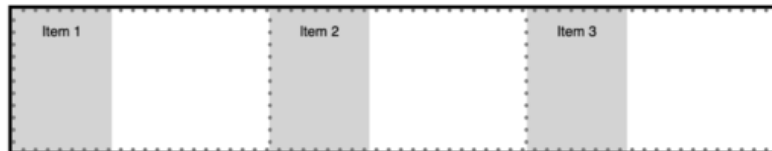
# Flex vlastnosti

---

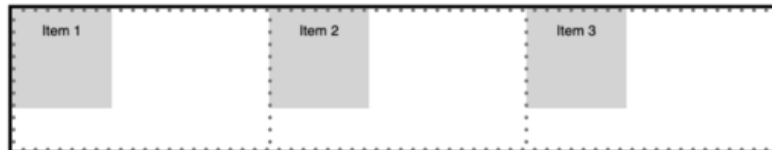
align-items: stretch | center | start | end

## align-items

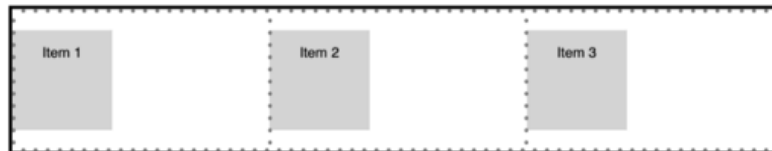
**stretch**  
(normal, auto)



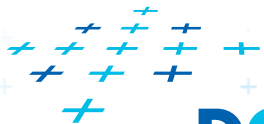
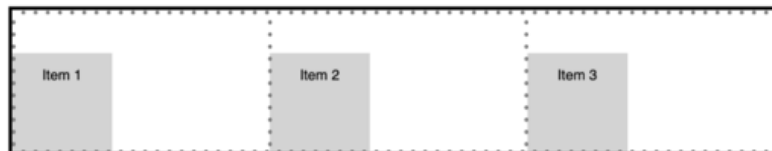
**start**  
(left, self-start)



**center**



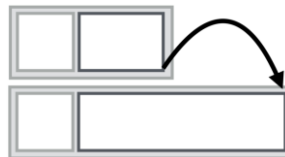
**end**  
(right, self-end)



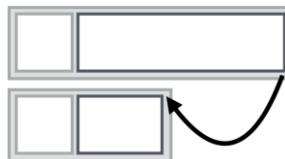
# Flex vlastnosti

---

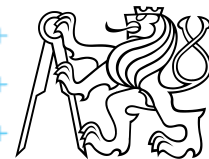
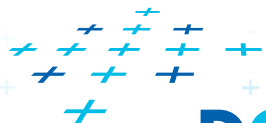
Pro vnitřní položky  
flex-grow: hodnota



flex-shring: hodnota



flex-basis: hodnota



# Generování obsahu

---

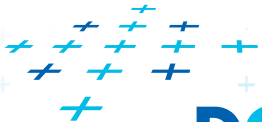
## ■ Použití pseudoelementů `:before` a `:after`

### ■ `content`

- normal
- <řetězec>
- <uri>
- counter
- open-quote, close-quote
- no-open-quote, no-close-quote
- attr(X)

### ■ `quotes`

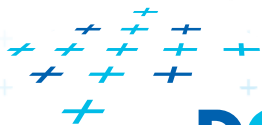
- none
- [ <string1> <string2> ]+



# Generování obsahu II – Čítače a seznamy

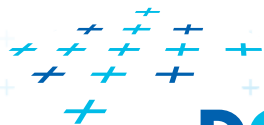
---

- `counter-reset`
- `counter-increment`
- Čítače je možné do sebe vnořovat (seznamy)
  - `counters`
- **Použití:**
  - `counter(name)`
  - `counter(name, style)`
    - style: (disc, circle, square, none, upper-latin, upper-roman, hebrew)
- `list-style-type`
  - (disc, circle, square, decimal, decimal-leading-zero, lower/upper-roman, georgian, armenian, lower/upper-latin, lower/upper-alpha, lower-greek)
- `list-style-image`
- `list-style-position`
  - (outside, inside)



---

# MEDIA A RESPONSIVNÍ DESIGN



**DCGI**





# Média

---

- CSS jsou nezávislé na platformě/cílovém zařízení, umí ale definovat různé styly pro různé cíle
- definice pomocí bloku `@media { }` nebo `@import`
  - `@import url("screen.css") screen;`
  - `@media print { ... }`
    - all, braille, embossed, handheld, print, projection, screen, speech, tty, tv
- definice stránkovaného média pomocí `@page`
  - `@page:left, @page:right, @page:first`
- **Zlom stránek pomocí**
  - `page-break-before/after/inside`
    - **auto, always, avoid, left, right**
  - `orphans`
  - `widows`



# Media Query

---

- Součástí @media může být i podmínka na velikost

podle šířky okna prohlížeče

```
@media only screen and (min-width: 40em) { ... }
```

podle rozlišení zařízení

```
@media ... (min-device-width: 40em) { ... }
```



# User Interface

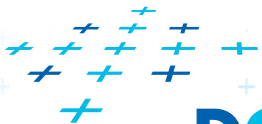
---

## ■ Specifikace kurzoru pomocí **cursor**

- auto, crosshair, default, pointer, move, e/ne/nw/n/...-resize, text, wait, progress, help, <url>

## ■ Použití barev uživatelského rozhraní

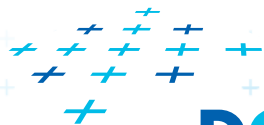
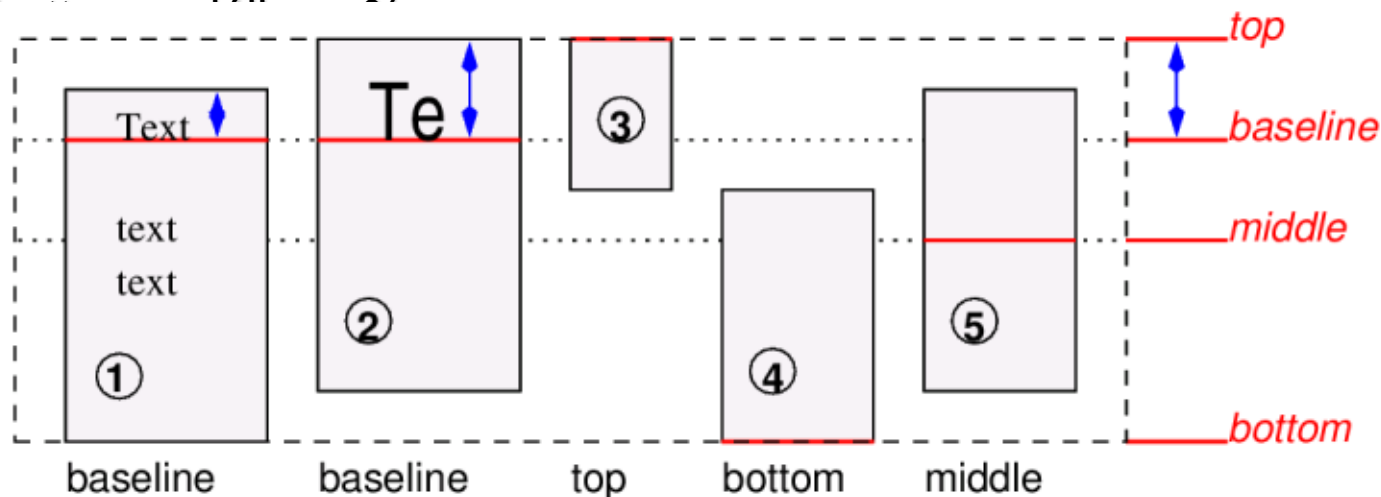
- odkaz na barvy UI pomocí jména  
(např. ButtonFace, ButtonText, Menu, Scrollbar, Window, ...)



# Co se jinem nevešlo – Tabulky

## ■ Tabulky

- table-layout (auto, fixed)
- border-collapse (collapse, separate)
- border-spacing (<délka> <délka>)
- empty-cells (show, hide)
- vertical-align (baseline, top, bottom, middle, sub, super, text-top, text-



# Co se jina<sup>m</sup> neveš<sup>lo</sup> II

---

## ■ Práce s bílými znaky pomocí `white-space`

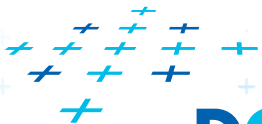
- `normal`, `pre`, `nowrap`, `pre-wrap`, `pre-line`

## ■ Práce s písmem

- `font-family`
- `font-style` (`normal`, `italic`, `oblique`)
- `font-variant` (`normal`, `small-caps`)
- `font-weight` (100-900)
- `font-size`

## ■ Práce s textem

- `text-indent`
- `text-align` (`left`, `right`, `center`, `justify`)
- `text-decoration` (`none`, `underline`, `overline`, `line-through`, `blink`)
- `text-transform` (`capitalize`, `uppercase`, `lowercase`, `none`)



---

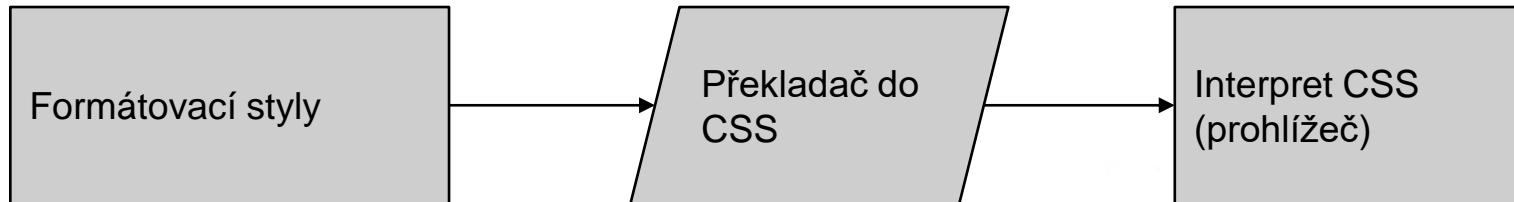
# NĚCO NAVÍC



# Nadstavby pro tvorbu CSS

---

- Less (<http://www.lesscss.cz/>)
- Sass
- Stylus



# Co CSS chybí a nadstavby mají

---

## ■ Ukázky

```
// LESS
@color: #4D926F;

#header {
  color: @color;
}

h2 {
  color: @color;
}
```

```
/* Výsledné CSS */
#header {
  color: #4D926F;
}

h2 {
  color: #4D926F;
}
```



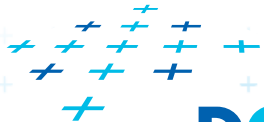


# Vnořování

---

```
// LESS
#header {
  h1 {
    font-size: 26px;
    font-weight: bold;
  }
  p {
    font-size: 12px;
    a {
      text-decoration: none;
      &:hover {
        border-width: 1px
      }
    }
  }
}
```

```
/* Výsledné CSS */
#header h1 {
  font-size: 26px;
  font-weight: bold;
}
#header p {
  font-size: 12px;
}
#header p a {
  text-decoration: none;
}
#header p a:hover {
  border-width: 1px;
}
```



# Výpočty

---

```
// LESS
```

```
@the-border: 1px;
```

```
@base-color: #111;
```

```
@red: #842210;
```

```
#header {
```

```
  color: @base-color * 3;
```

```
  border-left: @the-border;
```

```
  border-right: @the-border * 2;
```

```
}
```

```
#footer {
```

```
  color: @base-color + #003300;
```

```
  border-color: desaturate(@red, 10%);
```

```
}
```

```
/* Výsledné CSS */
```

```
#header {
```

```
  color: #333;
```

```
  border-left: 1px;
```

```
  border-right: 2px;
```

```
}
```

```
#footer {
```

```
  color: #114411;
```

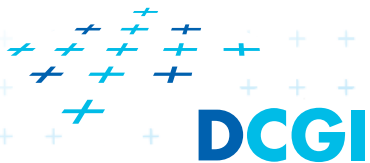
```
  border-color: #7d2717;
```

```
}
```



---

Děkuji za pozornost



# Reference

---

- Popis standardu

[https://www.w3.org/standards/techs/css#w3c\\_all](https://www.w3.org/standards/techs/css#w3c_all)

- CSS tutorial <https://www.w3schools.com/css/>

