Slideshow 6

CSS basics

INFO 6150
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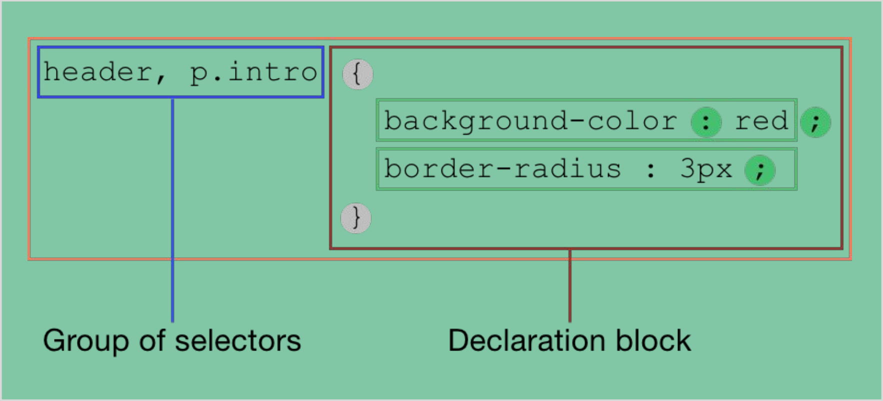
In this lesson:

- The idea behind CSS
- Selectors
- Specificity
- Pseudo-selectors
- CSS units and how / where to use them
- CSS colors
- CSS typography and typography stacks
- The default display modes: block, inline, inline-block
- The box model

CSS

Each declaration contains a property and a value.

Declarations go inside blocks - curly braces {} . Before each block, we specify selectors, which refer to HTML elements.

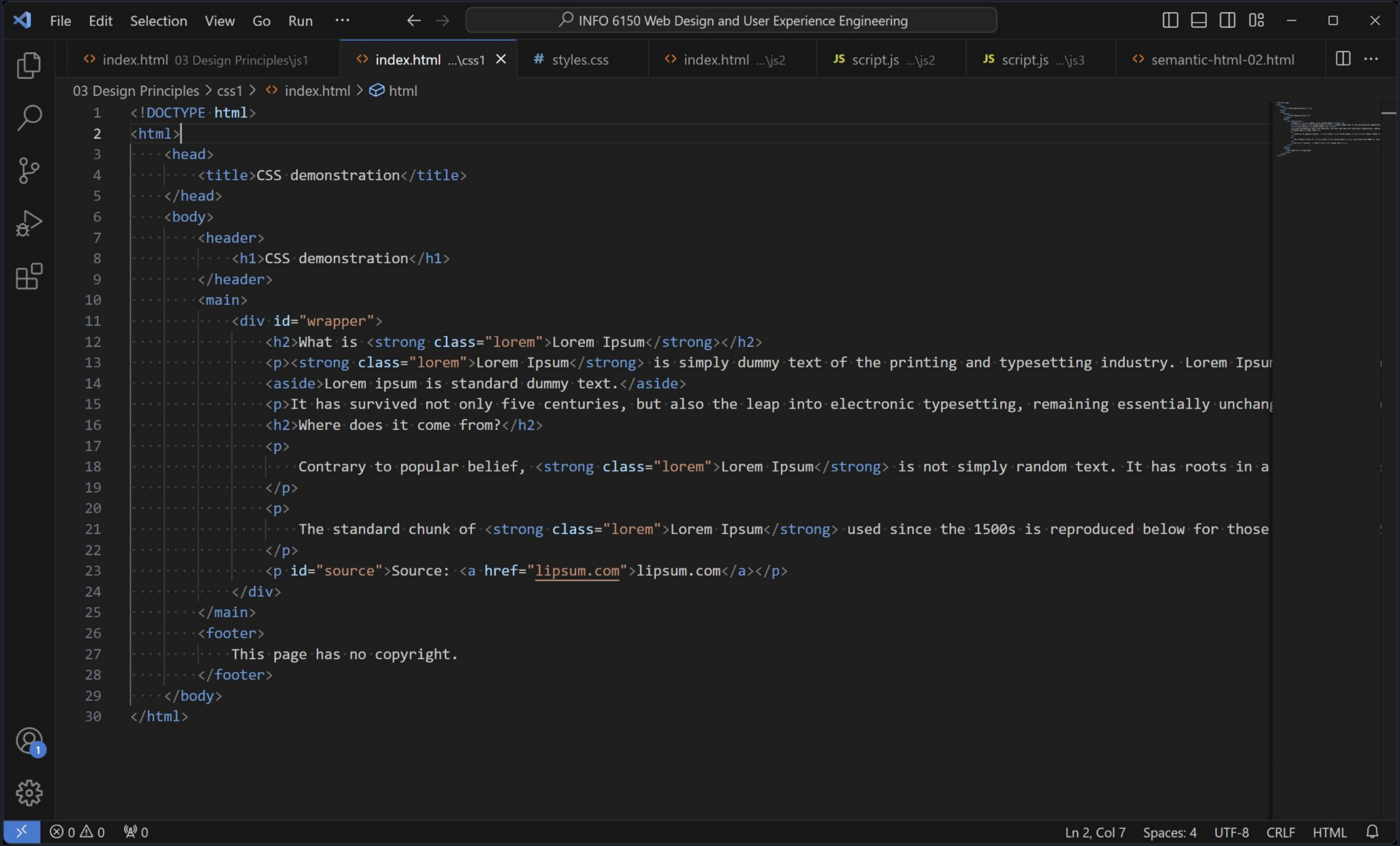


```
header, p.intro {
    background-color : red ;
    border-radius : 3px ;
}
```

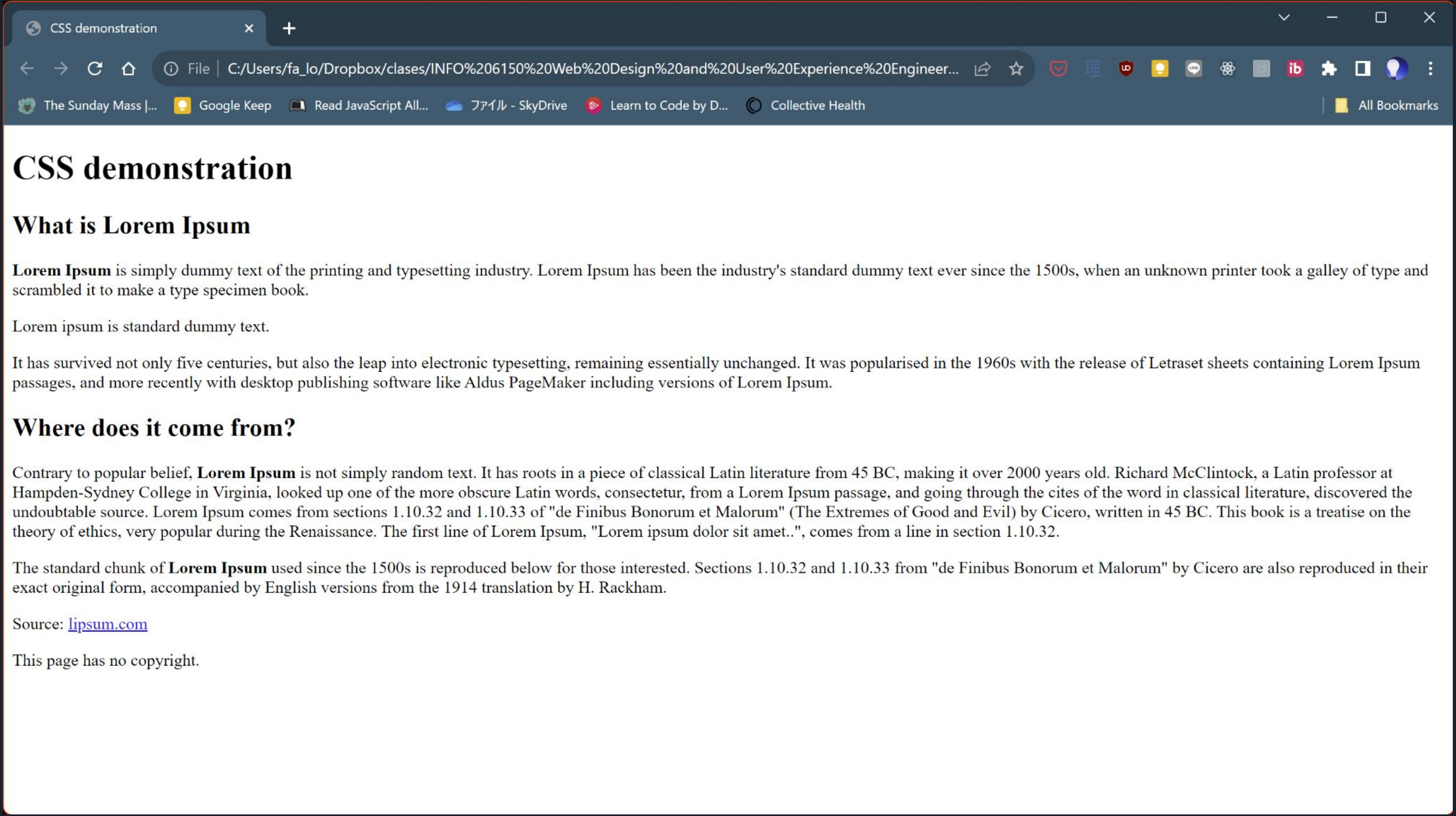
The idea behind CSS

CSS: Cascading Style Sheets

- The styles of the parent elements cascade (fall) down to their children
- If two rules conflict, the last one in the sheet is the one that applies



```html
<!DOCTYPE html>
<html>
    <head>
        <title>CSS demonstration</title>
    </head>
    <body>
        <header>
            <h1>CSS demonstration</h1>
        </header>
        <main>
            <div id="wrapper">
                <h2>What is <strong class="lorem">Lorem Ipsum</strong></h2>
                <p><strong class="lorem">Lorem Ipsum</strong> is simply dummy text of the printing and typesetting industry. Lorem Ipsu
                <aside>Lorem ipsum is standard dummy text.</aside>
                <p>It has survived not only five centuries, but also the leap into electronic typesetting, remaining essentially unchang
                <h2>Where does it come from?</h2>
                <p>
                    Contrary to popular belief, <strong class="lorem">Lorem Ipsum</strong> is not simply random text. It has roots in a
                </p>
                <p>
                    The standard chunk of <strong class="lorem">Lorem Ipsum</strong> used since the 1500s is reproduced below for those
                </p>
                <p id="source">Source: <a href="lipsum.com">lipsum.com</a></p>
            </div>
        </main>
        <footer>
            This page has no copyright.
        </footer>
    </body>
</html>
```



CSS demonstration

What is Lorem Ipsum

Lorem Ipsum is simply dummy text of the printing and typesetting industry. Lorem Ipsum has been the industry's standard dummy text ever since the 1500s, when an unknown printer took a galley of type and scrambled it to make a type specimen book.

Lorem ipsum is standard dummy text.

It has survived not only five centuries, but also the leap into electronic typesetting, remaining essentially unchanged. It was popularised in the 1960s with the release of Letraset sheets containing Lorem Ipsum passages, and more recently with desktop publishing software like Aldus PageMaker including versions of Lorem Ipsum.

Where does it come from?

Contrary to popular belief, **Lorem Ipsum** is not simply random text. It has roots in a piece of classical Latin literature from 45 BC, making it over 2000 years old. Richard McClintock, a Latin professor at Hampden-Sydney College in Virginia, looked up one of the more obscure Latin words, consectetur, from a Lorem Ipsum passage, and going through the cites of the word in classical literature, discovered the undoubtable source. Lorem Ipsum comes from sections 1.10.32 and 1.10.33 of "de Finibus Bonorum et Malorum" (The Extremes of Good and Evil) by Cicero, written in 45 BC. This book is a treatise on the theory of ethics, very popular during the Renaissance. The first line of Lorem Ipsum, "Lorem ipsum dolor sit amet..", comes from a line in section 1.10.32.

The standard chunk of **Lorem Ipsum** used since the 1500s is reproduced below for those interested. Sections 1.10.32 and 1.10.33 from "de Finibus Bonorum et Malorum" by Cicero are also reproduced in their exact original form, accompanied by English versions from the 1914 translation by H. Rackham.

Source: lipsum.com

This page has no copyright.

Let’s review the basics

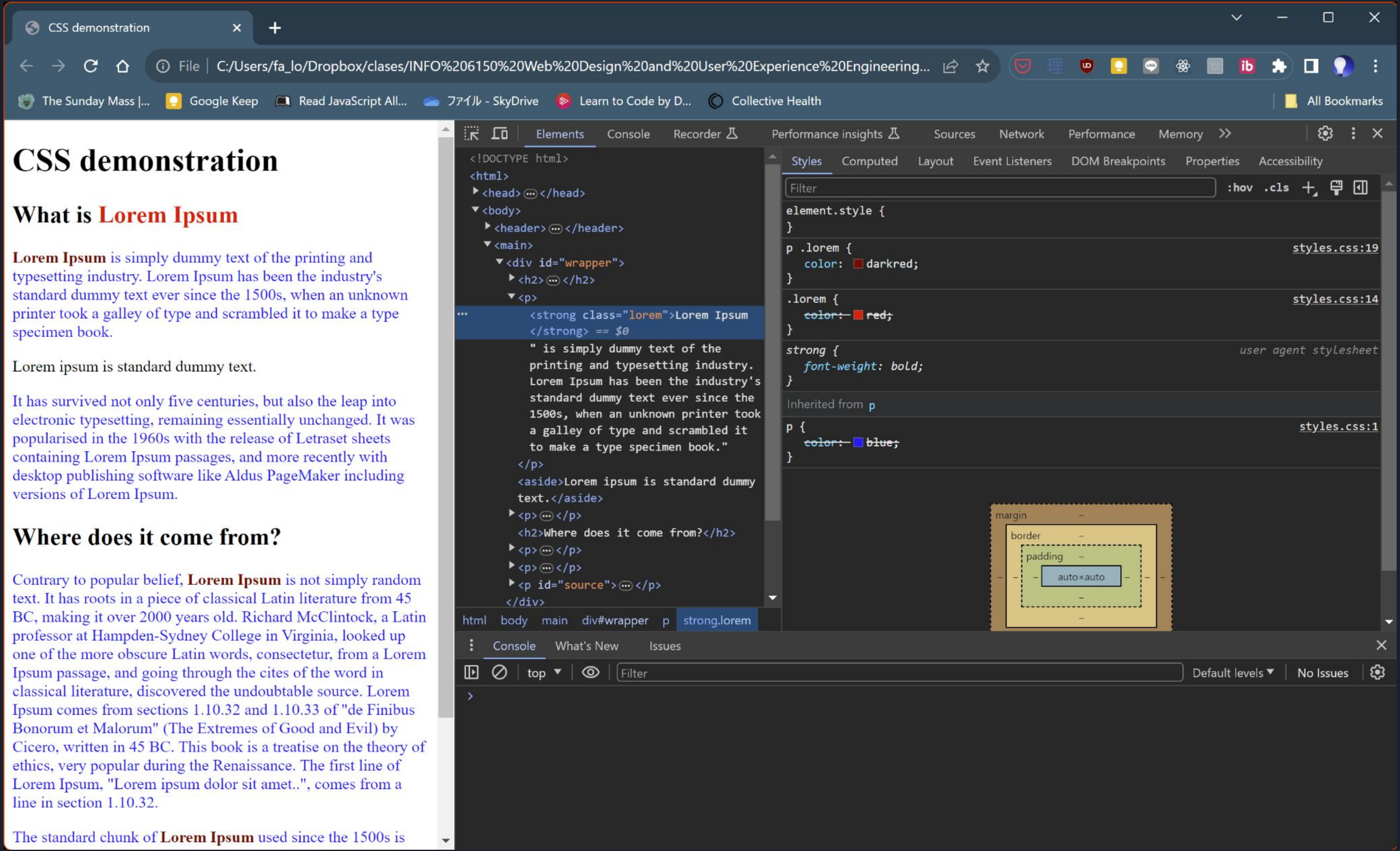
```css
p {
    color: blue;
}

footer {
    font-size: 0.8rem;
}

main {
    width: 100%;
}

/* Everything with the class "lorem" */
.lorem {
    color: red;
}

/* tags with lorem class, inside paragraphs */
p .lorem {
    color: darkred;
}
```

Linking the css file

Use the link tag:

```
    <head>
        <title>CSS demonstration</title>
        <link rel="stylesheet" type="text/css" href="styles.css" />
    </head>
```

(also possible: write css directly inside the link tag. Not recommended though)



CSS demonstration

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The standard chunk of **Lorem Ipsum** used since the 1500s is

```
<!DOCTYPE html>
<html>
 ▶<head>…</head>
 ▼<body>
   ▶<header>…</header>
   ▼<main>
     ▼<div id="wrapper">
       ▶<h2>…</h2>
       ▼<p>
          <strong class="lorem">Lorem Ipsum
          </strong> == $0
          " is simply dummy text of the
          printing and typesetting industry.
          Lorem Ipsum has been the industry's
          standard dummy text ever since the
          1500s, when an unknown printer took
          a galley of type and scrambled it
          to make a type specimen book."
        </p>
        <aside>Lorem ipsum is standard dummy
        text.</aside>
       ▶<p>…</p>
        <h2>Where does it come from?</h2>
       ▶<p>…</p>
       ▶<p>…</p>
       ▶<p id="source">…</p>
      </div>
```

html body main div#wrapper p strong.lorem

```
element.style {
}
p .lorem {                                   styles.css:19
   color: 🟥 darkred;
}
.lorem {                                     styles.css:14
   ~~color: 🟥 red;~~
}
strong {                          user agent stylesheet
   font-weight: bold;
}
Inherited from p
p {                                           styles.css:1
   ~~color: 🟦 blue;~~
}
```

Specificity

What happens if two rules contradict themselves?

More specific rules have priority over more general rules.

Consider this p tag:

```html
<html>
    <body>
        <main>
            <p id="unique" class="most">Special text</p>
```

Specificity

A tag can have two or more classes. In this case, both rulesets apply with the same priority.

```
<html>
    <body>
        <main>
            <p id="unique" class="big green">Special text</p>

/* both apply */
.big { font-size: 3rem; }
.green { color: green; }
```

Specificity

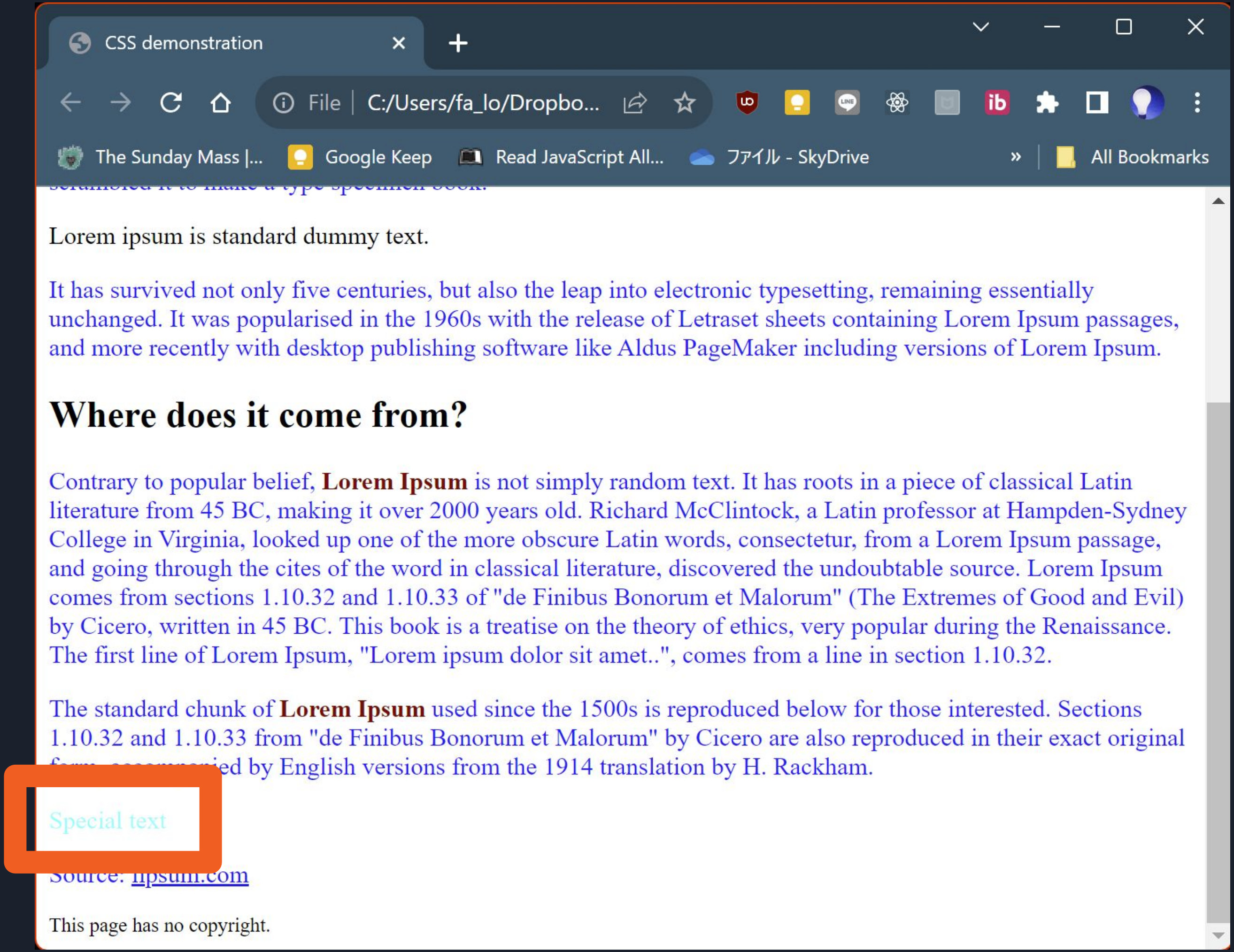
```css
/* in order of specificity. If we were to invert the order, the final color would still be cyan. */
p {
    color: blue;
}

.most {
    color: green;
}

p.most {
    color: yellow;
}

#unique {
    color: gray;
}

p#unique {
    color: cyan;
}
```



scrambled it to make a type specimen book.

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Special text

Source: lipsum.com

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More specific

Use the style attribute in the html tag:

```
<p id="unique" class="most" style="color:darkgreen">Special text</p>
```

Note: this is not recommended. Use VERY sparingly.

Also, this does not trump `!important` rules.

Even more specific!?

This trumps everything else. Use VERY SPARINGLY

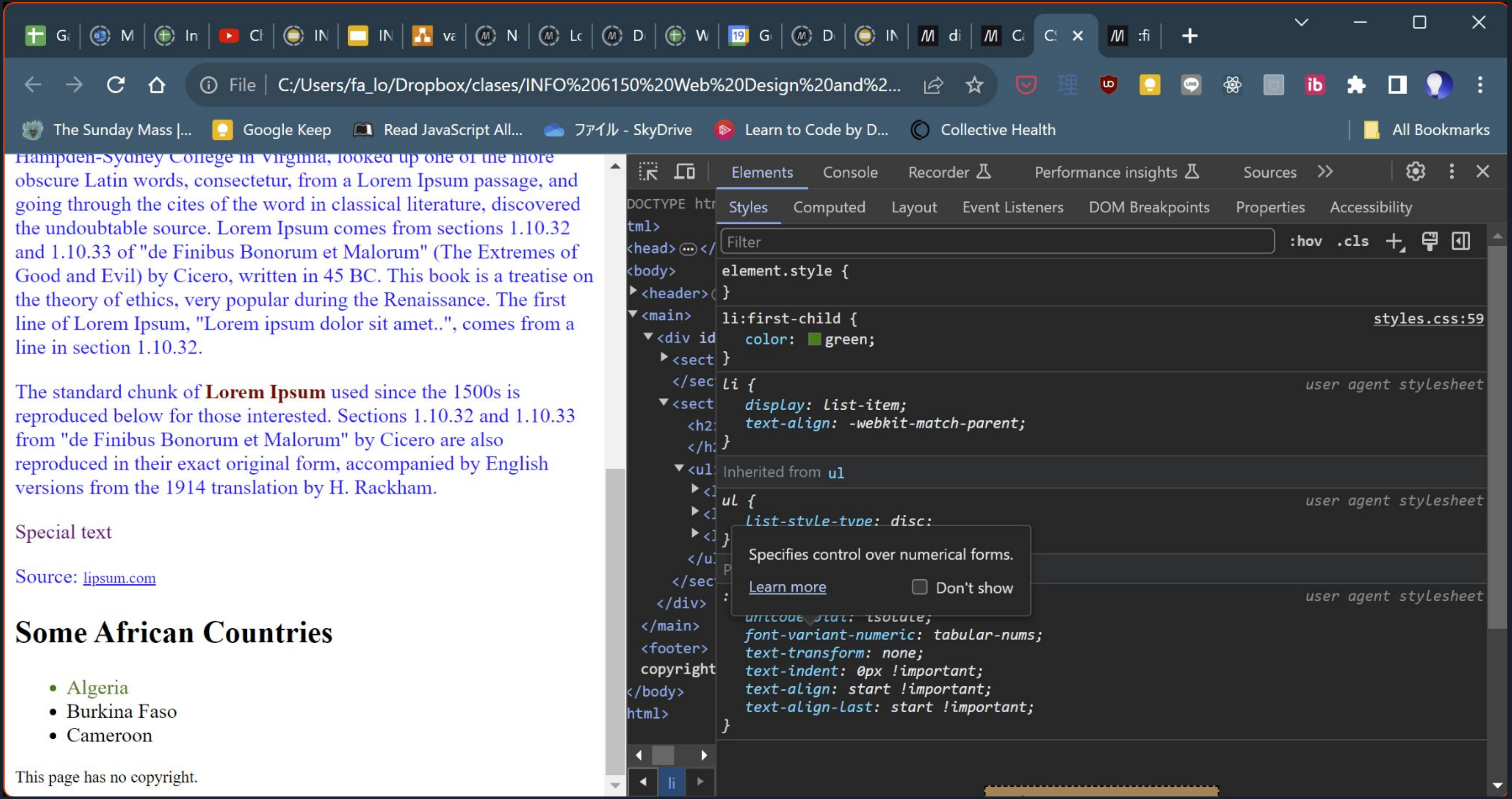
```css
#unique {
    color: purple !important;
}
```

More selectors

```
/* more selectors */

/* this means: all "a" tags that are direct children of a "p" tag.
   For example, <p><a /><p>,
   but not <p><span><a /></span></p> */
p > a {
    font-size: 12px;
}

/* out of all "p" tags, the first one of their "siblings" */
p:first-child {
    font-size: 1.2rem;
}
```



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Special text

Source: lipsum.com

Some African Countries

- Algeria
- Burkina Faso
- Cameroon

This page has no copyright.

```
DOCTYPE htr
tml>
<head>⋯</
<body>
 ▶<header>(
 ▼<main>
   ▼<div id
     ▶<sect
      </sec
     ▼<sect
       <h2
       </h
      ▼<ul
        ▶<l
        ▶<l
        ▶<l
        </ul
      </sec
   </div>
 </main>
 <footer>
 copyright
</body>
html>
```

```
element.style {
}
li:first-child {                                  styles.css:59
  color: ■ green;
}
li {                                     user agent stylesheet
  display: list-item;
  text-align: -webkit-match-parent;
}
Inherited from ul
ul {                                     user agent stylesheet
  list-style-type: disc;
}
:                                        user agent stylesheet
  unicode-bidi: isolate;
  font-variant-numeric: tabular-nums;
  text-transform: none;
  text-indent: 0px !important;
  text-align: start !important;
  text-align-last: start !important;
}
```

Specifies control over numerical forms.

Learn more ☐ Don't show

Created by HideMaru
from Noun Project

Quiz time!

With these rules:

```css
section > p {
    color: red;
}

section p {
    color: blue;
}
```

What color will be applied to the “something” text below? Why?

```html
<section>
    <p>Something</p>
</section>
```

Icon by HideMaru for Noun Project

Neat tricks using pseudo-selectors

Enter pseudo-selectors. :first-child is a pseudo-selector.

They can:

- Create more “virtual” content to create interesting css effects without adding html (`::before`, `::after`)
- Help select items with more specificity (`:first-child, :first-of-kind, :even, :odd`...)
- Style states of an element (`:hover, :visited`, etc.)

Pseudo-selectors

Test this in any page. What happens when you hover on a link? What happens after you visited the link and go back to your page?

```css
/* :hover and :visited are a type of pseudo-selector called
   pseudo-classes. They allow us to style states of an element. */

/* when we hover an <a>, it's in a "hover" state */
a:hover {
    font-weight: bold;
}

/* when we have already visited a link, it's in a "visited" state */
a:visited {
    font-weight: normal;
    font-style: italic;
}
```

Wait, what is “the state of an element”?

Example: a box is either closed or open. Each one of this is a state.

A closed box can become open by opening it.

An open box can become closed by closing it.

In other words:

- The state of an object represents how it is in a specific moment
- The object can change state

Elements that the user interacts with, such as links and inputs, have state. We can use CSS to change the appearance of the element depending on its state.

Now, let’s talk about declarations.

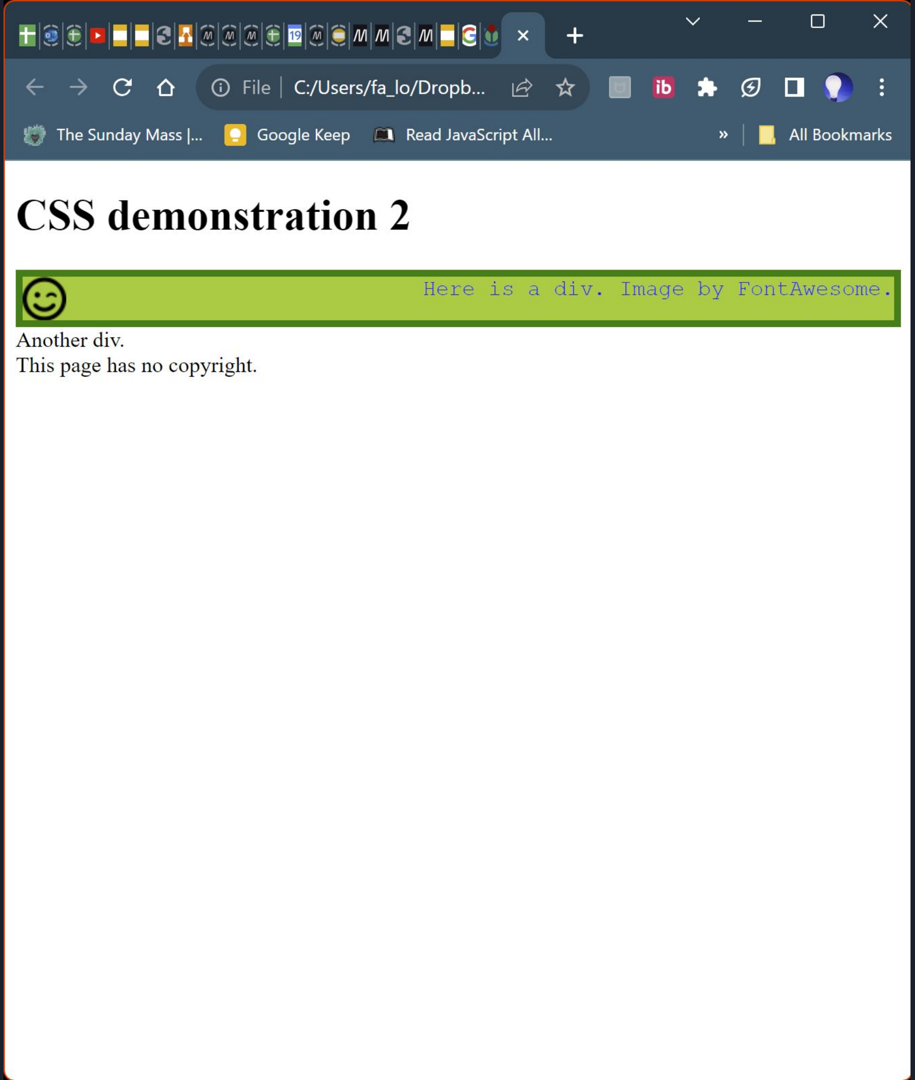
Many possible attributes can be styled. Some simple and fun ones:

```
#sample {
    background-color: yellowgreen;
    background-image: url(images/smile.png);
    background-repeat: no-repeat;
    background-position: top left;
    background: yellowgreen no-repeat top left url(images/smile.png); /* the same, in a single row */

    border: 5px solid green;
    color: blue;

    font-family: 'Courier New', Courier, monospace;
    text-align: right;

    height: 2rem;
    width: 100%; /* the default */
}
```



CSS demonstration 2

Here is a div. Image by FontAwesome.

Another div.
This page has no copyright.

Let’s talk units

Many ways to specify sizes. Some common ones:

`px`	“Pixels” but not really
`rem`	1 rem = the height of the font globally. Always use this instead of em
`em`	1 em = the height of the font in this element. Rules are weird; don’t use.
`%`	Percentage relative to the parent
`vh, vw`	Viewport height, viewport width. 100vh = the height of the browser window

CSS colors

Many ways to specify them. Most common ones:

#rrggbb	Red, green, blue, in hexadecimal (base 16) numbers - from 00 to FF. Example: #ff0000 = red; #00ffff = yellow.
#rgb	Abbreviated form; less colors here. Ex.: #f00 = red.
rgb()	Red, green, blue, in parts from 0 to 255. Example: rgb(255, 0, 0) = red.
rgba()	Same but also specifies transparency from 0 to 1. rgba(0, 0, 0, 0.75) = black, but with a bit of transparency. 0 is transparent; 1 is opaque.
name	Named colors. Use for examples only

CSS typography

CSS uses “font stacks”: specify many fonts in order of priority:

```
font-family: 'Courier New', Courier, monospace;
```

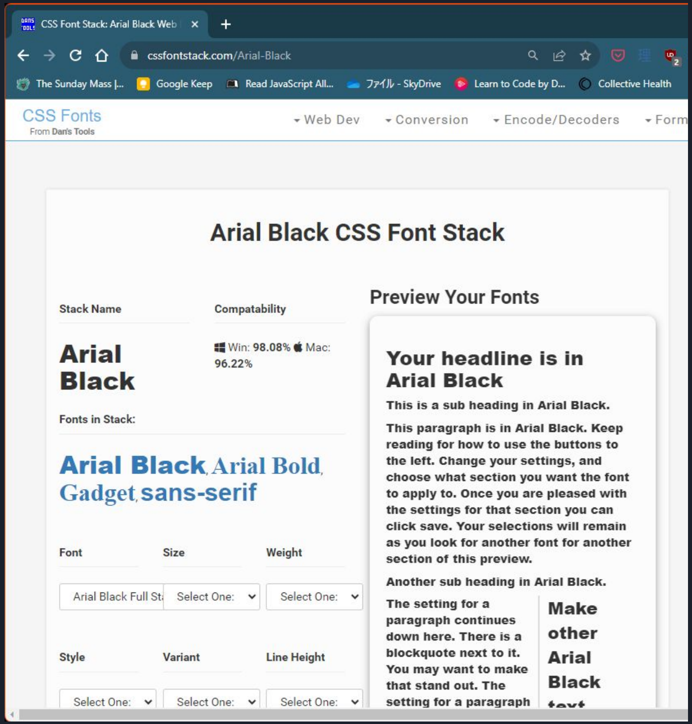
If the first one is not available in the user’s system, the next one is picked.

It’s good practice to end with one of the “generic” fonts such as sans-serif, serif, monospace, or cursive. Full list here.

CSS typography: Font stack generators

Use a tool such as cssfontstack.com to create font stacks for you.

If you import a font from Google Fonts, it will also come with a proper font stack.



Arial Black CSS Font Stack

Stack Name

Arial Black

Compatability

Win: 98.08% Mac: 96.22%

Fonts in Stack:

Arial Black, Arial Bold, Gadget, sans-serif

Font	Size	Weight
Arial Black Full St	Select One:	Select One:

Style	Variant	Line Height
Select One:	Select One:	Select One:

Preview Your Fonts

Your headline is in Arial Black

This is a sub heading in Arial Black.

This paragraph is in Arial Black. Keep reading for how to use the buttons to the left. Change your settings, and choose what section you want the font to apply to. Once you are pleased with the settings for that section you can click save. Your selections will remain as you look for another font for another section of this preview.

Another sub heading in Arial Black.

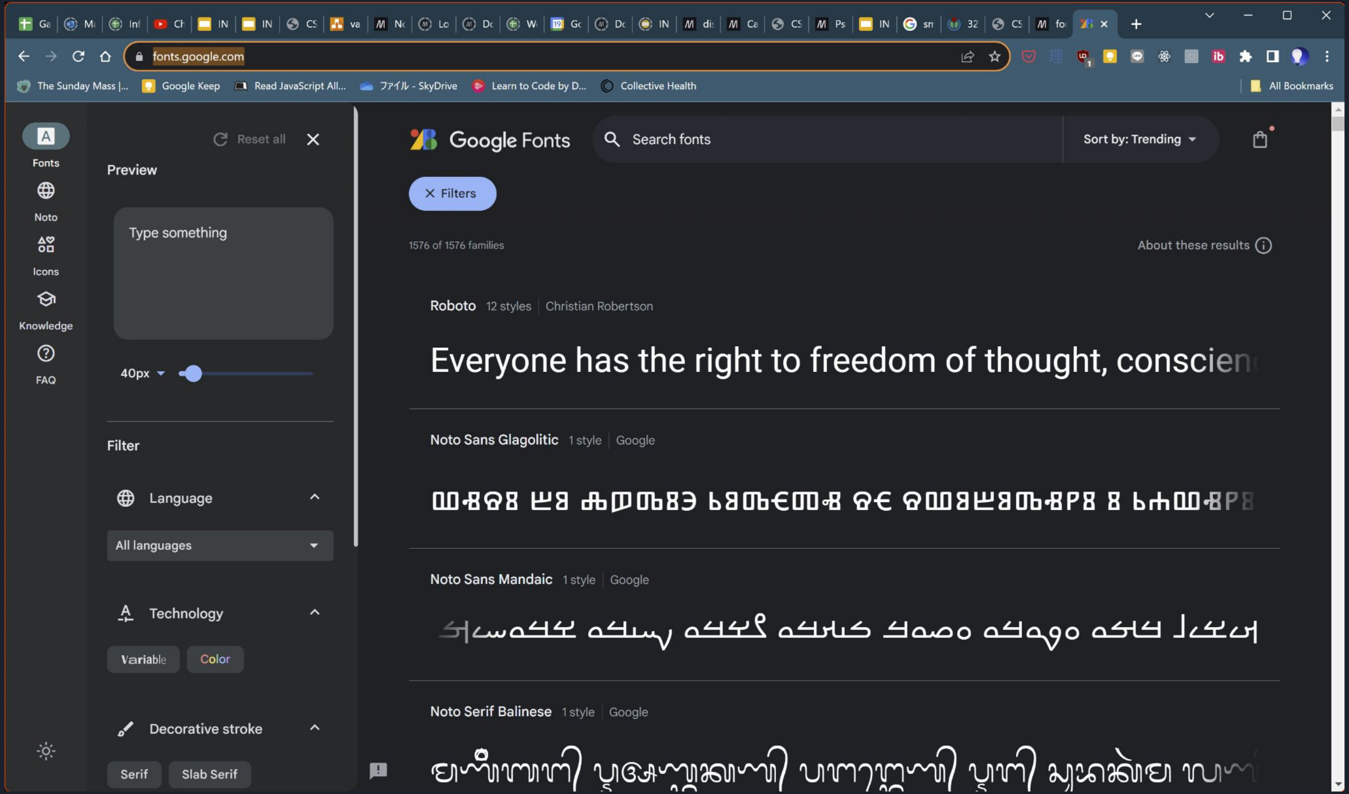
The setting for a paragraph continues down here. There is a blockquote next to it. You may want to make that stand out. The setting for a paragraph

> Make other Arial Black text

Web fonts

You can also use a font from a provider such as Google Fonts (free) or paid alternatives.

Select your font(s), then copy and paste the provided code.



1576 of 1576 families

Roboto 12 styles | Christian Robertson

Everyone has the right to freedom of thought, conscien

Noto Sans Glagolitic 1 style | Google

Noto Sans Mandaic 1 style | Google

Noto Serif Balinese 1 style | Google

Layout

Layout refers to the general “shape” of the page.

To understand how to create a layout, we need to understand display modes.

Display modes are set with the css `display` attribute.

Default display modes

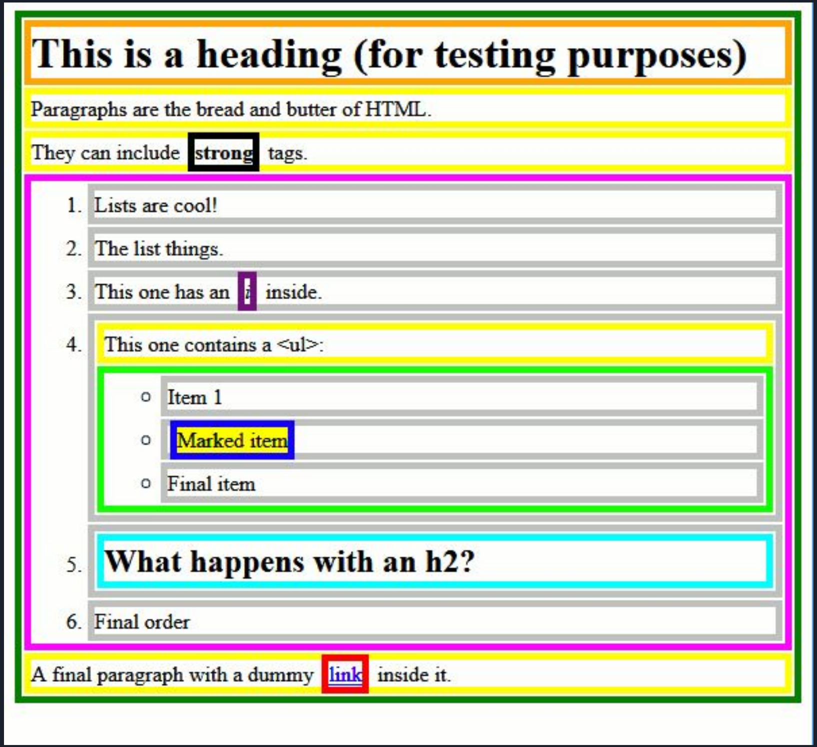
Every tag has, by default, either a block or an inline display mode.

- `block`: creates a rectangle. By default occupies all of the available width.
  - Basic building block of layouts.
  - Example: body, div, p, article
- `inline`: goes with the flow of text.
  - Examples: span, strong, img; also, text outside any tag

Blocks can contain inline and other blocks. Eg. an article can contain text

Inline should only contain inline; eg. a <strong> can contain text, but not a <div>

Default display modes



This is a heading (for testing purposes)

Paragraphs are the bread and butter of HTML.

They can include **strong** tags.

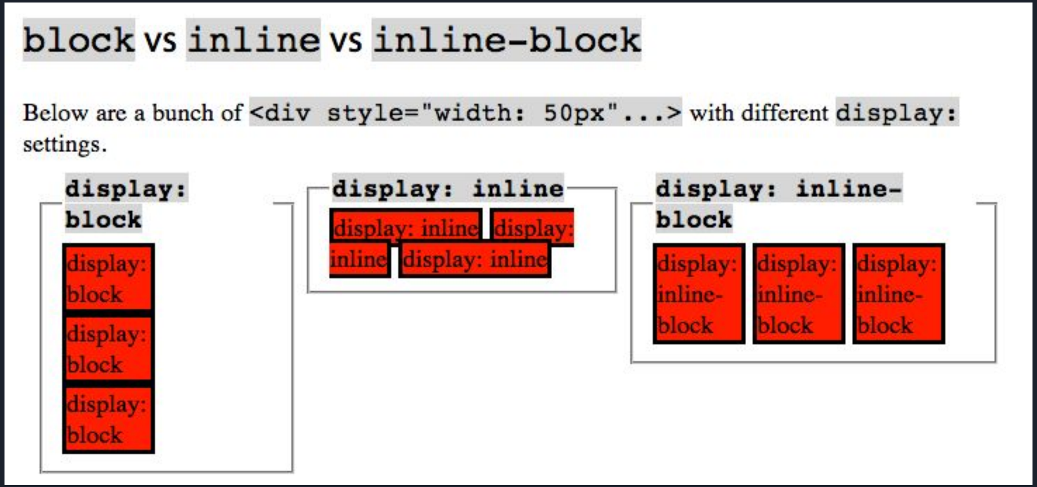
1. Lists are cool!
2. The list things.
3. This one has an *i* inside.
4. This one contains a <ul>:
   - Item 1
   - Marked item
   - Final item
5. ## What happens with an h2?
6. Final order

A final paragraph with a dummy link inside it.

Source: complete-concrete-concise.com

Default display modes

- Inline-block:
  - Internally behaves like a block (eg. it can contain other blocks or inline),
  - Externally, goes with the flow of text



`block` vs `inline` vs `inline-block`

Below are a bunch of `<div style="width: 50px"...>` with different `display:` settings.

Source: this article on medium.com

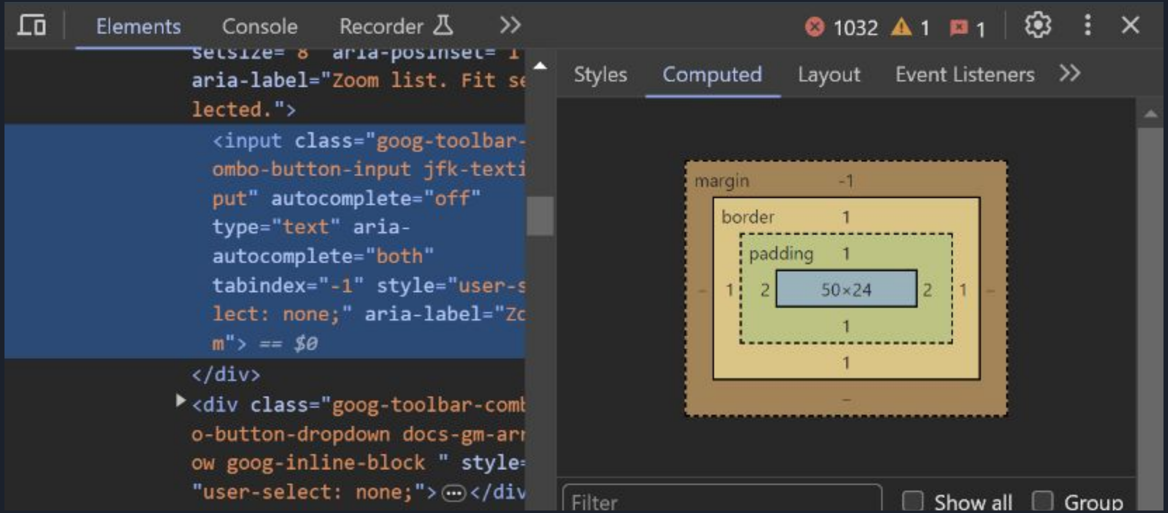
Other display modes

- display: none - use to not render an element.
- Others, less used, that we will not mention

We will cover display: flex and display: grid later on.

The box model

- Padding: the space around a box = space between the border and other boxes
- Border
- Margin: the space between the border and the internal contents

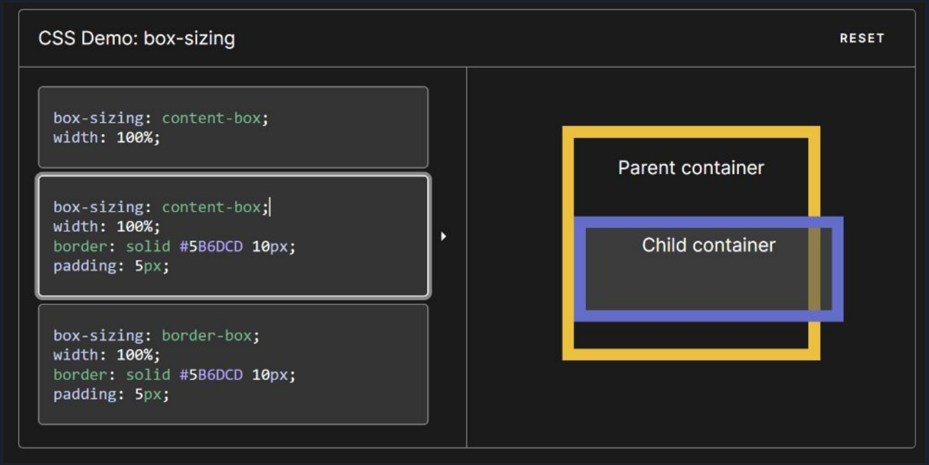


```
setsize= 8  aria-posinset= 1
aria-label="Zoom list. Fit se
lected.">
  <input class="goog-toolbar-
  ombo-button-input jfk-texti
  put" autocomplete="off"
  type="text" aria-
  autocomplete="both"
  tabindex="-1" style="user-s
  lect: none;" aria-label="Zo
  m"> == $0
</div>
▶<div class="goog-toolbar-comb
o-button-dropdown docs-gm-arr
ow goog-inline-block " style=
"user-select: none;">⋯</div
```

The box model

Did you set a `width` and things are misbehaving? Read on!

By default, `width` applies to the content of a box.



```
box-sizing: content-box;
width: 100%;
```

```
box-sizing: content-box;
width: 100%;
border: solid #5B6DCD 10px;
padding: 5px;
```

```
box-sizing: border-box;
width: 100%;
border: solid #5B6DCD 10px;
padding: 5px;
```

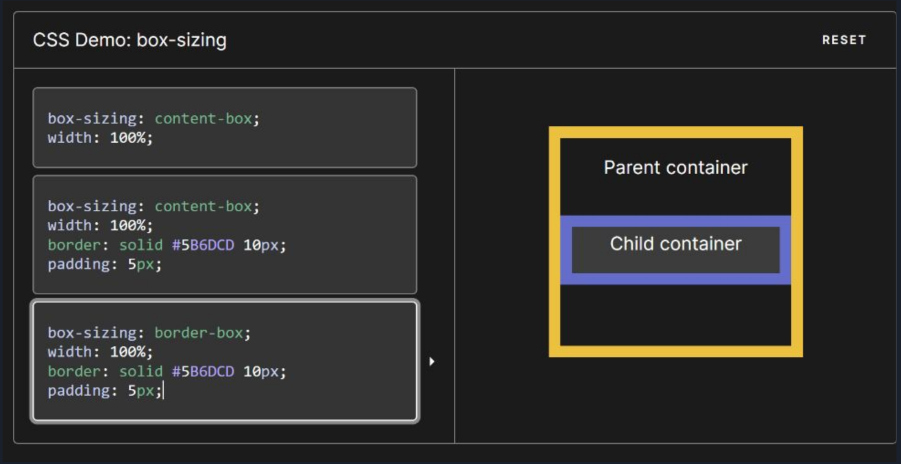
Screenshot from MDN

The box model

Change this by doing:

```
box-sizing: border-box;
```

With border-box, width applies to contents + padding. This is more consistent with most people's expectations.



CSS Demo: box-sizing

```
box-sizing: content-box;
width: 100%;
```

```
box-sizing: content-box;
width: 100%;
border: solid #5B6DCD 10px;
padding: 5px;
```

```
box-sizing: border-box;
width: 100%;
border: solid #5B6DCD 10px;
padding: 5px;
```

Screenshot from MDN