CSS Rules

Basic styling

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Intro to CSS

Anatomy of a Website

Content
Text, Media

HTML
Structure

CSS
Presentation

Javascript
Logic/Interactivity

What is CSS?

Cascading **S**tyle **S**heets

- CSS is a "style sheet language" that lets you style the elements on your page
- CSS is works in conjunction with HTML, but is not part of HTML itself

Anatomy of CSS

- CSS consists of style rules
- A block of CSS code is a **rule**
- Each style rule consists of a selector and declarations of property-value pairs
- A property-value pair is a **declaration**

```
selector {
 property: value;
 property: value;
}
```

Example:

```
body {
 color: yellow;
 background-color: black;
}
```

Applying CSS to HTML

There are 3 ways to apply CSS styles:

- Inline
- Embedded
- External

Inline CSS

```
<p style="color:red">Some text.</p>
```

- Uses the HTML style attribute
- Only applies to one element at a time
- Not recommended except in cases where choices are constrained

Embedded CSS

```
<head>
   <style>
     p {
       color: blue;
       font-size: 12px;
     }
   </style>
 </head>
```

- Inside `<head>` element
- Uses `<style>` tag
- Style not shared. Only applies to one HTML file
- Not recommended; only use when the number of rules is small and there are constraints on using an external CSS file

External CSS

```
<head>
   <link rel="stylesheet" type="text/css" href="style.css">
</head>
```

- Shared resource; Can be referenced from multiple pages
- Can be cached; Reduced HTML file size & bandwidth
- Easier to maintain, especially in larger projects

CSS selectors

Selector

The selector is used to select which elements in the HTML page will be given the styles inside the curly braces

```
selector {
 property: value;
 property: value;
}
```

Selector: Element

```css
/* Selects all paragraph elements. */
p {
 property: value;
}

/* Selects all image elements. */
img {
 property: value;
}
```

Selector: Relational

```
/* Selects all em elements that are within a paragraph. */
p em {
 color: yellow;
}

<!-- This would be selected -->
<p>This is <em>important.</em></p>

<!-- This would not! -->
<h1>This is <em>important.</em></h1>
```

- Position selectors are more specific
- They look for elements inside other elements
- We separate nested elements with a space

Selector: Relational

```
/* the css */
ul li a strong {
 color: purple;
}

<!-- the html -->
<ul>
 <li>
   <a href="programs.html">Our <strong>program</strong></a>
 </li>
</ul>
```

Reusing Code

Don’t Repeat Yourself (DRY) principle:

“every piece of knowledge must have a single, unambiguous, authoritative representation within a system”

Recognizing duplication and eliminating it through abstraction produces cleaner code than unnecessary repetition (copy paste)

To reuse CSS, we use IDs and classes

IDs vs. Classes

ID

- Should only apply to one element on a page
- For example, a page has has one footer
- Uses the symbol `#`

Class

- Many elements can have the same class
- There can be many warnings on one webpage
- Uses the symbol `.`

Selector: ID

```
/* Selects the one element on the page with an id of site-footer */
#site-footer {
 property: value;
}

<!-- the html -->
<p id="site-footer">Copyright message</p>
```

Selector: Class

```
/* Selects all elements with a class of warning. */
.warning {
 color: red;
}

<!-- the html -->
<p class="warning">Run away!</p>

<div class="warning">
 this is also a warning
</div>

<ul>
 <li>
   <p class="warning">Danger</p>
 </li>
</ul>
```

Grouping Selectors

```css
h3, .message, #notificationArea {
  color: Maroon;
}

/* or */

h3,
.message,
#notificationArea {
 color: Maroon;
}
```

CSS Pseudo-classes

Pseudo-classes

Pseudo-classes can style elements based on their current state

```
selector:pseudo-class {
 property: value;
}

/* Example */
a:hover {
 text-decoration: none;
}
```

Pseudo-classes

```
/* unvisited link */
a:link {
 color: #ff0000;
}

/* visited link */
a:visited {
 color: green;
}

/* moused over */
a:hover {
 color: purple;
}
```

To be effective, a:hover **must** come after a:link and a:visited

```
/* selected with keyboard*/
a:focus {
 color: purple;
}

/* activated link */
a:active {
 color: blue;
}
```

To be effective, a:active **must** come after a:hover

CSS properties

Property: Color

```css
/* The color property changes the color of the text */
p {
 color: red;
 color: #ff0000;
 color: rgb(255, 0, 0);
}
```

Property: Background-color

```css
/* The background-color property changes the color of the background */
p {
 background-color: black;
 background-color: #000000;
 background-color: rgb(0, 0, 0);
}
```

CSS Color Values

Browsers can accept colors in many different ways

Color name	red
Hexadecimal value	#FF0000 #FF0000FF

RGB value	rgb(255, 0, 0)
	rgba(255, 0, 0,1)

HSL value	hsl(0, 100%, 50%)
	hsla(0, 100%, 50%,1)

HTML Color Picker
147 CSS Color Names
Chrome devtools color-picker
216 Web Safe Colors

Property: Font-family

```css
p {
 /* Specific font name */
 font-family: "Times New Roman";

 /* Generic name */
 font-family: serif;

 /* Comma-separated list */
 font-family: "Arial", sans-serif;
}
```

The font-family property defines which font is used
When listing multiple fonts, always list a generic name last

Web-safe fonts are pre-installed by many operating systems
Not all systems have the same fonts, but web-safe font stacks contain fonts that look similar
CSS Web Safe Fonts

Custom fonts: @font-face

```css
@font-face {
  font-family: 'MyFontName';
  src: url('fontFile.eot'); /* IE9 */
  src: url('fontFile.eot?#iefix') format('embedded-opentype'), /* IE6-IE8 */
       url('fontFile.woff2') format('woff2'), /* Very Modern Browsers */
       url('fontFile.woff') format('woff'), /* Modern Browsers */
       url('fontFile.ttf')  format('truetype'), /* Safari, Android, iOS */
       url('fontFile.svg#svgFontName') format('svg'); /* Old iOS */
}
body {
  font-family: 'MyFontName', sans-serif;
}
```

Careful: using custom fonts makes your page slower

@font-face| MDN

CSS @font-face Rule

Google web fonts

```
<!-- the html -->
<head>
 <!-- rest of head -->
 <link href="https://fonts.googleapis.com/css?family=Trade+Winds&display=swap" rel="stylesheet">
 <!-- rest of head -->
</head>

/* the css */
p {
 font-family: 'Trade Winds';
}
```

Careful: using webfonts, such as google fonts, makes your page slower
Use with moderation

Property: Font-size

```css
/* The font-size property specifies the size of the font. */

p {
 /* Pixels */
 font-size: 12px;

 /* em */
 font-size: 1.5em;

 /* Percentage */
 font-size: 100%;
}
```

Property: Fonts (Shorthand)

```css
p {
 font-style: italic;
 font-weight: bold;
 font-size: 10px;
 font-family: sans-serif;
}

/* OR */

p {
 font: italic bold 10px sans-serif;
}
```

Property: Width

- Sets the width of a block-level element or img
- Doesn't work for inline elements (unless their display property is changed)
- Accepts a variety of length units

```
#sidebar {
 width: 200px;
 width: 20em; /* relative to font size */
 width: 20%; /* relative to containing element width */
 width: 20vw; /* relative to window: 1vw = 1% window width */
}
```

A list of all CSS length units
The Lengths of CSS
CSS Units

The most used are: **px, rem, em, vw, vh, % (percentage)**

More CSS Properties

Many CSS properties have self-explanatory names:

- background-color
- font-family
- font-size
- color
- width
- height

Most common CSS properties
CSS Properties Reference

Complete reference
CSS reference

Check browser compatibility before using properties
Can I use...

CSS Cascading

The CSS Cascade

```
p {
 color: orange;
 font-family: sans-serif;
}

.info-paragraph {
 color: blue;
 background-color: orange;
}

#main-paragraph {
 font-weight: bold;
 color: green;
}

<p>Paragraph</p>
<p class="info-paragraph">Paragraph</p>
<p class="info-paragraph" id="main-paragraph">Paragraph</p>
```

Cascading priority: Importance

The browser assigns different priorities to CSS depending on the type of selector

1. Inline CSS - Most Important
2. ID selector
3. Class selector
4. Element selector - Least Important

Cascading priority: Specificity

Your browser also assigns priority based on the specificity of the selection
More specific selectors have higher priority

```css
 /* Most specific */
.main .sale .clearance p {
 color: red;
}

.header .title p {
 color: green;
}

/* Least specific */
.footer p {
 color: blue;
}
```

Cascading priority: Source order

```
The tie-breaker is rule order
Rules lower in the file overwrite rules higher in the file

a {
 background-color: yellow;
}

a {
 background-color: teal;
}

/* This rule wins */
a {
 background-color: black;
}
```

Cascading priority: Specificity example

```html
<!-- the html -->
<div class="main">
 <p>What color am I?</p>
 <div class="sale">
   <p>What color am I?</p>
   <div class="clearance">
     <p>What color am I?</p>
   </div>
 </div>
</div>
```

```css
/* the css */
.main .sale .clearance p {
 color: red;
}

.main .sale p {
 color: orange;
}

.main p {
 color: lime;
}
```

Cascading priority: !important

The **!important** declaration overrides any other declarations

Using it is a very **bad practice** because it makes debugging more difficult by breaking the natural cascading in stylesheets

Only use !important when:

- You need to override foreign CSS (e.g. from a library)
- You need to override inline styles

```
<!-- the html -->
<div class="foo" style="color: red;">What color am I?</div>

/* the css */
.foo[style*="color: red"] {
 color: blue !important;
}
```

Cascading priority: !important is dangerous

```html
<!-- the html -->
<div class="main">
 <p>What color am I?</p>
 <div class="sale">
   <p>What color am I?</p>
   <div class="clearance">
     <p>What color am I?</p>
   </div>
 </div>
</div>
```

```css
/* the css */

p {
 color: pink!important;
}

.main .sale .clearance p {
 color: red;
}

.main .sale p {
 color: orange;
}

.main p {
 color: lime;
}
```

CSS reset & normalize

Why CSS resets are needed

- Each browser varies in how it displays web pages
- Browsers define different default styles, so you never start from the same blank slate
- CSS reset style sheets are used to normalize the default CSS across browsers

There are two main approaches:

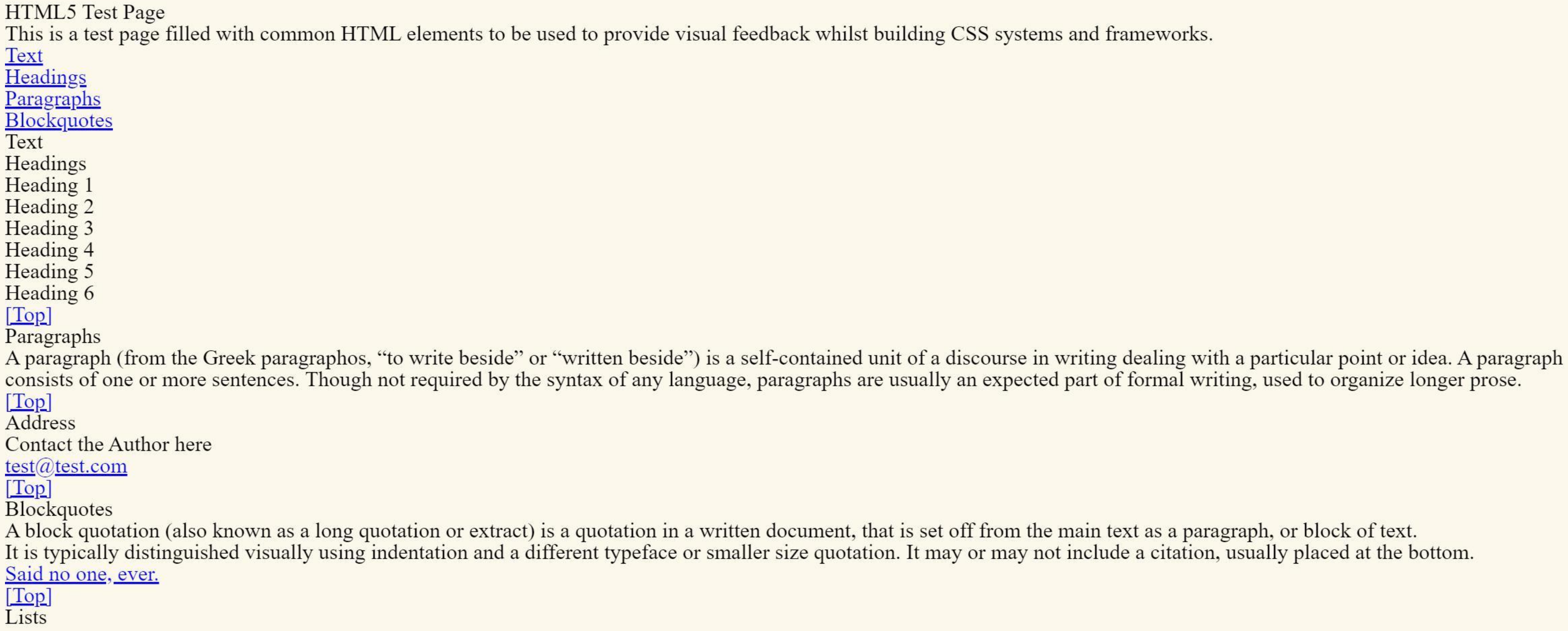
- Reset
- Normalize

CSS reset

- Removes every default style.
- Remove all built-in browser styling
- Standard elements like H1-6, p, strong, em, etc. end will look exactly similar without any styling
- The developer is supposed to add any styling from scratch

[CSS Tools: Reset CSS]

CSS reset



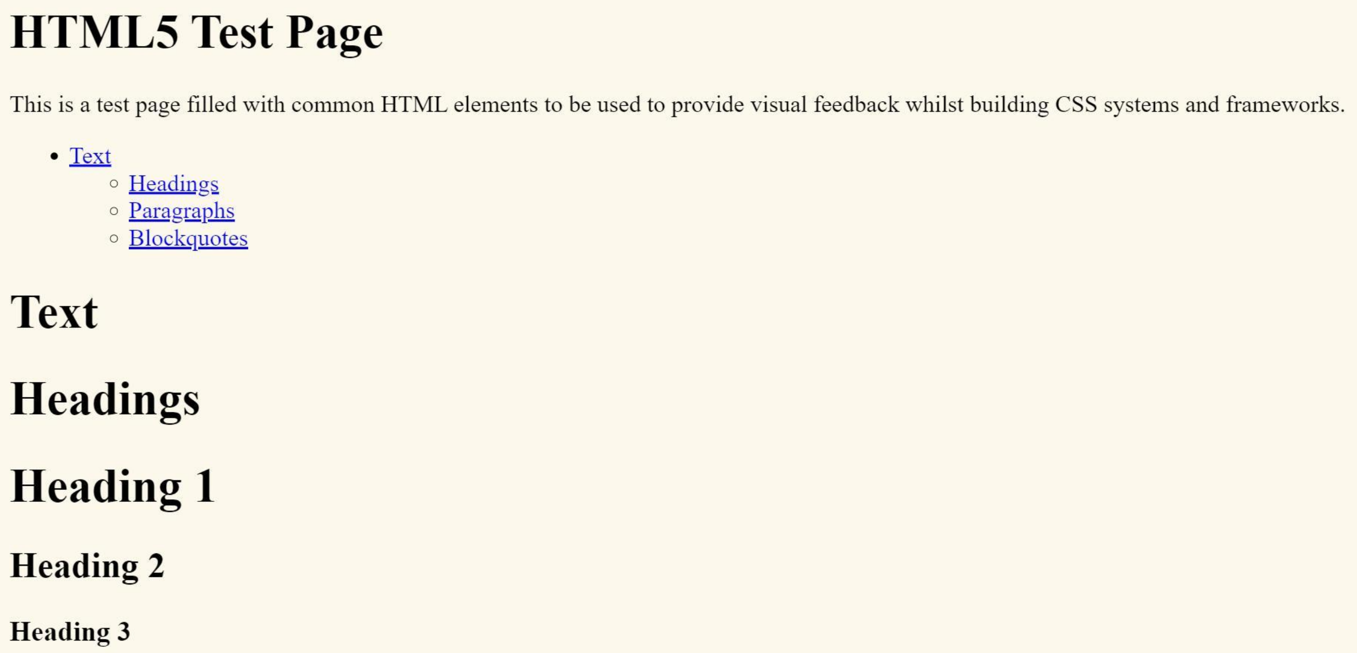
HTML5 Test Page
This is a test page filled with common HTML elements to be used to provide visual feedback whilst building CSS systems and frameworks.
Text
Headings
Paragraphs
Blockquotes
Text
Headings
Heading 1
Heading 2
Heading 3
Heading 4
Heading 5
Heading 6
[Top]
Paragraphs
A paragraph (from the Greek paragraphos, “to write beside” or “written beside”) is a self-contained unit of a discourse in writing dealing with a particular point or idea. A paragraph consists of one or more sentences. Though not required by the syntax of any language, paragraphs are usually an expected part of formal writing, used to organize longer prose.
[Top]
Address
Contact the Author here
test@test.com
[Top]
Blockquotes
A block quotation (also known as a long quotation or extract) is a quotation in a written document, that is set off from the main text as a paragraph, or block of text.
It is typically distinguished visually using indentation and a different typeface or smaller size quotation. It may or may not include a citation, usually placed at the bottom.
Said no one, ever.
[Top]
Lists

CSS normalize

- Aims to make built-in browser styling consistent across browsers
- Elements like H1-6 will appear bold, larger, etc. in a consistent way across browsers
- The developer is supposed to add additional styling where required

Normalize.css

CSS normalize



HTML5 Test Page

This is a test page filled with common HTML elements to be used to provide visual feedback whilst building CSS systems and frameworks.

- Text
    - Headings
    - Paragraphs
    - Blockquotes

Text

Headings

Heading 1

Heading 2

Heading 3

Reset or normalize?

Normalize has some advantages

- Preserves useful defaults
- Corrects common bugs
- Doesn't clutter dev tools
- Modular
- Better documentation

Answer: depends on the project. It might need reset, normalize or parts of both

There are also other approaches such as Destyle.css

Your turn

1.Simple styling

- Create an HTML file with some headings, paragraphs, lists and other elements
- Create three folders called: inline, embedded, external
- In each folder copy the HTML file that you created
- For the first folder use inline styling, for the second embedded, and use an external css file for the third
- Use at least the following style changes
    - Change the size of a text
    - Change the color
    - Change the background color of one or more elements
    - Change the font

2.Simple selecting

- Create an HTML file with some headings, paragraphs, lists and other elements
- Style the page using at least the following style changes
    - Change the size of a text
    - Change the color
    - Change the background color of one or more elements
    - Change the font
- In your CSS use at least one example of the following selectors
    - Element selector
    - Relational selector
    - ID selector
    - Class selector

3.Font mania

- Create an HTML file with some headings, paragraphs, lists and links
- Style the page using colors and fonts
  - Links not inside lists and paragraphs should be red
  - Links inside lists should have a web-safe font and should not be red
  - Links inside paragraphs should have a google font and should not be red
  - Add a CSS rule to style your links using pseudo-classes
  - Group selectors for your links and other elements **(DRY)**

Bonus:

- Try to use many google fonts in a page and calculate the impact on the page loading time. Present your findings in a Doc file

4.The great reset

- Create the following structure
    - Create 3 folders named: *test-reset, test-normalize, test-destyle*
    - Download *reset.css*, *normalize.css* and *destyle.css* and put them in /style in each of the folders
    - Create an *index.html* file with the HTML tags that you know, especially headers, paragraphs, images, lists, tables, forms and inputs
    - Copy *index.html* in each folder
    - Write a /style/style.css file for each folder
    - In style.css apply styling to your HTML using many different properties [CSS Properties Reference]

Continues on next page >>>

4.The great reset

- Result
  - Each style.css is different (because of the different resets) but
    - the result in the browser should look exactly the same for all 3 folders
    - The result should also look the same in different browsers *Chrome, Firefox, Edge, Safari*
- Report
  - Include a .txt .doc or .md file in which you explain which method, reset/normalize/destyle, is easier to work with based on:
    - The length of the CSS that you had to write
    - The number of CSS rules that you had to override

References

Validate your HTML:

The W3C Markup Validation Service

Validate your CSS:

The W3C CSS Validation Service

Check browser compatibility:

Can I use... Support tables for HTML5, CSS3, etc

References

Reset and normalize

Normalize CSS or CSS Reset?!

About normalize.css

In-depth reading about CSS resets

A tale of CSS Resets and Everything You Need to Know About Them