Web Application Architectures

Module 6: Presentation/User Interface
Lecture 6: Cascading Style Sheets (CSS)

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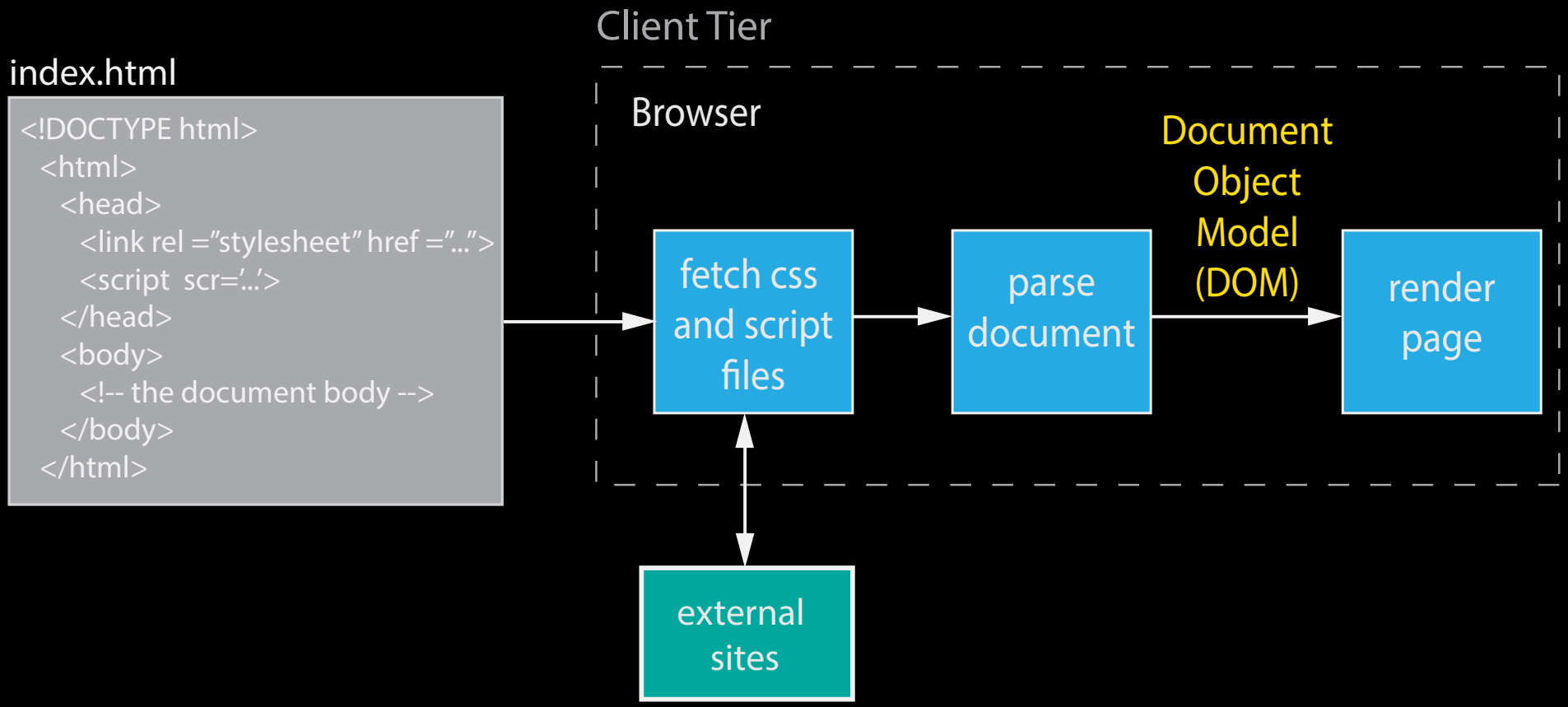
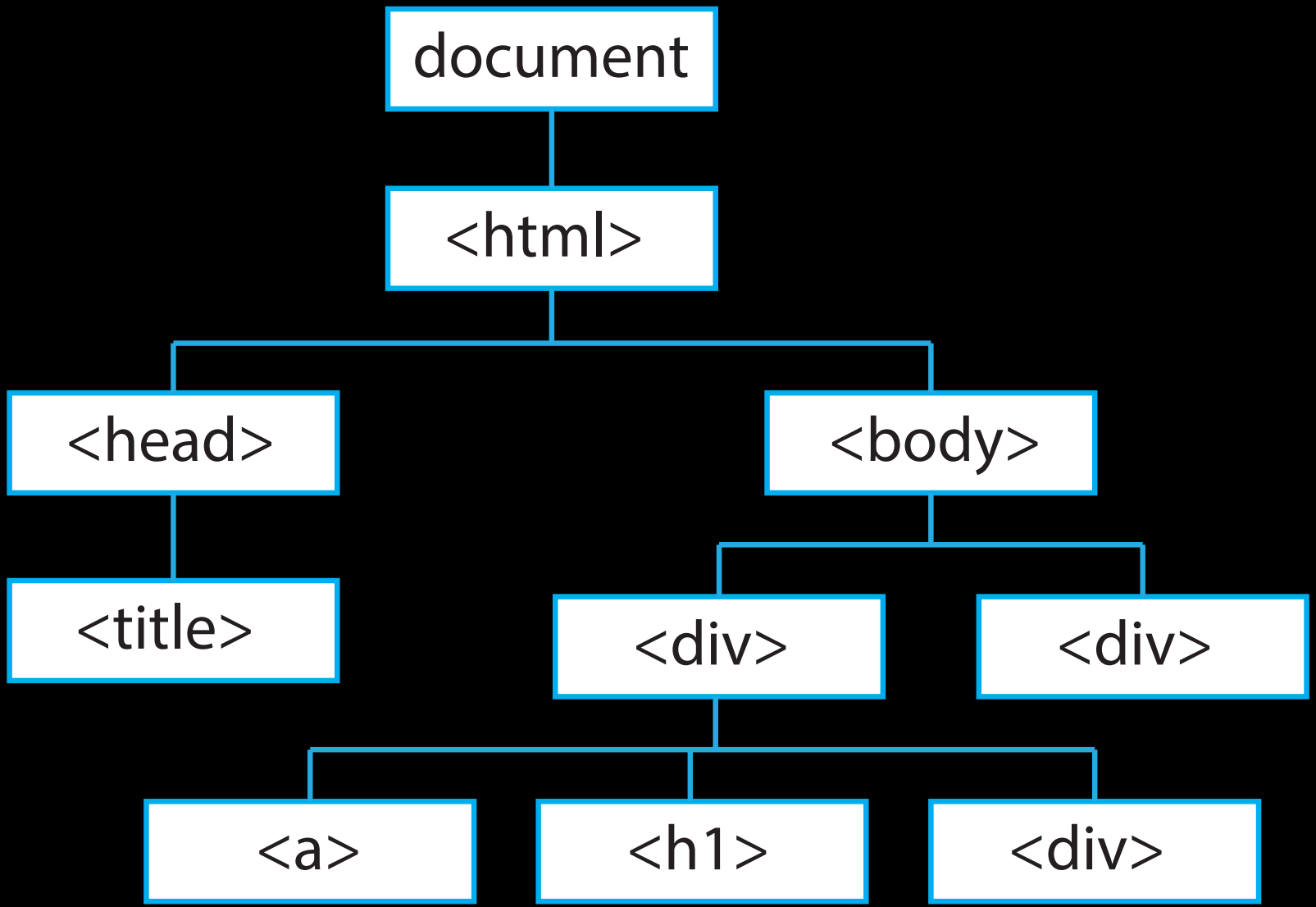
Displaying a Document



The DOM Tree



Cascading Style Sheets

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- Cascading Style Sheets (CSS) is a language for specifying the presentation semantics of an HTML document, i.e., CSS is used to style HTML in order to apply graphic design to a website.
- CSS involves creating rules that specify how particular HTML elements should appear.
- Rails uses an extension called SASS (Syntactically Awesome Stylesheets) — SASS is interpreted into CSS (see: `http://sass-lang.com/` for more details).
- Demonstration of how the separation of content and presentation principle is supported by HTML and external CSS style sheets: `www.csszengarden.com`

CSS Rules

A CSS rule has the following syntax:

selector {declaration}

where,

- selector – specifies the elements the rule will be applied to.
- declaration – a semicolon separated list of property:value pairs.
  Ex.

```
h1, h2 {
    font-weight:bold;
    font-family:arial;
    color:black
}
```

The formatting declarations shown in this CSS rule will be applied to all level 1 and level 2 headings in the HTML document.

Note: Invalid CSS rules are simply ignored.

CSS Rules

- Recall the `class` attribute that can be applied to almost any HTML element.

  Ex.

```
<div class="main">
    ...
</div>
```

- This attribute can be used to associate CSS rules with HTML elements using the class selector:

  Ex.

```
div.main {
    background-color:white;
    font-family:arial, verdana, sans-serif;
}
```

CSS Rules – Selectors

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Selectors allow you to specify the HTML elements that particular CSS rules should apply to. Some common selectors:

- Type Selector – applies to elements of a given type. Ex.

```
h1 {color:purple}   /* h1 elements purple */
h2, b {color:red}   /* h1, h2, b elements red */
```

- Class Selector – applies to elements of a given class. Ex.

```
p.main {font-style:normal} /* p elems, class main */
.main {color:red} /* all elements, class main */
```

- id Selector – applies to elements with a given id. Ex.

```
#chapter1 {text-align:center}
```

- A list of additional selectors can be found at:
  http://www.w3schools.com/cssref/css_selectors.asp

CSS Rules – Psuedo-classes

Pseudo-classes were introduced to allow for selection on information that lies outside the document tree, or that cannot be expressed using the other simple selectors.

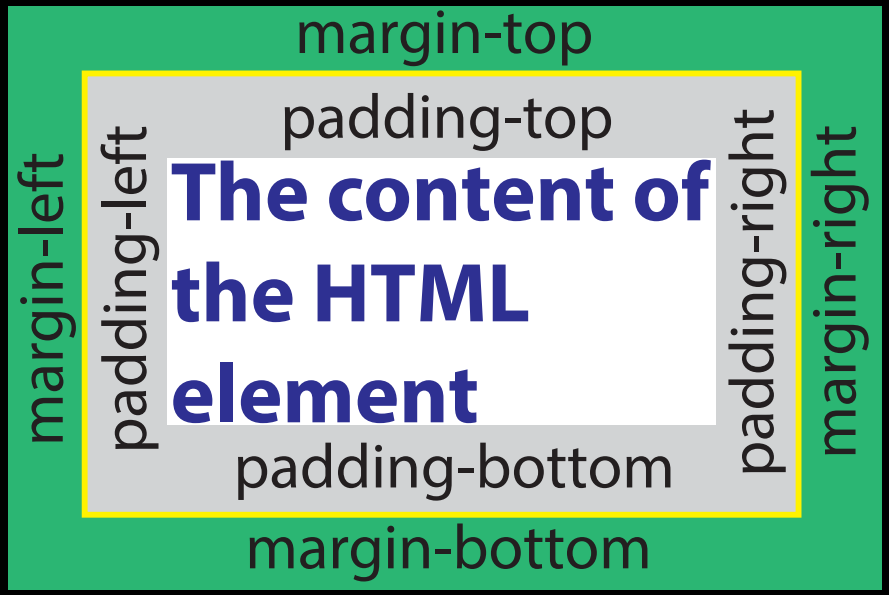
E.g., visited and unvisited links on a page are often displayed differently. The `:link` and `:visited` pueudo-classes allow you to control their appearance.

Ex.

```
a:link {color:#FF0000; } /* unvisited links */
a:visited {color:#00FF00;} /* visited links */
a:hover {color:#FF00FF;} /* user mouse over */
```

The Box Model

- CSS treats every element as a box, and allows you to specify the following properties associated with the formatting of a box:



- Every box has a border (even if it is not visible) — this is the thin yellow line shown in the figure.
- There are additional properties related to the border, e.g., `border-style`, `border-width`, `border-color`.

The Box Model

The margin and padding properties allows you to control the whitespace between elements, allowing you to create more pleasing visual designs.
Ex.

```
h1, img, b {
    border-style:solid;
    border-width:2px;
    border-color:#000000;
    padding:2px;
}

h1, b {background-color:#cccccc;}
```

This will put solid 2-pixel-wide black border around `h1`, `img`, and `b` elements, and the background of `h1` and `b` elements will be gray.

Positioning and Layout

- CSS can be used to control the positioning of the "boxes" on a page (i.e., the layout).
- The `position` property allows you to control the positions of boxes, and therefore page layout.
- Note: In the past, it was common to use HTML `table` or `iframe` elements in order to position other HTML elements on a page; however, this approach has fallen out of favor. The use of the positioning properties is now considered the standard way to control layout.
- We don't have the time to cover this in detail – see:
  `http://www.w3schools.com/css/css_positioning.asp`
  `http://www.w3schools.com/cssref/pr_class_position.asp`