

# Webudvikling Frontend

Intro, HTML, semantics, accessibility & performance

Webudvikling

**kea**  
KØBENHAVNS ERHVERVSAKADEMI

# Dagens Formål

- Introducere dig til faget
- Opsætte de vigtigste værktøjer
- Hands-on med moderne semantisk HTML
- Viden om performance og Web Dev Tools,
- samt begreber vi skal arbejde igen og igen

# Agenda

- Introduktion til Webudvikling Frontend
- Værktøjer - Frontend Tooling
- Client-server & HTTP
- Moderne & Semantisk HTML
- Source Code Management
- Performance

# Fagmodulets Formål

... at gøre dig i stand til at udvikle dynamiske webapplikationer - fokus på client-side. Du vil lære om moderne web- og frontendteknologier.

Webudvikling

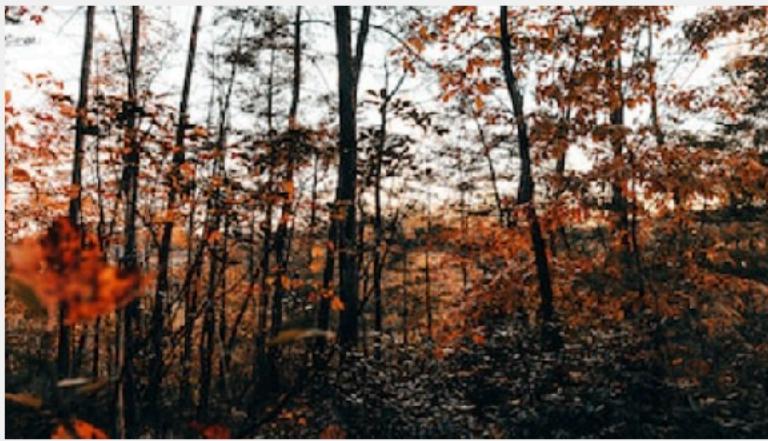
**kea**  
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# React CRUD App

React Firebase Post App https://race-react-firebase.web.app/

POSTS CREATE FAVORITES PROFILE

Maria Louise Bendixen  
Senior Lecturer



Dolor sint quo a velit explicabo  
quia namen

Eos qui et ipsum ipsam suscipit aut sed omnis non  
odio expedita earum mollitia molestiae aut atque  
rem suscipit nam impedit esse

[REMOVE FROM FAVORITES](#)

Jes Arbov  
Lecturer



Dolorem eum magni eos aperiam  
quia

Ut aspernatur corporis harum nihil quis provident  
sequi mollitia nobis aliquid molestiae perspiciatis  
et ea nemo ab reprehenderit accusantium quas  
voluptate dolores velit et doloremque molestiae

[ADD TO FAVORITES](#)

Birgitte Kirk Iversen  
Senior Lecturer



Magnam facilis autem

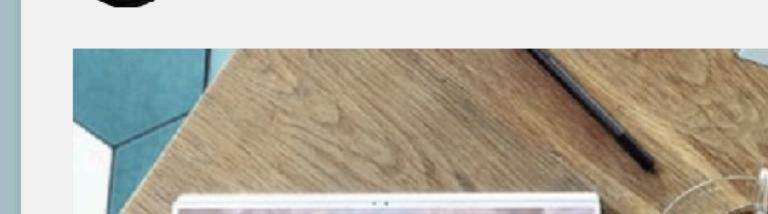
Dolore placeat quibusdam ea quo vitae magni quis  
enim qui quis quo nemo aut saepe quidem repellat  
excepturi ut quia sunt ut sequi eos ea sed quas

[ADD TO FAVORITES](#)

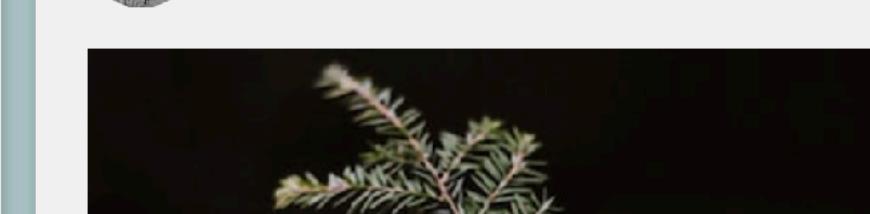
Kim Elkjær Marcher-Jepsen  
Senior Lecturer



Dan Okkels Brendstrup  
Lecturer



Morten Algy Bonderup  
Senior Lecturer



<https://react-rest-and-auth.web.app/>

# Indhold

## Webudvikling Frontend

- Moderne web og frontend teknologier
- Webapplikationer med teknologier som HTML, CSS, JavaScript og API'er
- Best practices indenfor frontend, design, accessibility og performance
- Et komponent baseret JavaScript Framework  
- React
- React og Single Page Apps
- Tools til frontend- og webudvikling, herunder NPM, bundlers, VS Code og debugging
- Webprotokoller, HTTP-verber, klient-server-arkitektur og BaaS
- Datakilder, REST og CRUD
- Brugervenlighed og brugertests

1. Intro, HTML, semantics, accessibility & performance
2. CSS, fonts, responsiveness & Design Principles
3. CSS Flexbox & intro to JavaScript
4. CSS Grid, JavaScript, the DOM & UX Laws
5. UI frameworks, JavaScript, forms & Usability Testing
6. JavaScript Modules & debugging
7. Async JavaScript & performance
8. Data Sources, JSON & APIs
9. Frontend Tooling & Intro to JS Frameworks
10. CSS Preprocessing & Intro to Component-Based Frameworks
11. A Component-Based Framework
12. A Component-Based Framework
13. Exam project
14. Exam project

# Undervisningsplan

[Find den her](#)



# Undervisningsform & Materiale

- Holdundervisning
- Kombination af teori, praktiske eksempler, cases og opgaver
- Visuelt materiale der komplementerer den til tider tørre programmeringsteori
- Materiale vil være på engelsk
- Tekster, videoer, tutorials og programmeringsøvelser som forberedelse

A photograph of a man and a woman looking at a laptop screen. The man is in the foreground, wearing a white t-shirt with an Adidas logo, and the woman is behind him, looking over his shoulder. They appear to be focused on the laptop screen.

I can teach everyone  
how to code!

... as long as you are eager to learn

Webudvikling

kea  
KØBENHAVNS ERHVERVSAKADEMI

I'm Rasmus Cederdorff  
Senior Lecturer  
Freelance Web App Developer

Programming, UI & UX

Frontend & Web Development  
“I speak JavaScript”

Websites, Webshops, Web Apps  
& Mobile Apps





I'm Rasmus Cederdorff  
Aarhus -> Copenhagen

2 Girls - Alicia & Ida

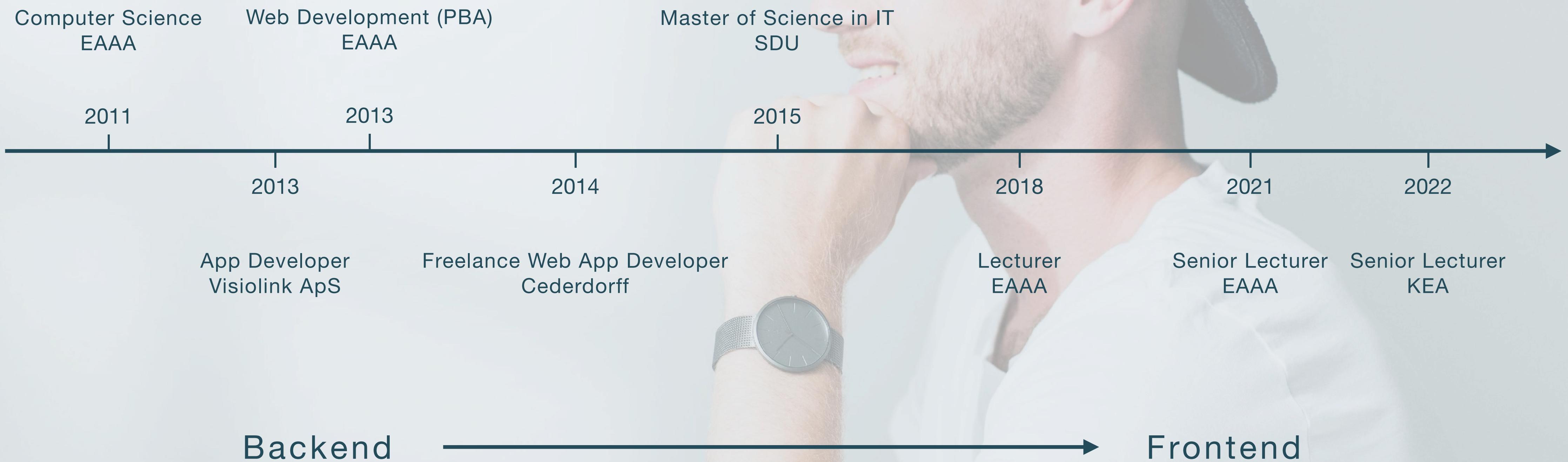
From Holstebro

I'm into sports

Love (⌚{}) gadgets, to take pictures  
& interior design projects

What's with my arm?

# Rasmus Cederdorff



# BACKEND

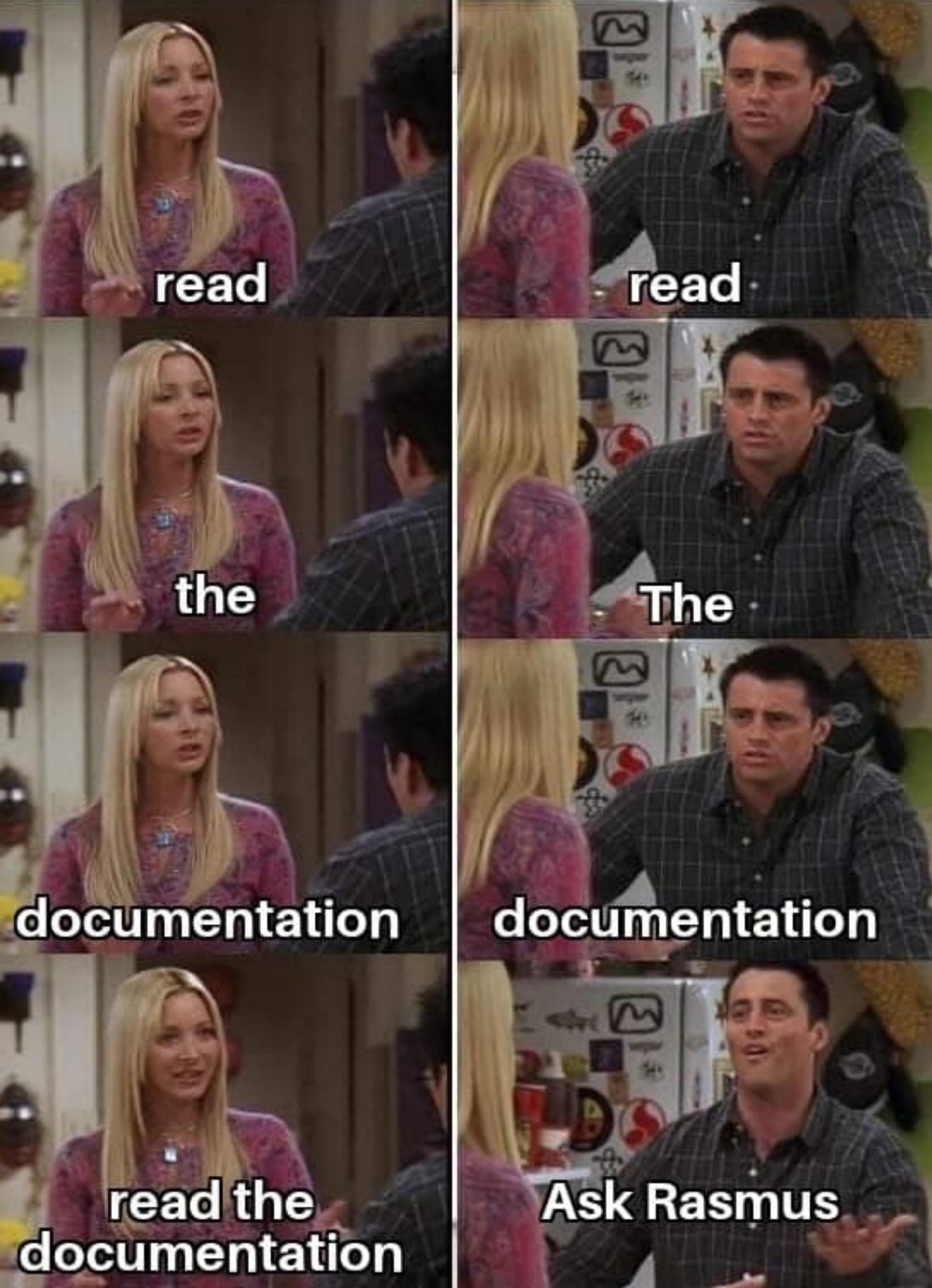
DATABASE  
ARCHITECTURE  
PERFORMANCE  
SECURITY  
SCALABILITY

# FRONTEND

UI  
INTERACTIONS  
ARCHITECTURE  
PERFORMANCE  
SECURITY  
SCALABILITY

```
index.html
firebase_crud
firebase_crud_bootstrap
firebase_get_started
form_basic
form_basic_onchange
form_location
form_stepper
form_stepper_materiali
84 }
85 }
86 /*
87 * Fetches post data from my headless cms
88 */
89 function getPersons() {
90   fetch('http://headlesscms.cederdorff.com/wp-json/wp/v2/posts?_embed')
91     .then(function(response) {
92       return response.json();
93     })
94     .then(function(persons) {
95       persons;
96     })
97     .then(function(persons) {
98       let html = '';
99       persons.forEach(function(person) {
100         html += `<div>

# How to read the docs?



**“Learning to code requires a HUGE  
investment of time and energy.”**

<https://medium.com/martinsoft/learn-javascript-c1cca9db9015>



Code  
Every  
Day

# Eksamensopgave

Individuelt skal du udvikle en single page app (web app), der interagerer med en eller flere datakilder. Baserer sig på det du har lært gennem kurset: HTML, CSS, JavaScript, React, etc.

Mundtlig prøve med baggrund i en individuel synopsis samt programmeret produkt.

Eksempel på eksamensopgave

# Mere info

Website: [https://kompetence.kea.dk/kurser-fag/  
webudvikling-frontend](https://kompetence.kea.dk/kurser-fag/webudvikling-frontend)

Studieordning: [https://kompetence.kea.dk/studieordninger/  
Diplom\\_Webudvikling\\_Studieordning\\_2018\\_05.pdf](https://kompetence.kea.dk/studieordninger/Diplom_Webudvikling_Studieordning_2018_05.pdf)

Undervisningsplan

Webudvikling

**kea**  
KØBENHAVNS ERHVERVSAKADEMI

# Hvem er I?

[https://eaaa.padlet.org/race/  
web\\_diplom\\_hvem\\_er\\_i](https://eaaa.padlet.org/race/web_diplom_hvem_er_i)

- Navn
- By - hvor er du fra?
- Baggrund - uddannelse & job?
- Baggrund - HTML, CSS, JavaScript mm?
- Hvorfor Webudvikling Frontend-modulet?
- Forventninger til kurset?
- Hvad kan du særligt godt lide at arbejde med?
- Drømmejob?
- Meget gerne et profil billede.

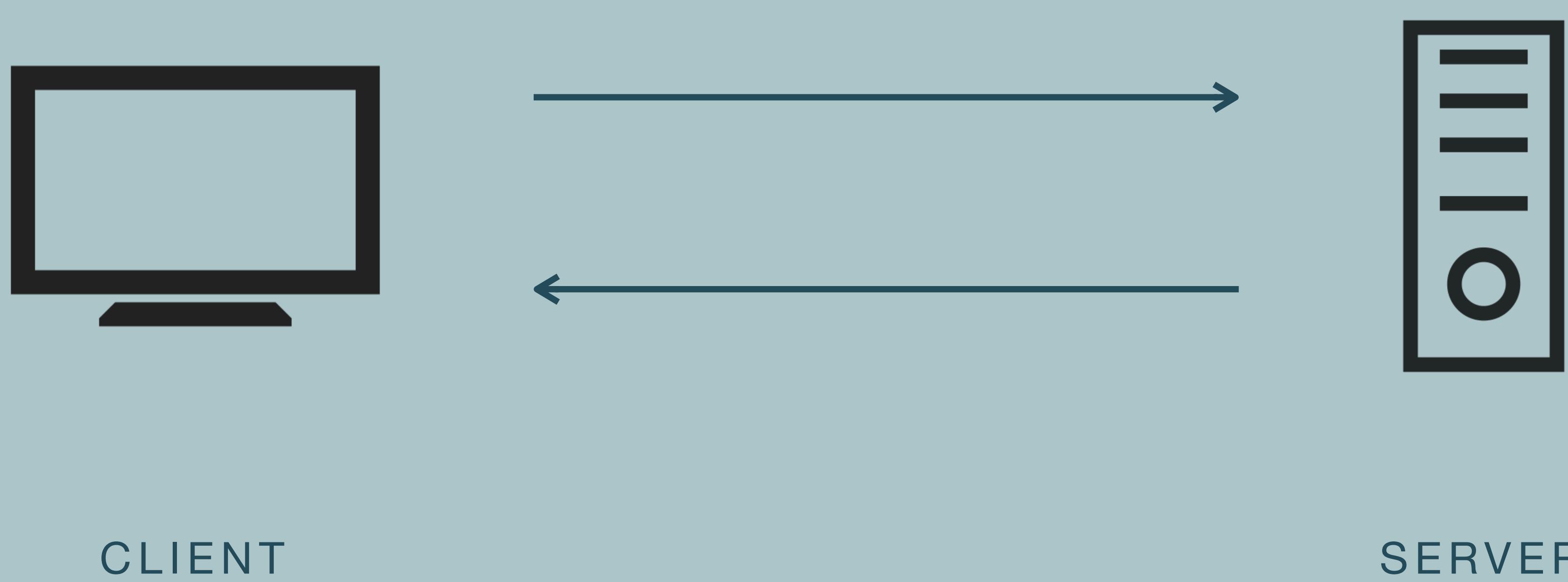
The background is a dark, slightly blurred photograph of a computer workstation. It features an iMac monitor with its characteristic rounded screen and a silver Apple keyboard. A white Apple Magic Mouse is positioned to the right of the keyboard. The overall aesthetic is clean and professional.

# Tools

Setup Tools & Dev Environment

# Client-Server Model

Communication between web **clients** and web **servers**.



# Client-Server Model

Communication between web **clients** and web **servers**.

**Browsers**  
Or any type of  
program or device

CLIENT

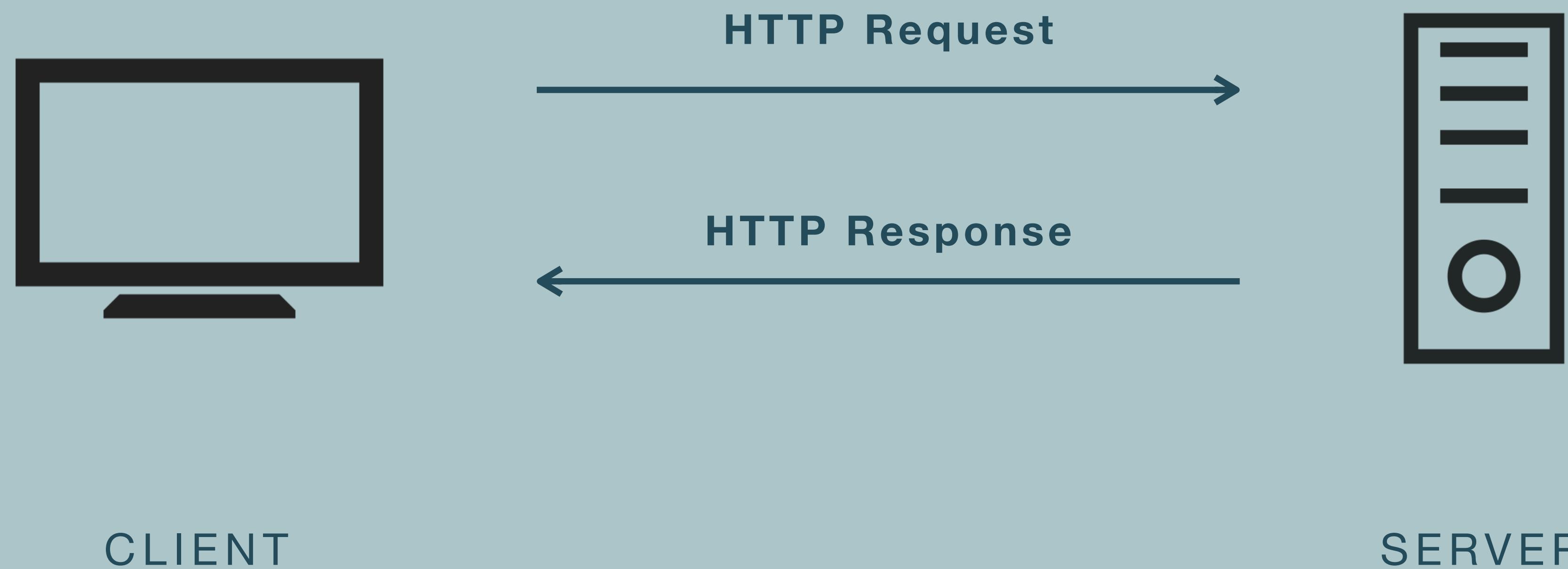


**Cloud Computers**  
Often computers  
in the cloud

SERVER

# Client-Server Model

Communication between web **clients** and web **servers**.



# Hyper Text Transfer Protocol

- A protocol and standard for fetching data, HTML and other resources (text, images, videos, scripts, JSON).
- The foundation of the web.



What is HTTP

Not Secure | w3schools.com/whatis/whatis\_http.asp

HTML CSS JAVASCRIPT SQL PYTHON

# HTTP Request / Response

Communication between clients and servers is done by **requests** and **responses**:

1. A client (a browser) sends an **HTTP request** to the web
2. A web server receives the request
3. The server runs an application to process the request
4. The server returns an **HTTP response** (output) to the browser
5. The client (the browser) receives the response

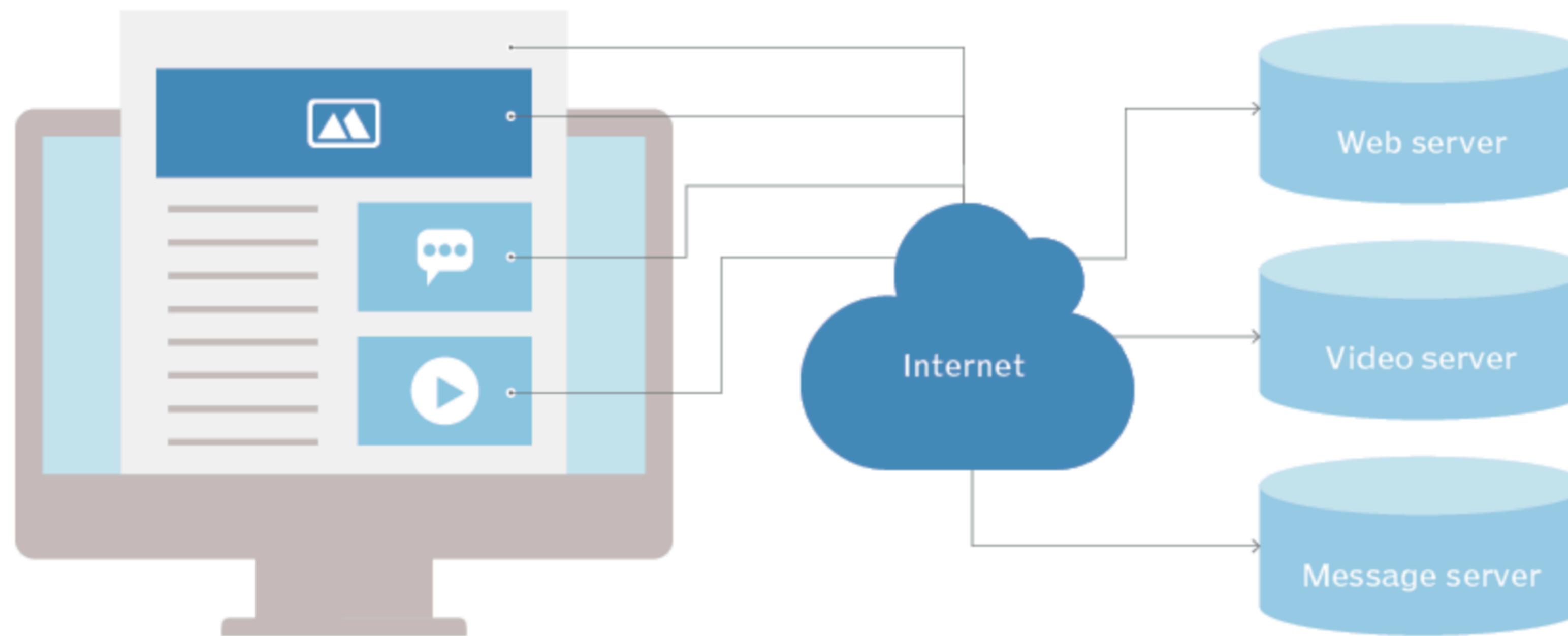
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## The HTTP Request Circle

A typical HTTP request / response circle:

1. The browser requests an HTML page. The server returns an HTML file.
2. The browser requests a style sheet. The server returns a CSS file.
3. The browser requests an JPG image. The server returns a JPG file.
4. The browser requests JavaScript code. The server returns a JS file
5. The browser requests data. The server returns data (in XML or JSON).

# How HTTP Works



<https://www.techtarget.com/whatis/definition/HTTP-Hypertext-Transfer-Protocol>

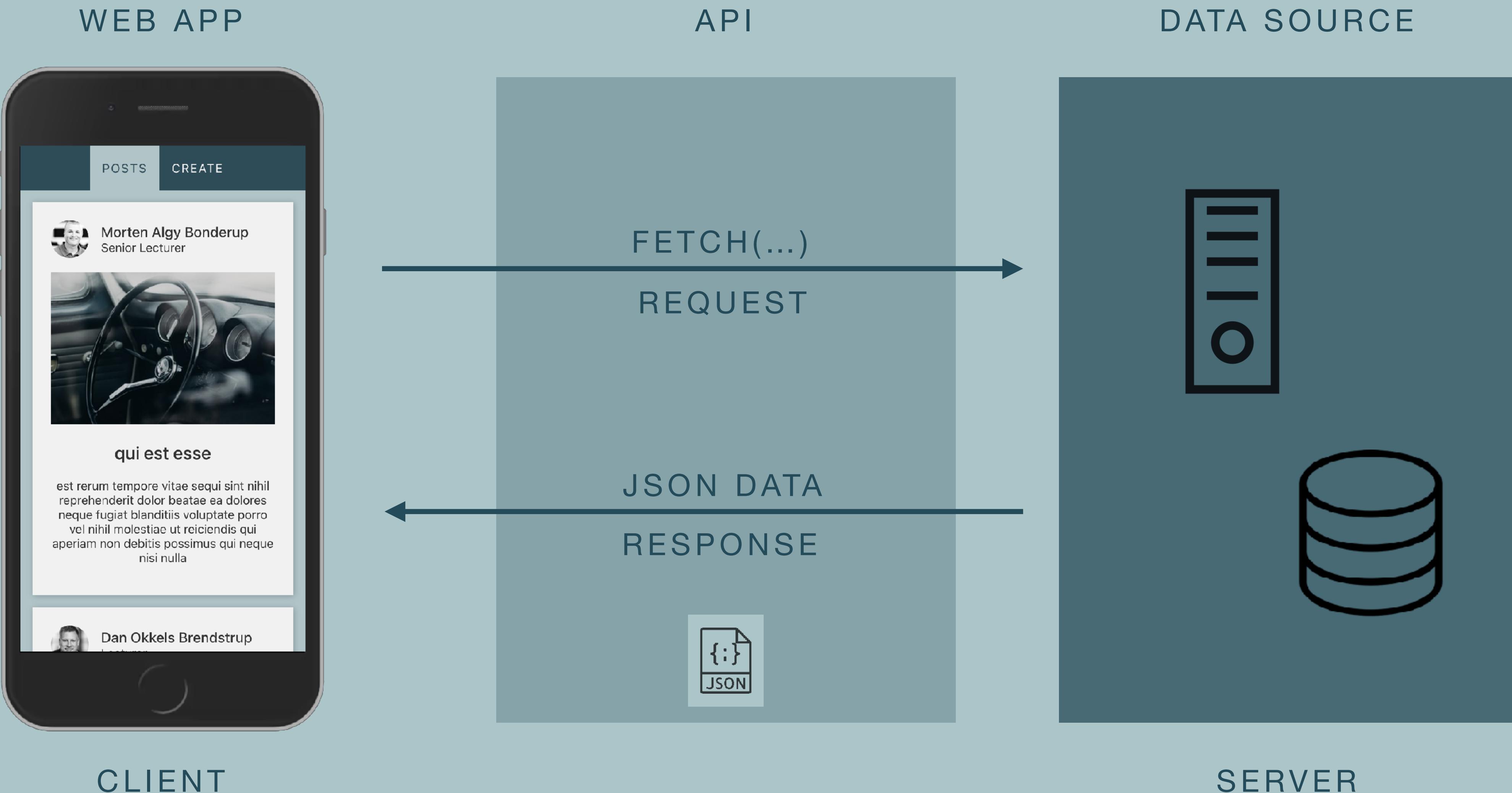
# Network Tab

The screenshot shows a web browser window with the URL [kompetence.kea.dk/kurser-fag/webudvikling-frontend](https://kompetence.kea.dk/kurser-fag/webudvikling-frontend). The main content area displays information about the 'WEBUDVIKLING FRONTEND' course, including a 'SE HOLDSTART OG TILMELD DIG →' button and a 'LAV DIN EGEN PDF-BROCHURE' section with a 'FØJ TIL PDF' button. A red sidebar on the left contains a 'NY UDDANNELSE: DIPLOM I WEBUDVIKLING' section with text about the diploma program.

**Network Tab Details:**

- Filter:** All | Fetch/XHR | JS | CSS | Img | Media | Font | Doc | WS | Wasm | Manifest | Other
- Has blocked cookies:**
- Blocked Requests:**
- 3rd-party requests:**
- Timeline:** 500 ms, 1000 ms, 1500 ms, 2000 ms
- Table Headers:** Name, Status, Type, Initiator, Size, Time, Waterfall
- Table Data:** A list of 46 requests, mostly 200 status, including files like 'webudvikling-fro...', 'quixtrap.css', 'quix.css', 'jquery.min.js?77...', 'style.css?77958...', etc.
- Metrics:** 46 requests | 28.7 kB transferred | 1.9 MB resources | Finish: 1.59 s | DOMContentLoaded

# Web Development



- Brug Network-tabben til at undersøge et website (fx [kea.dk](http://kea.dk), [dr.dk](http://dr.dk), [google.dk](http://google.dk), [react-rest-and-auth.web.app](http://react-rest-and-auth.web.app) eller et helt andet).
- Åben websitet i Chrome (eller en anden browser).
- Åben Developer Tool (se: [How to open the dev tool in your browser](#)) og gå til Network/Netværk.
- Genindlæs siden imens du står i Network-tabben og undersøg hvilke ressourcer, der bliver hentet.
- Hvilke(n) type ressourcer er der tale om?
- Overvej hvordan ressourcerne hentes.



## Network-tabben

# Frontend stack

**HTML**



**JS**



**CSS**



STRUCTURE  
CONTENT

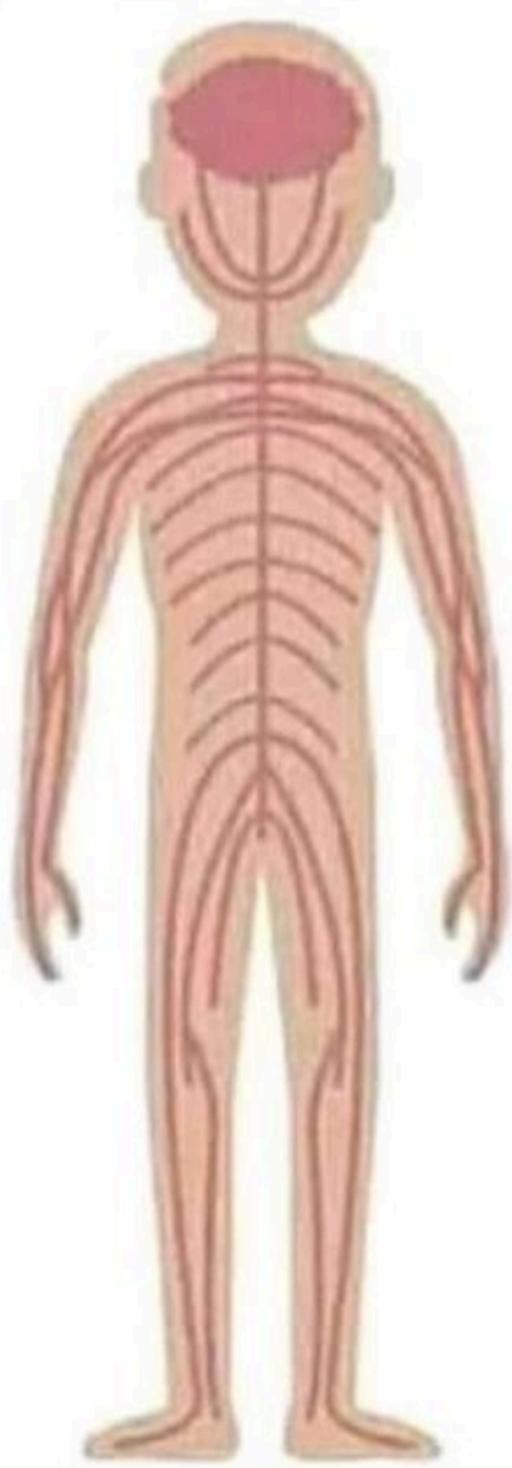
FUNCTIONALITY  
BEHAVIOR

LAYOUT/STYLING  
PRESENTATION

HTML



JS

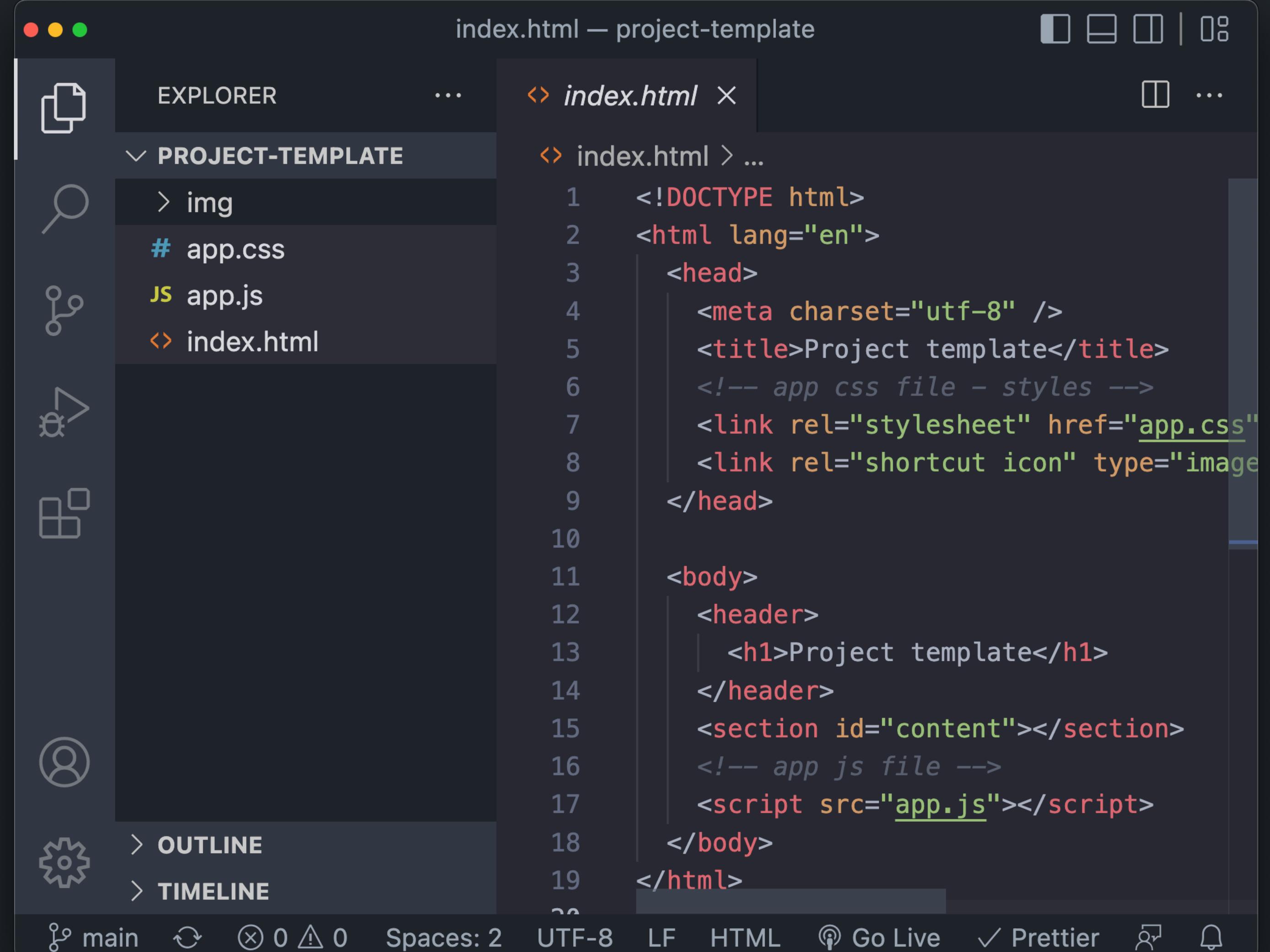


CSS



# Frontend Project Structure

- Project structure
  - HTML
  - CSS
  - JavaScript
- Keep a good structure & strive for consistency
- Separation of concerns



The screenshot shows a code editor interface with a dark theme. On the left, the Explorer sidebar displays a project structure under 'PROJECT-TEMPLATE' containing 'img', '# app.css', 'JS app.js', and 'index.html'. The 'index.html' file is selected and shown in the main editor area. The editor shows the following HTML code:

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="utf-8" />
    <title>Project template</title>
    <!-- app css file - styles -->
    <link rel="stylesheet" href="app.css" type="text/css" />
    <link rel="shortcut icon" type="image/x-icon" href="img/icon.png" />
</head>
<body>
    <header>
        <h1>Project template</h1>
    </header>
    <section id="content"></section>
    <!-- app js file -->
    <script src="app.js"></script>
</body>
</html>
```

The status bar at the bottom indicates the file is 'index.html – project-template', has 08 tabs open, and shows icons for main, refresh, search, 0 errors, 0 warnings, spaces: 2, LF, HTML, Go Live, Prettier, and a few others.

# HTML, CSS & JavaScript

You can literally build anything with it!

# What is HTML?

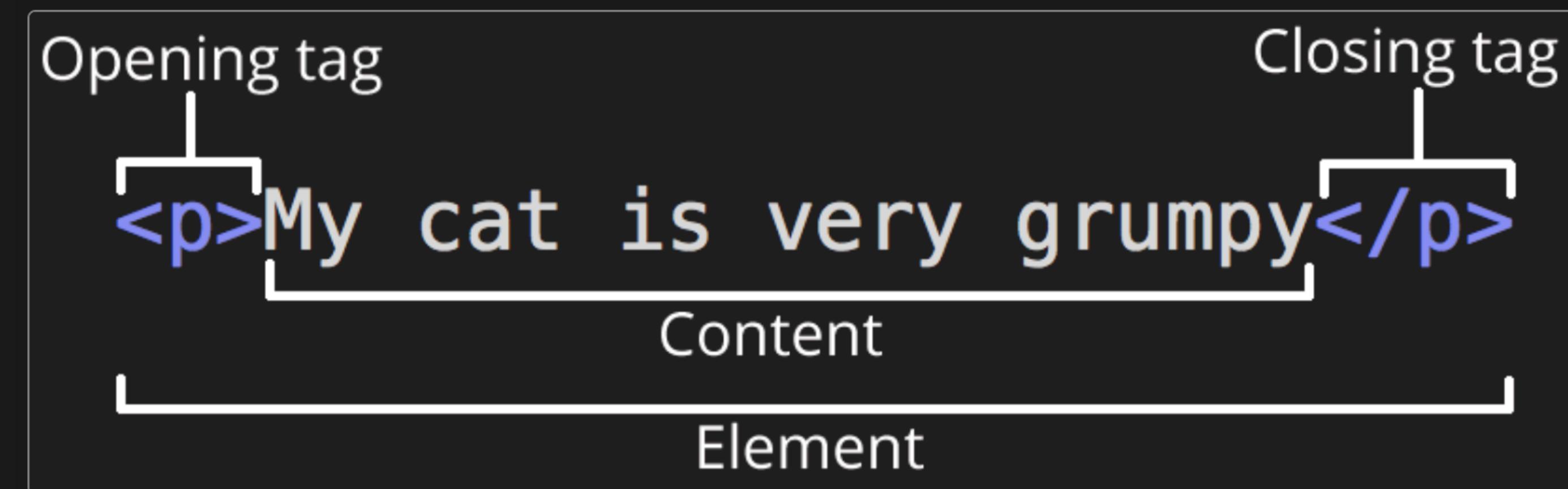
- Hyper Text Markup Language
- Standard markup language for creating Web pages
- Describes the structure of a Web page
- Consists of a series of elements (tags)
- HTML elements tell the browser how to display the content

```
index.html

1 <!DOCTYPE html>
2 <html>
3   <head>
4     <title>Page Title</title>
5   </head>
6   <body>
7     <h1>This is a Heading</h1>
8     <p>This is a paragraph.</p>
9   </body>
10 </html>
11
```

# Anatomy of an HTML element

Element: opening and closing tag + content



# Void elements

Element: single tag, usually to insert or embed something in a HTML

```

```



[https://developer.mozilla.org/en-US/docs/Learn/HTML/Introduction\\_to\\_HTML/Getting\\_started#void\\_elements](https://developer.mozilla.org/en-US/docs/Learn/HTML/Introduction_to_HTML/Getting_started#void_elements)

# Attributes

- Provides additional information and all element can have them.
- Are specified in the start tag
- name/value pairs: `name="value"`

[Attributes - mdn](#)

[HTML Attributes - W3Schools](#)

The screenshot shows a dark-themed web browser window. The title bar reads "Getting started with HTML - Le X". The address bar shows the URL "developer.mozilla.org/en-US/docs/Learn/HTML/Introduction\_to\_HTML/HTML\_attributes\_and\_attributes\_of\_HTML\_elements". The main content area is titled "Attributes" and contains the text: "Elements can also have attributes. Attributes look like this:" followed by a code example: "`<p class="editor-note">My cat is very grumpy</p>`". A callout box points to the word "class" in the code with the label "Attribute". Below the code example, the text continues: "Attributes contain extra information about the element that won't appear in the content. In this example, the `class` attribute is an identifying name used to target the element with style information." At the bottom, there is a section titled "An attribute should have:" with three bullet points: "A space between it and the element name. (For an element with more than one attribute, the attributes should be separated by spaces too.)", "The attribute name, followed by an equal sign.", and "An attribute value, wrapped with opening and closing quote marks."

**Attributes**

Elements can also have attributes. Attributes look like this:

`<p class="editor-note">My cat is very grumpy</p>`

Attribute

Attributes contain extra information about the element that won't appear in the content. In this example, the `class` attribute is an identifying name used to target the element with style information.

An attribute should have:

- A space between it and the element name. (For an element with more than one attribute, the attributes should be separated by spaces too.)
- The attribute name, followed by an equal sign.
- An attribute value, wrapped with opening and closing quote marks.

The screenshot shows a web browser window with the title "HTML Attributes". The URL in the address bar is "w3schools.com/html/html\_attributes.asp". The browser interface includes standard controls like back, forward, and search, along with a user profile icon.

The main content area has a dark background with white text. It features a navigation bar at the top with tabs for "HTML", "CSS", "JAVASCRIPT", "SQL", "PYTHON", "JAVA", and "PHP".

## The href Attribute

The `<a>` tag defines a hyperlink. The `href` attribute specifies the URL of the page the link goes to:

**Example**

```
<a href="https://www.w3schools.com">Visit W3Schools</a>
```

**Try it Yourself »**

You will learn more about links in our [HTML Links chapter](#).

## The src Attribute

The `<img>` tag is used to embed an image in an HTML page. The `src` attribute specifies the path to the image to be displayed:

**Example**

```

```

**Try it Yourself »**

```
1  <!DOCTYPE html>
2  <html>
3      <head>
4          <title>Page Title</title>
5      </head>
6      <body>
7          <h1>This is a Heading</h1>
8          <p>This is a paragraph.</p>
9      </body>
10 </html>
11
```

# This is a Heading

This is a paragraph.

# Anatomy of an HTML document

```
<> index.html ×  
1  <!DOCTYPE html>  
2  <html>  
3    <head>  
4      <title>Page Title</title>  
5    </head>  
6    <body>  
7      <h1>This is a Heading</h1>  
8      <p>This is a paragraph.</p>  
9    </body>  
10   </html>  
11
```

The `<!DOCTYPE html>` declaration defines that this document is an HTML5 document

The `<html>` element is the root element of an HTML page

The `<head>` element contains meta information about the HTML page

The `<title>` element specifies a title for the HTML page (which is shown in the browser's title bar or in the page's tab)

The `<body>` element defines the document's body, and is a container for all the visible contents, such as headings, paragraphs, images, hyperlinks, tables, lists, etc.

The `<h1>` element defines a large heading

The `<p>` element defines a paragraph

```
index.html ×  
1  <!DOCTYPE html>  
2  <html>  
3  <head>  
4    <title>Page Title</title>  
5  </head>  
6  <body>  
7    <h1>This is a Heading</h1>  
8    <p>This is a paragraph.</p>  
9  </body>  
10 </html>  
11
```

```
<html>  
  
<head>  
  
  <title>Page title</title>  
  
</head>  
  
<body>  
  
  <h1>This is a heading</h1>  
  
  <p>This is a paragraph.</p>  
  
  <p>This is another paragraph.</p>  
  
</body>  
  
</html>
```

A screenshot of a web browser window displaying the MDN Web Docs page for "HTML comments". The browser has a dark mode interface. The title bar shows the page is titled "Getting started with HTML - Le...". The address bar shows the URL: "developer.mozilla.org/en-US/docs/Learn/HTML/Introduction\_to\_HTML/Getting\_started#anatomy\_of\_an\_html\_document". The page content starts with a section header "HTML comments" followed by a paragraph explaining the purpose of HTML comments. Below the paragraph, there is an example code block showing how to write an HTML comment.

## HTML comments

HTML has a mechanism to write comments in the code. Browsers ignore comments, effectively making comments invisible to the user. The purpose of comments is to allow you to include notes in the code to explain your logic or coding. This is very useful if you return to a code base after being away for long enough that you don't completely remember it. Likewise, comments are invaluable as different people are making changes and updates.

To write an HTML comment, wrap it in the special markers `<!--` and `-->`. For example:

```
<p>I'm not inside a comment</p>

<!-- <p>I am!</p> -->
```

# HTML Quiz & Exercises

HTML Quiz

HTML Exercises

# HTML Semantic Elements

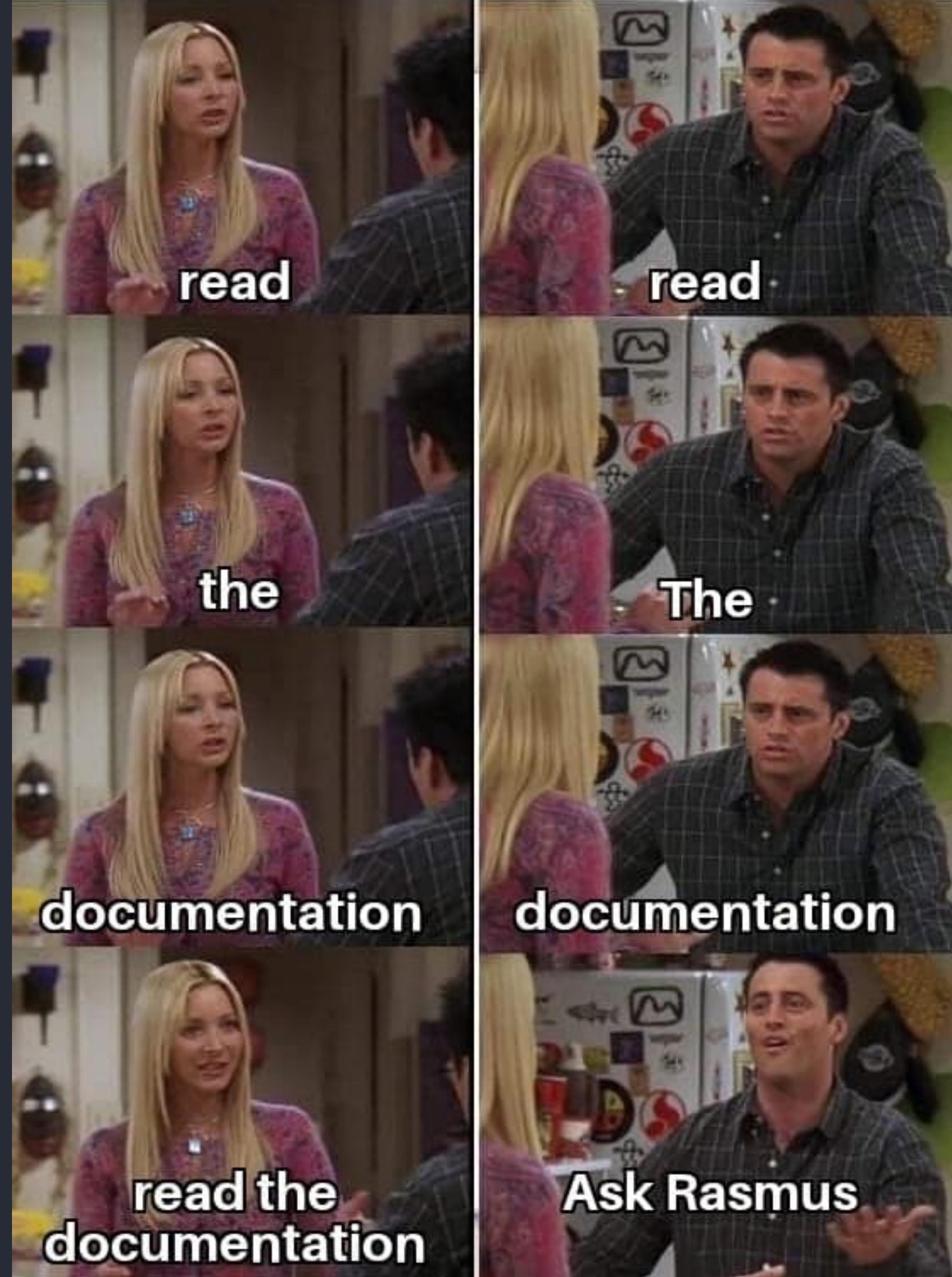
Clearly describes the meaning to both the browser and the developer.

Semantic elements = elements with a meaning

The screenshot shows a web browser window with the title "HTML Semantic Elements" and the URL "w3schools.com/html/html5\_semantic\_elements.asp". The page features a navigation bar with links for HTML, CSS, JAVASCRIPT, SQL, PYTHON, and JAVA. The main content is titled "Semantic Elements in HTML" and includes a note: "Below is a list of some of the semantic elements in HTML." A table lists 15 semantic elements with their descriptions:

Tag	Description
<code>&lt;article&gt;</code>	Defines independent, self-contained content
<code>&lt;aside&gt;</code>	Defines content aside from the page content
<code>&lt;details&gt;</code>	Defines additional details that the user can view or hide
<code>&lt;figcaption&gt;</code>	Defines a caption for a <code>&lt;figure&gt;</code> element
<code>&lt;figure&gt;</code>	Specifies self-contained content, like illustrations, diagrams, photos, code listings, etc.
<code>&lt;footer&gt;</code>	Defines a footer for a document or section
<code>&lt;header&gt;</code>	Specifies a header for a document or section
<code>&lt;main&gt;</code>	Specifies the main content of a document
<code>&lt;mark&gt;</code>	Defines marked/highlighted text
<code>&lt;nav&gt;</code>	Defines navigation links
<code>&lt;section&gt;</code>	Defines a section in a document
<code>&lt;summary&gt;</code>	Defines a visible heading for a <code>&lt;details&gt;</code> element
<code>&lt;time&gt;</code>	Defines a date/time

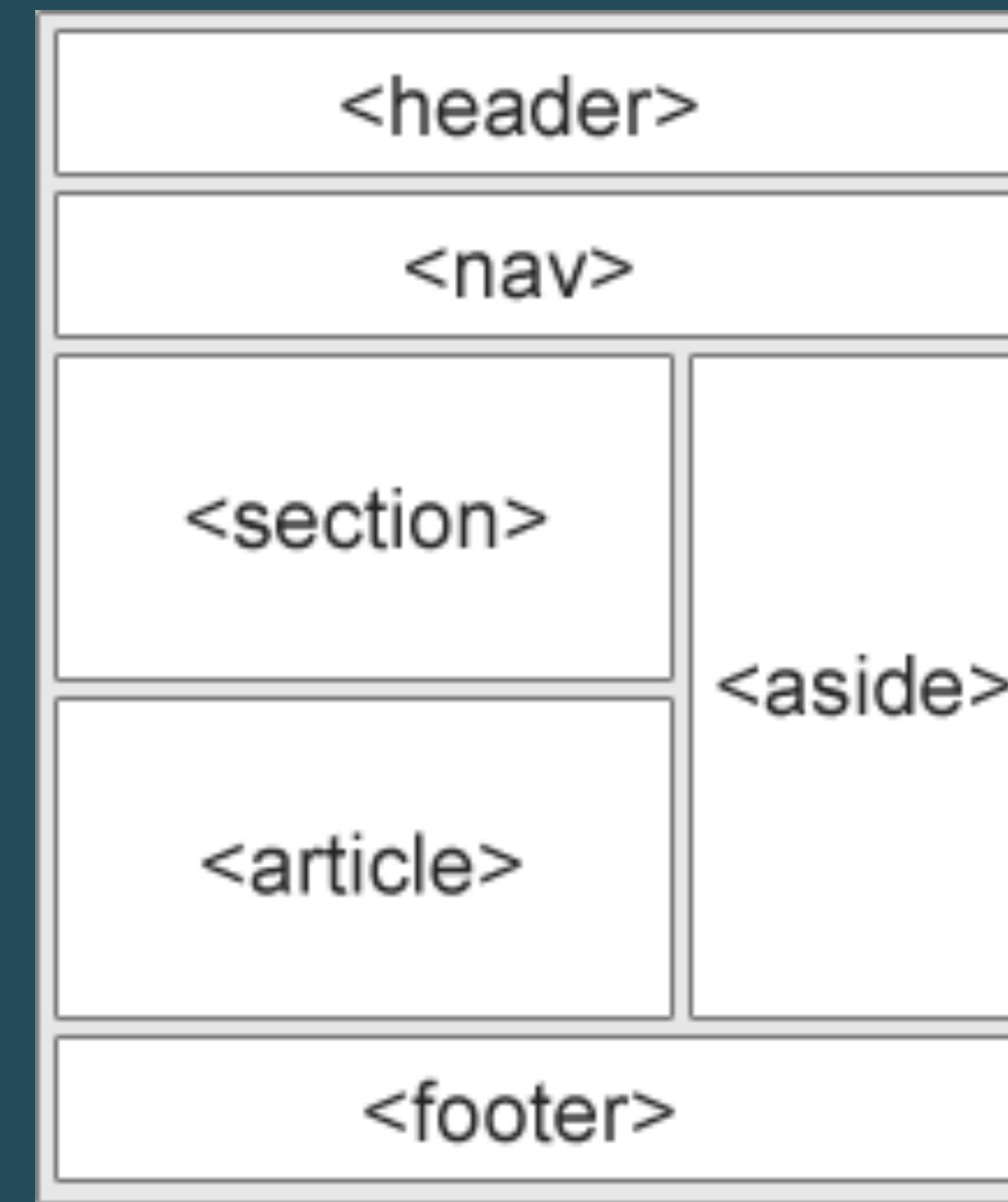
At the bottom, a yellow bar contains the text: "For a complete list of all available HTML tags, visit our [HTML Tag Reference](#)".



# HTML Semantic Elements

Semantic elements that can be used to define different parts of a website

- <article>
- <aside>
- <details>
- <figcaption>
- <figure>
- <footer>
- <header>
- <main>
- <mark>
- <nav>
- <section>
- <summary>
- <time>



# Why use semantic elements?

```
<body>
  <div id="header">
    <h1>PROJECT TEMPLATE</h1>
  </div>
  <div class="sections">
    <div class="article">
      <div class="figure">
        <img>
        <div class="figcaption"></div>
      </div>
    </div>
  </div>
  <div id="footer"></div>
  <!-- main js file -->
  <script src="js/main.js"></script>
</body>
```

```
<body>
  <header>
    <h1>PROJECT TEMPLATE</h1>
  </header>
  <section>
    <article>
      <figure>
        <img>
        <figcaption></figcaption>
      </figure>
    </article>
  </section>
  <footer></footer>
  <!-- main js file -->
  <script src="js/main.js"></script>
</body>
```

## NON SEMANTIC

```
<div class='header'>  
  <div class='section'>  
    <div class='article'>  
      <div class='article'>  
    </div>  
  </div>  
<div class='aside'>  
</div>  
<div class='footer'>
```

## SEMANTIC

```
<header>  
<section>  
<article>  
<article>  
<aside>  
<footer>
```



# <div> tags?

Many websites contain HTML code like:

```
<div id="nav">  
<div class="header">  
<div id="footer">
```

to indicate navigation, header, and footer.

Can we still use div tags?

Apple x + apple.com

Store Mac iPad iPhone Watch AirPods TV & Home Only on Apple Accessories Support Q □

# iPhone 14 Pro

Pro. Beyond.

[Learn more >](#) [Buy >](#)



# iPhone 14

Big and bigger.

iPhone 14 Plus available starting 10.7

[Learn more >](#) [Shop >](#)

Elements Console » F 1 ⚙️ ⋮ ×

```
><nav id="ac-globalnav" class="js no-touch no-windows no-firefox" role="navigation" aria-label="Global" data-hires="false" data-analytics-region="global nav" lang="en-US" dir="ltr" data-www-domain="www.apple.com" data-store-locale="us" data-store-root-path="/us" data-store-api="/[storefront]/shop/bag/status" data-search-locale="en_US" data-search-suggestions-api="/search-services/suggestions/" data-search-defaultlinks-api="/search-services/suggestions/defaultlinks/">...</nav>
<div class="ac-gn-blur"></div>
<div id="ac-gn-curtain" class="ac-gn-curtain"></div>
<div id="ac-gn-placeholder" class="ac-nav-placeholder">
</div>
<script type="text/javascript" src="/ac/globalnav/7/en_US/scripts/ac-globalnav.built.js"></script>
...
  ><div id="ac-gn-viewport-emitter" data-viewport-emitter-dispatch data-viewport-emitter-state="{"viewport":"medium","orientation":"portrait","retina":true}">...</div> == $0
<script src="/metrics/ac-analytics/2.15.1/scripts/ac-analytics.js" type="text/javascript" charset="utf-8"></script>
  ><main class="main" role="main">...</main>
  ><footer class="js" lang="en-US" id="ac-globalfooter" data-analytics-region="global footer" role="contentinfo" aria-...
...
  -image.no-reduced-motion.no-edge.no-ie.css-mask.inline-video.deskt ...

```

Styles Computed Layout Event Listeners DOM Breakpoints »

Filter :hov .cls + ↻

```
element.style {
}
#ac-gn-viewport-emitter { ac-globalna...built.css:1
  overflow: hidden;
  position: absolute;
  top: 0;
  left: 0;
  width: 0;
  height: 0;
  visibility: hidden;
  z-index: -1;
}
```

Google

google.com

Gmail Billeder Log ind

# Google

Google-søgning Jeg prøver lykken

Google er tilgængelig på: Føroyskt

Danmark

CO2-neutral siden 2007

Om Annoncering Erhverv Sådan fungerer Google Søgning Privatliv Vilkår Indstillinger

Elements Console ↗ 1 ↘ 1 ⚙ ⋮ X

```
<!DOCTYPE html>
<html itemscope itemtype="http://schema.org/WebPage" lang="da">
  <head>...</head>
  <body jsmodel="hspDDf" jsaction="YUC7He:.CLIENT;vPBs3b:.CLIENT;IVKTfe:.CLIENT;KsNBn:.CLIENT;sbTXNb:.CLIENT;xjhTIf:.CLIENT;02vyse:.CLIENT;Ez7VMc:.CLIENT;qqf0n:.CLIENT;me3ike:.CLIENT;IrNywb:.CLIENT;Z94jBf:.CLIENT;A8708b:.CLIENT;YcfJ:.CLIENT;A6SDQe:.CLIENT;LjVEJd:.CLIENT;VM8bg:.CLIENT;hWT9Jb:.CLIENT;wCulWe:.CLIENT;NTJodf:.CLIENT;szjOR:.CLIENT;PY1zjf:.CLIENT;wnJTPd:.CLIENT;JL9QDc:.CLIENT;kWlxhc:.CLIENT;qGMTIf:.CLIENT">
    <style data-iml="1634195875072">...</style>
    ... <div class="L3eUgb" data-hveid="1"> flex == $0
      <div class="o3j99 n1xJcf Ne6nSd">...</div> flex
      <div class="o3j99 LLD4me yr19Zb LS80J">...</div> flex
      <div class="o3j99 ikrT4e om7nvf">...</div>
      <div class="o3j99 qarstb">...</div>
      <div class="o3j99 c93Gbe">...</div>
    </div>
    <div class="Fgvgjc">
      <style data-iml="1634195875111">
        .Fgvgjc{height:0;overflow:hidden}</style>
      <div class="gTMtLb fp-nh" id="lb">...</div>
      <div jscontroller="fKZehd" style="display:none" data-u="0" jsdata="C4mkuf;_;AzQv+I" jsaction="rcuQ6b:npT2md">
      <span style="display:none">...</span>
      <script nonce="4eyH3+1nxzKy0S3HAsRNUA==">...</script>
      <div>...</div>
    </div>
  html body div.L3eUgb
  Styles Computed Layout Event Listeners DOM Breakpoints >
```

Filter :hov .cls + [ ]

```
element.style {
}
.L3eUgb {
  display: flex;
  flex-direction: column;
}
```

HTML Semantic Elements

w3schools.com/html/html5\_semantic\_elements.asp

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# HTML Semantic Elements

◀ Previous Next ▶

Semantic elements = elements with a meaning.

## What are Semantic Elements?

A semantic element clearly describes its meaning to both the browser and the developer.

Examples of **non-semantic** elements: `<div>` and `<span>` - Tells nothing about its content.

Examples of **semantic** elements: `<form>`, `<table>`, and `<article>` - Clearly defines its content.

## Semantic Elements in HTML

Many web sites contain HTML code like: `<div id="nav">` `<div class="header">` `<div id="footer">` to indicate navigation, header, and footer.

In HTML there are some semantic elements that can be used to define different parts of a web page:

- `<article>`
- `<aside>`
- `<details>`
- `<figcaption>`

```
<header>
<nav>
```

Elements Console » 2 2 28

```
... <body> == $0
▶ <div class="w3-bar w3-card-2 notranslate" style="position: relative;z-index: 4;font-size: 18px;background-color: white;color:#282A35;padding-left:12px;padding-right:16px;font-family: 'Source Sans Pro', sans-serif;">...
▶ <div style="display:none;position:absolute;z-index:4;right:52px;height:44px;background-color:#282A35;letter-spacing:norma;" id="googleSearch">...
<div style="display:none;position:absolute;z-index:3;right:111px;height:44px;background-color:#282A35;text-align:right;padding-top:9px;" id="google_translate_element"></div>
<div class="w3-card-2 topnav notranslate" id="topnav" style="position: relative;">...
<div id="myAccordion" class="w3-card-2 w3-center w3-hide-large w3-hide-medium" style="width: 100%; position: absolute; display: none; background-color: rgb(231, 233, 235); padding-top: 0px;">...
<script> </script>
<div class="w3-sidebar w3-collapse" id="sidenav" style="top: 118px; display: none;">...
<div class="w3-main w3-light-grey" id="belowtopnav" style="margin-left: 220px; padding-top: 0px;">
  <div class="w3-row w3-white">
    ::before
    <div class="w3-col l10 m12" id="main">
      <div id="mainLeaderboard" style="overflow:hidden;">...
    </div>
    <h1>...</h1>
    <div class="w3-clear nextprev"> </div>
  </div>
</div>
html body
```

Styles Computed Layout Event Listeners DOM Breakpoints »

Filter :hov .cls +

```
element.style {
}

html, body {
  font-family: Verdana,sans-serif;
  font-size: 15px;
  margin: 0;
  padding: 0;
```

w3schools28.css:27

# <div> tags?

Use semantic elements as much as possible (!)

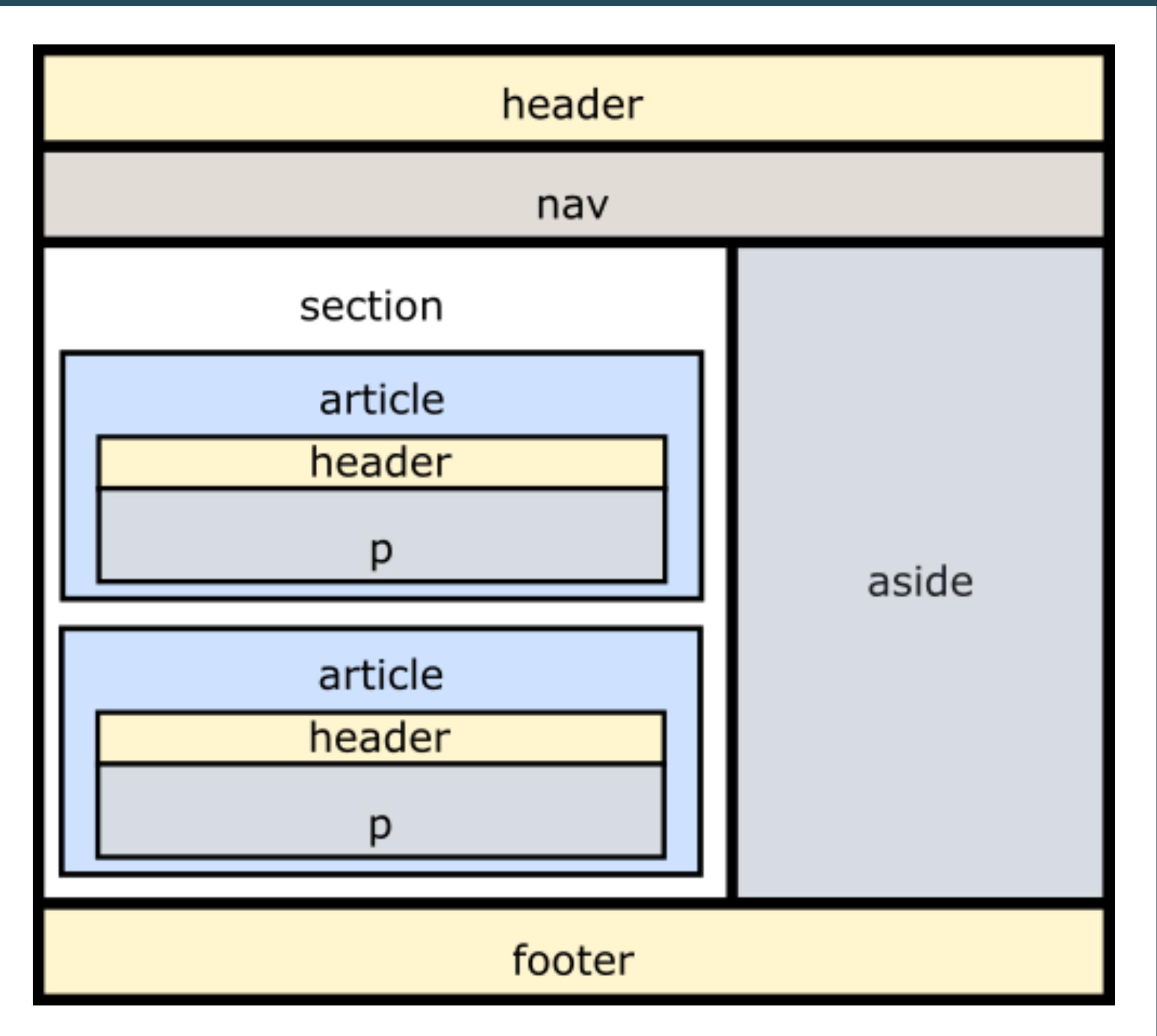
... but don't let it stop you from building

something amazing 

- RACE

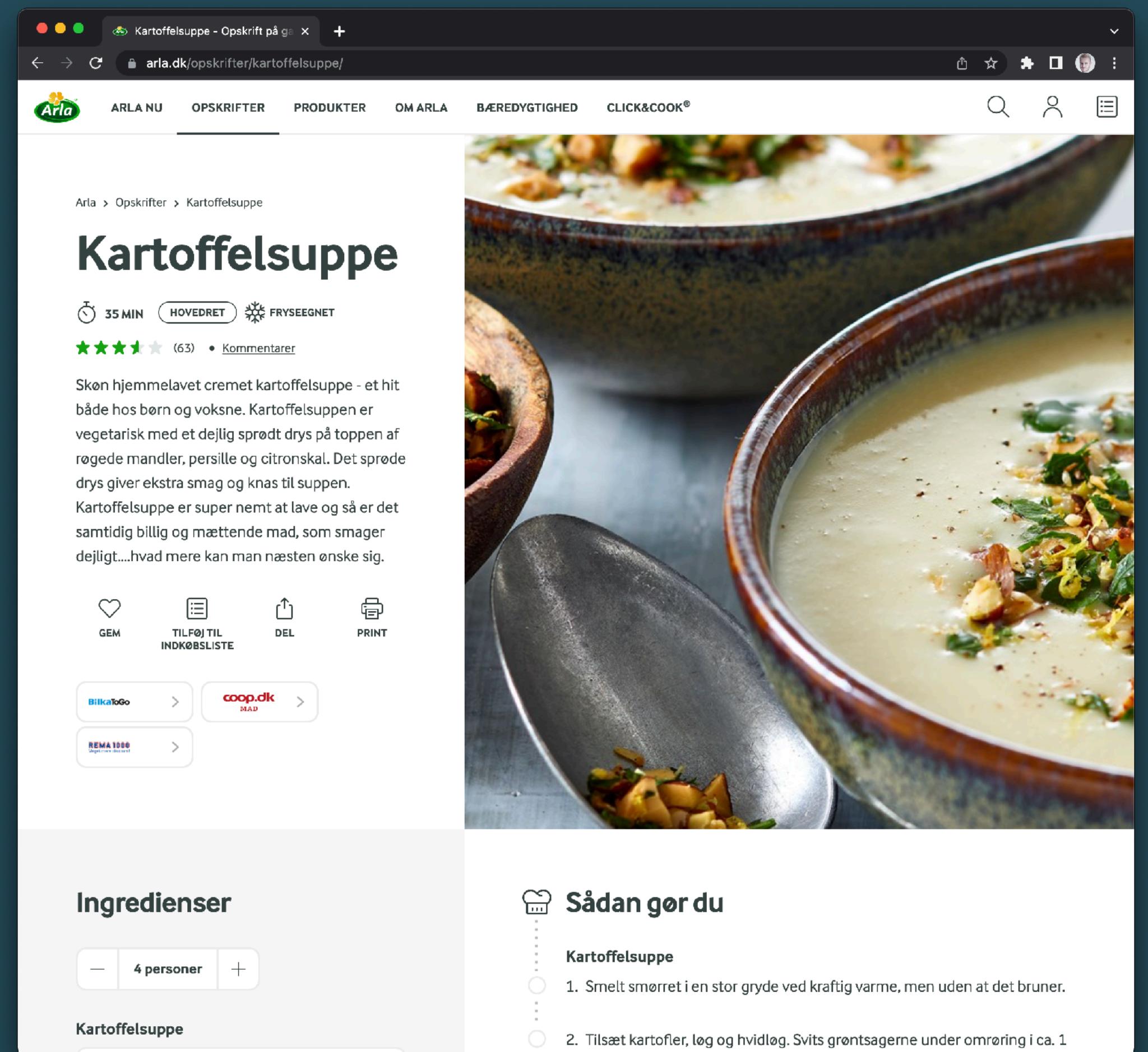
# HTML Semantics Exercise

1. Use the project-template from [GitHub](#).  
Make a copy of the project and paste the project folder into your own local dev folder.
2. Create a structure matching the image to the right. Use HTML Semantic tags.
3. Add content to the structure, like headings, links, text (paragraphs), images and contact info. Explore and use [HTML Element Reference](#) & [HTML Semantics](#).
4. Extra: Add some styling (CSS).



# HTML Recipe Exercise

- Tag udgangspunkt i dit projekt fra foregående opgave (tag eventuelt en kopi)
- Strukturér en opskriftsside med elementer som overskrift(er), beskrivelse(r), billede(r), liste af ingredienser og fremgangsmåde. Du skal bruge HTML elementer og semantiske tags.
- Fokus er struktur i HTML'en - ikke styling og layout.
- Du kan bruge elementer som h1, h2, h3, p, section, article, aside, main, ul, li og mange andre. Gå på opdagelse i "dokumentationen".
- Brug indhold fra websitet til venstre eller en anden opskrift efter eget ønske.



# Semantic HTML & SEO(indexability)

Why tell the browser what the HTML elements represents?

... to improve

# Search Engine Optimization

Tell what your content is about and  
by hierarchy, tell what's important

# Why Semantic HTML?

“Because semantic HTML uses elements for their given purpose, it’s easier for both people and machines to read and understand it.”

“Semantic HTML means using correct HTML elements for their correct purpose as much as possible. Semantic elements are elements with a meaning; if you need a button, use the `<button>` element (and not a `<div>` element).”

### Semantic

```
<button>Report an Error</button>
```

### Non-semantic

```
<div>Report an Error</div>
```

**Examples of non-semantic elements: <div> and <span>**

- Tells nothing about its content.

**Examples of semantic elements: <form>, <table>, and <article>**

- Clearly defines its content.

1. Headings <h1> to <h6>
2. Document Structure
3. Textual Meaning (Bold, Italics, Highlight)
4. Media Type
5. Correlation Tags

5 Ways to Write Semantic HTML and Improve Webpage SEO and Accessibility

[Read more here](#)

# What's Accessibility?

“[...] the practice of making your websites usable by as many people as possible.”

- and machines, programs and devices.

What is accessibility?

“Web accessibility means that people with disabilities can use the Web.”

Why Web Accessibility Is Important and How You Can Accomplish It

- Semantic HTML
- Headings are Important!
- Alternative Text
- HTML Language Type (en, da, etc.)
- Clear written language
- Show the user this is a link or a clickable element
- ARIA - a set of roles and attributes to make the content more accessible

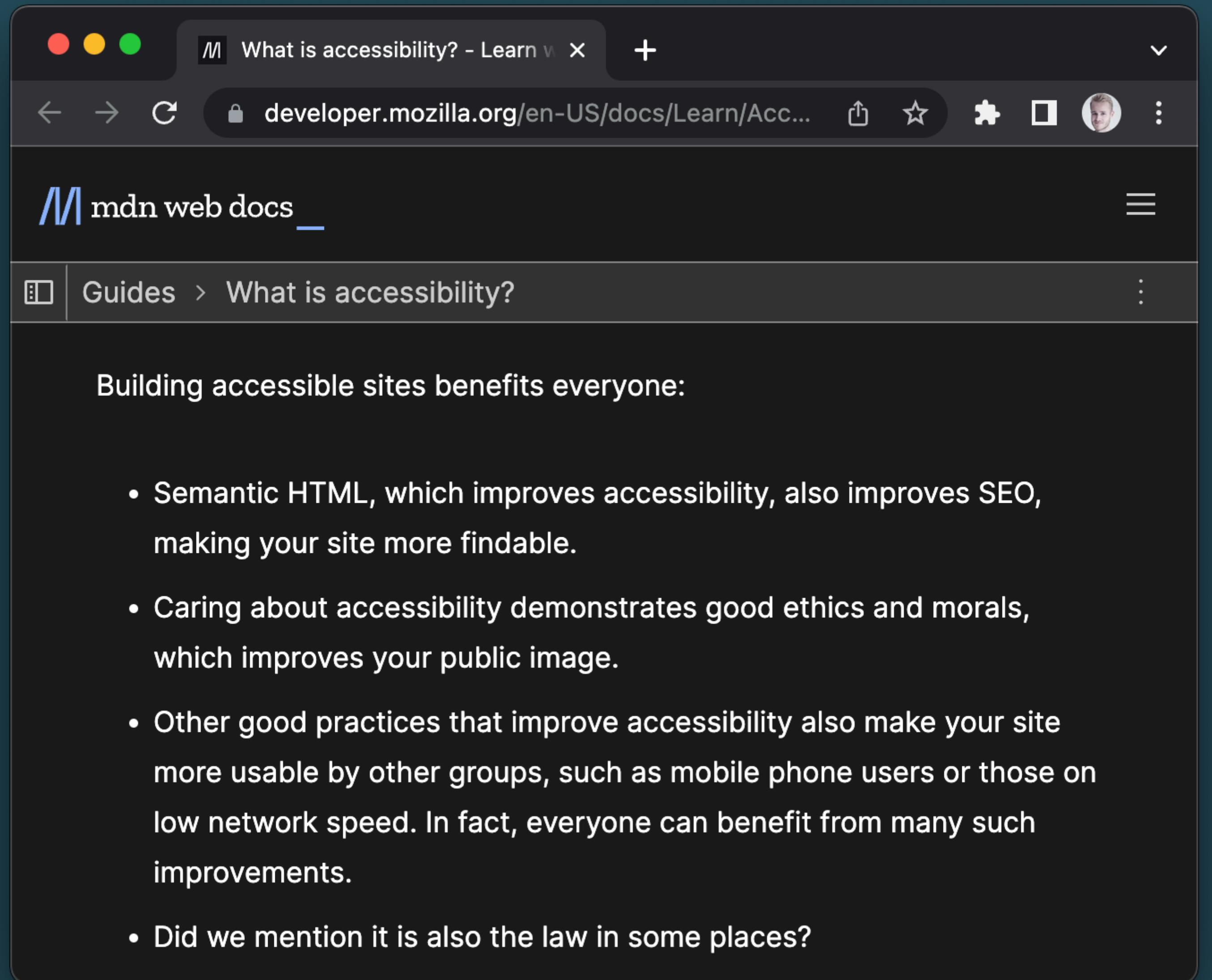
[HTML Accessibility - W3Schools](#)

[HTML: A good basis for accessibility](#)

[Accessibility and HTML](#)

[ARIA](#)

# The benefits of accessibility?



A screenshot of a web browser window displaying the MDN Web Docs page titled "What is accessibility?". The browser has a dark mode interface. The page content starts with a heading "Building accessible sites benefits everyone:" followed by a bulleted list of six items. The list discusses the benefits of accessibility, including improved SEO, good ethics, user usability, and legal requirements.

What is accessibility?

MDN Web Docs

Guides > What is accessibility?

Building accessible sites benefits everyone:

- Semantic HTML, which improves accessibility, also improves SEO, making your site more findable.
- Caring about accessibility demonstrates good ethics and morals, which improves your public image.
- Other good practices that improve accessibility also make your site more usable by other groups, such as mobile phone users or those on low network speed. In fact, everyone can benefit from many such improvements.
- Did we mention it is also the law in some places?

# Lighthouse in Chrome

The image shows a screenshot of a web browser displaying the KEA - Københavns Erhvervsakademি website. The main heading on the page is "VIL DU STARTE PÅ EN UDDANNELSE TIL JANUAR?". Below it is a large button labeled "→ SØG IND NU". On the left side of the page, there are three buttons: "FÅ HJÆLP TIL AT VÆLGE UDDANNELSE", "SÅDAN ANSØGER DU", and "FIND SVAR I VORES FAQ". On the right side, there is a section titled "FÅ 10.000 TIL DIN EFTERUDDANNELSE" with a button "→ LÆS HVORDAN PÅ KEA.DK/EFTERUDDANNELSER". A woman is sitting on the floor in front of a pink background.

The browser's developer tools are open, showing the Lighthouse performance audit results for the page. The overall score is 79. The audit results are categorized into five sections: Performance (79), Accessibility (89), Best Practices (67), SEO (82), and PWA (PWA). The Performance section details the following metrics:

Metric	Value
First Contentful Paint	0.7 s
Speed Index	1.8 s
Largest Contentful Paint	3.0 s
Time to Interactive	1.8 s
Total Blocking Time	0 ms
Cumulative Layout Shift	0.055

Below the metrics, there are buttons for "View Original Trace" and "View Treemap".

# Git, GitHub & GitHub Desktop

Version Control, Collaboration & how to manage  
your code projects

# Git

VERSION CONTROL - SOFTWARE

A system that tracks all changes in your code

# GitHub

CLOUD-BASED HOSTING SERVICE

- The interface that uses git and helps people
- like you and me collaborate on projects

# GitHub Desktop

AN APPLICATION ON YOUR COMPUTER

A GUI to manage your project with Git  
and GitHub

# Git



Git is installed and maintained on your local system (rather than in the cloud)



First developed in 2005

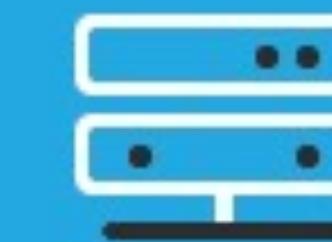


One thing that really sets Git apart is its branching model

Git is a high quality version control system

vs.

# GitHub



GitHub is designed as a Git repository hosting service

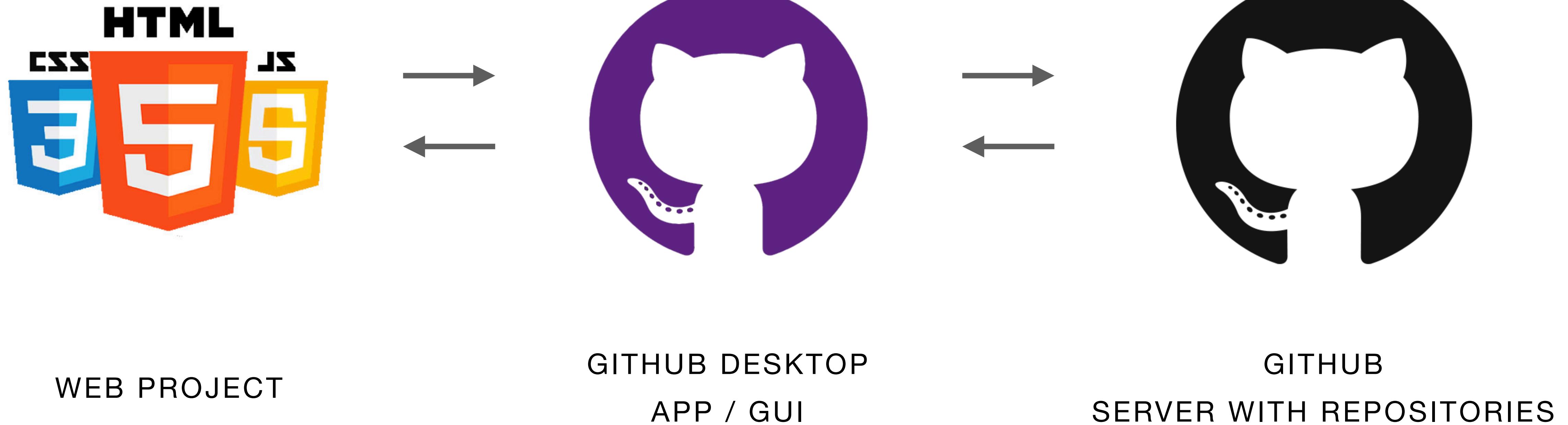


You can share your code with others, giving them the power to make revisions or edits



GitHub is a cloud-based hosting service

# Git



# Performance is about...

- Load time of your website
- Is your site usable while loading resources? (Lazy loading)
- Smoothness and interactivity
- Does your site seem fast to the user? (Perceived performance)
- Measuring performance

Reduce and minimise size (ex images),  
loading and response time

# Lighthouse in Chrome

The image shows a screenshot of a web browser displaying the KEA - Københavns Erhvervsakademি website. The main heading on the page is "VIL DU STARTE PÅ EN UDDANNELSE TIL JANUAR?". Below it is a large button labeled "→ SØG IND NU". The page also features several other buttons: "FÅ HJÆLP TIL AT VÆLGE UDDANNELSE", "SÅDAN ANSØGER DU", and "FIND SVAR I VORES FAQ". To the right, there is a section titled "FÅ 10.000 TIL DIN EFTERUDDANNELSE" with a button "→ LÆS HVORDAN PÅ KEA.DK/EFTERUDDANNELSER" and a small image of a woman sitting cross-legged.

On the right side of the image, the Lighthouse performance audit results are displayed. The overall score is 79. The audit results are categorized into five sections: Performance (79), Accessibility (89), Best Practices (67), SEO (82), and PWA (PWA). The Performance section details the following metrics:

Metric	Value
First Contentful Paint	0.7 s
Speed Index	1.8 s
Largest Contentful Paint	3.0 s
Time to Interactive	1.8 s
Total Blocking Time	0 ms
Cumulative Layout Shift	0.055

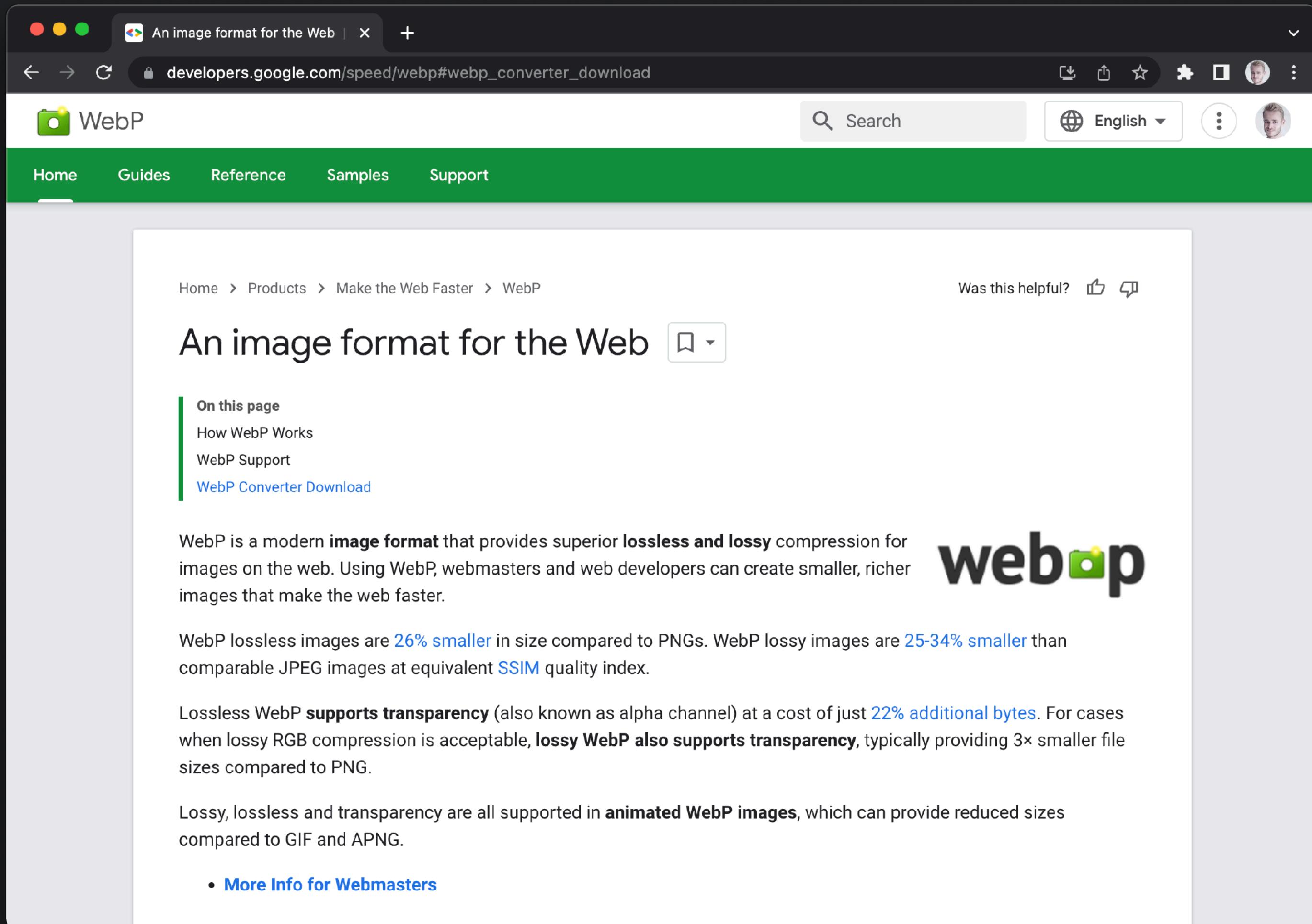
Below the metrics, there are links to "View Original Trace" and "View Treemap".

# Not bragging



The image shows a split-screen view of a web browser. On the left is the homepage of [cederdorff.com](https://cederdorff.com), featuring a large portrait of a man wearing a black fedora and a dark turtleneck. Below the photo, the text "I'M A |" is followed by "WEB APP DEVELOPER | SENIOR LECTURER" and social media icons for Instagram, LinkedIn, and Facebook. On the right is the Lighthouse performance audit results page for the same URL. The audit summary shows scores of 95 for Performance, 94 for Accessibility, 100 for Best Practices, 100 for SEO, and a PWA badge. The "Performance" section details metrics: First Contentful Paint (0.6s), Speed Index (0.8s), Largest Contentful Paint (1.5s), Time to Interactive (0.6s), Total Blocking Time (0ms), and Cumulative Layout Shift (0.003). A small thumbnail of the homepage is shown next to the performance summary.

# Images, sizes & formats



The screenshot shows a web browser window displaying the "An image format for the Web" page from the Google Developers website. The URL in the address bar is [https://developers.google.com/speed/webp#webp\\_converter\\_download](https://developers.google.com/speed/webp#webp_converter_download). The page has a green header with the "WebP" logo and navigation links for Home, Guides, Reference, Samples, and Support. The main content area includes a breadcrumb trail (Home > Products > Make the Web Faster > WebP), a "Was this helpful?" feedback section, and a large heading "An image format for the Web". Below the heading, there's a sidebar titled "On this page" with links to "How WebP Works", "WebP Support", and "WebP Converter Download". The main text explains that WebP is a modern image format providing superior lossless and lossy compression. It highlights that lossless images are 26% smaller than PNGs and lossy images are 25-34% smaller than comparable JPEGs. It also notes that lossless WebP supports transparency at a cost of 22% additional bytes, while lossy WebP also supports transparency. The text concludes by mentioning animated WebP images. At the bottom, there's a link to "More Info for Webmasters". To the right of the text, the "webp" logo is displayed.

<https://developers.google.com/speed/webp>

# .webp

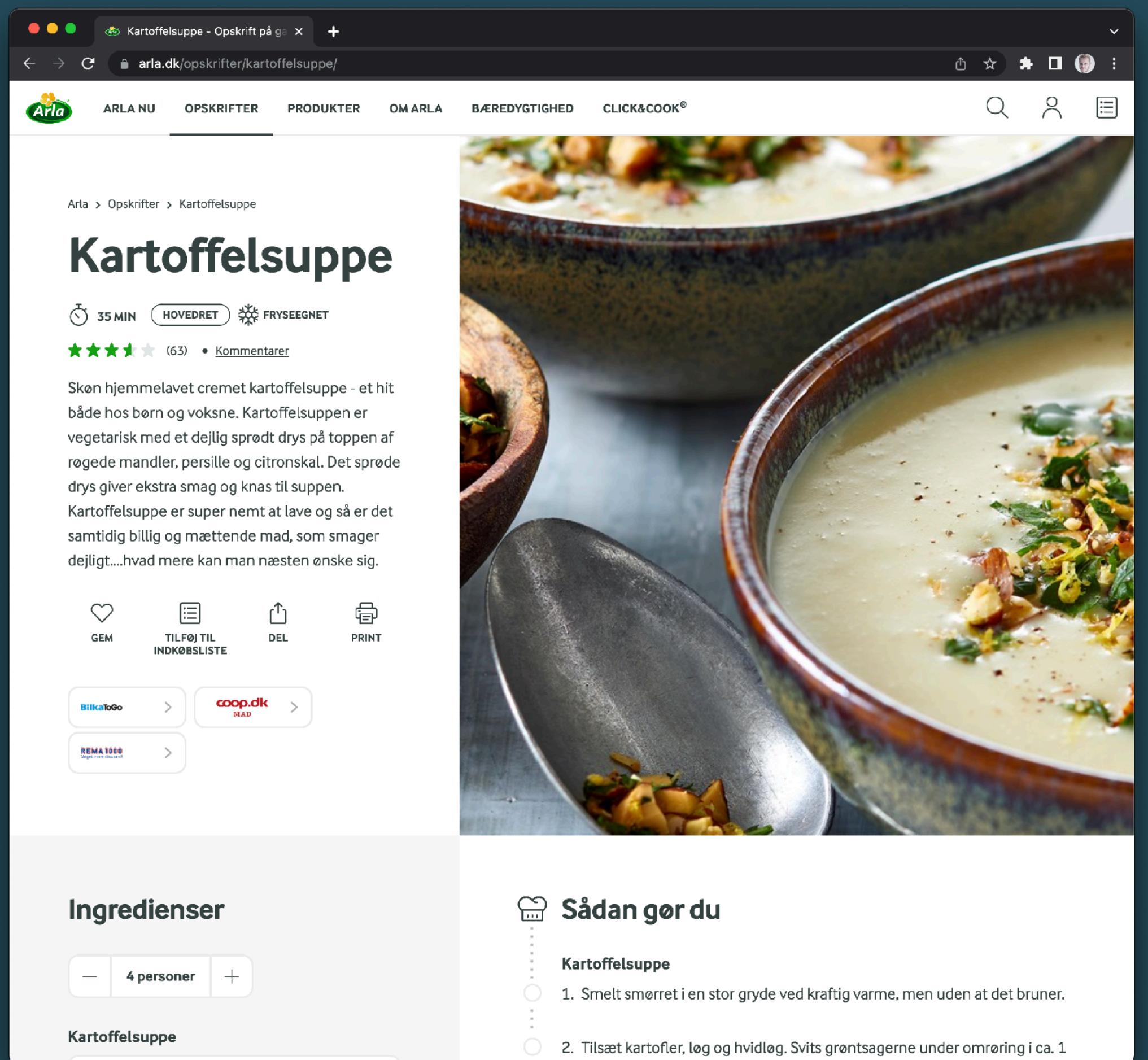
The screenshot shows a web browser window with the title "Rasmus Cederdorff | Web App" and the URL "cederdorff.com". The main content area displays a section titled "CLIENTS" with a sub-section for "HOUSE OF VINCENT" featuring a "WEBSITE + WEBSHOP". Below this, there is a paragraph about the website's implementation and a "GO TO WEBSITE AND WEBSHOP >" button. To the right of the main content is the "Network" tab of the developer tools, which shows a timeline and a table of network requests. The table lists 11 requests, all of which are successful (Status 200) and have a type of "webp". The initiator for all requests is "react-dom...". The "Waterfall" column shows a vertical stack of colored bars corresponding to each request.

Name	Status	Type	Initiator	Size	Time	Waterfall
banner_web.webp	200	webp	react-dom...	(mem...)	0 ms	
rasmus_new.webp	200	webp	react-dom...	(mem...)	0 ms	
logo_inverted.webp	200	webp	react-dom...	(mem...)	0 ms	
header_mobile.6eb9647...	200	webp	main.b9823...	(mem...)	0 ms	
expertise_bg.9998200f8...	200	svg+...	main.b9823...	(mem...)	0 ms	
houseofvincent.webp	200	webp	react-dom...	(mem...)	0 ms	
boutime_web.webp	200	webp	react-dom...	(mem...)	0 ms	
sidewalk.webp	200	webp	react-dom...	(mem...)	0 ms	
thebigfridge_web.webp	200	webp	react-dom...	(mem...)	0 ms	
cphcloud_web.webp	200	webp	react-dom...	(mem...)	0 ms	
karolineshus_web.webp	200	webp	react-dom...	(mem...)	0 ms	

11 / 23 requests | 0 B / 529 kB transferred | 720 kB / 1.8 MB resources | Finish: 86 ms | DOMContentLoaded

# Webp Exercise

1. Find og download et par billeder du kan bruge på din opskriftsside.
2. Sørg for at billeder ikke er større end nødvendigt (opløsning, height og width).
3. Test med Lighthouse. Tag et screenshot af resultatet.
4. Konverter dine billeder til .wepb (brug fx en online converter).
5. Brug webp-filerne i stedet for dine tidligere billedfiler.
6. Test med Lighthouse igen og sammenlign resultatet med tidligere



# Hvordan er “formen”?

Tak for i dag

Webudvikling

**kea**  
KØBENHAVNS ERHVERVSAKADEMI