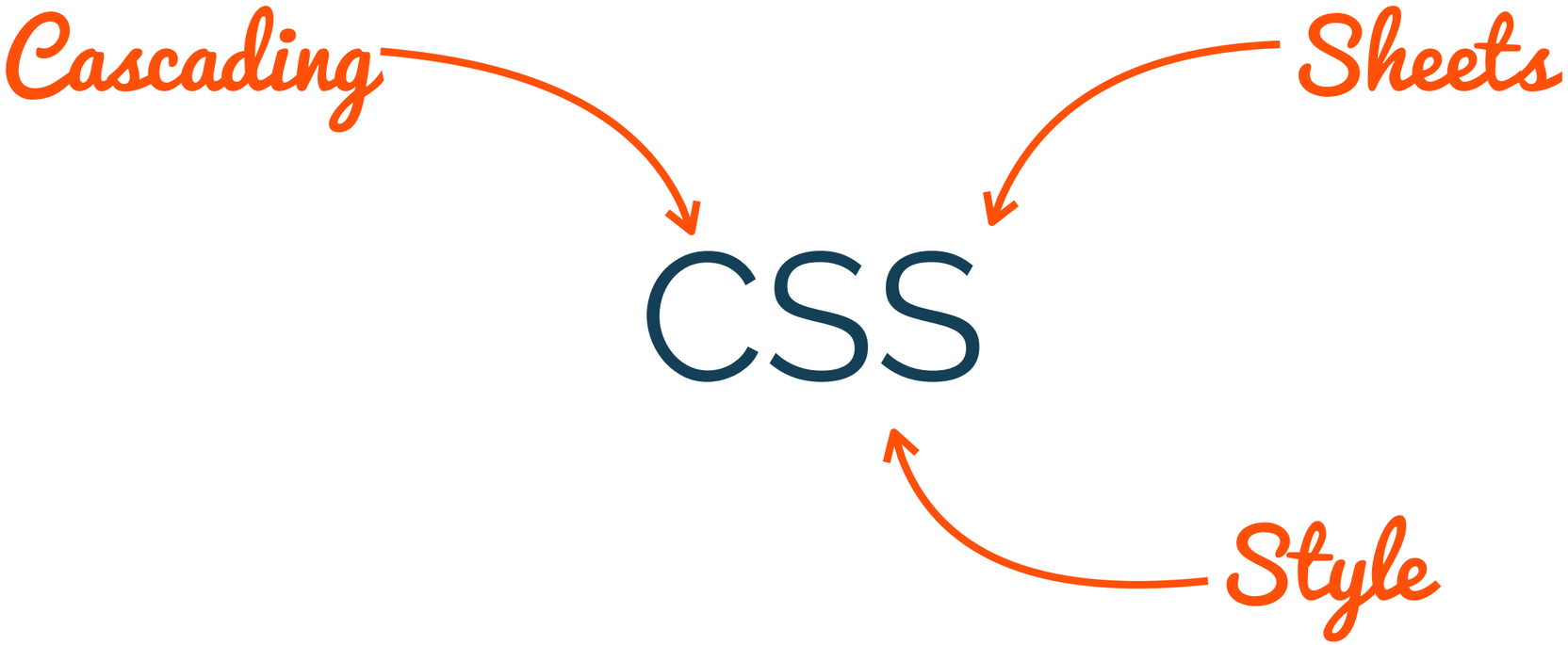
Cascading
Sheets
CSS
Style

WHAT IS CSS?

language for specifying the presentations of Web documents

www.w3.org/TR/CSS/

IF THERE WAS NO CSS...

This is a historical document, one of the oldest on the web. Telektronikk 4-93 was made available on www.nta.no/telektronikk/4.93 on Dec 17, 1993. It pioneered the concept of thumbnail images in HTML documents. Also, during the Quark-to-web conversion process, it became clear to the editor that a proper style sheet language for the web was needed.

text in images

Welcome to the electronic Telektronikk. The electronic version was available through the web one week before paper, and has enjoyed several corrections after the ink had dried. It has also recieved honorable mention at the best of Web'94. Due to high demand, we are no longer able to send out complimentary paper copies, but help yourself to the electronic version - of which there are unlimitied copies.

- Guest editorial by Håkon W Lie
- Windows into Cyberspace by Håkon W Lie
- Altruism and benefit in Cyberspace by Børre Ludvigsen
- Listen to Internet by Per E Dybvik
- Telecommunications and CD-ROM - friends or foes? by Erling Maartmann-Moe
- The digital video album: On the merging of media types in multimedia by Gunnar Liestøl
- Hypertext reading as practical action: notes on technology, objectivation and knowledge by Terje Rasmussen
- Information exchange in MultiTorg by Dag Solvoll, Geir Ivarsøy, Håkon W Lie, and Per E Dybvik
- Media streams: an iconic visual language for video annotation by Marc Davis
- SCREAM: Screen-based navigation in voice messages by Håkon W Lie, Per E Dybvik, and Jan Rygh
- Telecommunications and social interaction - Social constructions in virtual space by Ola Ødegård
- Distributed Virtual Reality: applications for education, entertainment and industry by Carl E Loeffler
- Coordination: challenge of the nineties: Multimedia as a coordination technology by Per M Schiefloe and Tor G Syvertsen
- An informal requirements analysis of Norwegian public administration relative to CSCW by Pål Sørgaard
- International Information Infrastructure: social and policy considerations by David Hakken

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howcome

Håkon Wium Lie Interview

Timeline


1993: 1st HTML spec
Tim Berners-Lee
1996: CSS 1
W3C release
CSS4?
1999-2012: CSS3 released in modules
HTML2
HTML3
1989
2015
1994: CSS draft
Håkon Wium Lie

Separation of

CONTENT *from* PRESENTATION

CSS RULES

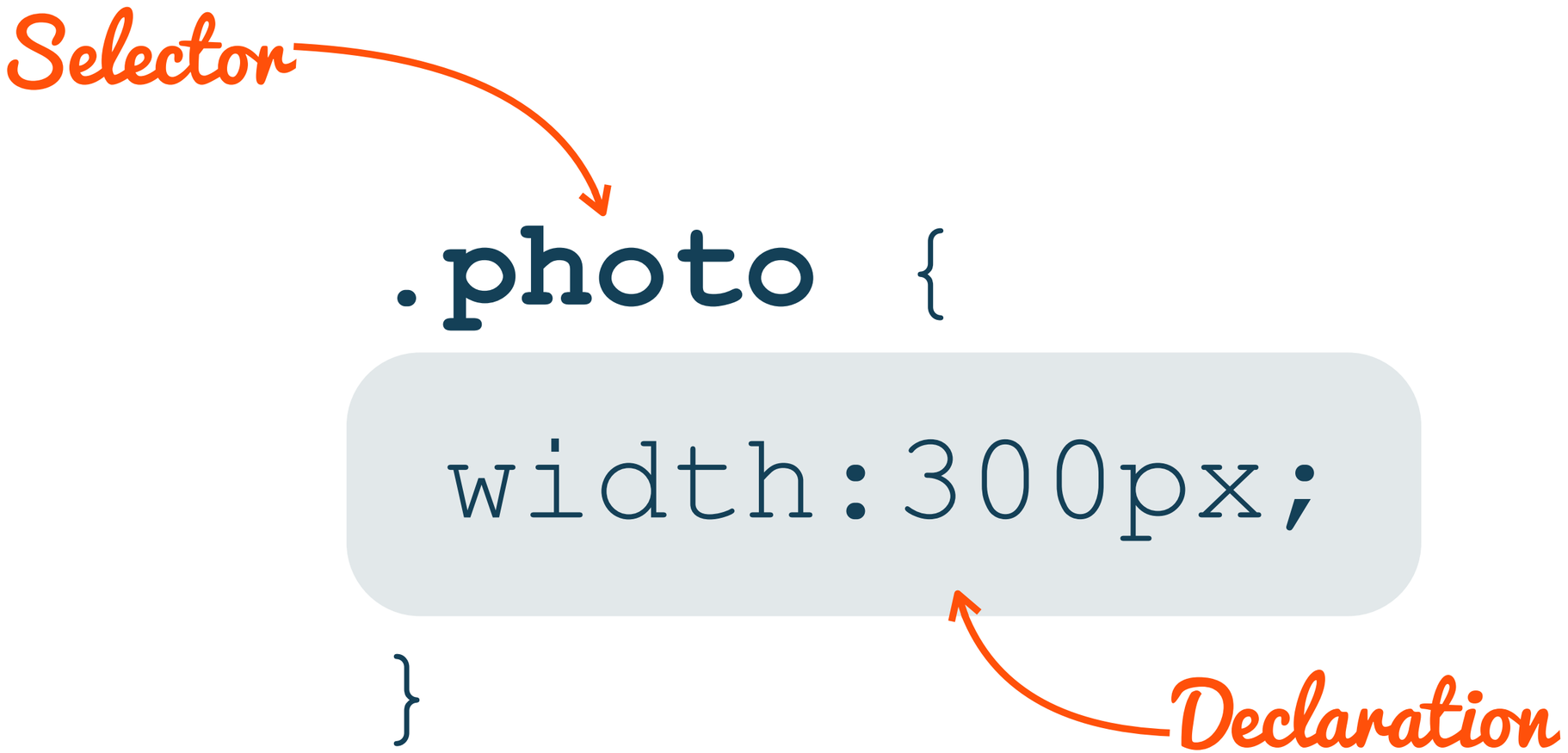
```
img {
 border:1px solid black;
}
.photo {
 width:300px;
}
.photo h3 {
 font-weight:bold;
}
...
```

describe how markup should be rendered

visual properties

positioning in page's layout

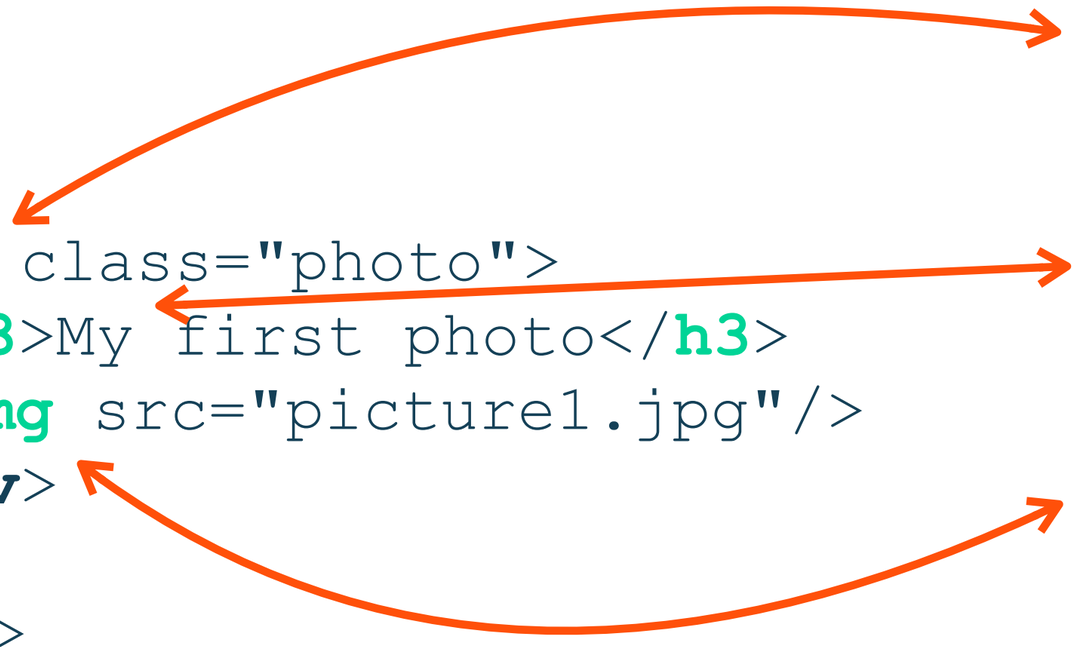
CSS RULES



CSS SELECTORS

```
<!DOCTYPE html>
<html>
  ...
  <body>
    <div class="photo">
      <h3>My first photo</h3>
      <img src="picture1.jpg"/>
    </div>
  ...
  </body>
</html>
```

```
.photo {
 width:300px;
}
.photo h3 {
 font-weight:bold;
}
img {
 border:1px solid black;
}
...
```



map HTML elements to CSS rules

ELEMENT SELECTORS

html:

```
<img src="picture1.jpg"/>
```

css:

```
img {
 border:1px solid black;
}
```

selects all elements matching the tag name

class SELECTORS

html:

```
<div class="photo">…
```

css:

```
.photo {
 width:300px;
}
```

id SELECTORS

html:

```
<div id="llama-photo">…
```

css:

```
#llama-photo {
  width:300px;
}
```

HIERARCHICAL SELECTORS

html:

```
<div class="photo">
  <h3>My first photo</h3>…
```

css:

```
.photo h3 {
 font-weight:bold;
}
```

www.w3schools.com/cssref/css_selectors.asp

Which selectors promote the most *reuse*?

WHY CASCADING?

more than one rule can apply to an HTML element

priority rules for resolving conflicts

more *specific* = higher priority (class trumps element)

some properties (**`font-size`**) are inherited, while others aren't (**`border`**, **`background`**)

LINKING TO HTML

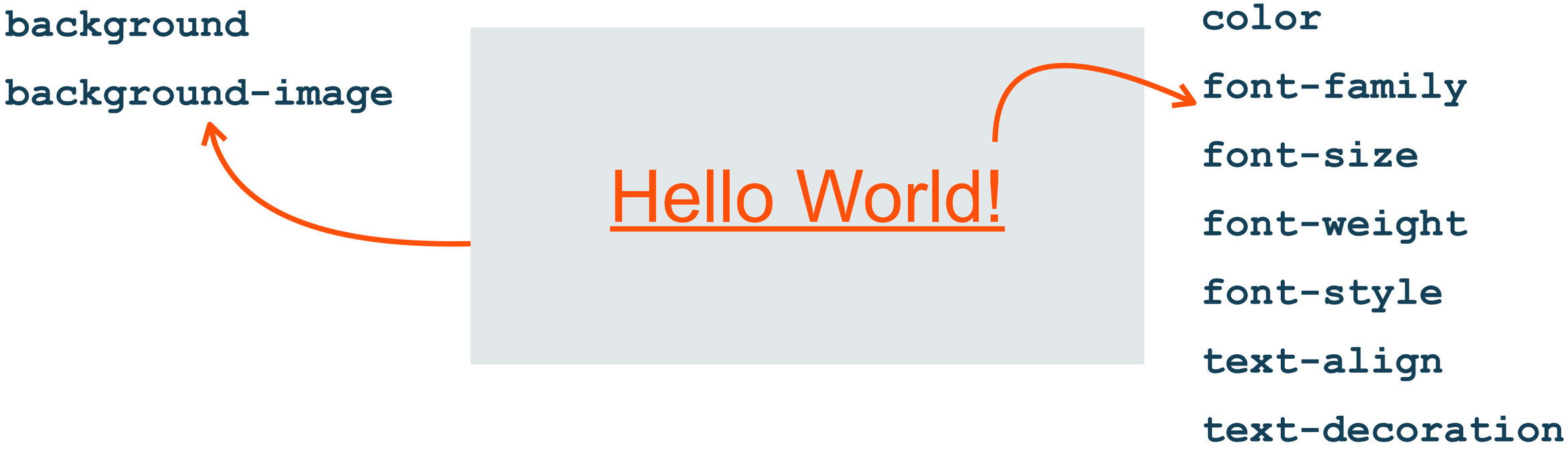
(1)
```
<link rel="stylesheet" href="gallery.css" type="text/css"/>
```

(2)
```
<html>
   <head>
      <style>
       h1 {color:red;}
       p {color:blue;}
      </style>
```

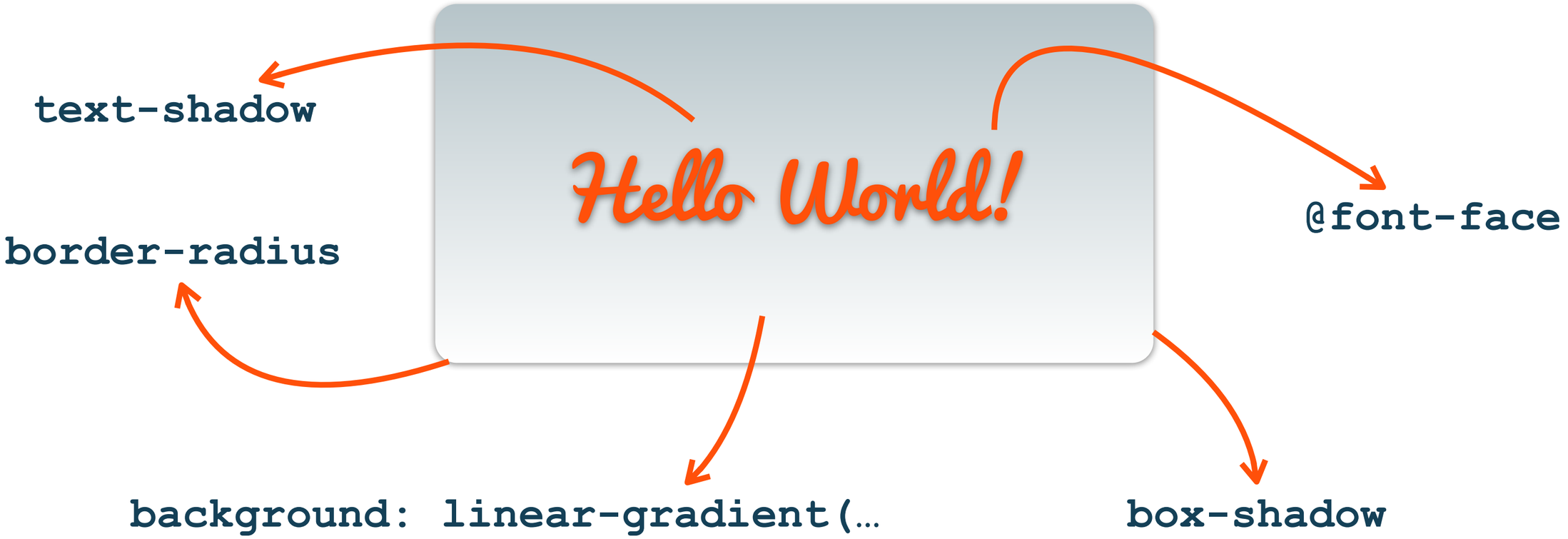
(3)
```
<div style="color:blue;text-align:center">
```

higher priority

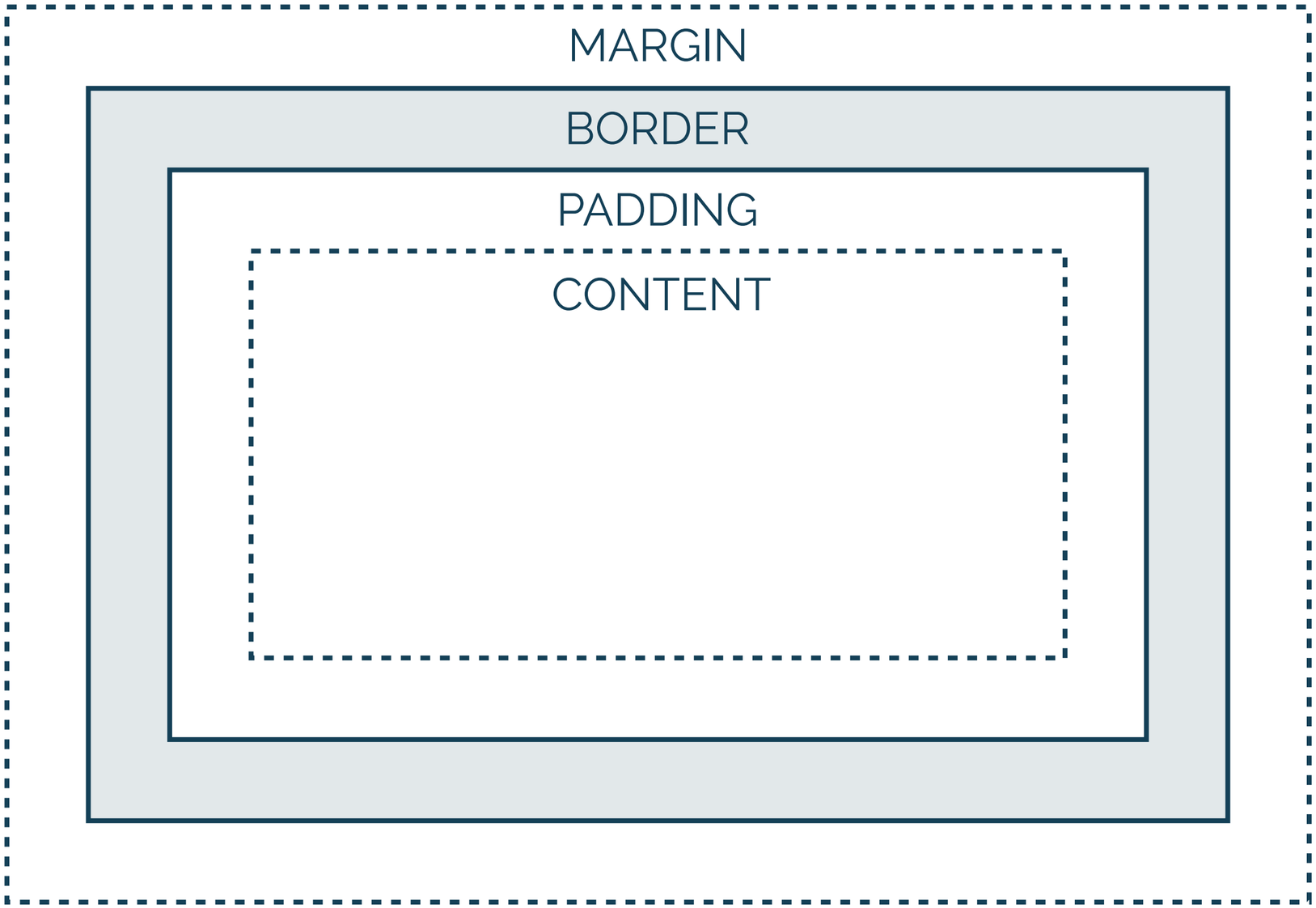
CSS PROPERTIES



CSS3 PROPERTIES

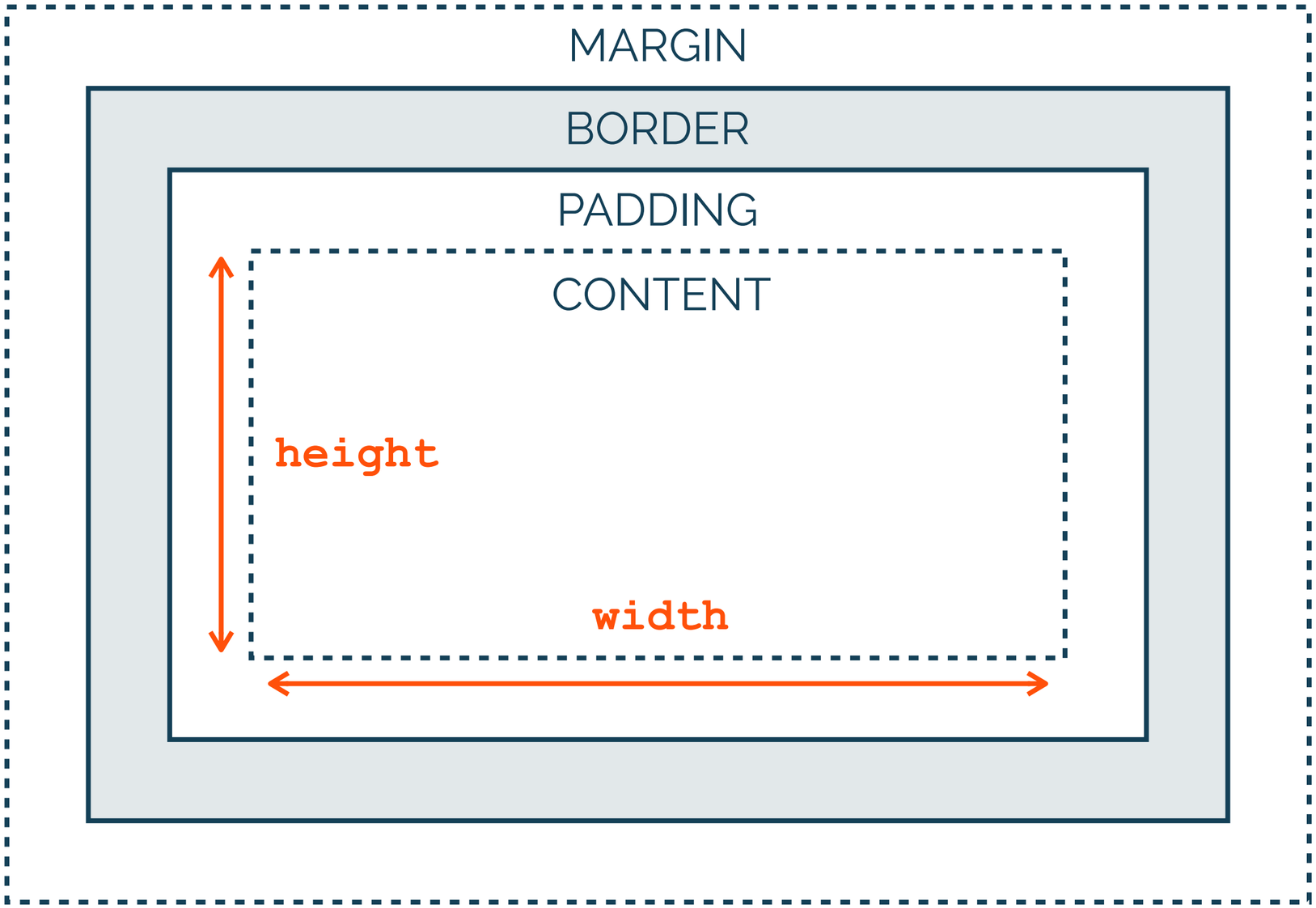


Box Model



control over white space

Box Model



width and **height** properties refer to content area

to calculate full-size of the element add padding, border, and margins

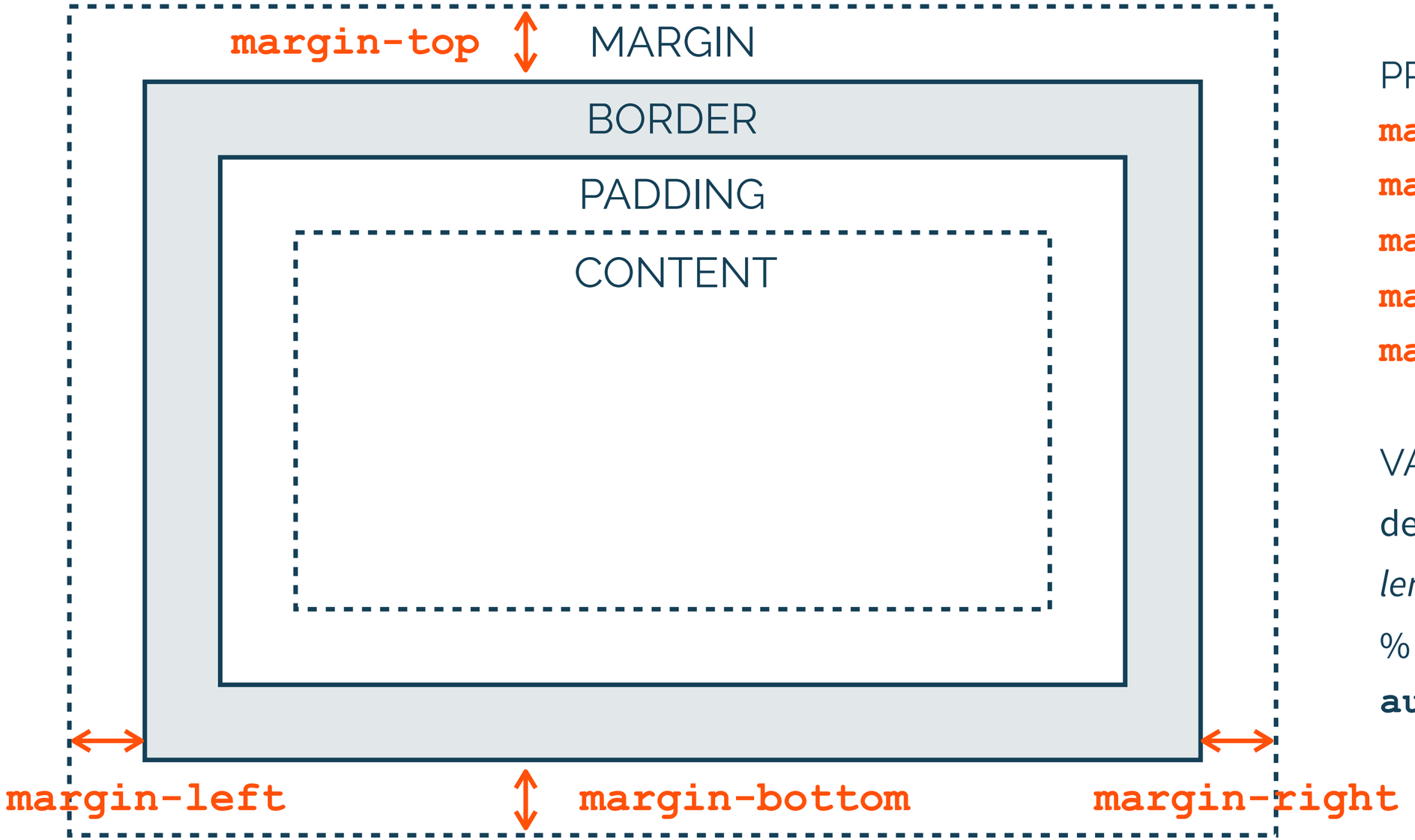
VALUES

default value is **auto**

length +/- (px, em, in, cm, pt)

% of parent's width

Box Model: Margin



PROPERTIES

margin (shorthand)

margin-top

margin-bottom

margin-left

margin-right

VALUES

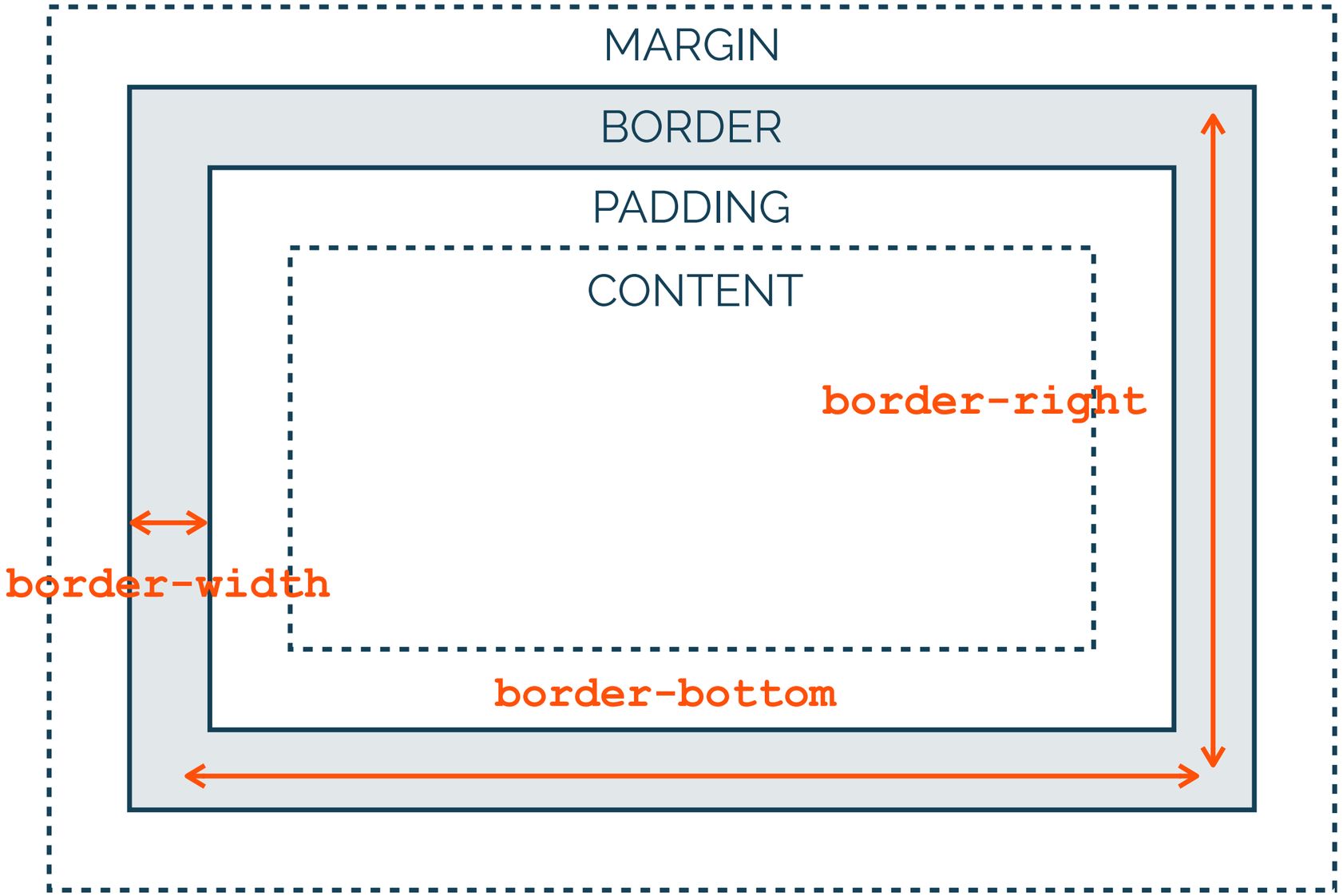
default value is 0

length +/- (px, em, in, cm, pt)

% of parent's width

auto

Box Model: Border



PROPERTIES

`border (shorthand)`

`border-top`

`border-bottom`

`border-left`

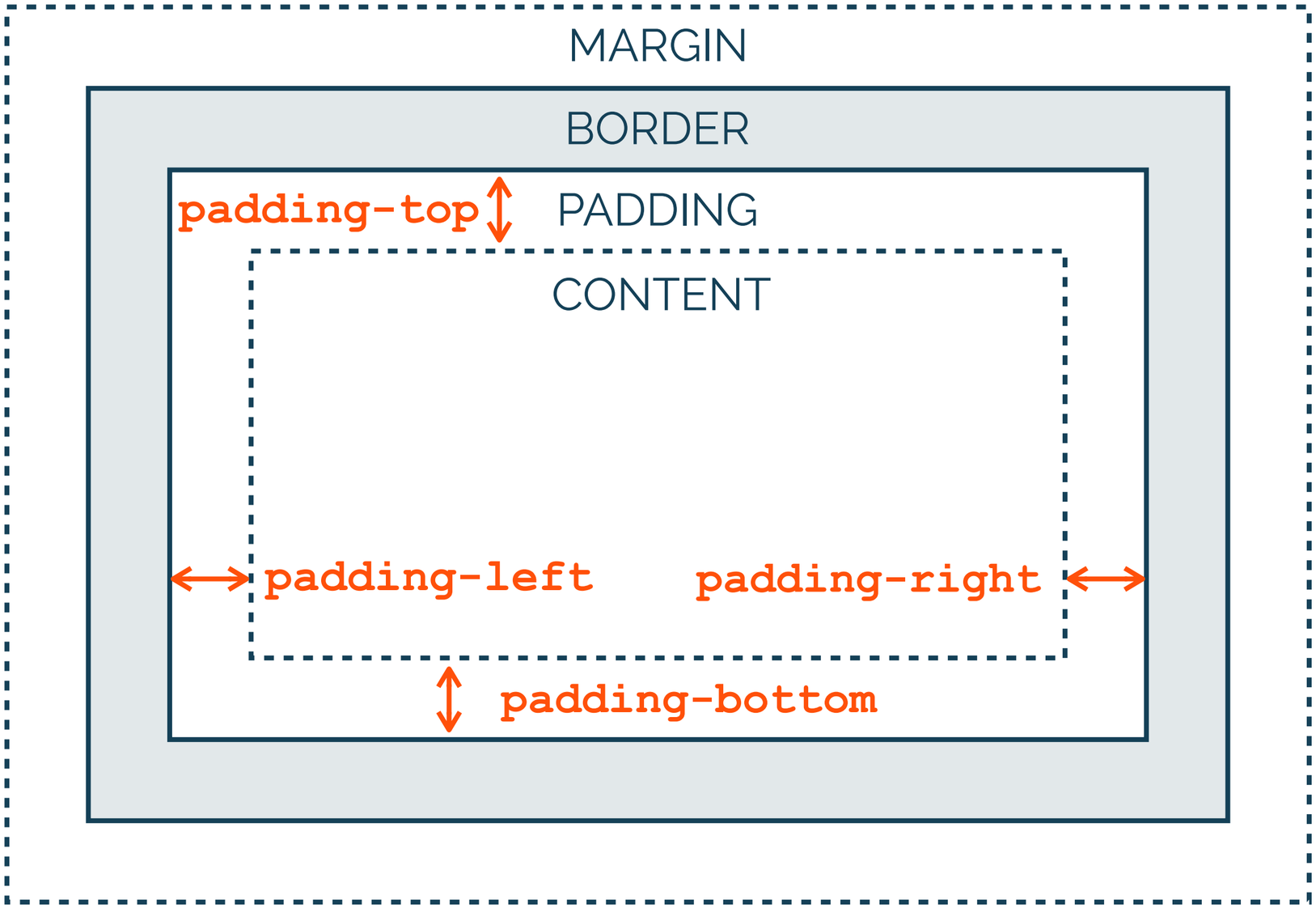
`border-right`

`border-width`

`border-style`

`border-color`

Box Model: Padding



PROPERTIES

`padding (shorthand)`

`padding-top`

`padding-bottom`

`padding-left`

`padding-right`

VALUES

default value is 0

length (px, em, in, cm, pt)

% of the element's width

LAYOUT

Block

rendered with preceding and following line breaks (stacked)

line breaks within nested elements collapsed if no other content

`width` of **`auto`** (default) will expand to fill entire width

Inline

rendered on a common baseline or wrap onto a new baseline below

margin, width, height properties don't affect these elements

can only contain text or other inline elements

www.w3.org/wiki/The_CSS_layout_model_-_boxes_borders_margins_padding

UNITS

absolute (**`px`**, **`in`**, **`cm`**, **`pt`**) vs relative (**`em`**, **`%`**)

`em` relative to the font-size of the element

(or its parent when used to set **`font-size`**)

be careful when mixing different units

position

VALUE	DESCRIPTION
`static`	default. positioned by the flow model; unaffected by top, bottom, left, right
`fixed`	positioned relative to browser window; will not move when window is scrolled
`relative`	positioned relative to its normal position
`absolute`	positioned relative to the first ancestor where `position!=static`

use with

`top`
`bottom`
`left`
`right`

`display`

VALUE	DESCRIPTION
`inline`	default if the element is an inline element (*e.g.*, **`span`**) displays element as inline element
`block`	default if the element is a block-element (*e.g.*, **`div`**) displays element as block element
`table`	element behaves like **`table`** element
`none`	element not displayed (doesn't appear in DOM)

not the same as **`visibility: hidden;`**

www.w3schools.com/cssref/pr_class_display.asp

`float`

breaks with the flow model

pushes element to **`left`** or **`right`**, allowing other elements to wrap around it

use **`clear`** (**`left`**, **`right`**, **`both`**) to force other elements below floated ones

often used to flow text around images

Design Challenge:

horizontally center a `<div>`

CODEPEN

SOLUTION

```
<div class="outer">
  <div class="inner">
  </div>
</div>
```

```
.outer {
   height: 300px;
   background-color: #144057;
}

.inner {
   width: 100px;
   height: 100px;
   background-color: #B6C4C9;

   margin: 0 auto;
}
```

Design Challenge:

vertically center a `<div>`

CODEPEN

SOLUTION

```
<div class="outer">
  <div class="inner">
  </div>
</div>
```

```
.outer {
    height: 300px;
    background-color: #144057;

    position:relative;
}

.inner {
    width: 100px;
    height: 100px;
    background-color: #B6C4C9;

    position: absolute;
    top: 50%;
    margin-top: -50px;
}
```

Design Challenge:

vertically center a `<div>`
of unknown height

CODEPEN

SOLUTION

```
<div class="table-outer">
  <div class="outer">
    <div class="inner">
    </div>
  </div>
</div>
```

```
.table-outer {
  width: 100%;
  display: table;
}

.outer {
  height: 200px;
  background-color: #144057;

  display: table-cell;
  vertical-align: middle;
}

.inner {
  width: 100px;
  height: 50%;
  background-color: #B6C4C9;
}
```

Separation of CONTENT from PRESENTATION?

purely presentational html!

```
<div class="table-outer">
  <div class="outer">
    <div class="inner"></div>
  </div>
</div>
```

a lot of HTML suffers from presentational `div` bloat

Separation of CONTENT from PRESENTATION?

good in theory, doesn't always work in practice

DOMs are often cluttered with presentational HTML

Add higher-level design attributes to CSS
(*i.e., CSS3 implemented rounded corners*)

Research: Cascading Tree Sheets (CTS) [Benson et al.]

CSS PREPROCESSORS

languages that extend CSS in meaningful ways

features: variables, nesting, mixins, inheritance

shrinks developer's codebase and compiles into CSS

popular CSS preprocessors: LESS and SASS

VARIABLES

```
$heading_font:'Source Sans Pro', sans-serif;
$body_font: 'Raleway', sans-serif;
$nav_font: 'Maven Pro', sans-serif;

$text_color: #181818;
$attention_color: #ff500a;

body {
  font-family: $body_font;
  font-size: 14px;
  color: $text_color;
}
…
```

All examples are written in SASS

NESTING

```
.class {
  div {
   font-family: $nav_font;
  }
  a {
    color: $attention_color;
    text-decoration: none;
  }
  li {
    margin-bottom: 10px;
  }
}
```

compiles into

```
.class div {
  font-family: $nav_font;
}
.class a {
  color: $attention_color;
  text-decoration: none;
}
.class li {
  margin-bottom: 10px;
}
```

All examples are written in SASS

MIXINS

```
@mixin border-radius($radius) {
  -webkit-border-radius: $radius;
     -moz-border-radius: $radius;
      -ms-border-radius: $radius;
          border-radius: $radius;
}

.small-box { @include border-radius(5px); }
.big-box { @include border-radius(10px); }
```

compiles into

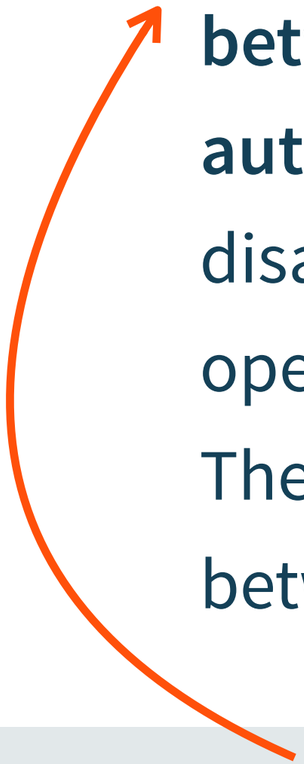
```
.small-box {
  -webkit-border-radius: 5px;
  -moz-border-radius: 5px;
  -ms-border-radius: 5px;
  border-radius: 5px;
}

.big-box {
  -webkit-border-radius: 10px;
  -moz-border-radius: 10px;
  -ms-border-radius: 10px;
  border-radius: 10px;
}
```

All examples are written in SASS

CSS LIMITATION?

“**Having a constraint solver allows you to express relationships between arbitrary elements and have conflicts resolved automagically.** However, things can get complex when elements disappear and new ones arrive, like they do through DOM operations. Circular dependencies must also be handled gracefully. Therefore, the idea of allowing CSS to express layout constraints between any elements were dropped at an early stage.”



can be implemented in Javascript

Håkon Wium Lie Interview

NEXT CLASS: JAVASCRIPT

courses.engr.illinois.edu/cs498rk1/