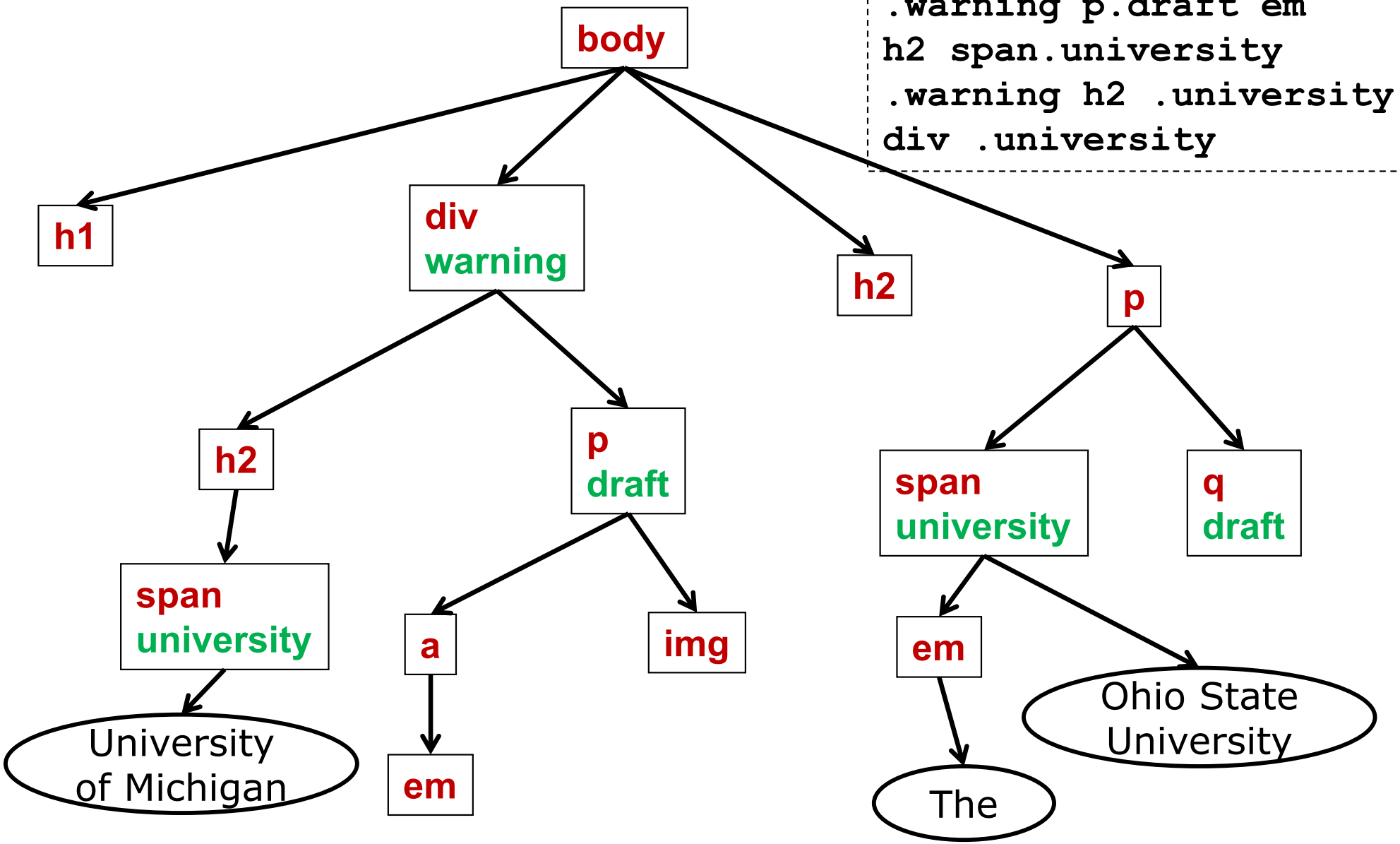
CSS Cont'd: Cascading Style Sheets

Lecture 19

Recall: Example


```
.warning p.draft em
h2 span.university
.warning h2 .university
div .university
```



Resolving Conflicts

- Generally, (text) styles are inherited
- Inherited styles are overridden by selectors that match children
- But conflicts can arise: *multiple* selectors match *the same* element
  - Multiple rules with same selector
  - Element part of 2 different classes
  - Two different paths (ancestors) match
  - Different sources of css (author vs user)

Priority of Styling

- Rough sketch:
  - Place conflicting rules into *categories*
  - Within category, most *specific* rule wins
  - Break remaining ties with *order of declaration*
- More detail: There are 3 stages, made from 4 factors:
  1. Location and Importance
  2. Specificity
  3. Declaration order

Location

- Three sources of CSS rules:
  - Author of document
    - Direct style attribute on element (ugly)
    - **<style>** in head element
    - **<link>** to CSS style sheets in header
  - User (rare)
  - Browser (defaults, eg blue underline)
- Priority order (high to low):
  1. Author (direct, head style, linked)
  2. User
  3. Browser

Importance

- Preference given to document author
- But some users *really* need control
- Solution: **`!important`** modifier

```
h1 { font-family: arial !important; }
```

- Priority order of categories (high to low):
  1. Browser **`!important`**
  2. User **`!important`**
  3. Author **`!important`**
  4. Author (normal)
  5. User (normal)
  6. Browser (normal)
- Use with caution! (eg for debugging)

Specificity

- Within a given category, *most specific* rule has highest priority
- Specificity of selector: a triple (x, y, z)
  - X = no. of id's
  - Y = no. of classes (and pseudo-classes)
  - Z = no. of elements (and pseudo-elts)
- Compare specificity *lexicographically*
- More specific is larger = higher priority

  (2, 0, 0) > (1, 4, 3)

  (1, 2, 0) > (1, 1, 5)

Source Order

- Remaining ties broken by the order in which rules are encountered
- Later rule overrides previous one
- Example: order matters!

```
h1, h2 { padding: 25px; }
h2 { padding-left: 10px; }
```

- Example: order matters!

```
p {
  padding: 25px;
  padding-left: 80px;
}
```

Your Turn

- Which rule has higher priority?

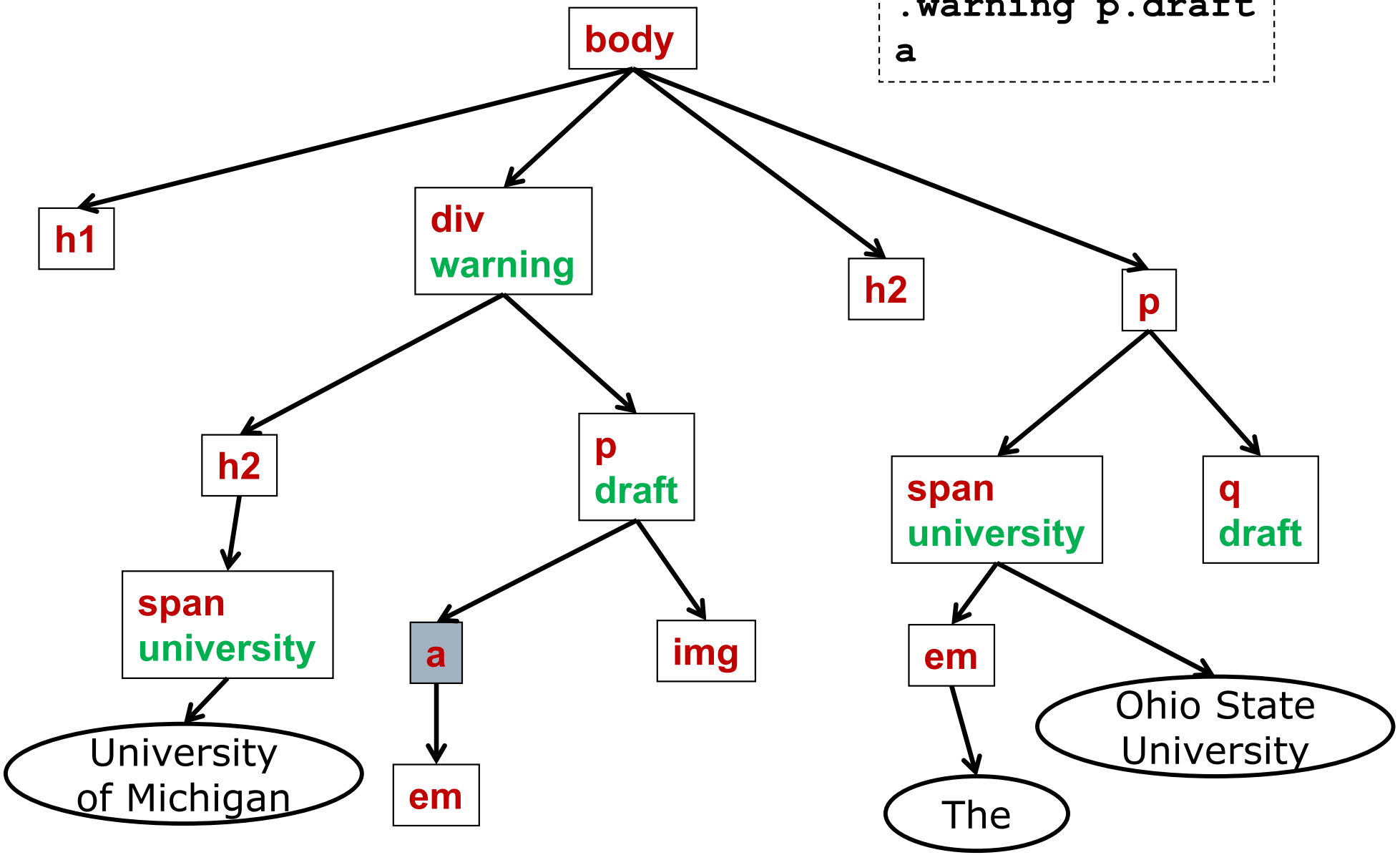
```
#main li { }
.draft ul li { }
```

- Order the following from high to low:

```
.draft div .warning li {  }
.draft div #main li { !important; }
.draft div #main ul li {  }
.draft .warning ul li {  }
```

Problem: Selectors Beat Inherit.


```
.warning p.draft
a
```



Explicit Inheritance

- Problem: How to style <a>?
  - Children inherit color from parent (good)
  - But browser defines default color for <a>

```
a { color: blue;
    text-decoration: underline; }
```

  - Author styling can override browser rule

```
a { color: black; }
```

  - But I want the color dictated by styling of *parent* of <a>

```
.warning { color: darkred; }
```

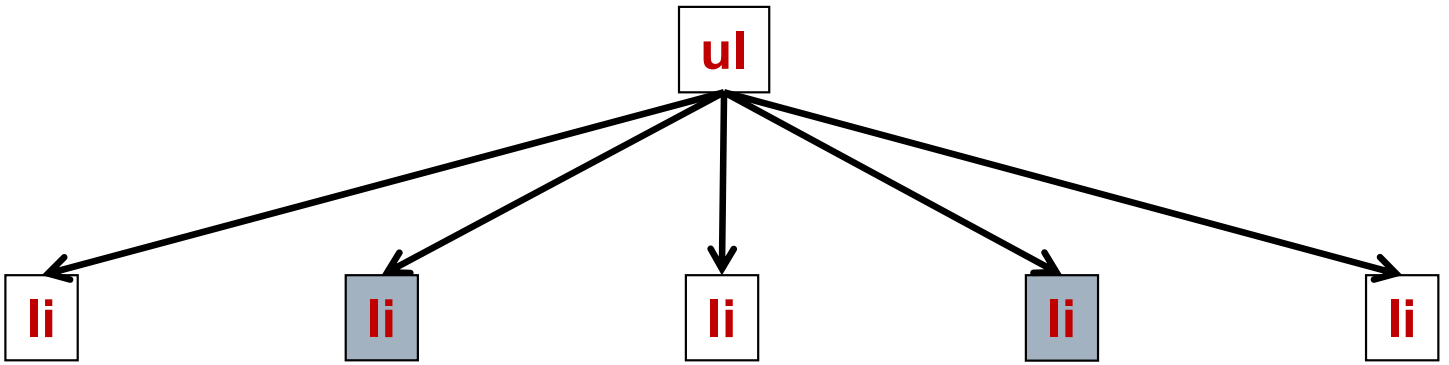
- Solution: explicit inheritance

```
a { color: inherit; }
```

Pseudo-classes

- Virtual classes
  - Implicitly declared (a few standard ones)
  - Implicit membership (no class attribute)
- CSS syntax: ***elt:pseudo***
  - Same specificity as (non-pseudo) class

```
ul li:nth-child(2n) {…}
```



Examples


```
a.button:hover {
   background: green;
}

tbody tr:nth-of-type(odd) {
   background: #ccc;
}
```

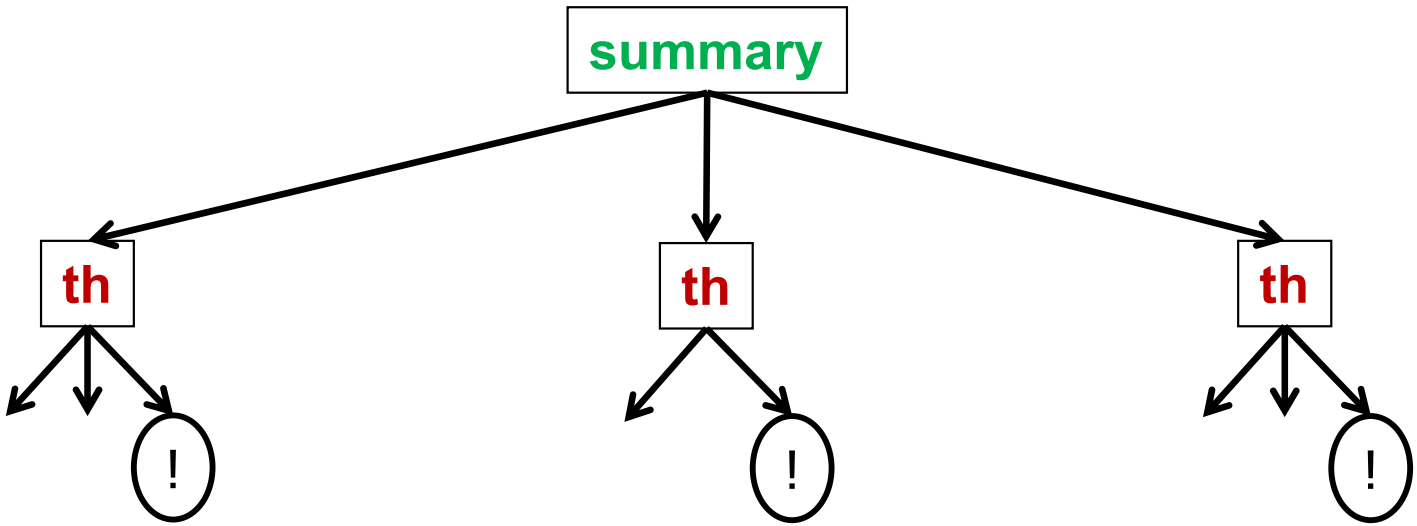
Some Useful Pseudo-classes

- Classic
  - `:link, :visited, :active`
  - `:hover, :focus`
- Structural
  - `:nth-child(An+B), :nth-of-type(An+B)`
  - `:first-child, :last-child, :first-of-type`
  - `:only-child, :only-of-type`
  - `:empty, :root`
- State of UI elements
  - `:enabled, :disabled`
  - `:checked`
- Target
  - `:target /* elt whose id matches url fragment*/`
- Negation
  - `:not(S)`

Pseudo-elements

- Virtual elements
  - Implicitly exist
  - Not part of structural tree (just rendering)
- CSS syntax: ***elt::pseudo***

```
.summary th::after { content: "!";}
```



Some Useful Pseudo-Elements

- Match start
  - `::first-line, ::last-line`
  - `::first-letter`
- Insert content
  - `::before, ::after`
  - Inserted as (first/last) *child* of element
  - Requires content property
  - Beware using CSS to inject content!

Summary

- Classes and Ids
- Divs and Spans
- Selectors with ancestors, siblings
- Conflict resolution in CSS
- Pseudo-classes and pseudo-elements