Web Programming

CSS Part II

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#Desenvolvimento Web Front-end

#UniEvangelica2025

Part II.
Selectors

Recap

- Selectors indicate which element(s) the rule applies to
- Declarations describe the styling
- List of property: value pairs separated by a semicolon

Element selector

- Using single element as a selector:

```css
body {
    background-color: #f0f8ff;
}
```

- Multiple elements can be listed by commas.

- The individual elements can also have their own styles (like p below)

```css
h1, h2, h3, p {
    font-family: Verdana, Arial, sans-serif;
}
p {
  margin: 1em;
  padding: 0.5em;
}
```

IDs and classes

- ID specifies a single unique element
  - HTML: id attribute with a unique value
  - CSS: id value prefixed by #

HTML
```
<p id="firstpar">...</p>
```

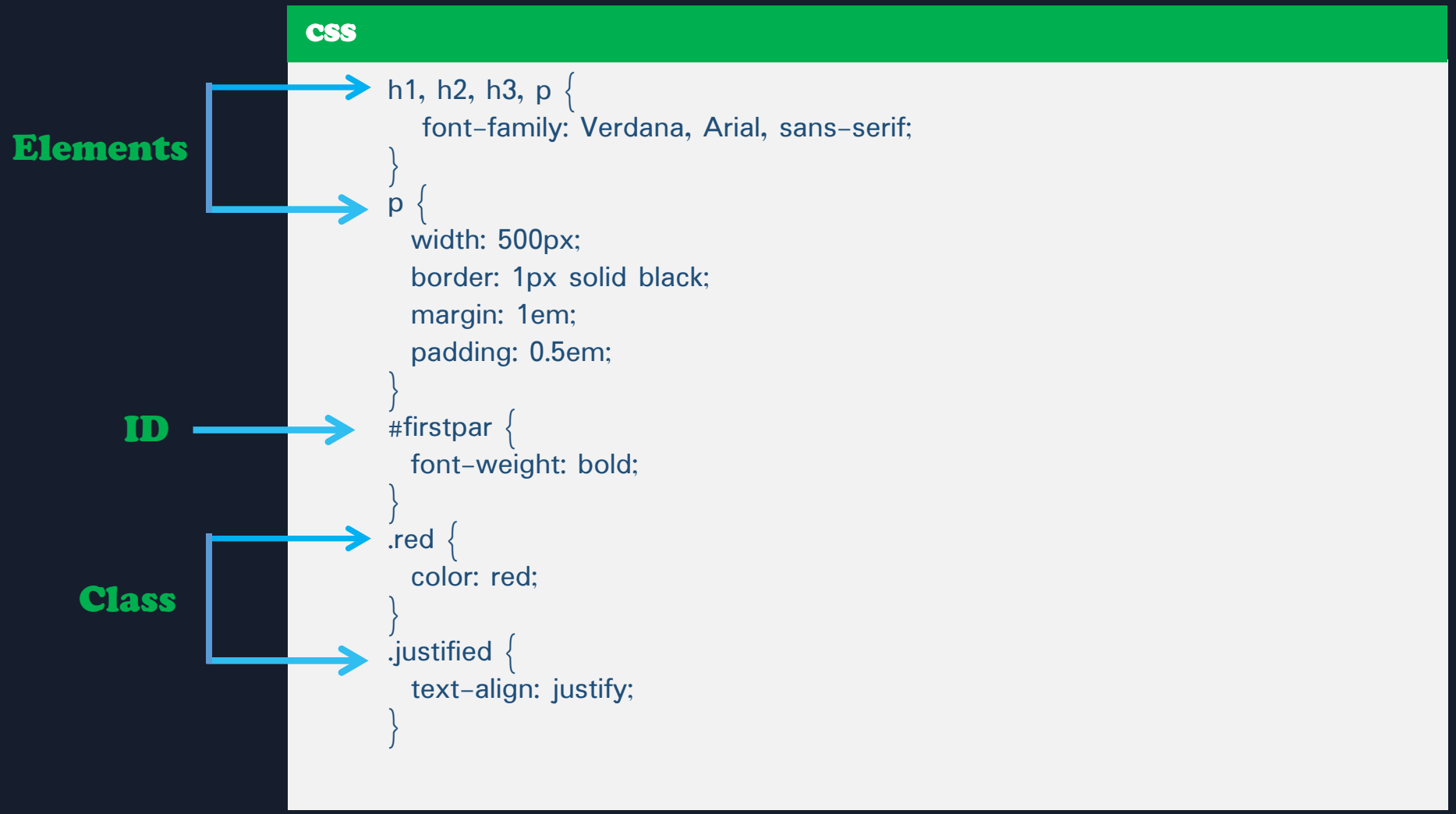
CSS
```
#firstpar {...}
```

  - Class can be assigned to a number of elements.
  - An element can have multiple classes assigned to it.
  - HTML: class attribute with one or more values separated by space
  - CSS: class value prefixed by .

HTML
```
<p class="red">...</p>
<p class="red justified">...</p>
```

CSS
```
.red {...}
.justified {...}
```

Selectors so far



ID selector vs. inline CSS

- With the ID selector inline CSS can be avoided
- That also means that it is possible from now on to move all style sheets to an external CSS file

- **Best practice: avoid inline CSS**
  - style sheets provide more maintainability
  - better separation of HTML data/structure and style/layout

Elements tree

HTML

```
<table border="1">
<thead>
  <tr>
    <th>First name</th>
    <th>Last name</th>
    <th>Points</th>
  </tr>
</thead>
<tbody>
 <tr>
    <td>John</td>
    <td>Smith</td>
    <td>100</td>
  </tr>
[...]
</tbody>
</table>
```

Child: td elements are Childs of the tr element.

Siblings: td elements in same row are siblings.

Descendant: all **td** and **tr** elements are descendants of table

Selectors

Selector	Meaning	Example
Universal	Matches all elements in the document	* {} All elements on the page
Type	Matches element name	h1, h2, h3 {} <h1>, <h2>, <h3> elements
Class	Matches element class	.note {} Any elements whose class attribute has a value of note p.note {} Only <p> elements whose class attribute has a value of note
ID	Matches element ID	#introduction {} Element with an id attribute that has the value introduction

Selectors (2)

Selectors combinators

Type	explain	Example
Descendant	Element that is descrendent of another (not just direct child)	p a {} Any <a> inside an <p> (even if there are other elements nested in between them)
Child	Element that is a direct child of another	li > a {} Any <a> elements that are children of an element
Adjacent sibling	Element that is the next sibling of another	h1+p {} First <p> element after any <h1> element (but not other <p> elements)
General sibling	Element that is a sibling of another, but does not have to be directly preceding	h1~p {} If there are two <p> elements that are siblings of an <h1> element,

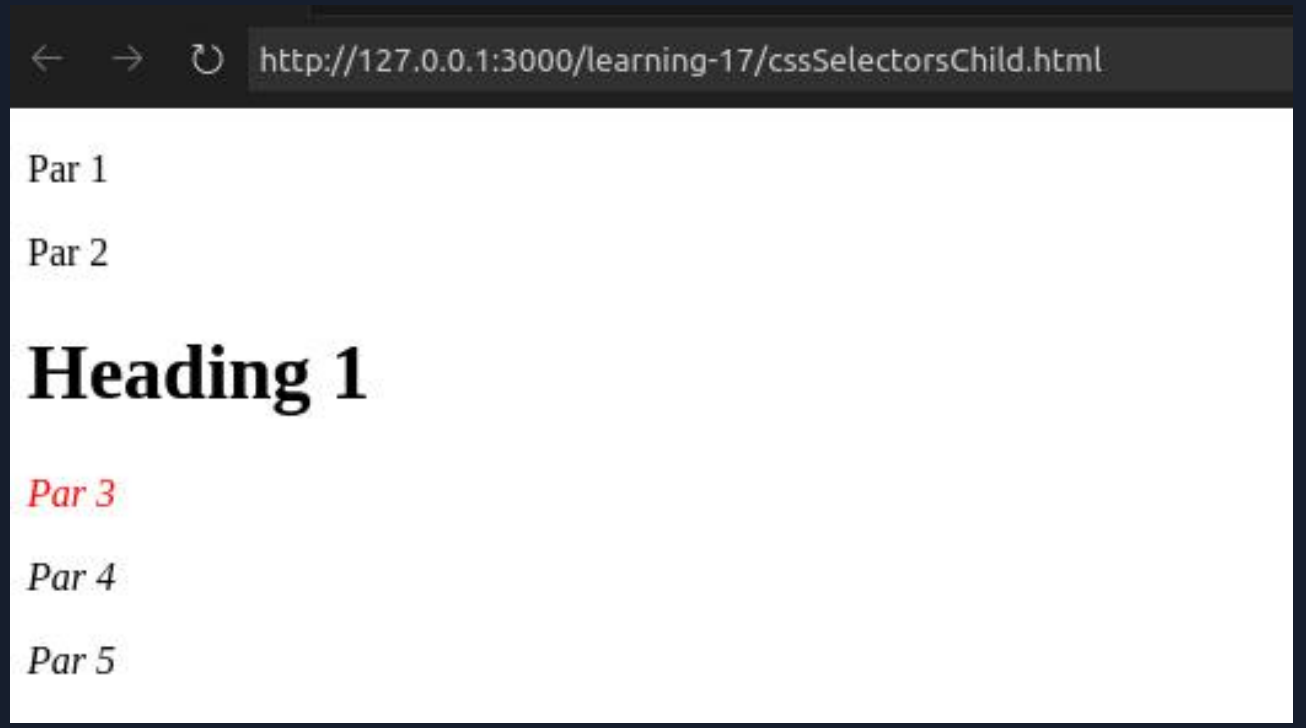
Example: adjacent vs. general sibling

HTML

```
<p>Par 1</p>
<p>Par 2</p>
<h1>Heading 1</h1>
<p>Par 3</p>
<p>Par 4</p>
<p>Par 5</p>
```

CSS

```
h1 + p {
  color: red;
}
h1 ~ p {
  font-style: italic;
}
```



Selectors(3)

Selector	Meaning	Example
Attribute selector	Element that has a specific attribute	p[title] {} Any <p> elements that have a title attribute
Pseudo-classes	Add special effects to some selectors, which are applied automatically in certain states	a:visited {} Any visited link
Pseudo-elements	Assign style to content that does not exist in the source document	p::first-line {} First line inside a <p> element

Question

- What's the difference?

.intro a {...}

a element inside an element that have the **intro** class

a.intro {...}

only **a** elements that have the **intro** class

Question

- What's the difference?

#header.callout {...}

element that has ID **header** as well as class **callout**

#header .callout {...}

all elements with the class name **callout** that are **descendants** of the element with ID **header**

CSS Priority Scheme

- This is the “cascading” part...
  - Many properties might affect the same element
  - Some of these might conflict with each other
  - Cascading decides which to apply

CSS priority scheme

#	CSS source type	Description
1	User defined	User-defined CSS in the browser
2	Inline	HTML element's style property
3	Media type	Media-specific CSS
4	Importance	!important overwrites previous types
5	Selector specificity	More specific selector over generic ones
6	Rule order	Last rule of declaration
7	Parent inheritance	Not specified is inherited from parent
8	CSS definition	Any CSS definition
9	Browser default	Initial values

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Inheritance

- Some properties are inherited by child elements
  - Font-family, color, etc.

- Others are not inherited by child elements
  - Background-color, border, etc.

- **Inheritance** can be forced using **inherit**

CSS

```
body {...}

.page {
  background-color: #efefef;
  padding: inherit;
}
```

CSS priority scheme

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Specificity hierarchy

- If multiple selectors apply to the same element, the one with higher specificity wins
- Every selector has its place in the specificity hierarcy

    1. IDs

    #div

    2. Classes, attributes, pseudo-classes

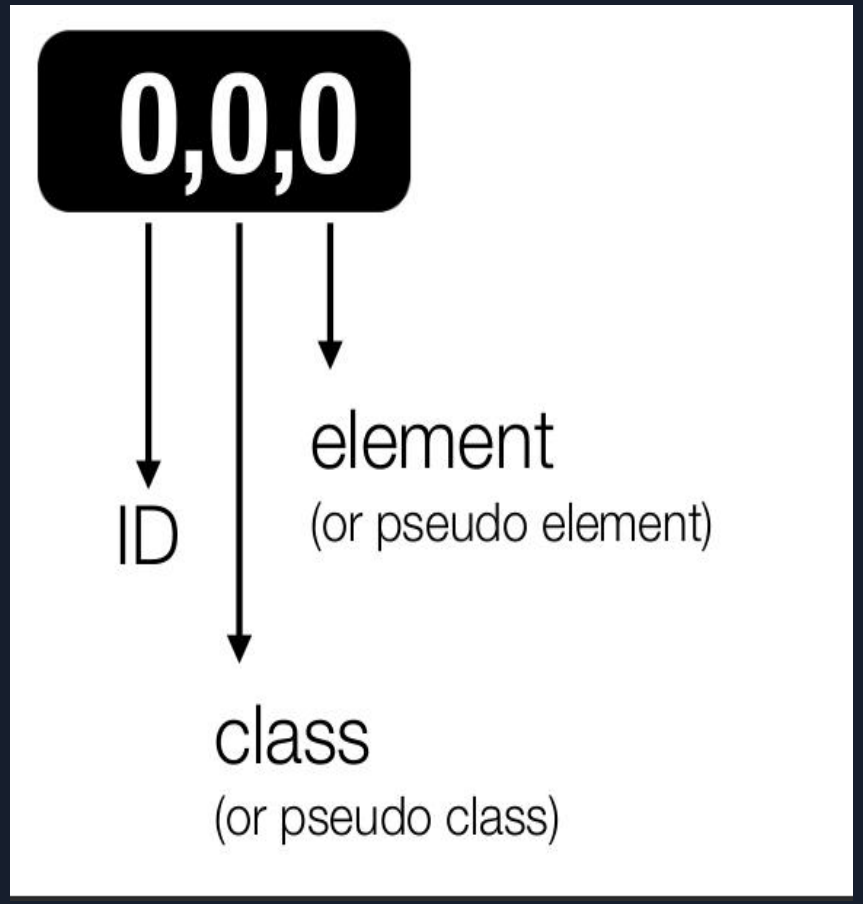
    .classes, [attributes], :hover

    3. Elements (types) and pseudo-elements

    p, :after

Computing specificity

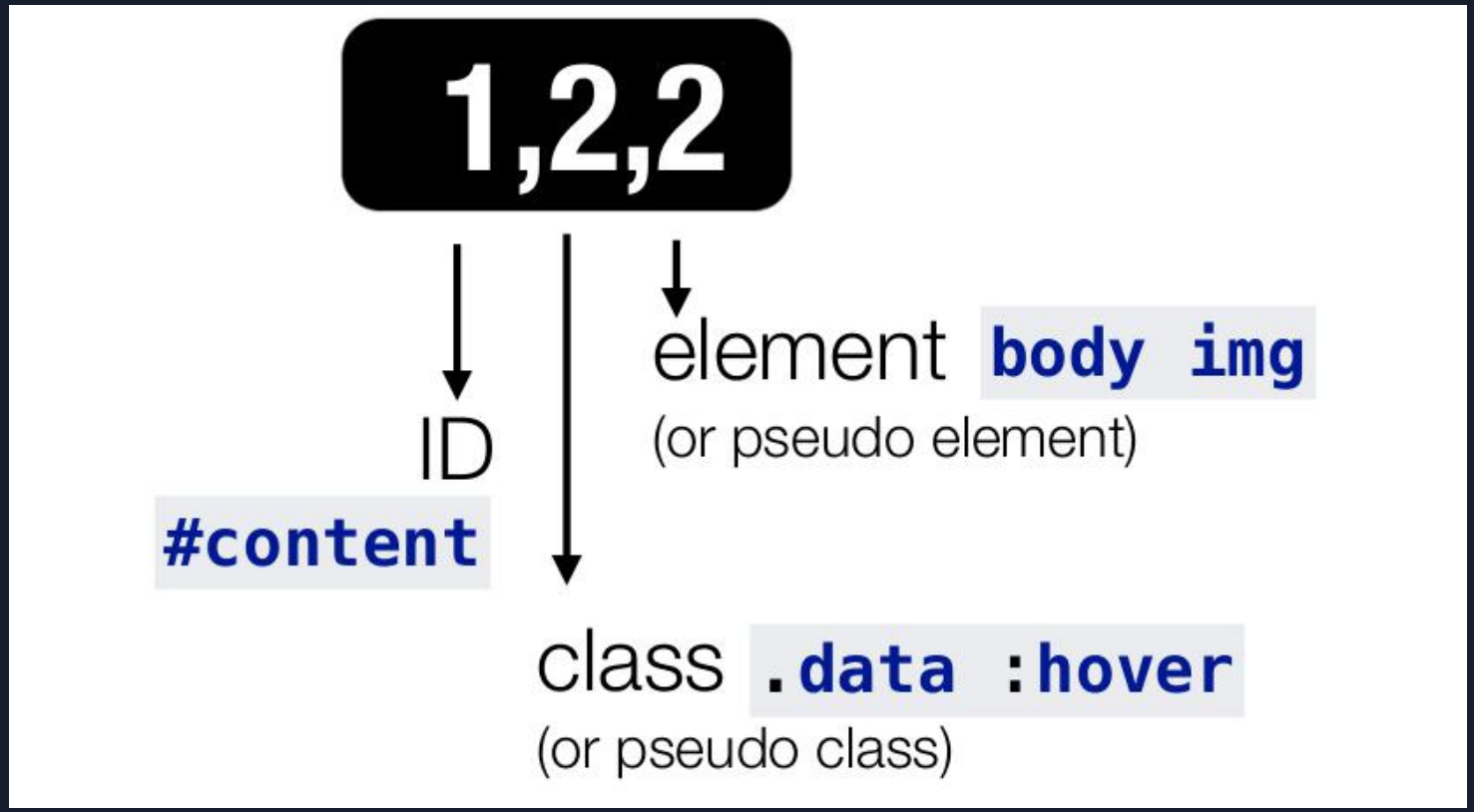
- Think in a number system (with a large base)



Computing specificity

- Think in a number system (with a large base)

body #content .data img:hover



Specificity wars

http://www.stuffandnonsense.co.uk/archives/css_specificity_wars.html

Vader

1,0,0

ID

Maul

0,1,0

class

Storm trooper

0,0,1

element

a
1 x element selector

Sith power: 0,0,1

p a
2 x element selectors

Sith power: 0,0,2

.foo
1 x class selector *

Sith power: 0,1,0

a.foo
1 x element selector
1 x class selector

Sith power: 0,1,1

p a.foo
2 x element selectors
1 x class selector

Sith power: 0,1,2

.foo .bar
2 x class selectors

Sith power: 0,2,0

p.foo a.bar
2 x element selectors
2 x class selectors

Sith power: 0,2,2

#foo
1 x id selector

Sith power: 1,0,0

a#foo
1 x element selector
1 x id selector

Sith power: 1,0,1

.foo a#bar
1 x element selector
1 x class selector
1 x id selector

Sith power: 1,1,1

.foo .foo #foo
2 x class selectors
1 x id selector

Sith power: 1,2,0

style
1 x style attribute

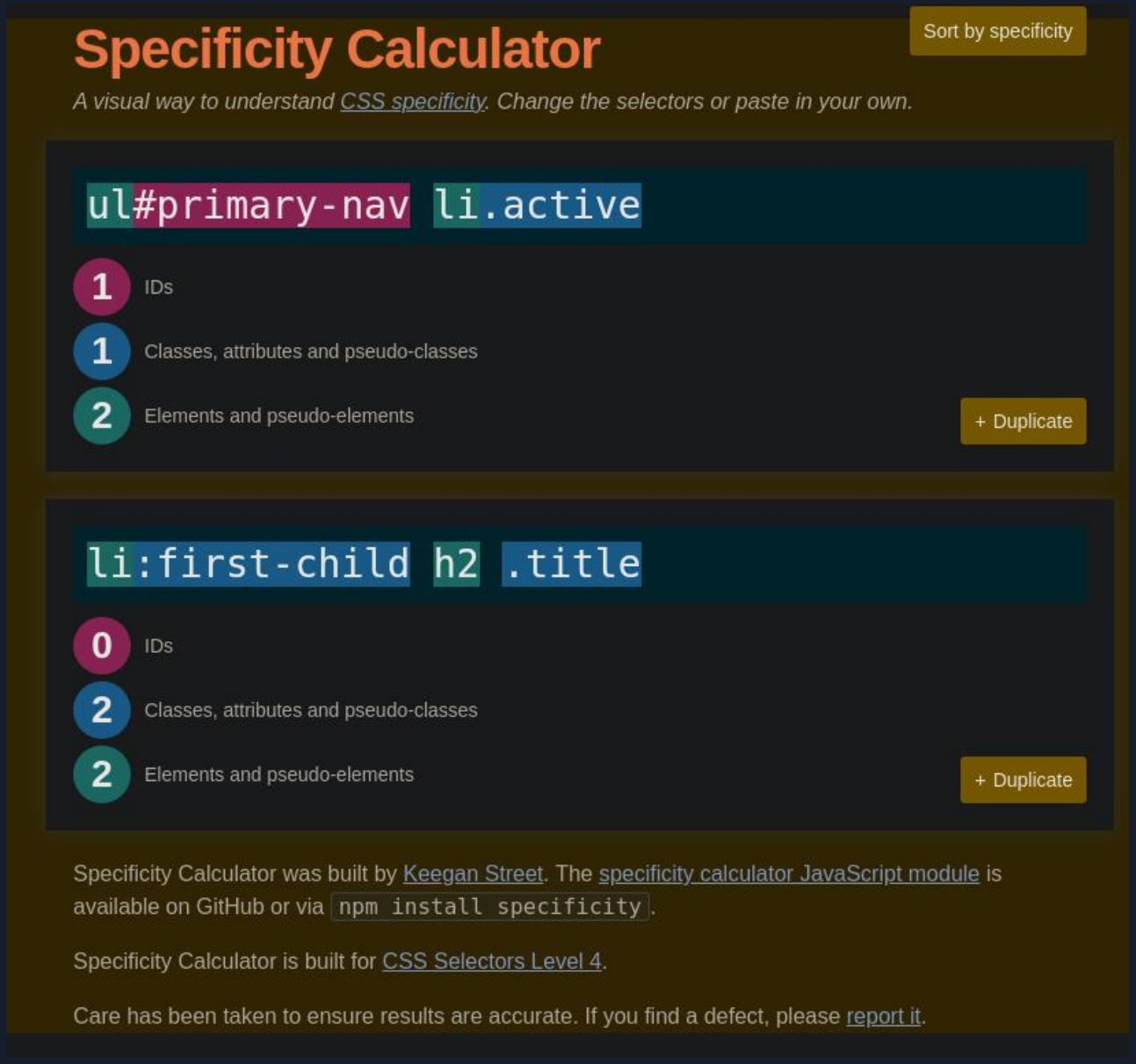
Sith power: 1,0,0,0

Solutions

#	CSS	Score	Explanation
1	* { }	0	
2	li { }	1	one element
3	li:first-line { }	2	element + pseudo-element
4	ul li { }	2	two elements
5	ul ol+li { }	3	three elements
6	h1 + *[rel=up] { }	11	one attribute, one element
7	ul ol li.red { }	13	one class, three elements
8	li.red.level { }	21	two classes, one element
9	style=""	1000	one inline styling
10	p { }	1	one element
11	div p { }	2	two elements
12	.sith	10	one class
13	div p.sith { }	12	two elements and a class
14	#sith	100	one id
15	body #darkside .sith p { }	112	element, ID, class, element (1+100+10+1)

Online specificity calculator

http://specificity.keegan.st



Quiz #1

- The answer is the color of the text after CSS is applied
- I.e., the HTML part is always the same

HTML

```
<div id="main" class="container">
    <p id="foo" class="bar boo">Something clever goes here</p>
</div>
```

CSS

```
body {color: red;}
p {color: blue;}
```

- The answer is the color of the text after CSS is applied

- ☐ red
- ☐ blue
- ☐ black

Solution #1

- The answer is the color of the text after CSS is applied
- I.e., the HTML part is always the same

HTML

```
<div id="main" class="container">
    <p id="foo" class="bar boo">Something clever goes here</p>
</div>
```

CSS

```
body {color: red;}
p {color: blue;}
```

- The answer is the color of the text after CSS is applied

Explanation:
The red color is inherited from body. The explicit style declaration for the p element overwrites it.

- [ ] red
- [x] blue
- [ ] black

Quiz #2

HTML

```
<div id="main" class="container">
    <p id="foo" class="bar boo">Something clever goes here</p>
</div>
```

CSS

```
p.bar {color: red;}
p.boo {color: blue;}
```

- The answer is the color of the text after CSS is applied

- [ ] red
- [ ] blue
- [ ] black

Solution #2

HTML

```
<div id="main" class="container">
    <p id="foo" class="bar boo">Something clever goes here</p>
</div>
```

CSS

```
body {color: red;}
p {color: blue;}
```

- The answer is the color of the text after CSS is applied

- [ ] red
- [x] blue
- [ ] black

Explanation:
p.bar and p.boo have the same specificity. The last rule of declaration decides.

Quiz #3

HTML

```
<div id="main" class="container">
    <p id="foo" class="bar boo">Something clever goes here</p>
</div>
```

CSS

```
p {color: red;}
.container {color: blue;}
```

- The answer is the color of the text after CSS is applied

- [ ] red
- [ ] blue
- [ ] black

Solution #3

HTML

```
<div id="main" class="container">
    <p id="foo" class="bar boo">Something clever goes here</p>
</div>
```

CSS

```
p {color: red;}
.container {color: blue;}
```

- The answer is the color of the text after CSS is applied

- [x] **red**
- [ ] **blue**
- [ ] **black**

Explanation:
The blue color is inherited from div.container. The explicit style declaration for the p element overwrites it.

Quiz #4

HTML

```
<div id="main" class="container">
    <p id="foo" class="bar boo">Something clever goes here</p>
</div>
```

CSS

```
#main {color: red;}
body .container {color: blue;}
```

- The answer is the color of the text after CSS is applied

- [ ] **red**
- [ ] **blue**
- [ ] **black**

Solution #4

HTML

```
<div id="main" class="container">
    <p id="foo" class="bar boo">Something clever goes here</p>
</div>
```

CSS

```
#main {color: red;}
body .container {color: blue;}
```

- The answer is the color of the text after CSS is applied

- [x] **red**
- [ ] **blue**
- [ ] **black**

Explanation:
The color is inherited from the parent div. For that div, the ID #main has a higher specificity (1-0-0) than "body .container" (0-1-1).

Quiz #5

HTML

```
<div id="main" class="container">
    <p id="foo" class="bar boo">Something clever goes here</p>
</div>
```

CSS

```
#foo {color: red;}
#main {color: blue;}
```

- The answer is the color of the text after CSS is applied

- [ ] **red**
- [ ] **blue**
- [ ] **black**

Solution #5

HTML

```
<div id="main" class="container">
    <p id="foo" class="bar boo">Something clever goes here</p>
</div>
```

CSS

```
#foo {color: red;}
#main {color: blue;}
```

- The answer is the color of the text after CSS is applied

- [x] **red**
- [ ] **blue**
- [ ] **black**

Explanation:
The color inherited from the parent div (blue) is overwritten by the declaration for the ID #foo.

Quiz #6

HTML

```
<div id="main" class="container">
    <p id="foo" class="bar boo">Something clever goes here</p>
</div>
```

CSS

```
.container p {color: red;}
div .boo {color: blue;}
```

- The answer is the color of the text after CSS is applied

- [ ] **red**
- [ ] **blue**
- [ ] **black**

Solution #6

HTML

```
<div id="main" class="container">
    <p id="foo" class="bar boo">Something clever goes here</p>
</div>
```

CSS

```
.container p {color: red;}
div .boo {color: blue;}
```

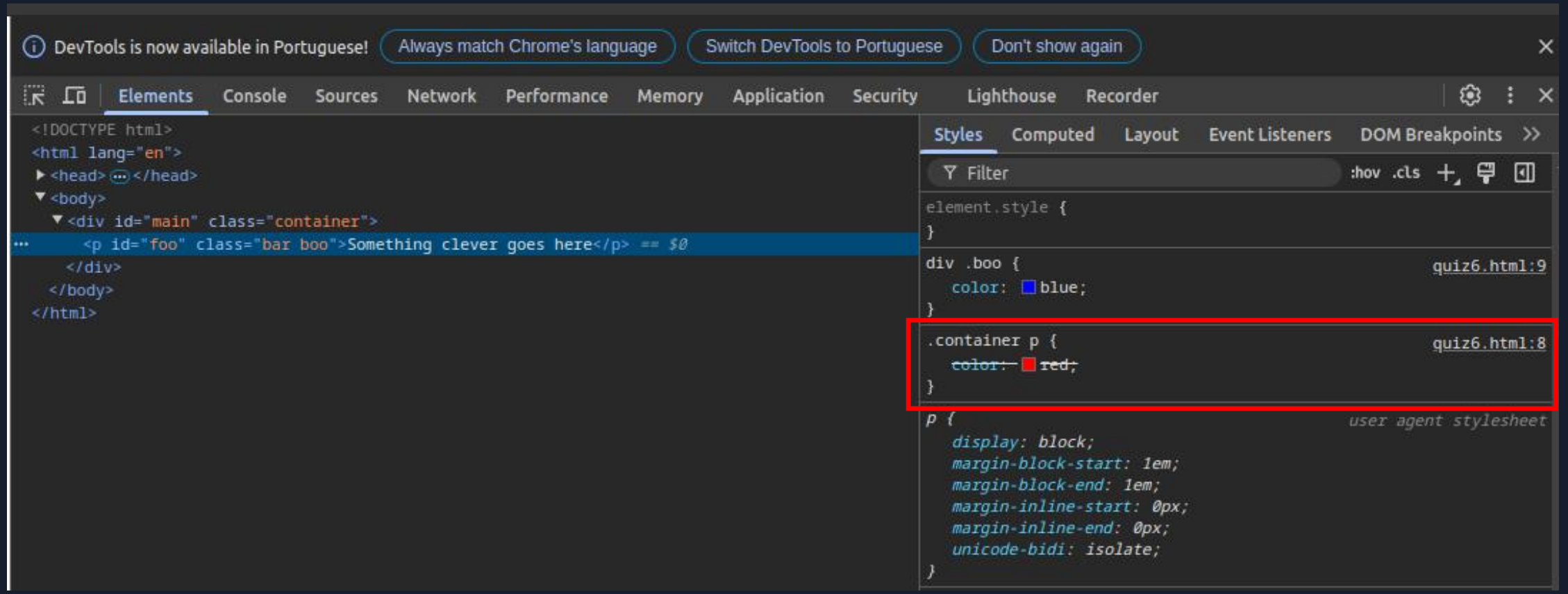
- The answer is the color of the text after CSS is applied

- [ ] **red**
- [x] **blue**
- [ ] **black**

Explanation:
Both declarations apply to the <p> element (the first because p the second because .boo).
They have the same specificity (0-1-1), therefore the last rule of declaration decides.

When in doubt

- Use the browser's developer functions



Best practices

- Minimize the number of selectors

- Use ID to make a rule more specific

- **Most Important**

    - Never use **!important**