Cascading Style Sheets
CSS

Part #1

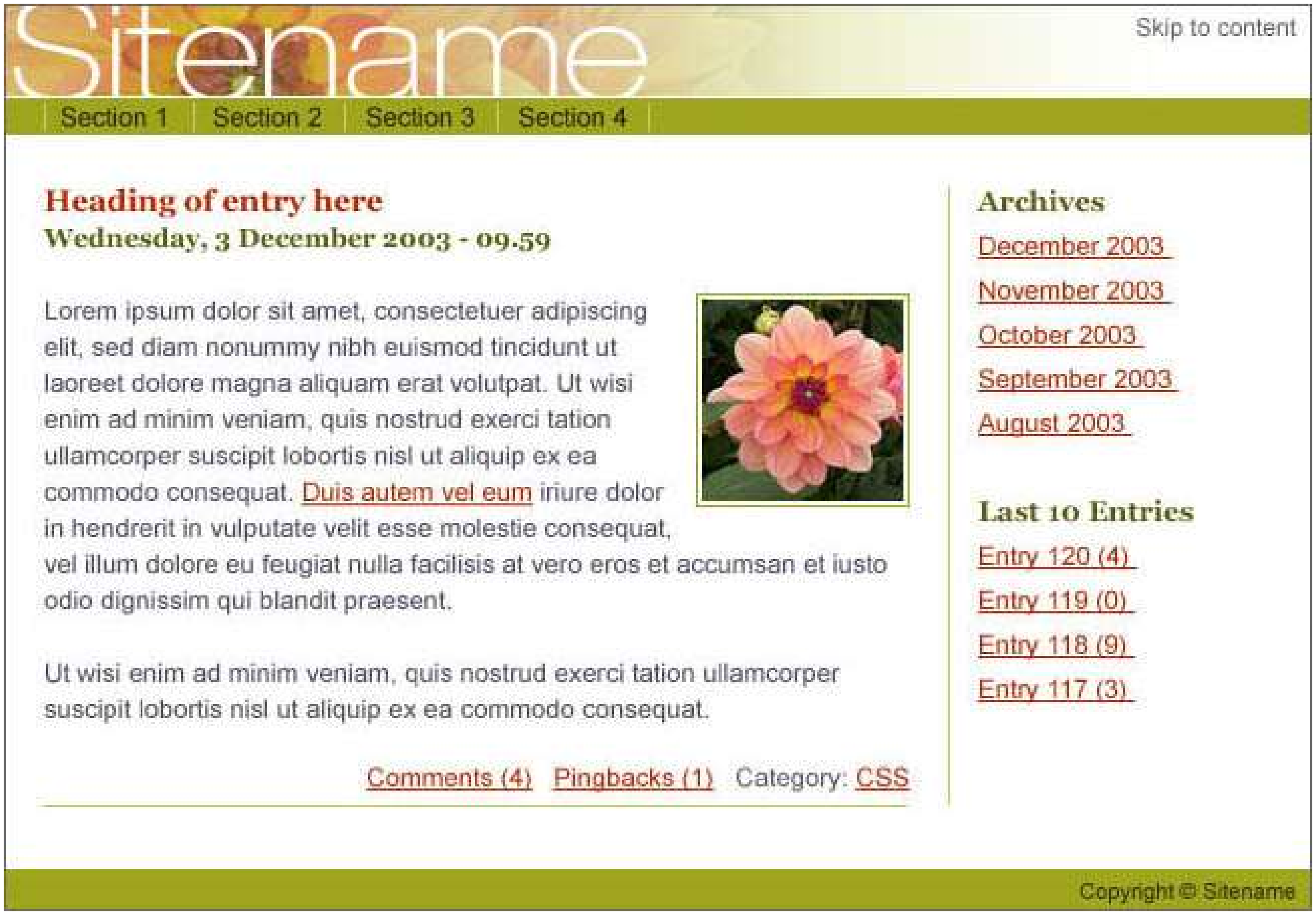
Topics

- History
- Basic Syntax
- Selectors
- Fonts
- Lists
- Colors
- Alignments
- Background images
- Borders

What is Cascading Style Sheets?

- CSS is a language that describes the style of an HTML document
- CSS describes how HTML elements should be displayed
- Like HTML, CSS is NOT a programming language

Use CSS to define the page layout



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Section 1 Section 2 Section 3 Section 4

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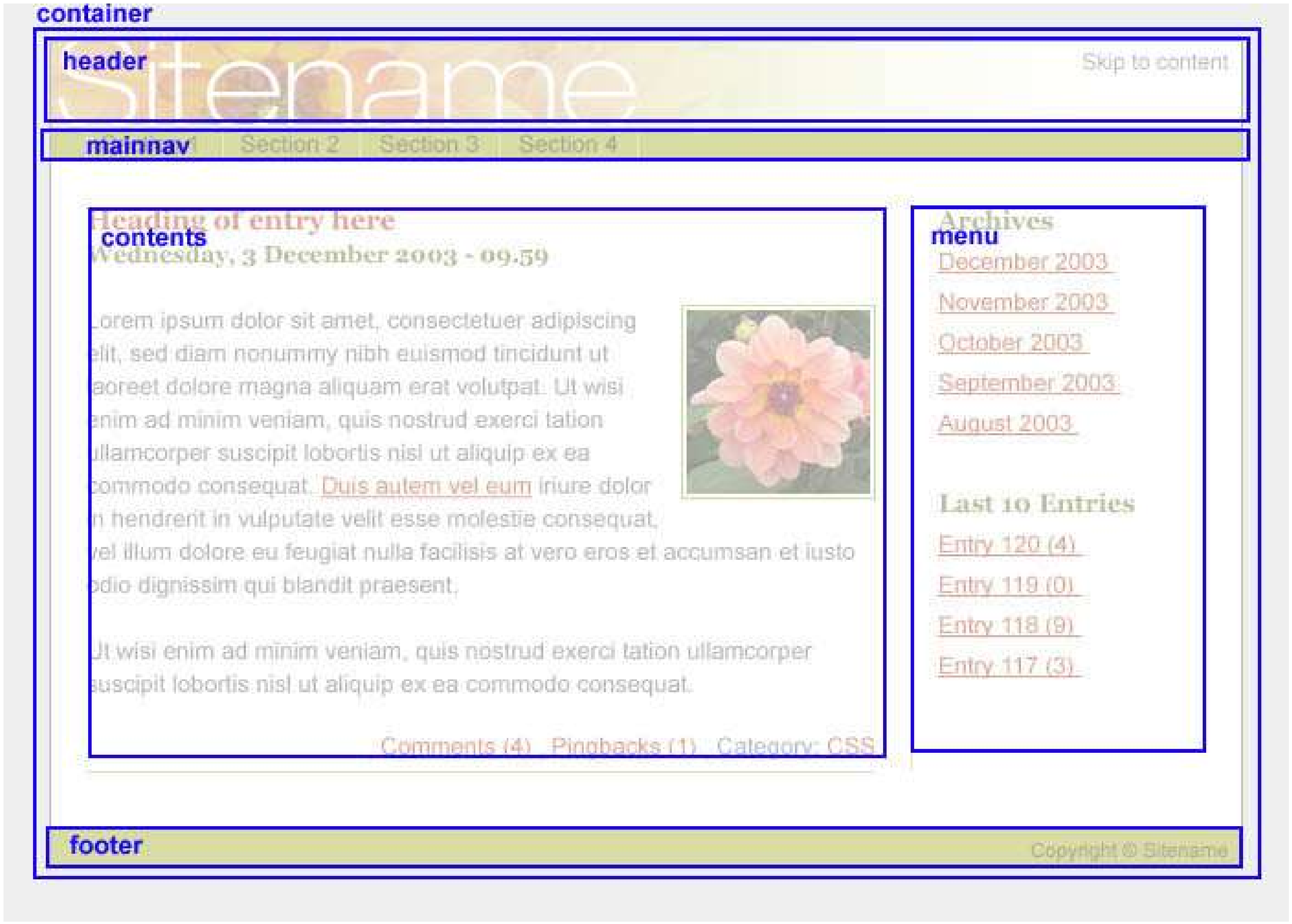
Layout



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Best Practices

- Responsiveness
  - Responsive web design is about creating web sites which automatically adjust themselves to look good on all devices, from small phones to large desktops.
- Mobile-first
  - First design the style for mobile devices
  - Do you really need to develop a mobile app?
- Browser compatibility
  - Chrome, Firefox, IE, Edge, Safari, Opera
- Animation with CSS is preferred over animation with JavaScript

History

- CSS1 specification was developed in 1996
- CSS2 was released in 1998
- CSS3 was released in 1999
- Usage: consistent presentation style
  - CSSs provide the means to control and change presentation of HTML documents
  - CSS is not technically HTML, but can be embedded in HTML documents
  - Style sheets allow you to impose a standard style on:
    - a special element, or
    - a whole document, or
    - a whole collection of documents

More resources

- Check the w3school tutorial on responsive CSS at https://www.w3schools.com/css/css_rwd_intro.asp
- Check the bootstrap 5 tutorial at w3school https://www.w3schools.com/bootstrap5/

CSS References

- CSS reference and tutorials at w3school
  - https://www.w3schools.com/css/default.asp
- CSS layouts http://www.maxdesign.com.au/articles/css-layouts/

(Almost) all CSS references

- https://developer.mozilla.org/en-US/docs/Web/CSS/Reference

Extreme CSS

- CSS zen garden: http://www.csszengarden.com/

General Syntax

```
Selector {
        property1: value1;
        property2: value2;
        …
        property3: value3;
}
```

Note: this is for non-inline CSS

Four types of selectors

- HTML elements
- Classes (most used)
- IDs
- * (universal)

Levels of Style Sheets

- Inline
  - specified for a specific occurrence of a tag and apply only to that tag
  - defeats the purpose of style sheets - uniform style
  - W3C deprecated inline style in XHTML1.1 (2001)
- Document-level style sheets
  - defined in the head section
  - apply to the whole document in which they appear
- External style sheets
  - Defined in a separate file
  - can be applied to any number of documents
  - file included in the head section
- How browsers use CSS?
  - Cascading order
  - Implementation

Inline

- Avoid this method!
- Within an HTML element, define properties using the style attribute:

```
<p style="color:red; margin-left:20px">This is a paragraph.</p>
```

Needs copy/paste to use for another paragraphs

```
<p style="color:red; margin-left:20px">This is another paragraph.</p>
```

Document Level

- Define the style in the head element of the HTML document using the <style> tag

Selector

```
<head>
  <style>
    h1 { color: red; }
    p  { margin-left: 20px;}
    body { background-color: grey; }
  </style>
</head>
```

Needs copy/paste to use in other HTML documents

External CSS

- Define styles in a separate document and link it in the head element

```
<head>
  <link rel="stylesheet" href="mystyle.css" />
</head>
```

Relationship

- Inside mystyle.css

```
h1 { color: red;}
p { margin-left: 20px;}
body { background-color: grey;}
```

Simple Selector

- tag names {property_1: value_1; property_2:value_2; …}

```
h1 {color: white;}
```

h1	selector
`{color:white;}`	declaration
color	property
white	value

- Selectors can be grouped as in

```
h1, h2, h3 {color: green;}
```

- Declarations can be grouped as in

```
h1 {color: white; background: black;}
```

Contextual Selectors

- Applied to child within parent
- Applied to em inside h1

```
h1 em { color:blue }
```

- NOT this

```
h1, em { color:blue }
```

Class selectors

```
p.normal {property-value list}
p.warning {property-value list}
```

```
<p class = "normal">
 A paragraph in 'normal' presentation style
</p>
```

```
<p class = "warning">
 A paragraph in 'warning' presentation style
</p>
```

- http://www.w3schools.com/Css/tryit.asp?filename=trycss_syntax_element_class

Generic selectors

```
.sale {property-value list}
```

```
<h1 class = "sale"> Weekend Sale </h1>
<p class = "sale"> … </p>
```

- http://www.w3schools.com/Css/tryit.asp?filename=trycss_syntax_class

Universal selectors

```
* {property-value list}
```

`id` selectors

```
#section14 {font-size: 20}          ✓
h2#section14 {font-size: 20}        ✗
p#section14 {font-size: 20}
```

```
<h2 id = "section14"> Header 2 text</h2>
```

- http://www.w3schools.com/Css/tryit.asp?filename=trycss_syntax_id

Pseudo Classes

- A pseudo-class is used to define a special state of an element.
- For example, it can be used to:
  - Style an element when a user mouses over it
  - Style visited and unvisited links differently
  - Style an element when it gets focus

Pseudo Classes (2)

```
<!DOCTYPE html>
<html>
  <head> <title> Checkboxes </title>
    <style>
      input:hover {color: red; background: pink;}
      input:focus {color: green; background: blue;}
    </style>
  </head>
  <body>
    <form action = "">
      <p>
        Your name:
        <input type = "text" />
      </p>
    </form>
  </body>
 </html>
```

Pseudo class is useful for animation

- Previous example: with text input
- Another example: with hyperlink
  - `:link` a hyperlink that has not been visited
  - `:visited` a hyperlink that has been visited
  - `:active` a hyperlink that is being clicked on
  - `:hover` a hyperlink over which the mouse is

```
a:link     {color:#FF0000;}      /* unvisited link */
a:visited {color:#00FF00;}      /* visited link */
a:hover   {color:#FF00FF;}      /* mouse over link */
a:active  {color:#0000FF;}      /* link being clicked */
```

http://www.w3schools.com/css/tryit.asp?filename=trycss_link

The Cascade

- Most properties are inherited. For example, in

```
<!DOCTYPE html>
<head>
    <style>
        h1 {color: gray;}
    </style>
</head>
<body>
      <h1>It's a wonderful day for <em>science!</em>
</h1>
</body>
```

- Some properties, such as border, do not inherit.
- More *specific* selectors dominate.
  - *id* dominates *class* which dominates all others

Order

- id > class/pseudo class > simple/contextual selector> * > default style

```
<!DOCTYPE html>
<head>
     <style>
          .blue {color:blue;}
           h1 {color:green;}
           #highlight {color: red;}
     </style>
</head>
<body>
  <h1 class="blue">This is blue</h1>
  <h1 id = "highlight"> This is red </h1>
</body>
```

How about this one?

```
<!DOCTYPE html>
<head>
     <style>
          .blue {color: blue;}
           h1 {color: green;}
           #highlight {color: red;}
           * {color: yellow; font-size: 5mm}
     </style>
</head>
<body>
      <h1> this is ________</h1>
      <h2> this is ________</h2>
</body>
```

Same selector type: the last one defined later wins

```
<!DOCTYPE html>
<head>
     <style>
        .green {color: green}
        a {color: yellow;}
        h1 {color: red;}
        h1 {color: blue;}
     </style></head>
<body>
<h1>This is blue </h1>
<h1 class="green">This is green</h1>
</body>
```