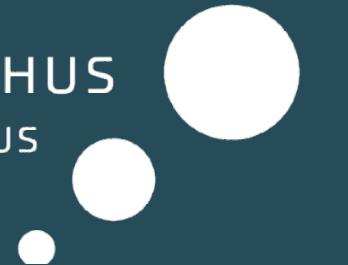


# FUNDAMENTAL PROGRAMMING KNOWLEDGE

FRONTEND DEVELOPER

ERHVERVSAADEMI AARHUS  
BUSINESS ACADEMY AARHUS





# AGENDA

FORMÅL

HVAD SIGER “DE”?

3. SEMESTER - HVOR ER VI?

MIT TAKE PÅ VARIABLER,  
OBJEKTER, ARRAYS & TOOLS

(WEB APP)

# BASAL PROGRAMMERINGSFORSTÅELSE

## FORVENTNINGSAFSTEMNING

## FOKUS

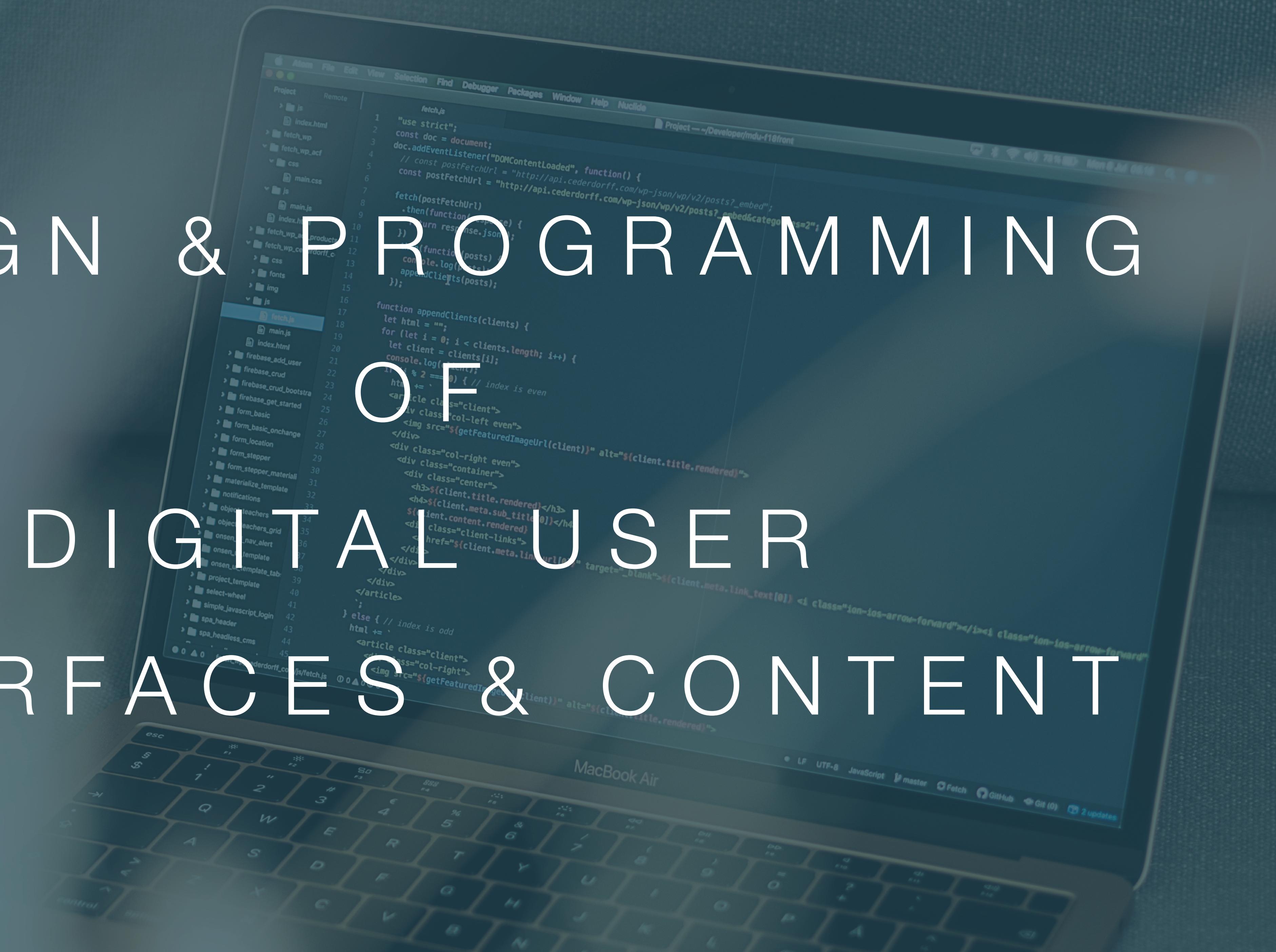
## FORMÅL



# DESIGN & PROGRAMMING OF DIGITAL USER INTERFACES & CONTENT



The background image shows a dark-themed code editor window. On the left, a file tree lists various files and folders such as 'index.html', 'fetch.js', 'main.js', 'firebase\_add\_user', 'firebase\_crud', 'firebase\_crud\_bootstrap', 'firebase\_get\_started', 'form\_basic', 'form\_basic\_onchange', 'form\_location', 'form\_stepper', 'form\_stepper\_material', 'materialize\_template', 'notifications', 'object\_teachers', 'object\_teachers\_grid', 'onsen\_alert', 'onsen\_alert\_template', 'onsen\_alert\_template\_tab', 'project\_template', 'select-wheel', 'simple\_javascript\_login', 'spa\_header', and 'spa\_headless\_cms'. The main pane displays a snippet of JavaScript code with some parts highlighted in red and blue, indicating syntax highlighting for CSS or JSON-like strings. A large white circle highlights the letter 'O' in the word 'OF'.



javascript-starter - CodeSandbox

← → ⌂ 🔒 codesandbox.io/s/javascript-starter-brg12?file=/app.js

File Edit Selection View Go Help

Drafts / javascript-starter

Browser Tests

https://brg12.csb.app/

This is a Heading

This is a paragraph.

Try me

Files

- app.js
- index.html
- package.json
- sandbox.config.json
- styles.css

index.html

```
1 <!DOCTYPE html>
2 <html>
3   <head>
4     <title>Page Title</title>
5     <link rel="stylesheet" href="styles.css" />
6   </head>
7   <body>
8     <h1>This is a Heading</h1>
9     <p>This is a paragraph.</p>
10    <button onclick="tryMe()">Try me</button>
11    <script src="app.js"></script>
12  </body>
13 </html>
```

app.js

```
1 function tryMe() {
2   document.body.style.backgroundColor = "red";
3   document.body.style.color = "white";
4 }
```

styles.css

```
1 body {
2   font-family: Helvetica, Arial, sans-serif;
3   text-align: center;
4 }
5
6 button {
7   font-weight: 200;
8   text-align: center;
9   cursor: pointer;
10  border: none;
11  padding: 12px 15px;
12  font-size: 1em;
```

Console 0 Problems 0

c64598339 Ln 1, Col 1 Spaces: 2 UTF-8 LF JavaScript

<https://codesandbox.io/s/javascript-starter-brg12>

javascript-input - CodeSandbo +

← → C 🔒 codesandbox.io/s/javascript-input-okm7e?file=/app.js

File Edit Selection View Go Help

An embedded page at okm7e.csb.app says  
Hi Rasmus Cederdorff, Welcome to my Web App!

OK

Files index.html x

```
1 <!DOCTYPE html>
2 <html>
3   <head>
4     <title>Page Title</title>
5     <link rel="stylesheet" href="styles.css" />
6   </head>
7   <body>
8     <h1>This is a Heading</h1>
9     <p>This is a paragraph.</p>
10    <input type="text" placeholder="Type your name" id="name" />
11    <button onclick="tryMe()">Try me</button>
12
13    <script src="app.js"></script>
14  </body>
15 </html>
```

index.html x

```
1 function tryMe() {
2   let name = document.getElementById("name").value;
3   alert("Hi " + name + ", Welcome to my Web App!");
4 }
```

Tests https://okm7e.csb.app/

# This is a Heading

This is a paragraph.

Rasmus Cederdorff Try me

Console 0 Problems 1

c64598339

Ln 1, Col 1 Spaces: 2 UTF-8 LF JavaScript

<https://codesandbox.io/s/javascript-input-okm7e>

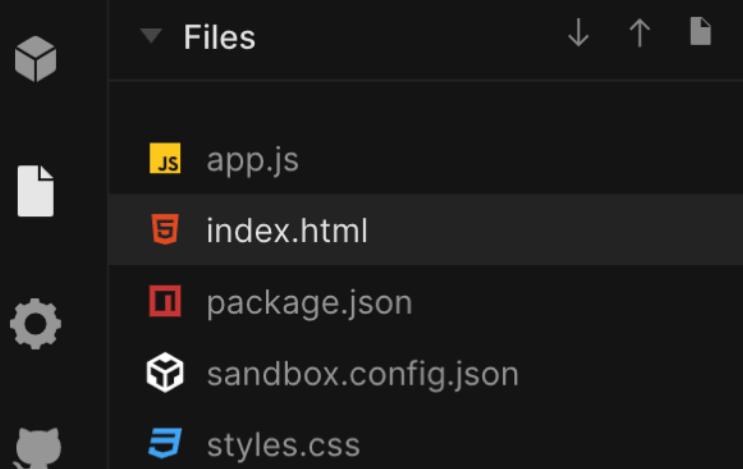


File Edit Selection View Go Help

Drafts / html-css-javascript-my-webpage



Share Fork Create Sandbox



```
<!DOCTYPE html>
<html>
  <head>
    <title>Rasmus Cederdorff</title>
    <link rel="stylesheet" href="styles.css" />
  </head>
  <body>
    <h1>Rasmus Cederdorff</h1>
    <p>Underviser i Frontendudvikling</p>
    <a href="mailto:race@eaaa.dk">race@eaaa.dk</a>
    <a href="https://cederdorff.com">cederdorff.com</a>
    <section id="instagram-feed" class="grid-container"></section>
    <script src="app.js"></script>
  </body>
</html>
```



app.js

```
let username = "cederdorff";

fetch("https://instagram.com/" + username + "/?__a=1")
  .then((response) => response.json())
  .then((data) => {
    let posts = data.graphql.user.edge_owner_to_timeline_media.edges;
    addInstagramFeed(posts);
  });

function addInstagramFeed(posts) {
  for (let post of posts) {
    let imageUrl = post.node.thumbnail_src;
    document.getElementById("instagram-feed").innerHTML +=
      "<article><img src='" + imageUrl + "'></article>";
  }
}
```

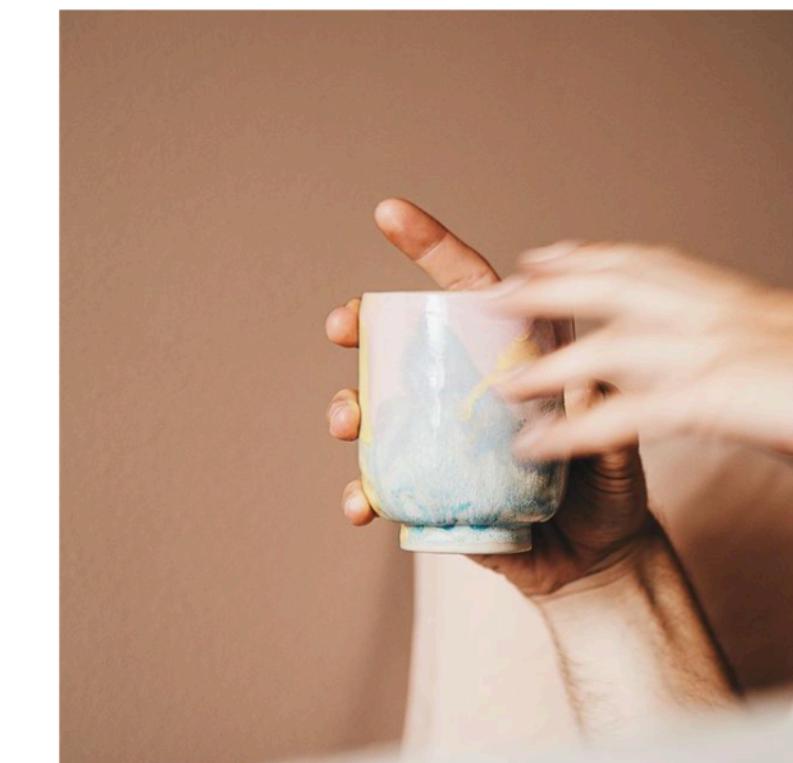
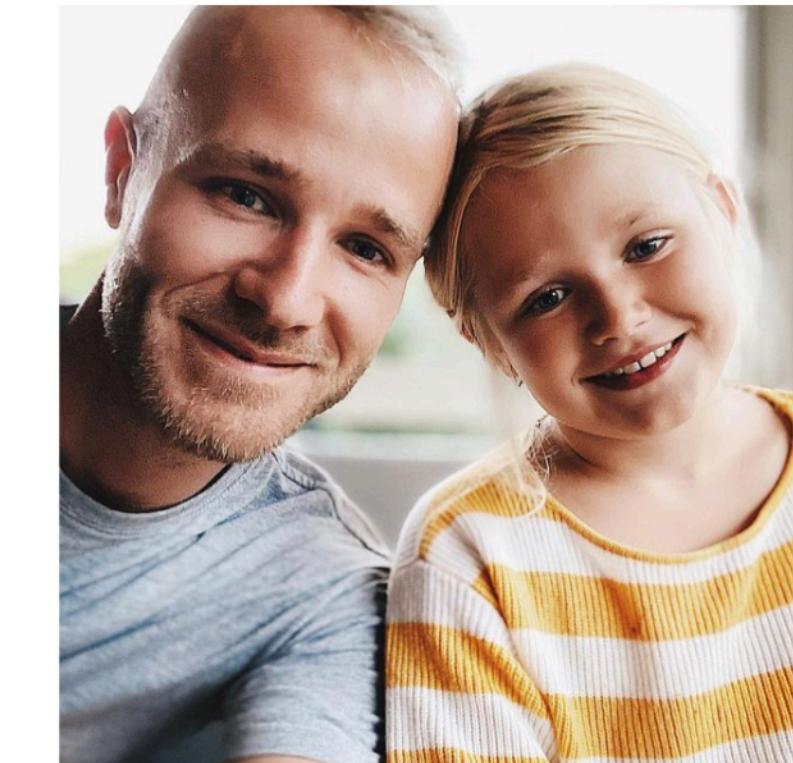
c64598339

https://wyg9w.csb.app/

# Rasmus Cederdorff

Underviser i Frontendudvikling

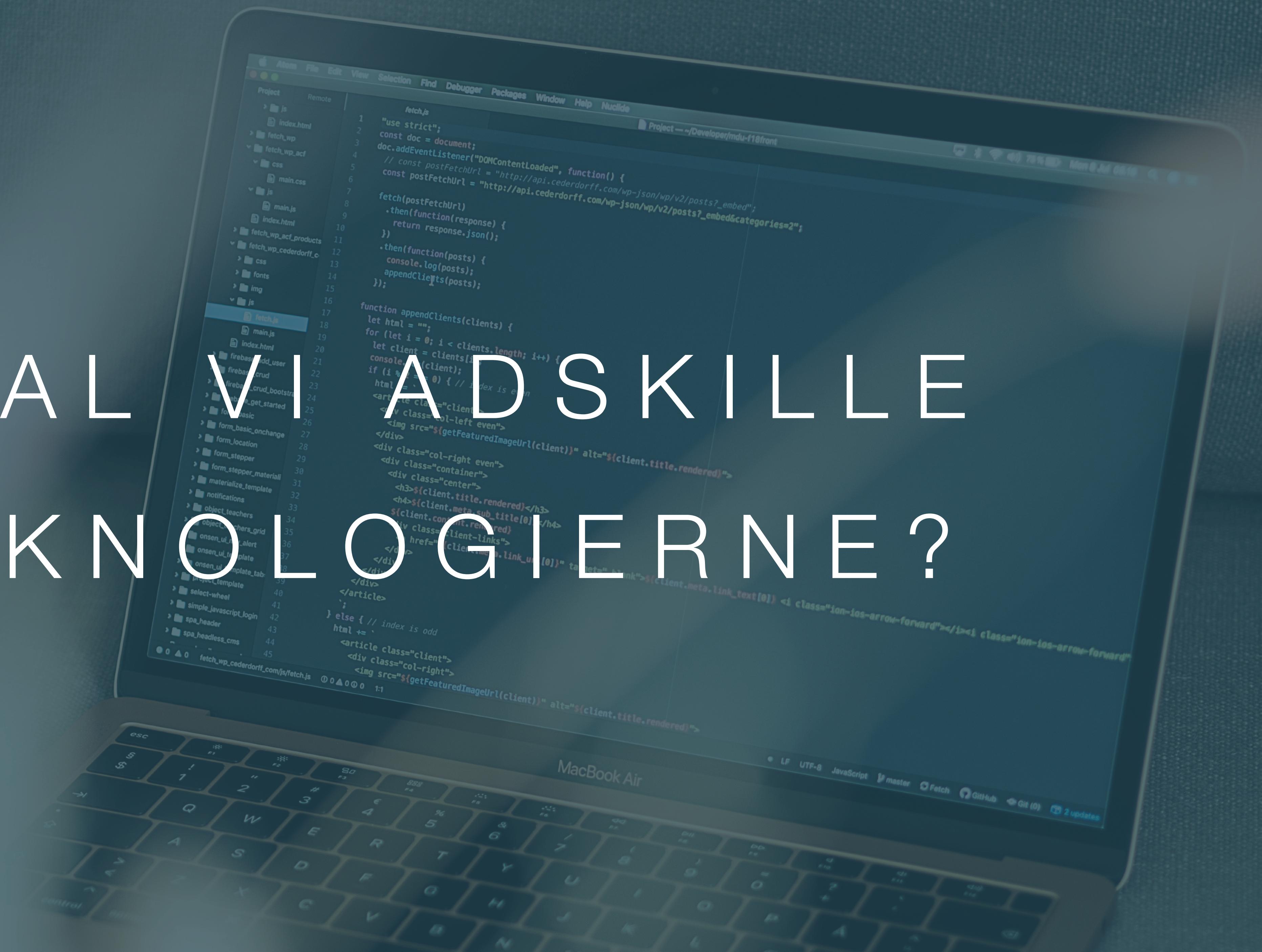
[race@eaaa.dk](mailto:race@eaaa.dk) [cederdorff.com](http://cederdorff.com)



Console 0 Problems 0

Ln 15, Col 8 Spaces: 2 UTF-8 LF HTML

# SKAL VI ADSKILLE TEKNOLOGIERNE?



JEPPE ENGELL  
HK

JAVASCRIPT OG GERNE ET ELLER TO  
FRAMEWORKS

KALDE EN WEBSERVICE OG  
BEHANDLER DATA (JSON)

HTML OG CSS, KOMBINERE  
FORSKELLIGE LAYOUTS SOM FX  
FLEXBOX OG GRID

BRUG AF CLOUDSERVICES VIA  
JAVASCRIPT: FIREBASE ELLER AZURE

PETER ANDERSEN  
NODES

MANIPULERING AF DOM OG DATA (JSON,  
ARRAYS, STRINGS, ETC.)

FORSTÅELSE AF ASYNKRONE KALD, OG  
TILHØRENDE TIMING (ASYNC AWAIT, FETCH,  
THEN, CATCH, FINALLY, ETC.)

BASIC KODE ARKITEKTUR / STRUKTUR. HVORDAN  
DU BEDST STRUKTURER DIN KODEBASE, SÅ DEN  
LETTERE KAN UDVIDES, SKALERES OG  
VEDLIGEHOLDES  
VERSIONSSTYRING, NPM, CSS COMPILERS,  
AUTHENTICATION  
ES6+

CRUD, REST, API, WEBSERVICES

JS FRAMEWORKS. OFTEST BEHØVER DET IKKE AT  
VÆRE DEN MEST EKSTENSIVE ERFARING, BLOT  
MAN HAR EN GRUNDLÆGGENDE FORSTÅELSE  
MED VANILLA JS

MIKKEL ENGHOLM  
CREUNA

GIT

BASIC JAVASCRIPT

CSS PREPROCESSORS

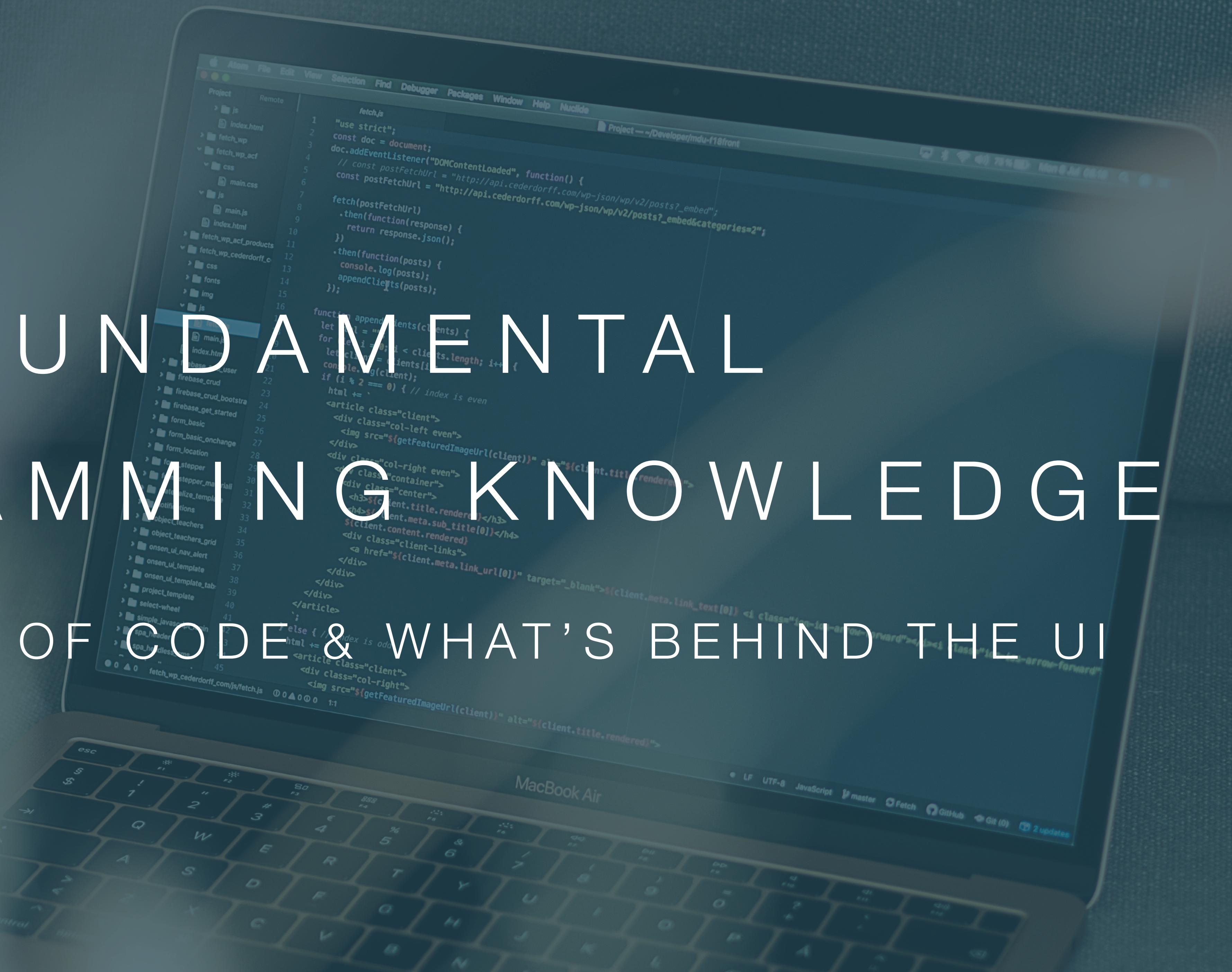
PACKAGE MANAGERS (NPM)

DESIGN SYSTEMS

BROWSERSUPPORT, ACCESSIBILITY OG  
PERFORMANCE

FRAMEWORKS: VUE.JS, STENCILJS

# FUNDAMENTAL PROGRAMMING KNOWLEDGE KNOWLEDGE OF CODE & WHAT'S BEHIND THE UI



# 3RD SEMESTER RECAP

VARIABLES: VAR, LET & CONST

DATATYPES: STRINGS & NUMBERS

DATA STRUCTURES: OBJECTS & ARRAYS

LOOPS, CONDITIONS & IF STATEMENTS

FUNCTIONS, ARGUMENTS & RETURN VALUE

CLIENT SERVER MODEL

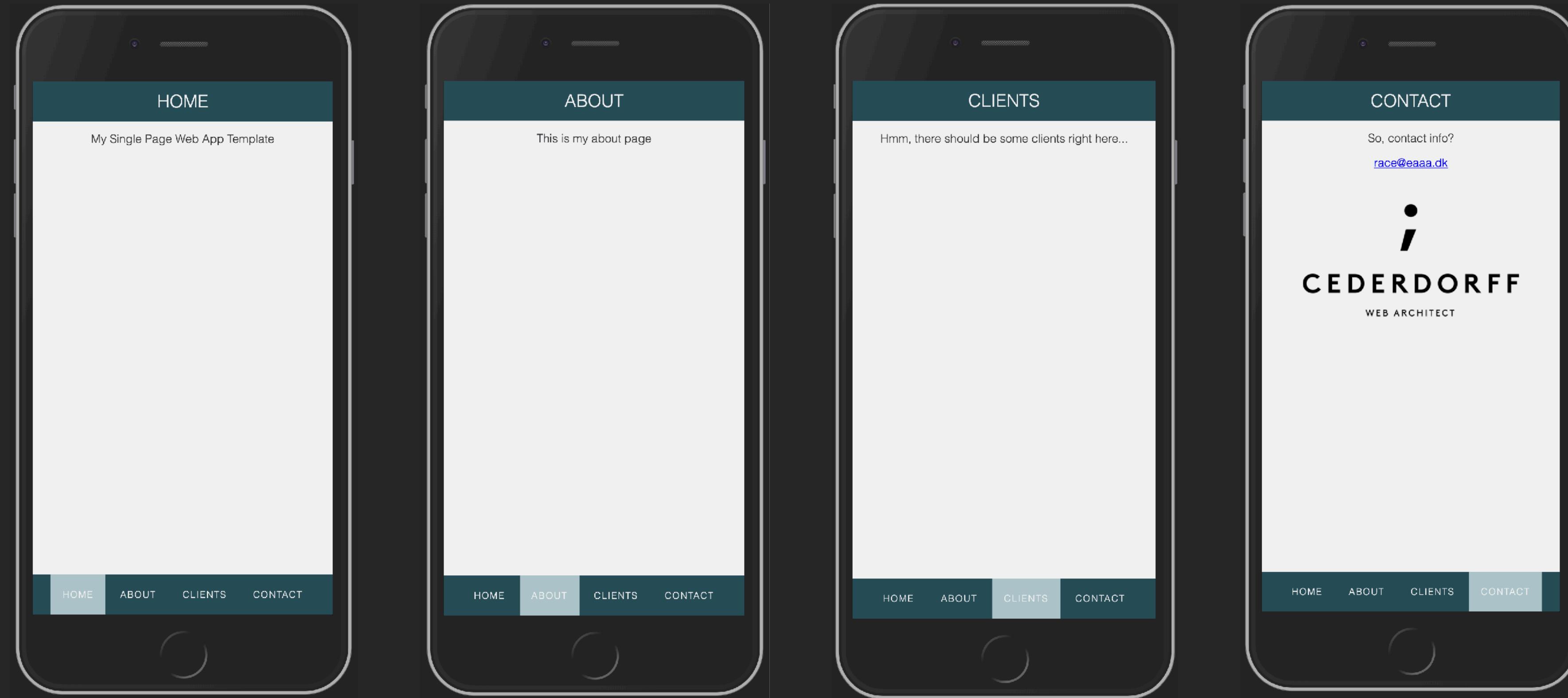
SEPERATION OF CONCENS

HTTP(S), API, JSON & DATA SOURCES

FROM WEBSITE TO WEB APP

SINGLE PAGE APPLICATION

TOOLS: VS CODE, LIVE SERVER EXTENSION & GITHUB DESKTOP



<https://github.com/cederdorff/mdu-e19front/tree/master/spa-template>

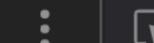
<https://cederdorff.github.io/mdu-e19front/spa-template/>

iPhone 6/7/8 ▾ 375 x 667 100% ▾ Online ▾

## CLIENTS

Hmm, there should be some clients right here...

HOME ABOUT CLIENTS CONTACT



Elements

Console

Sources

Network

Performance

Memory

&gt;



⋮ X

```
<!DOCTYPE html>
<html lang="en">
  <head>...</head>
  <body onhashchange="pageChange()">
    <!-- tabBar navigation -->
    <nav class="tabbar">...</nav>
    <!-- pages -->
    <!-- home page -->
    <section id="home" class="page" style="display: none;">...</section>
    <!-- about page -->
    <section id="about" class="page" style="display: none;">...</section>
    <!-- clients page -->
    ... <section id="clients" class="page" style="display: block;">...</section> == $0
    <!-- contact page -->
    <section id="contact" class="page" style="display: none;">...</section>
    <!-- SPA functionality -->
    <script src="js/spa.js"></script>
    <!-- main js file -->
    <script src="js/main.js"></script>
  </body>
</html>
```

html body section#clients.page

Styles Event Listeners DOM Breakpoints Properties Accessibility

Filter

:hov .cls +

⋮ Console

Default levels ▾

The image shows two smartphones side-by-side, both displaying a dark-themed mobile application interface.

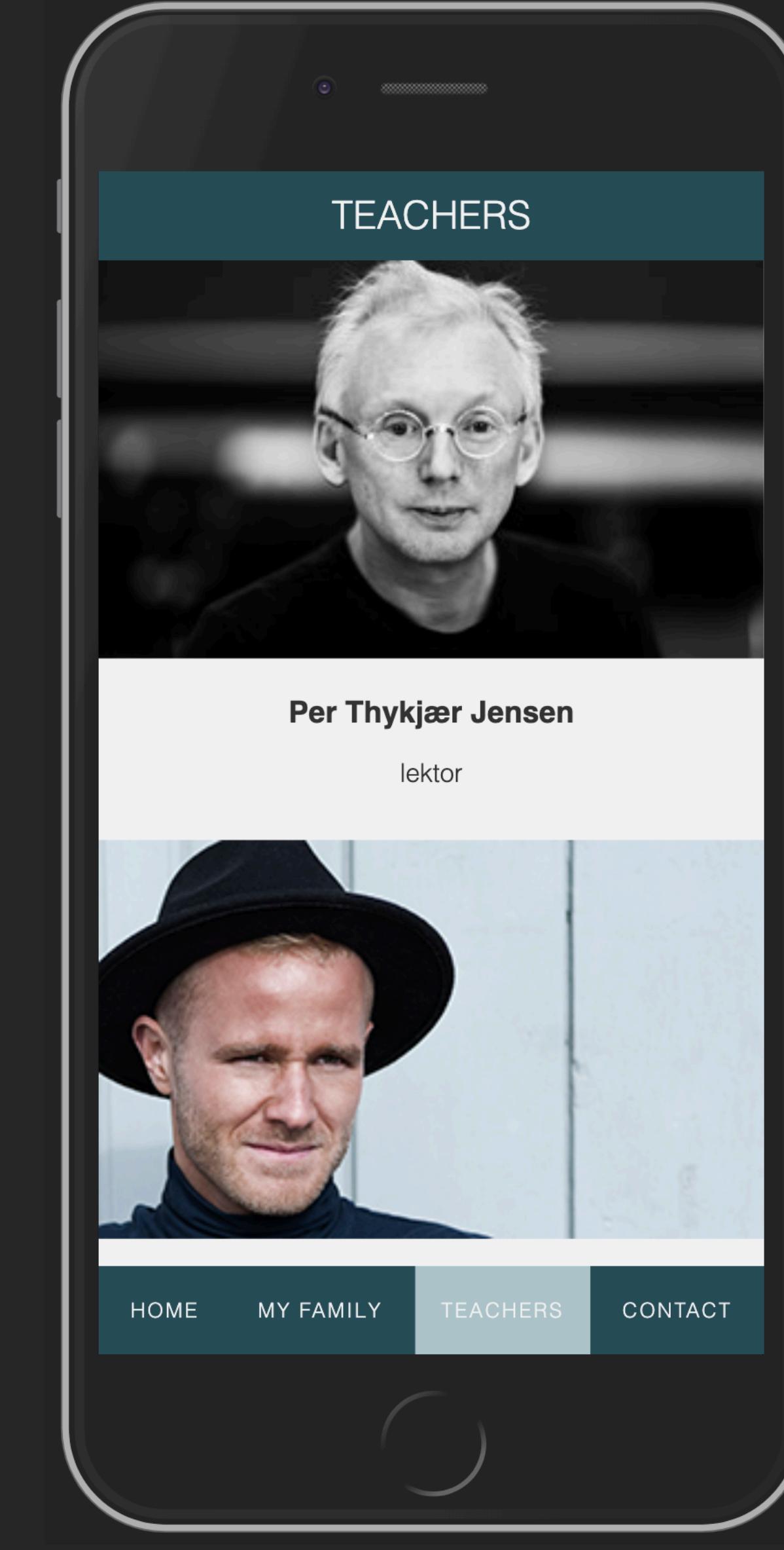
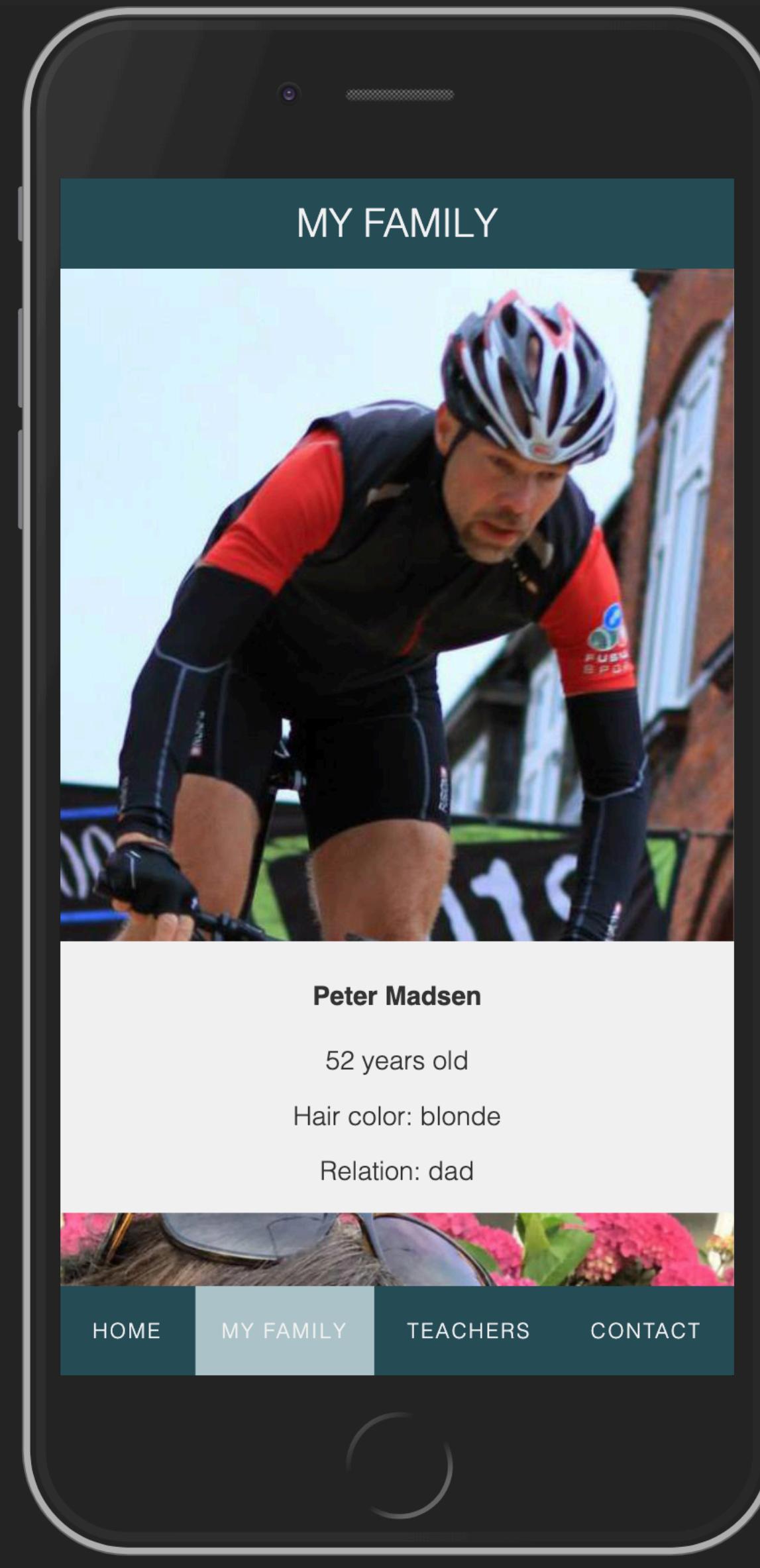
**Left Phone Screen (PRODUCTS View):**

- Header:** PRODUCTS
- Search Bar:** Search
- Product Card:** MacBook Pro 13" by Apple, Price: 11799 kr. (with a small image of the laptop)
- Bottom Navigation:** PRODUCTS (highlighted in light blue), ADD PRODUCT, and a circular navigation icon.

**Right Phone Screen (ADD NEW PRODUCT View):**

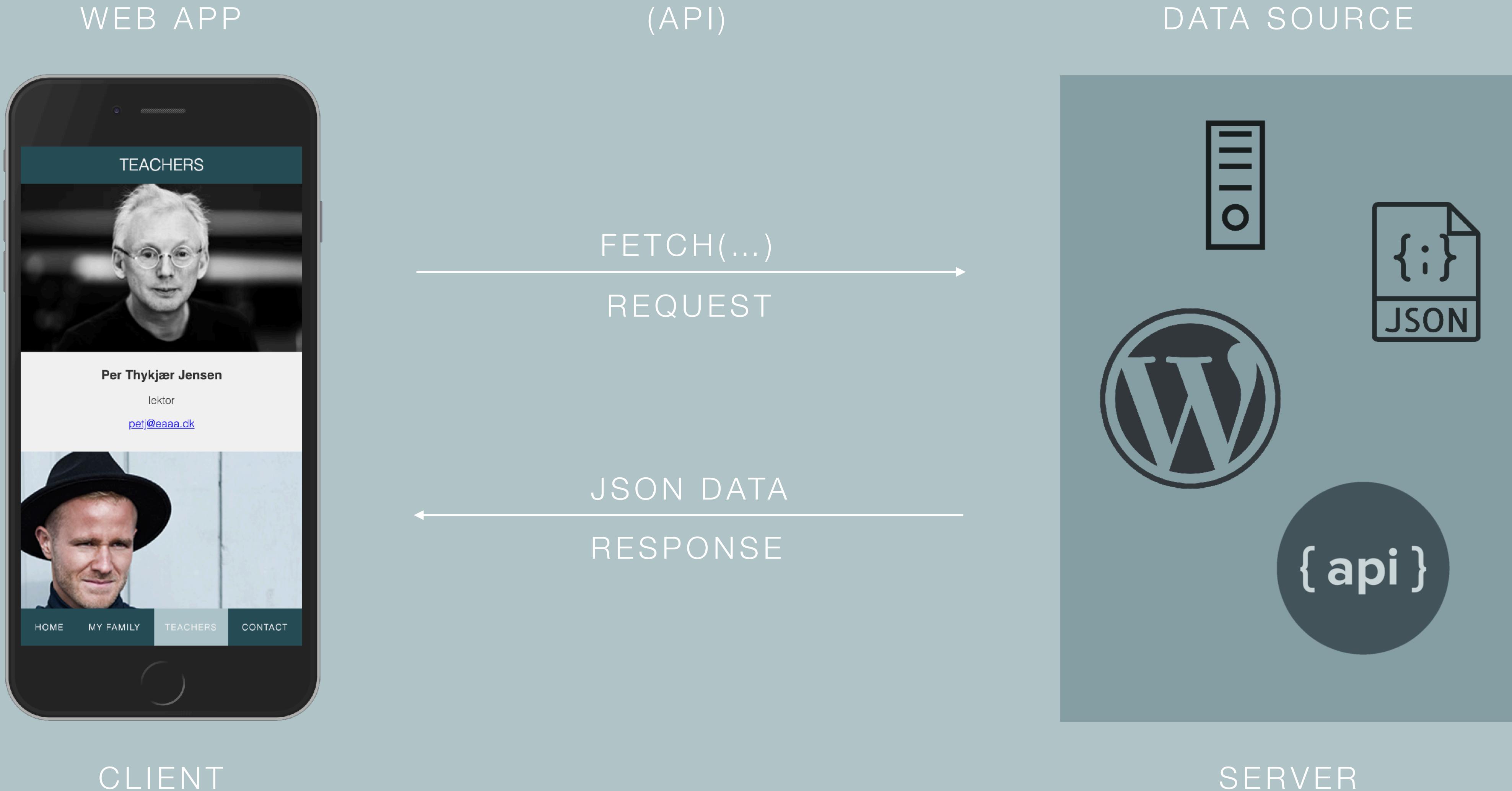
- Header:** ADD NEW PRODUCT
- Form Fields:** Brand, Model, Price, Image URL
- Save Button:** Save (in a dark teal bar)
- Bottom Navigation:** PRODUCTS, ADD PRODUCT, and a circular navigation icon.

spa-products

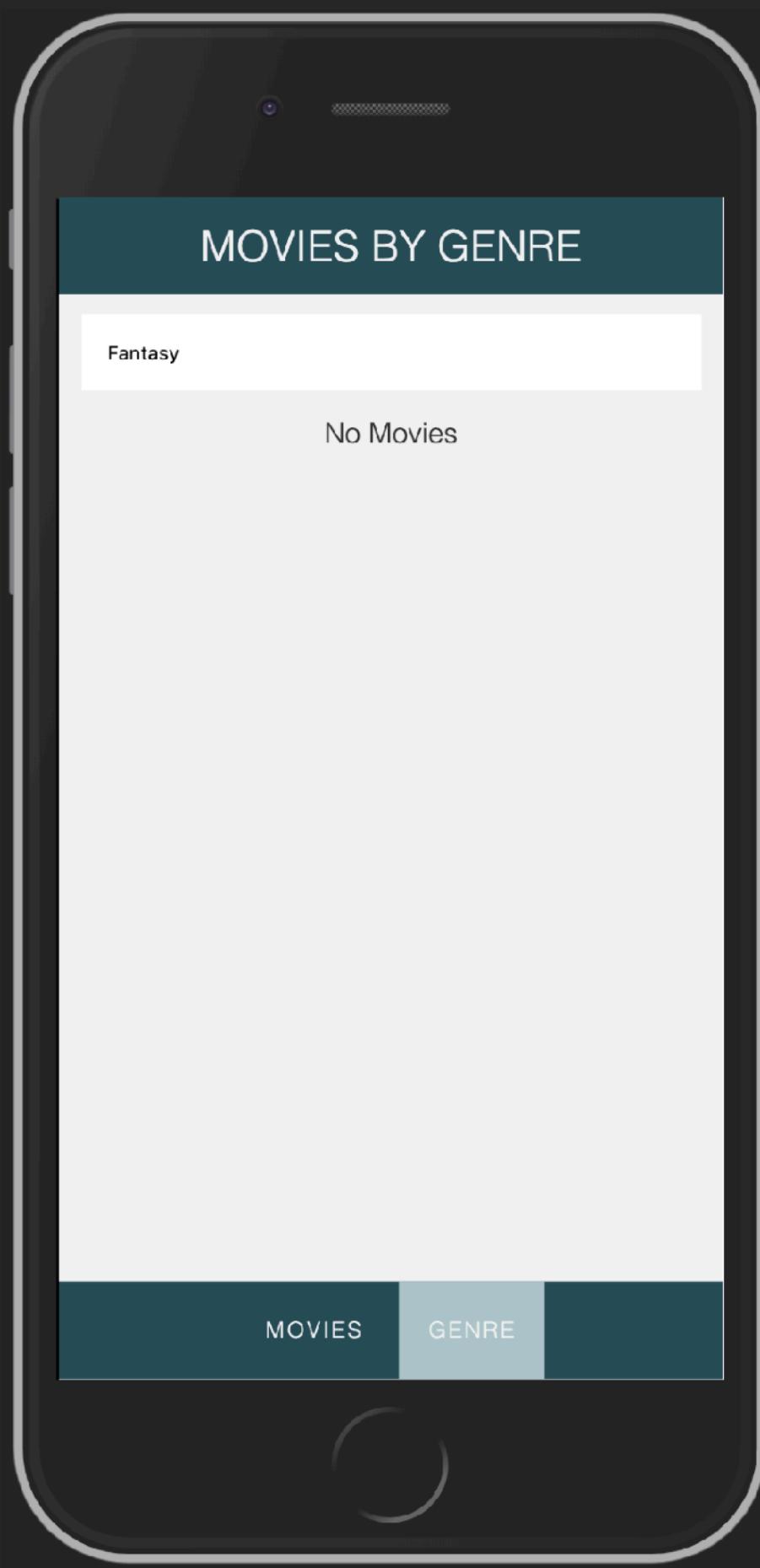
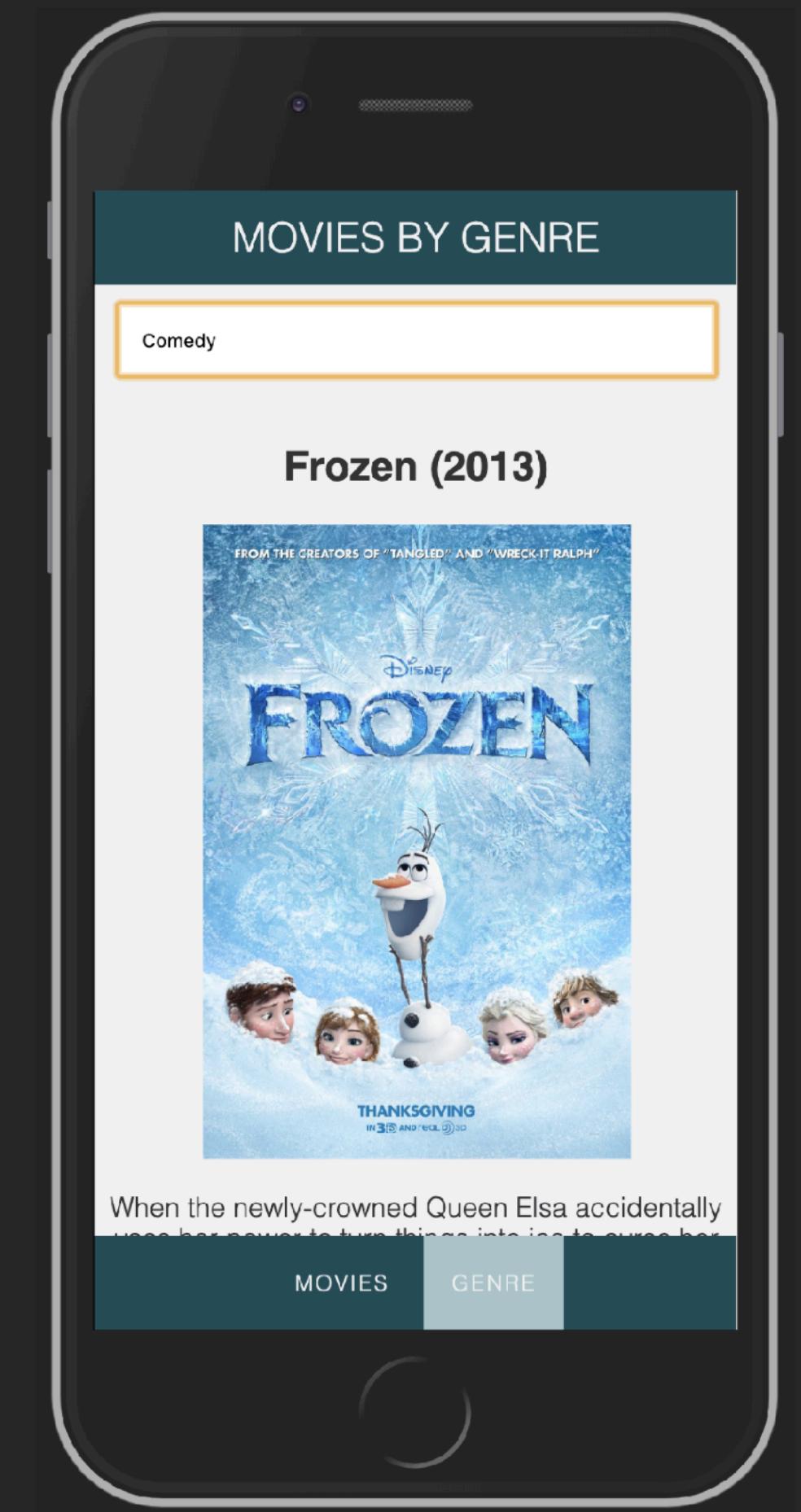
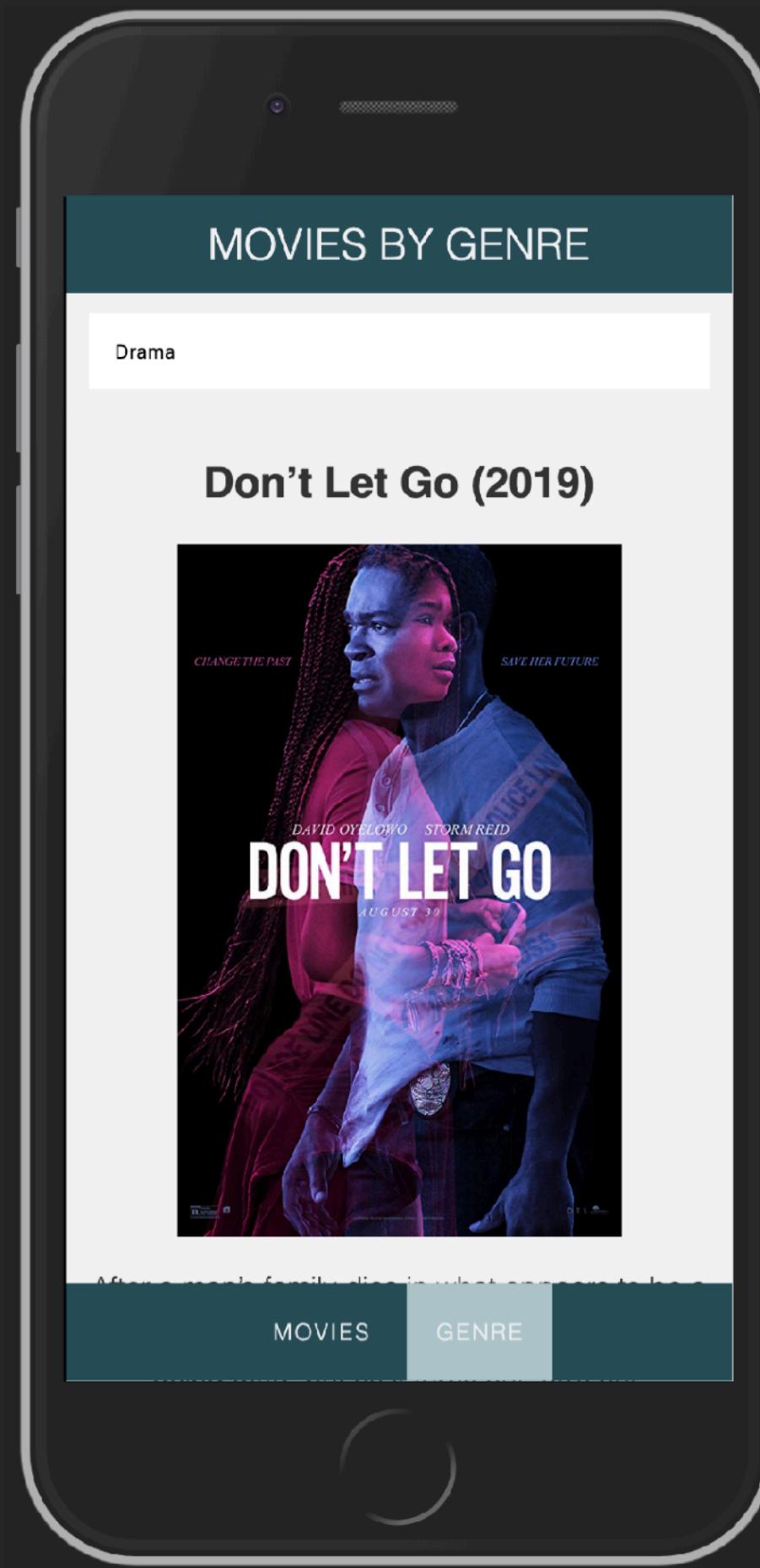
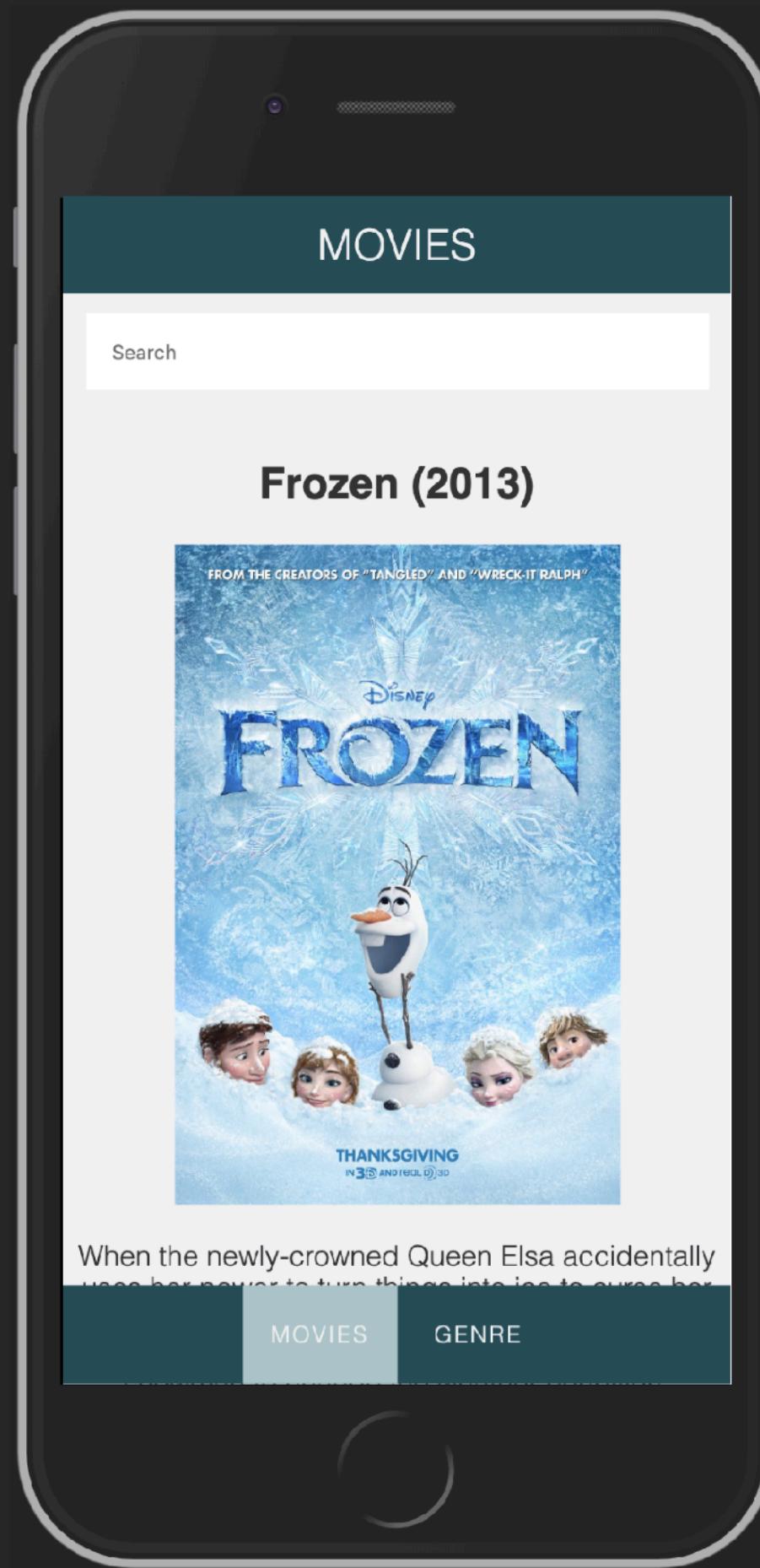


spa-headless-cms-teachers-family-members  
spa-headless-cms-teachers-family-members-es6

# HTTP REQUEST AND RESPONSE



# SPA + HEADLESS CMS



[spa-headless-cms-movies](#)

# VARIABLES

... ARE USED TO STORE DATA IN THE MEMORY

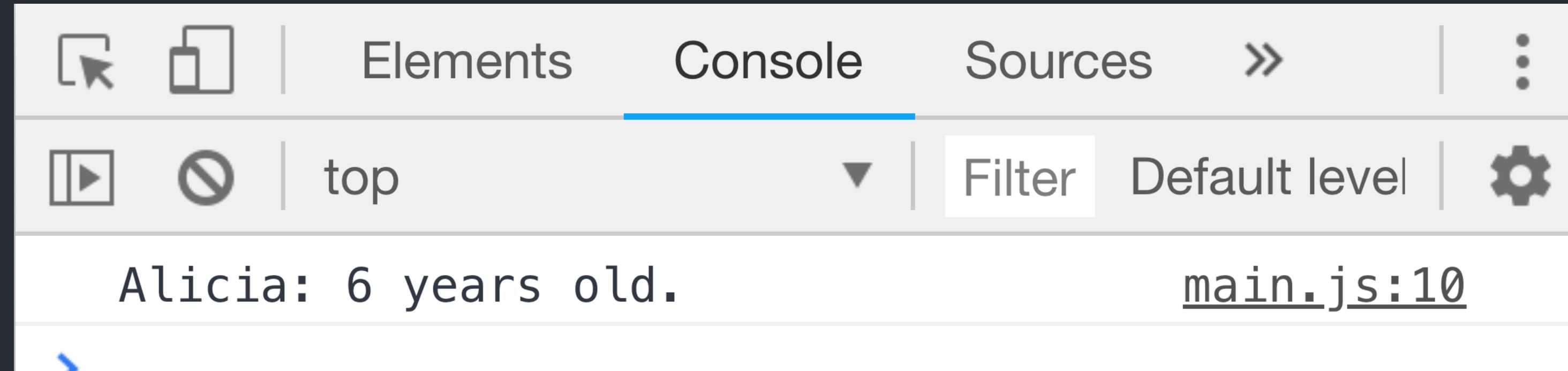
# THE OLD WAY

... STORE DATA IN THE MEMORY

```
var name = "Alicia";
```

```
var age = 6;
```

```
console.log(name + ": " + age + " years old.");
```

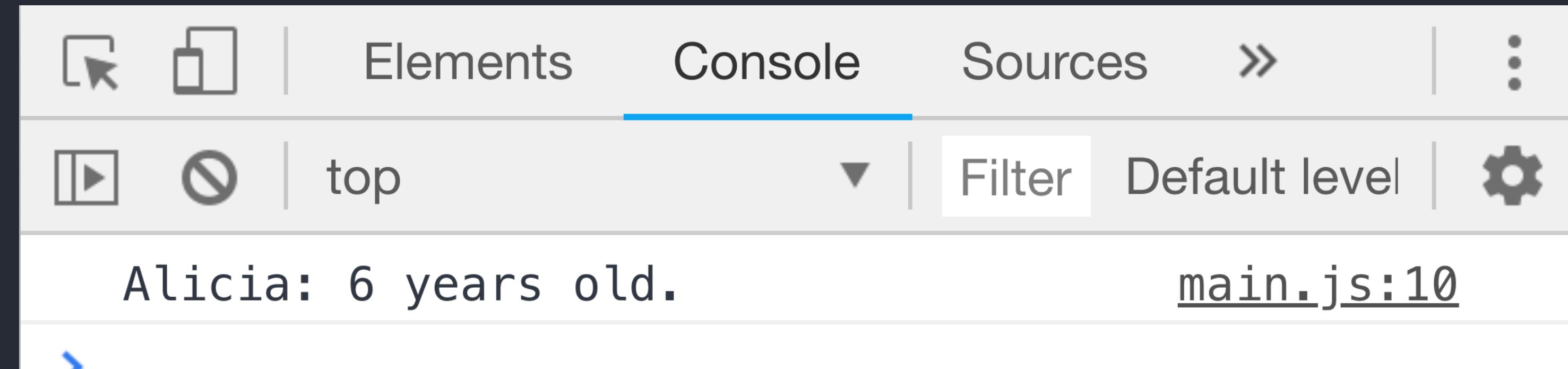


# THE NEW WAY

... STORE DATA IN THE MEMORY

```
let name = "Alicia";
let age = 6;

console.log(name + ": " + age + " years old.");
```

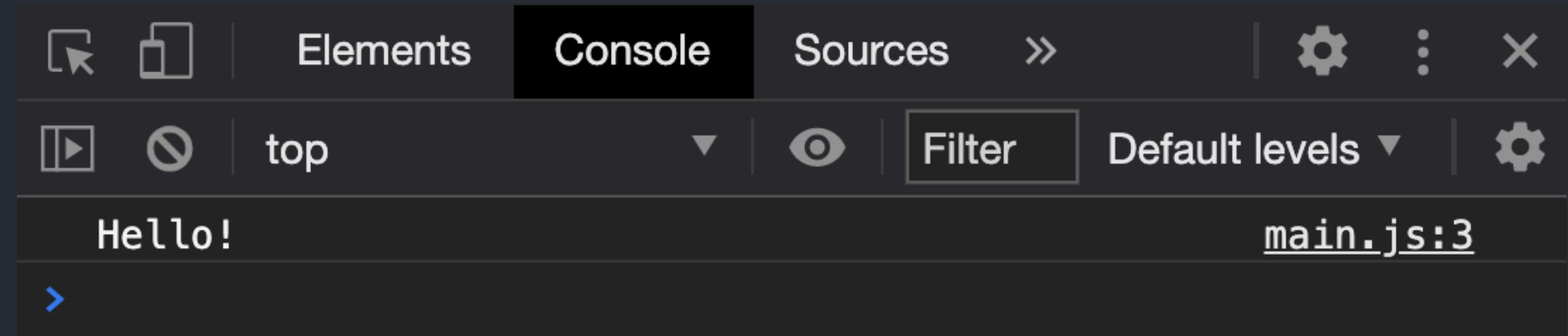


# VARIABLES

... STORE DATA IN THE MEMORY

```
let message = "Hello!";
```

```
console.log(message);
```



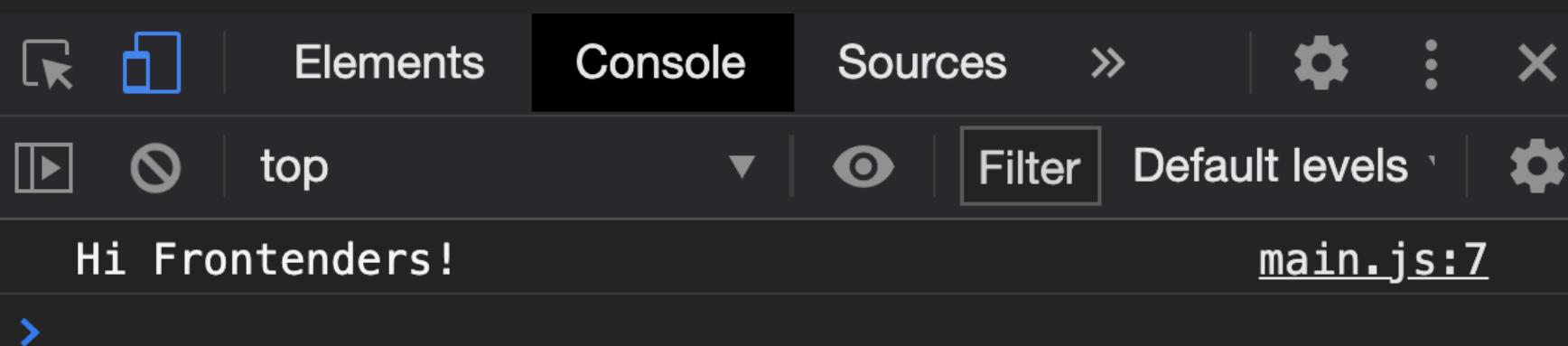
```
// declaring a variable with a value
let message = "Hi Frontenders!"

//accessing the variable and logging it to the console
console.log(message);

// appending the variable (the string) to the DOM element #content
document.querySelector("#content").innerHTML = message;
```

## PROJECT TEMPLATE

Hi Frontenders!



```
// declaring a variable with a value
let message = "Hi Frontenders!"

//accessing the variable and logging it to the console
console.log(message);

// appending the variable (the string) to the DOM element #content
document.querySelector("#content").innerHTML = message;
```

```
<body>
  <header>
    <h1>PROJECT TEMPLATE</h1>
  </header>
  <section id="content"></section>
  <!-- main is file -->
  <script src="js/main.js"></script>
</body>
```

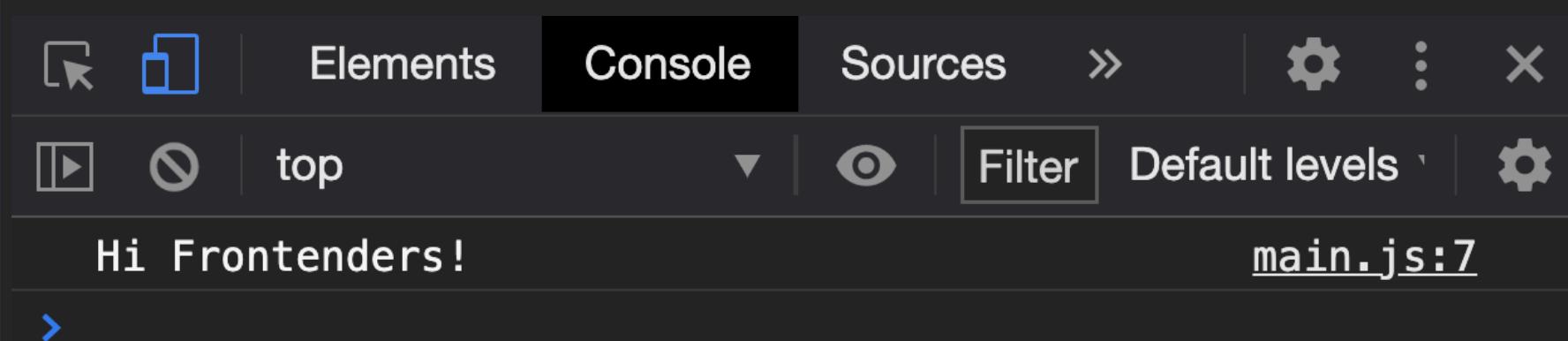


```
// declaring a variable with a value
let message = "Hi Frontenders!"

// accessing the variable and logging it to the console
console.log(message);

// changing the value of the variable
message = "Hello World";

// appending the variable (the string) to the DOM element #content
document.querySelector("#content").innerHTML = message;
```

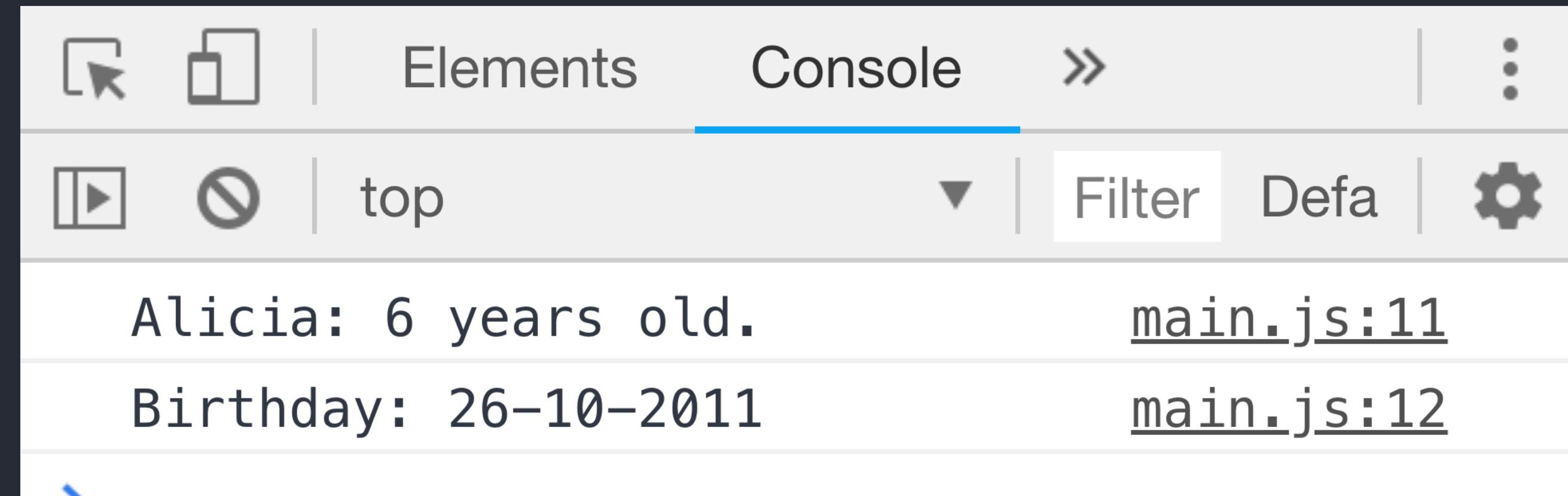


# THE NEW WAY

... STORE DATA IN THE MEMORY

```
let name = "Alicia";
let age = 6;
const birthday = '26-10-2011';

console.log(name + ": " + age + " years old.");
console.log("Birthday: " + birthday);
```



# VAR VS LET

THE DIFFERENCE IS THE SCOPING

VAR IS FUNCTION-WIDE OR GLOBAL SCOPE

LET IS BLOCK SCOPED

VAR TOLERATES REDECLARATION

<https://javascript.info/var>

```
// Example 1
// "var" has no block scope
if (true) {
| var test1 = true; // use "var" instead of "let"
}
console.log(test1); // true, the variable lives after if

// Example 2
if (true) {
| let test2 = true; // use "let"
}
console.log(test2); // Error: test is not defined

// Example 3
for (var i = 0; i < 10; i++) {
| // ...
}
console.log(i); // 10, "i" is visible after loop, it's a global variable
```

```
// "var" tolerates redeclarations
var user1 = "Pete";
var user1 = "John"; // this "var" does nothing (already declared)
// ...it doesn't trigger an error
console.log(user1); // John

let user2;
let user2; // SyntaxError: 'user' has already been declared
```

<https://github.com/cederdorff/mdu-e19front/tree/master/var-vs-let>  
<https://cederdorff.github.io/mdu-e19front/var-vs-let/>

U S E   L E T  
I N S T E A D   O F   V A R

<https://javascript.info/variables>  
<https://javascript.info/var>

# DATA STRUCTURES

## OBJECTS & ARRAYS

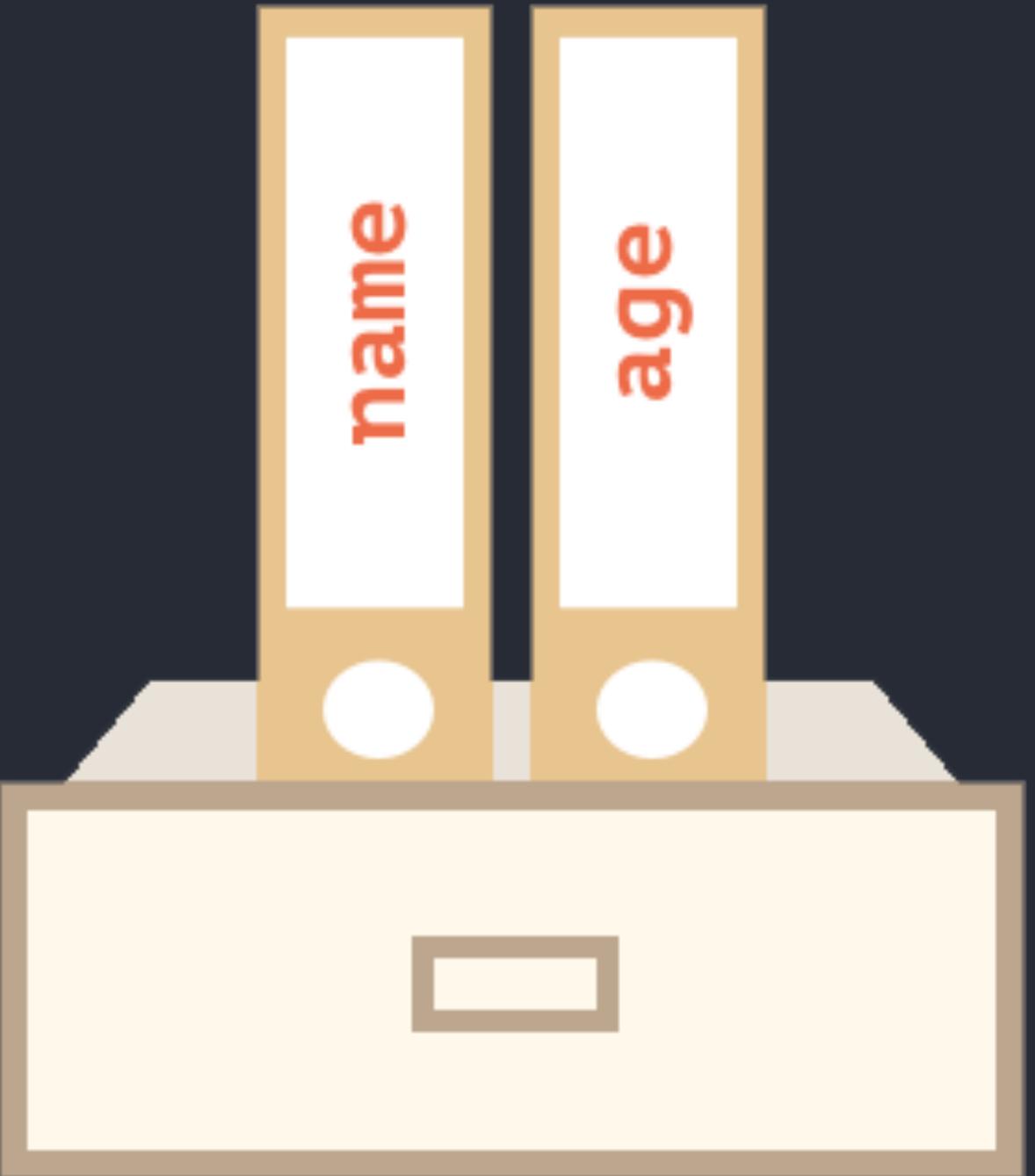
O B J E C T  
... A SET OF NAMED VALUES

# OBJECTS

```
let user = {  
    name: 'Alicia',  
    age: 6  
};
```

```
console.log(user.name +  
    " is " + user.age +  
    " years old.");
```

user



Alicia is 6 years old.

main.js:11

# OBJECTS

property

value

```
let person = {  
    name: "Birgitte Kirk Iversen",  
    initials: "bki",  
    mail: "bki@baaa.dk",  
    phone: "72286316",  
    address: "Sønderhøj 30, 8260 Viby J",  
    position: "Senior Lecturer",  
    department: "Multimedia Design"  
};
```

## *Birgitte Kirk Iversen*

**Position**

Senior Lecturer

**Department**

Programmes within Digital Communication and Multimedia

**Address**

Sønderhøj 30, 8260 Viby J

**Mail**

[bki@baaa.dk](mailto:bki@baaa.dk)

**Phone**

[+45 7228 6316](tel:+4572286316)



<https://www.baaa.dk/contact/find-employee/employee/birgitte-kirk-iversen>

PROJECT TEMPLATE

Not Secure | eaaa.cederdorff.com/mdu-e18front/project\_template/

# PROJECT TEMPLATE

Hi Frontenders!

Elements Console Sources Network Performance Memory Application Security Audits

top Filter Default levels

main.js:19

main.js:20

▶ {name: "Birgitte", initials: "bki"} i  
initials: "bki"  
name: "Birgitte"  
► \_\_proto\_\_: Object

▶ {name: "Gertie", initials: "gkj"} i  
initials: "gkj"  
name: "Gertie"  
► \_\_proto\_\_: Object

>

Console What's New

# ARRAYS

... A COLLECTION OF VALUES OR OBJECTS

# ARRAYS

*Rasmus Cederdorff*

---

**Position:**  
Lecturer *Michael Hvidfeldt*

**Department/programme:**  
Multimedia Design

**Digital Concepts:**

**Address:**  
Lecturer *Birgitte Kirk Iversen*

**Ringvej Syd 10**

**Mail:** [race@baaa.dk](mailto:race@baaa.dk)

**Phone:** 7228 6318

**Position:**  
Senior Lecturer

**Address:**  
Ringvej Syd 10

**Department/programme:**  
Multimedia Design

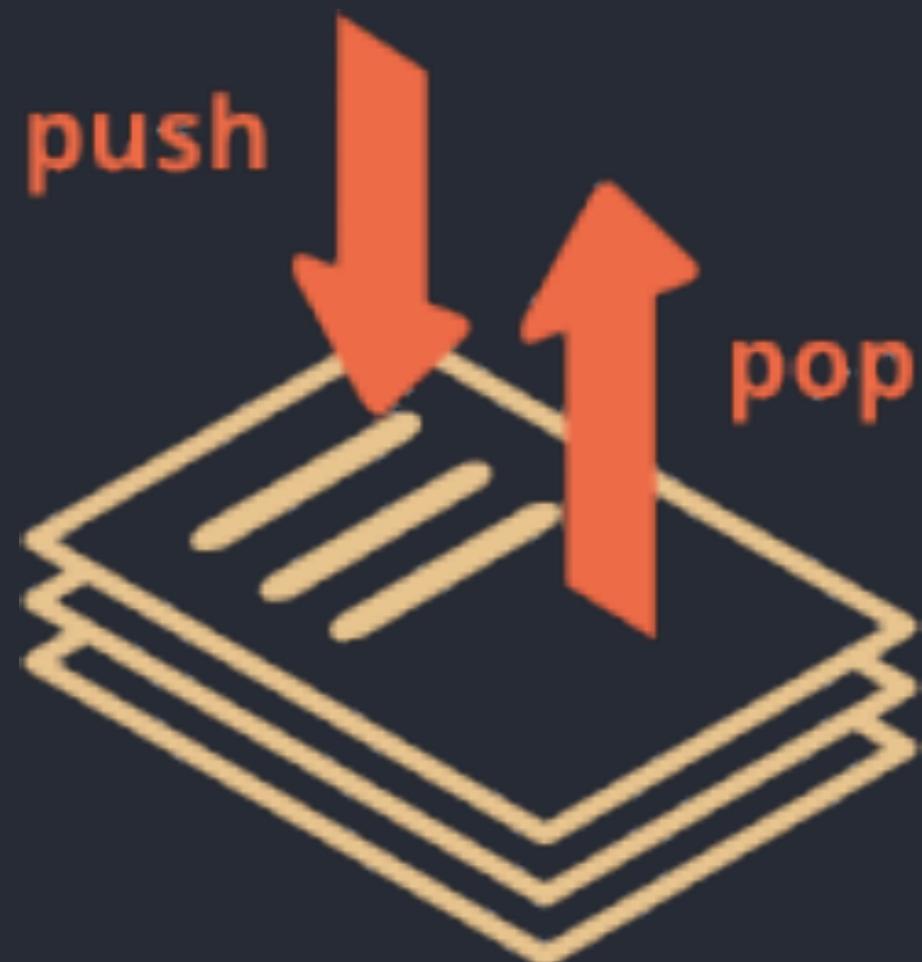
**Address:**  
Sønderhøj 30, 8260 Viby J

**Mail:** [mhv@baaa.dk](mailto:mhv@baaa.dk)

**Phone:** 7228 6328

**Position:**  
bki@baaa.dk

**Address:**  
7228 6316



# ARRAYS

## DECLARATION

```
// declaration  
let teachers = [];
```

...

```
let teachers = [  
    {  
        name: "Birgitte Kirk Iversen",  
        mail: "bki@baaa.dk"  
    },  
    {  
        name: "Michael Hvidtfeldt",  
        mail: "mhv@baaa.dk"  
    },  
    {  
        name: "Rasmus Cederdorff",  
        mail: "race@baaa.dk"  
    }  
];
```

Rasmus Cederdorff

**Position:** Lecturer *Michael Hvidtfeldt*  
**Department/** Multimedia De  
Digital Concept  
**Address:** Ringvej Syd 10  
**Mail:** [race@baaa.dk](mailto:race@baaa.dk)  
**Phone:** 7228 6318  
  
**Position:** Lecturer *Birgitte Kirk Iversen*  
**Department/** Multimedia De  
**Address:** Senior Lecturer  
Ringvej Syd 10  
**Mail:** [mhv@baaa.dk](mailto:mhv@baaa.dk)  
**Phone:** 7228 6328  
**Mail:** [bki@baaa.dk](mailto:bki@baaa.dk)  
  
**Phone:** 7228 6316





**Peter Madsen**

52 years old

Hair color: blonde

Relation: dad

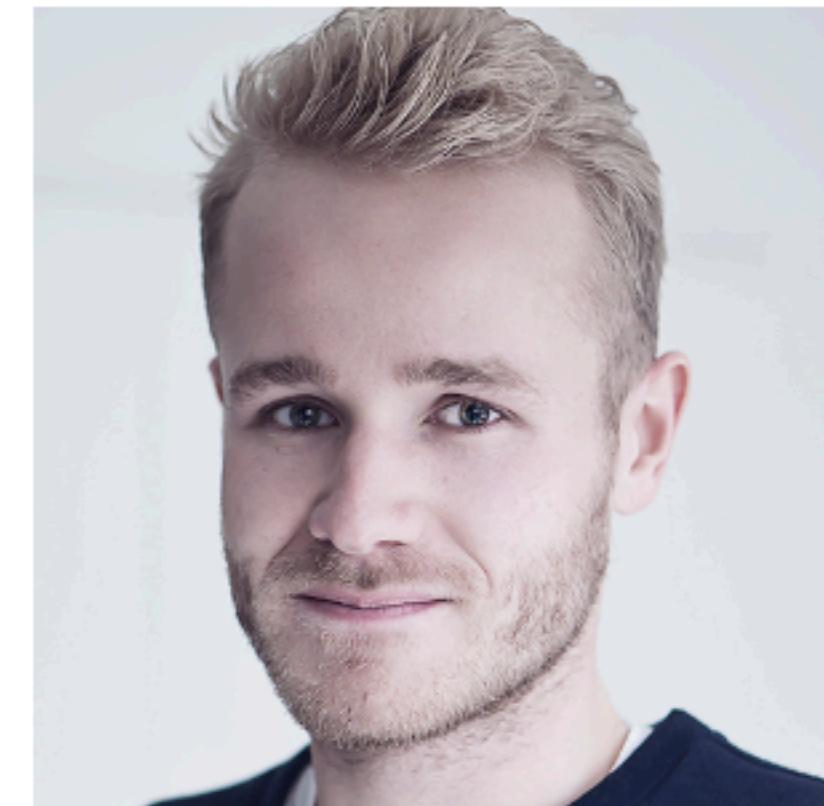


**Ane Madsen**

51 years old

Hair color: brown

Relation: mom



**Rasmus Madsen**

28 years old

Hair color: blonde

Relation: brother



**Mie Madsen**

25 years old

Hair color: brown

Relation: blonde

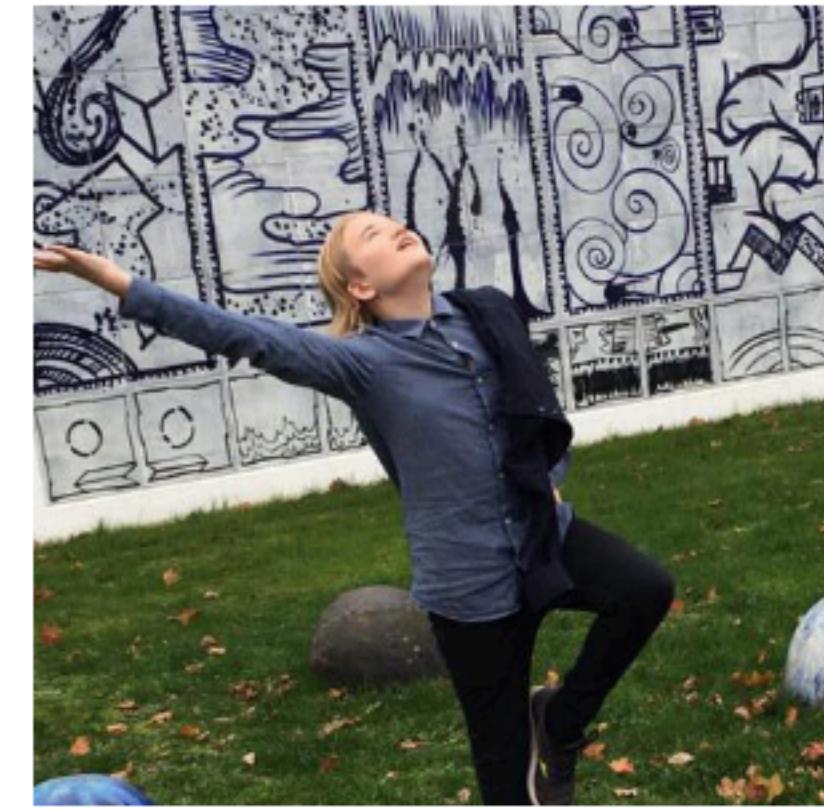


**Mads Madsen**

18 years old

Hair color: dark

Relation: blonde

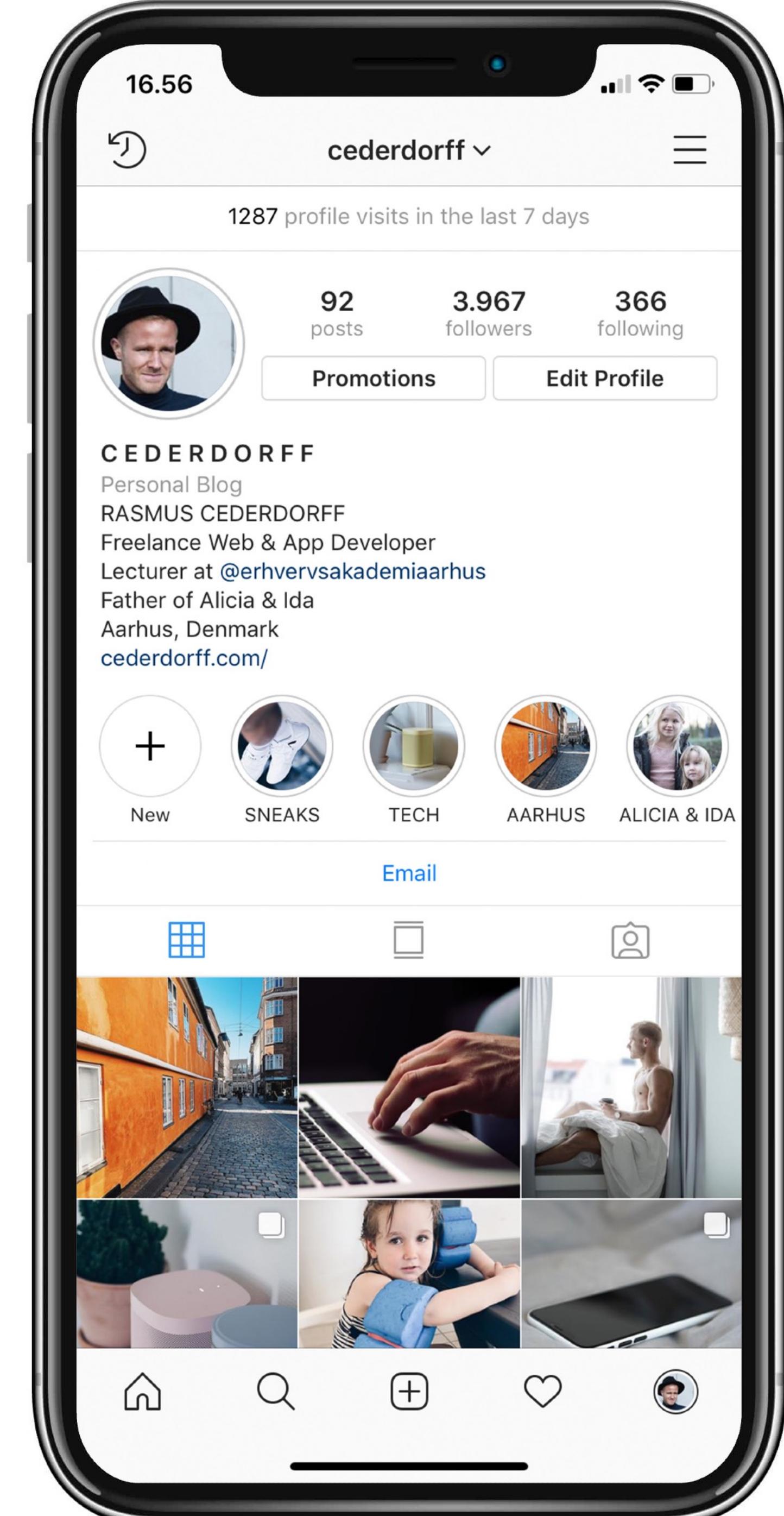
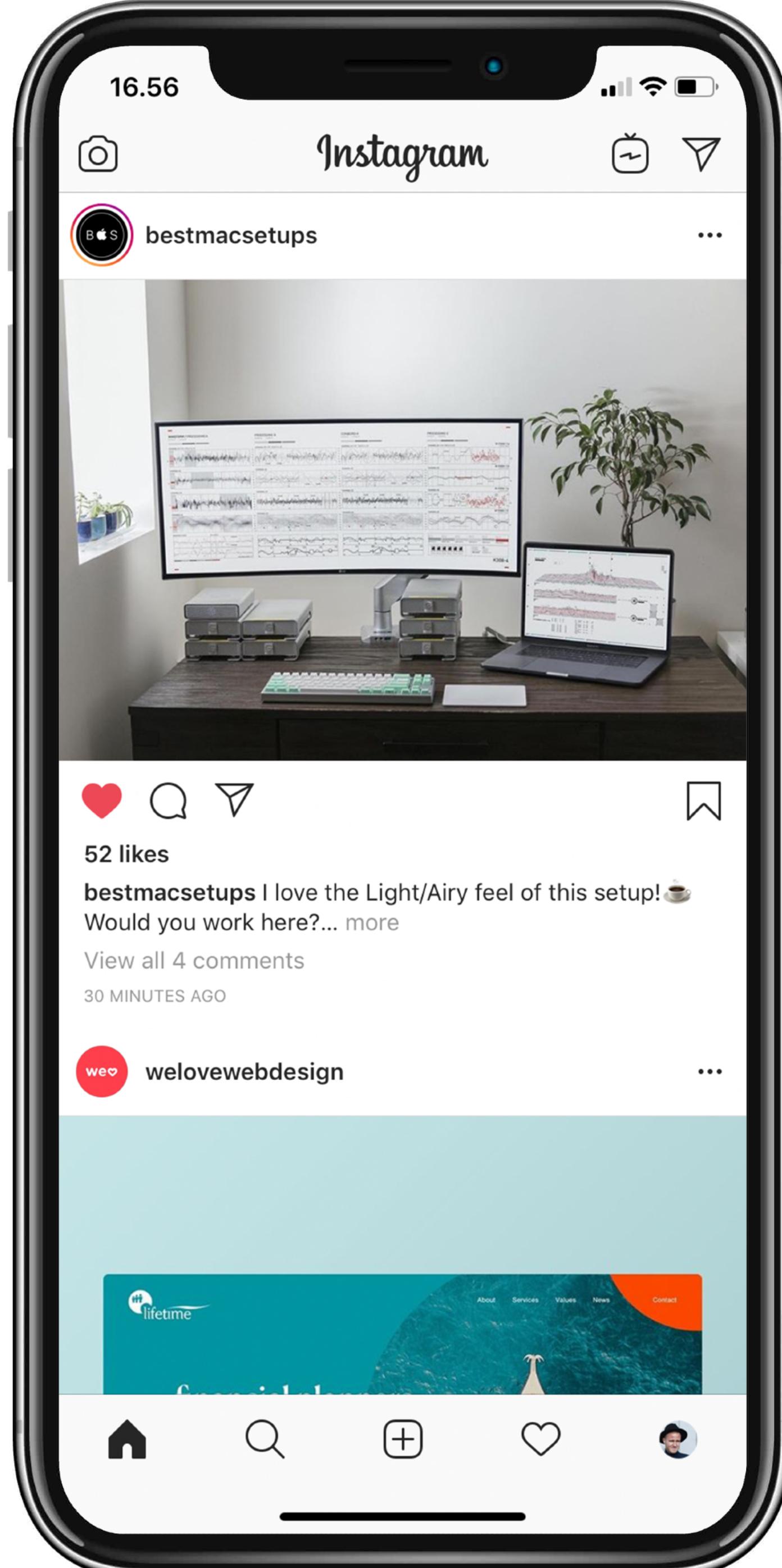


**Jens Madsen**

14 years old

Hair color: blonde

Relation: uncle



# ARRAYS

DECLARATION, ACCESSING & LENGTH

```
let teachers = [ {  
    name: "Birgitte Kirk Iversen",  
    mail: "bki@baaa.dk"  
},  
{  
    name: "Michael Hvidtfeldt",  
    mail: "mhv@baaa.dk"  
},  
{  
    name: "Rasmus Cederdorff",  
    mail: "race@baaa.dk"  
}  
];
```

```
console.log(teachers);  
console.log(teachers[1]);  
console.log(teachers.length);
```

```
main.js:21  
▼ (3) [ { ... }, { ... }, { ... } ] ⓘ  
▶ 0: { name: "Birgitte Kirk Iversen", mail: "bki@baaa..."  
▶ 1: { name: "Michael Hvidtfeldt", mail: "mhv@baaa.dk" ...  
▶ 2: { name: "Rasmus Cederdorff", mail: "race@baaa.dk" ...  
length: 3  
▶ __proto__: Array(0)  
main.js:22  
▶ { name: "Michael Hvidtfeldt", mail: "mhv@baaa.dk" }  
3  
main.js:23
```

# ARRAYS

ADD NEW OBJECTS WITH PUSH

```
// declare an array
let teachers = [];

// create a new object
let newTeacher = {
    name: "Birgitte Kirk Iversen",
    initials: "bki",
    mail: "bki@baaa.dk",
    phone: "72286316",
    address: "Sønderhøj 30, 8260 Viby J",
    position: "Senior Lecturer",
    department: "Multimedia Design",
    img: "https://www.baaa.dk/CropUp/headshot/media/1524902/birgitte-kirk-iversen.jpg"
};

// add the new object to the array
teachers.push(newTeacher);
```

# ARRAYS

## LOOPS

```
for (let teacher of teachers) {  
  console.log(teacher);  
}
```

```
▶ {name: "Birgitte Kirk Iversen", mail: "bki@baaa.dk"}  main.js:20  
▶ {name: "Michael Hvidtfeldt", mail: "mhv@baaa.dk"}  main.js:20  
▶ {name: "Rasmus Cederdorff", mail: "race@baaa.dk"}  main.js:20
```

# ARRAYS

## LOOPS

```
for (let teacher of teachers) {  
  console.log(teacher.mail);  
}
```

bki@baaa.dk

main.js:20

mhv@baaa.dk

main.js:20

race@baaa.dk

main.js:20

# LOOPS

... LOOP THROUGH AN ARRAY AND ADD A CONDITION

```
for (let teacher of teachers) {  
  if (teacher.name === "Rasmus Cederdorff") {  
    console.log(teacher);  
  }  
}
```

# LOOPS

... SEARCH

```
let filteredTeachers = [];
for (let teacher of teachers) {
    let name = teacher.name.toLowerCase();
    if (name.includes(value.toLowerCase())) {
        filteredTeachers.push(teacher);
    }
}
console.log(filteredTeachers);
```

[https://mdu-f19front.racedev.dk/array\\_teachers\\_search/](https://mdu-f19front.racedev.dk/array_teachers_search/)

[https://github.com/cederdorff/mdu-f19front/tree/master/array\\_teachers\\_search](https://github.com/cederdorff/mdu-f19front/tree/master/array_teachers_search)

# ARRAYS

## LOOPS

```
for (let teacher of teachers) {  
  console.log(teacher);  
  document.querySelector("#grid-teachers").innerHTML +=  
    "<article>" +  
    "<img src='" + teacher.img + "'>" +  
    "<h3>" + teacher.name + "</h3>" +  
    teacher.position + "<br>" +  
    "<a href='mailto:" + teacher.mail + "'>" + teacher.mail + "</a>" +  
    "<article>";  
}
```

## TEACHERS



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Senior Lecturer  
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Rasmus Cederdorff

Lecturer  
[race@baaa.dk](mailto:race@baaa.dk)

# FUNCTIONS

...A BLOCK OF CODE TO PERFORM A SPECIFIC TASK & TO  
MAKE OUR CODE REUSABLE

A WAY OF STORING OUR CODE SO WE CAN USE IT AGAIN  
AND AGAIN AND REUSE IT

# FUNCTIONS

## FUNCTION DECLARATION

```
function log(message) {  
    console.log(message);  
}
```

```
log("Hi Frontenders!");
```

# FUNCTIONS

## FUNCTION DECLARATION

```
console.log("Hi Frontenders!");
console.log("Good job!");
console.log("I'm testing something!");
console.log("Hola");
```

```
function log(message) {
  console.log(message);
}

log("Hi Frontenders!");
log("Good job!");
log("I'm testing something!");
log("Hola");
```

# FUNCTIONS

## FUNCTION DECLARATION

```
function append(htmlTemplate, idOfElement) {  
  document.getElementById(idOfElement).innerHTML += htmlTemplate;  
}  
  
append("<h2>Hi Frontenders!</h2>", "content");
```

# FUNCTIONS

## FUNCTION DECLARATION

```
function append(htmlTemplate, idOfElement) {  
    console.log(htmlTemplate);  
    document.getElementById(idOfElement).innerHTML += htmlTemplate;  
    alert("Yaaaaah, you did it!");  
}  
  
append("<h2>Hi Frontenders!</h2>", "content");
```

# FUNCTIONS

## FUNCTION DECLARATION

```
function append(htmlTemplate, idOfElement) {  
    console.log(htmlTemplate);  
    document.getElementById(idOfElement).innerHTML += htmlTemplate;  
    alert("Yaaaaah, you did it!");  
}  
  
append("<h2>Hi Frontenders!</h2>", "content");
```

The name of the function

Parameters

Body of the function  
(code block)

How to call the function

The diagram illustrates the structure of a JavaScript function declaration. It shows a code block with two main parts: the function definition and its invocation. The function definition starts with 'function' followed by the name 'append'. It takes two parameters: 'htmlTemplate' and 'idOfElement'. The body of the function contains three statements: logging the template to the console, setting the innerHTML of the specified element, and displaying an alert. An annotation 'The name of the function' points to the word 'append'. Another annotation 'Parameters' points to the two variables listed after the opening parenthesis. A large bracket on the right side of the body is labeled 'Body of the function (code block)'. An annotation 'How to call the function' points to the line where 'append' is invoked with its arguments.

# FUNCTIONS

```
// teacher1 - Birgitte
document.querySelector("#grid-teachers").innerHTML +=
  "<article>" +
  "<img src=''" + teacher1.img + "'>" +
  "<h3>" + teacher1.name + "</h3>" +
  teacher1.position + "<br>" +
  "<a href='mailto:" + teacher1.mail + "'>" + teacher1.mail + "</a>" +
  "</article>";
```

```
//teacher2 - Gertie
document.querySelector("#grid-teachers").innerHTML +=
  "<article>" +
  "<img src=''" + teacher2.img + "'>" +
  "<h3>" + teacher2.name + "</h3>" +
  teacher2.position + "<br>" +
  "<a href='mailto:" + teacher2.mail + "'>" + teacher2.mail + "</a>" +
  "</article>";
```

```
//teacher3 - Kim
document.querySelector("#grid-teachers").innerHTML +=
  "<article>" +
  "<img src=''" + teacher3.img + "'>" +
  "<h3>" + teacher3.name + "</h3>" +
  teacher3.position + "<br>" +
  "<a href='mailto:" + teacher3.mail + "'>" + teacher3.mail + "</a>" +
  "</article>";
```

```
//teacher4 - Rasmus
document.querySelector("#grid-teachers").innerHTML +=
  "<article>" +
  "<img src=''" + teacher4.img + "'>" +
  "<h3>" + teacher4.name + "</h3>" +
```

```
function appendTeacher(teacher) {
  document.querySelector("#grid-teachers").innerHTML +=
    "<article>" +
    "<img src=''" + teacher.img + "'>" +
    "<h3>" + teacher.name + "</h3>" +
    teacher.position + "<br>" +
    "<a href='mailto:" + teacher.mail + "'>" + teacher.mail + "</a>" +
    "</article>";
}
```

```
appendTeacher(teacher1);
appendTeacher(teacher2);
appendTeacher(teacher3);
appendTeacher(teacher4);
```

# FUNCTIONS

## ARRAY & LOOPS

The name of the function



Parameters

```
function appendTeachers(teachers) {  
  for (let teacher of teachers) {  
    console.log(teacher);  
    document.querySelector("#grid-teachers").innerHTML +=  
      "<article>" +  
      "<img src=''" + teacher.img + "'>" +  
      "<h3>" + teacher.name + "</h3>" +  
      teacher.position + "<br>" +  
      "<a href='mailto:" + teacher.mail + "'>" + teacher.mail + "</a>" +  
      "</article>";  
  }  
}  
  
appendTeachers(teachers);
```

How to call the function

Body of the function  
(code block)

TEACHERS



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Michael Hvidtfeldt

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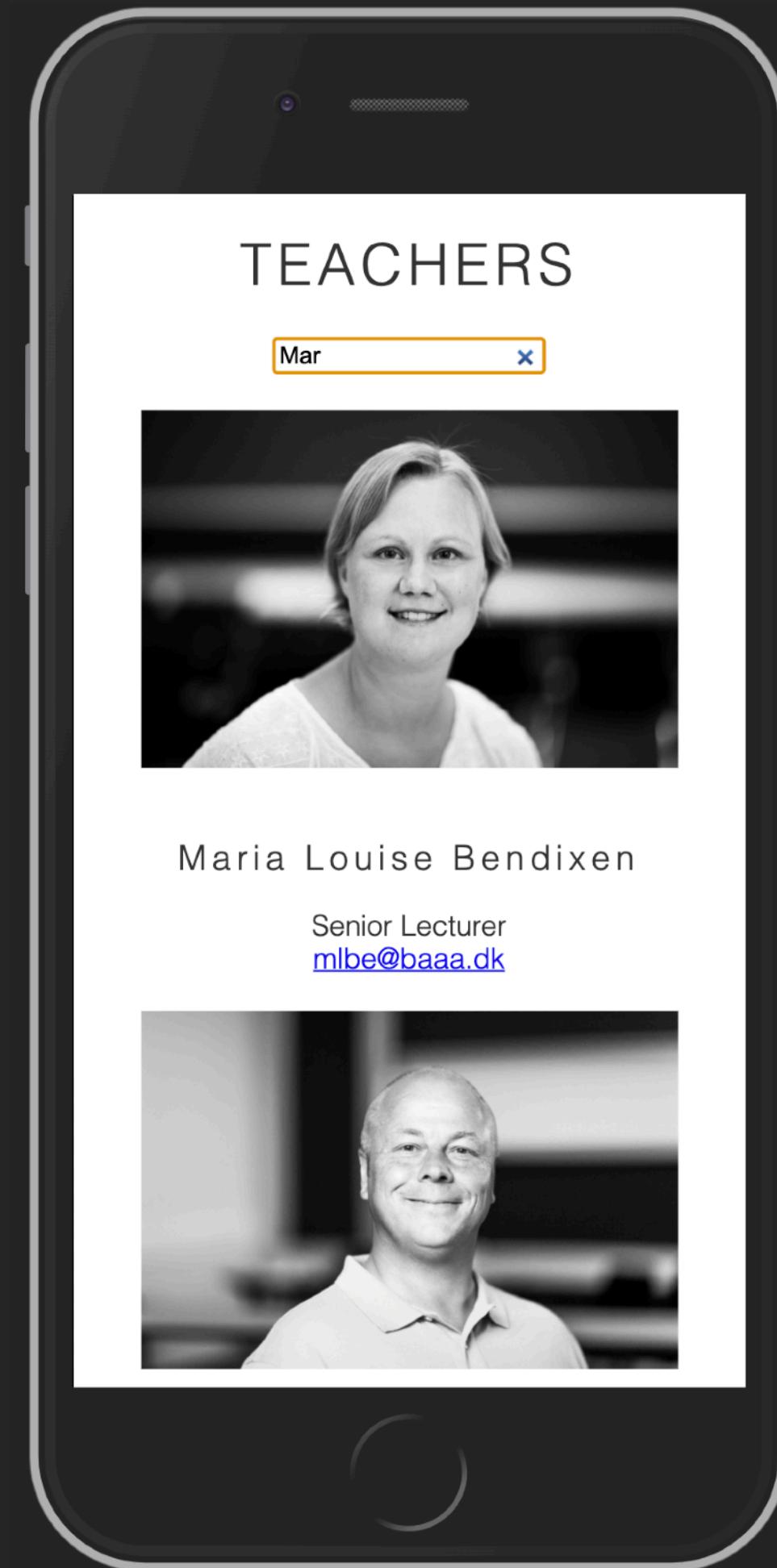
Rasmus Cederdorff

Lecturer  
[race@baaa.dk](mailto:race@baaa.dk)

# LOOPS

... SEARCH

```
function search(value) {  
    console.log(value);  
    let filteredTeachers = [];  
    for (let teacher of teachers) {  
        let name = teacher.name.toLowerCase();  
        if (name.includes(value.toLowerCase())) {  
            filteredTeachers.push(teacher);  
        }  
    }  
    console.log(filteredTeachers);  
    appendTeachers(filteredTeachers);  
}
```



# FUNCTIONS

```
function logPersons(persons) {  
  for (var i = 0; i < persons.length; i++) {  
    console.log(persons[i]);  
  }  
}
```

FUNCTION DECLARATION

```
const logPersons = function(persons) {  
  for (var i = 0; i < persons.length; i++) {  
    console.log(persons[i]);  
  }  
}
```

FUNCTION EXPRESSION

```
const logPersons = (persons) => {  
  for (var i = 0; i < persons.length; i++) {  
    console.log(persons[i]);  
  }  
}
```

ARROW FUNCTION

# CLIENT-SERVER

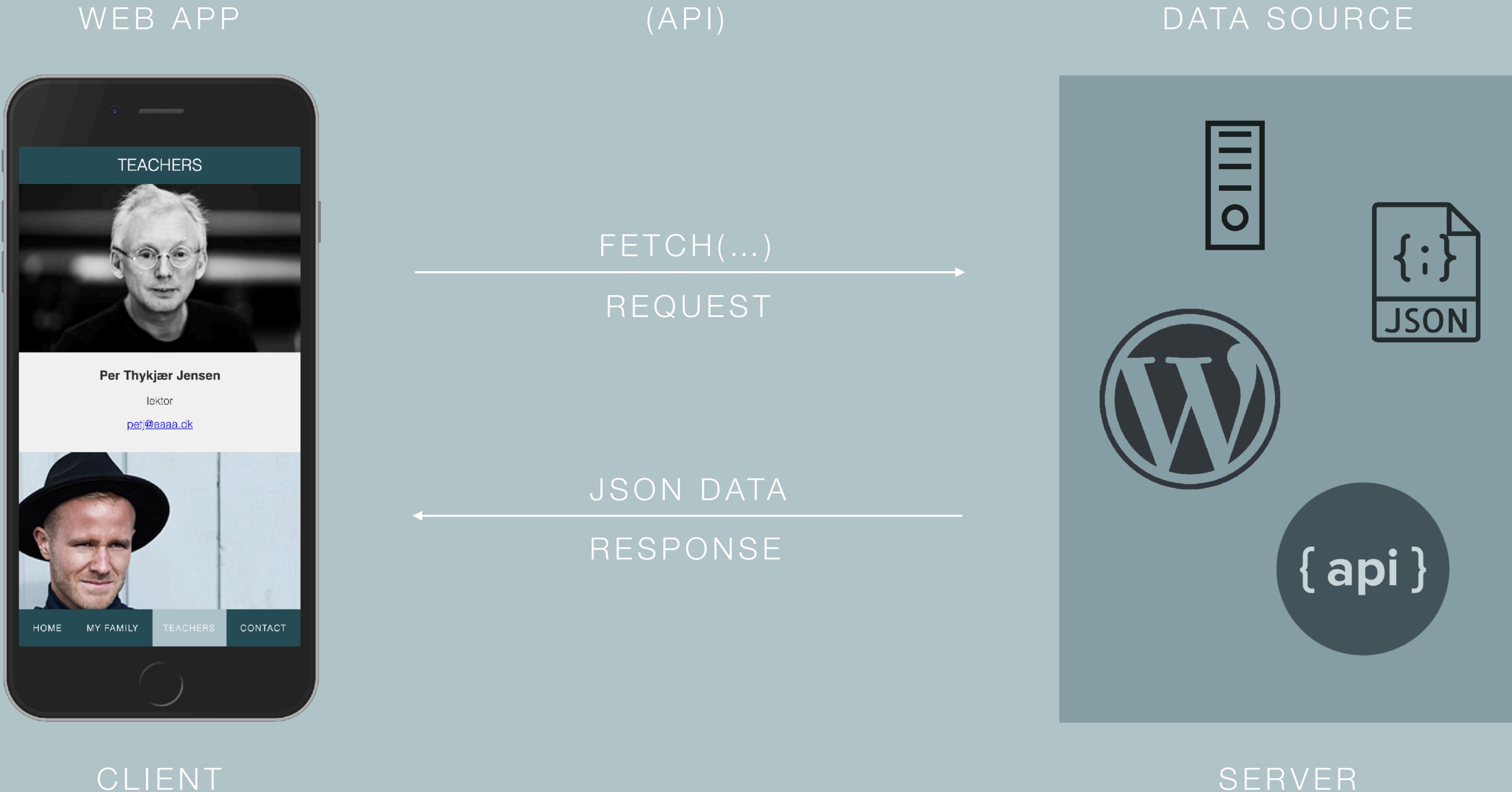


WEB APP  
(CLIENT)



WEB SERVER

# HTTP REQUEST AND RESPONSE



# SEPARATION OF CONCERNS

**HTML**



**JS**



**CSS**



STRUCTURE  
CONTENT

FUNCTIONALITY  
BEHAVIOR

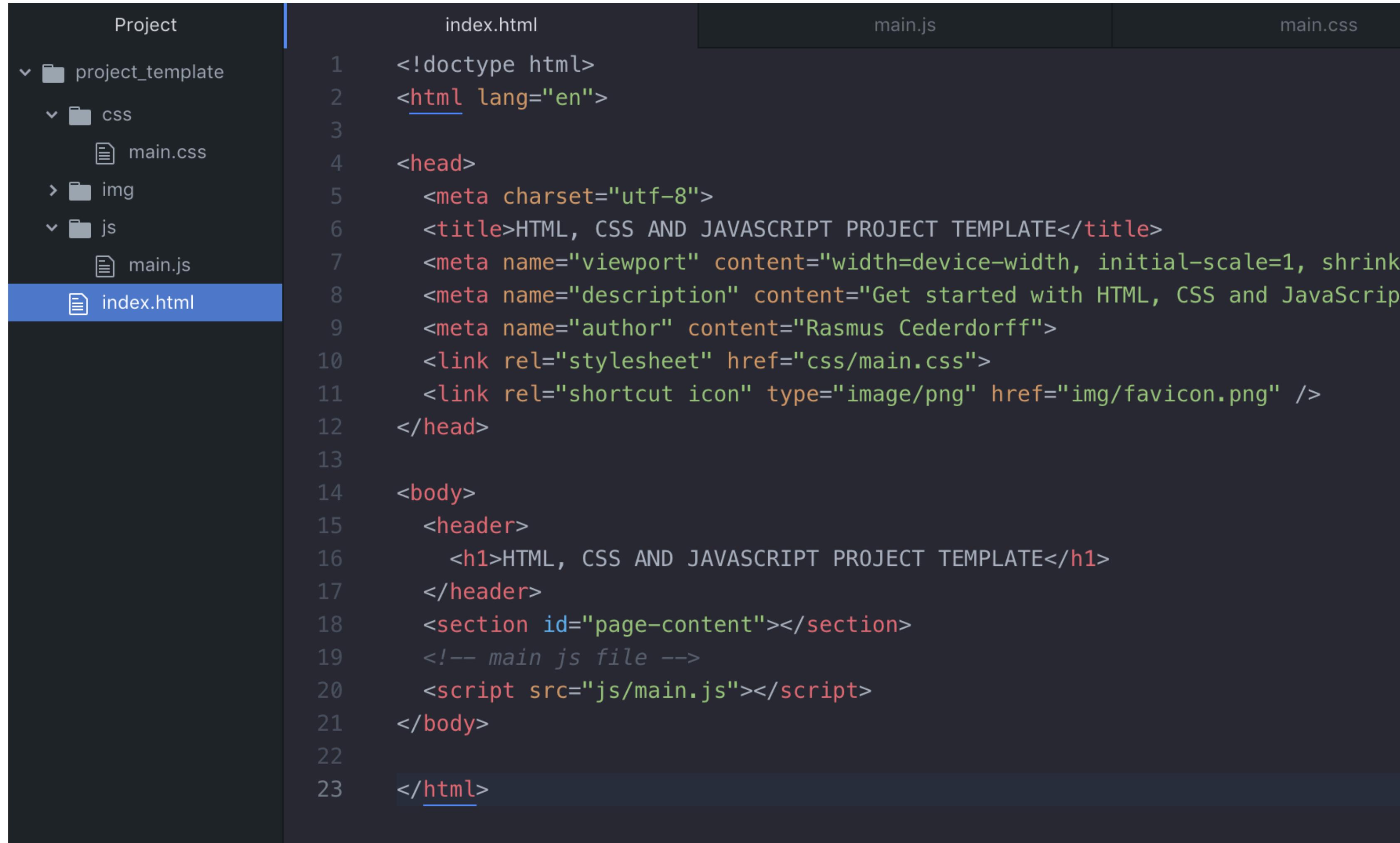
LAYOUT  
PRESENTATION

# SEPARATION OF CONCERNS

...IS A DESIGN PRINCIPLE, NOT A BEST PRACTICE

# FRONTEND WEB PROJECT

- Project structure:
  - HTML
  - CSS
  - JavaScript
- Keep a good structure
- Separation of concerns



The screenshot shows a code editor interface with a sidebar labeled "Project" and a main area with four tabs: "index.html", "main.js", and two others which are partially visible.

**Project:**

- project\_template
  - css (containing main.css)
  - img
  - js (containing main.js)

**index.html:**

```
1 <!doctype html>
2 <html lang="en">
3
4 <head>
5   <meta charset="utf-8">
6   <title>HTML, CSS AND JAVASCRIPT PROJECT TEMPLATE</title>
7   <meta name="viewport" content="width=device-width, initial-scale=1, shrink-to-fit=no" />
8   <meta name="description" content="Get started with HTML, CSS and JavaScript!" />
9   <meta name="author" content="Rasmus Cederdorff" />
10  <link rel="stylesheet" href="css/main.css" />
11  <link rel="shortcut icon" type="image/png" href="img/favicon.png" />
12 </head>
13
14 <body>
15   <header>
16     <h1>HTML, CSS AND JAVASCRIPT PROJECT TEMPLATE</h1>
17   </header>
18   <section id="page-content"></section>
19   <!-- main js file -->
20   <script src="js/main.js"></script>
21 </body>
22
23 </html>
```

# C O D E   E D I T O R S



[brackets.io](https://brackets.io)



[atom.io](https://atom.io)



[sublimetext.com](https://sublimetext.com)



[code.visualstudio.com](https://code.visualstudio.com)

Best code editors 2020: <https://www.creativebloq.com/advice/best-code-editors>

Code editors: <https://javascript.info/code-editors>

Search Extensions in Marketplace

## ENABLED

- Atom One Dark Theme** 2.2.2  
One Dark Theme based on Atom  
Mahmoud Ali
- ES6 String HTML** 1.1.1  
Highlight html in es6 multiline strings  
hjb2012
- ESLint** 2.1.8  
Integrates ESLint JavaScript into VS Code.  
Dirk Baeumer
- Live Server** 5.6.1  
Launch a development local Server with live ...  
Ritwick Dey



# Live Server

ritwickdey.liveserver

Ritwick Dey | ↗ 6,635,977 | ★★★★★ | Repository | License | v5.6.1

Launch a development local Server with live reload feature for static & dynamic pages

[Disable](#) [Uninstall](#) This extension is enabled globally.

[Details](#) [Feature Contributions](#) [Changelog](#)

*[I'm sorry but I'm super busy now. If you want to be a maintainer of the project, please feel free to contact me! You've to be passionate about programming]*

## Live Server

Live Server loves ❤ your multi-root workspace

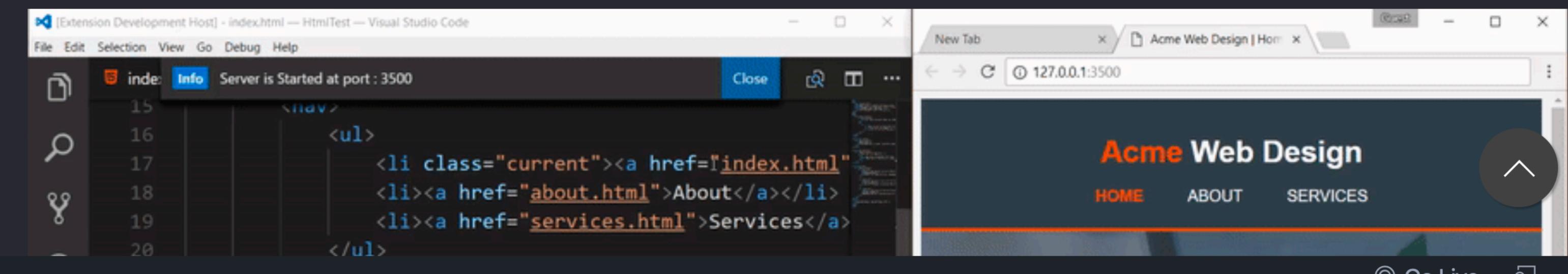
Live Server for server side pages like PHP. [Check Here](#)

\*[For 'command not found error' #78]\*

vscode marketplace v5.6.1 downloads 9.8M rating 4.5/5 (260)

travis branch passing appveyor branch failing license MIT

Launch a local development server with live reload feature for static & dynamic pages.



&gt; RECOMMENDED

9

&gt; DISABLED

0

0

0

Go Live

# PROJECTS

GitHub Repository: <https://github.com/cederdorff/mdu-e19front>

Live Running Projects: <https://cederdorff.github.io/mdu-e19front/>

# RECAP

FOKUS PÅ BASAL PROGRAMMERINGSFORSTÅELSE  
(HVORDAN FORSTÅR VI DET HELE UD FRA FX  
OBJEKTER & ARRAYS)

FOKUS PÅ JAVASCRIPT, HTML & CSS  
INGEN JQUERY

FOKUS PÅ SIMPEL OPSÆTNING AF TOOLS (GERNE VS  
CODE, LIVE SERVER EXTENSION & GITHUB DESKTOP)

# WEB APP

.. IS ANY PROGRAM EXECUTED IN THE BROWSER

# WEB APP

.. IS ANY PROGRAM THAT PERFORMS A SPECIFIC FUNCTION BY  
USING A WEB BROWSER AS ITS CLIENT

# WEB APP

DO YOU KNOW ANY WEB APPS?

**HTML**



**JS**



**CSS**



# WEB APP



WEB APP  
(CLIENT)



WEB SERVER

W E B S I T E

THE USER WANTS TO GET SOMETHING

# WEB APP

THE USER WANTS TO DO SOMETHING

# WEB APP

## WEB AS ACTION

# TEACHERS



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Rasmus Cederdorff

Lecturer  
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NAME
INITIALS
EMAIL
PHONE
IMAGE URL
POSITION

**Save**

```
<body>
  <header>
    <h1>TEACHERS</h1>
  </header>
  <section id="grid-teachers" class="grid-container"></section>
  <section>
    <form id="add-teacher-form" class="form">
      <input type="text" name="name" placeholder="NAME">
      <input type="text" name="initials" placeholder="INITIALS">
      <input type="email" name="mail" placeholder="EMAIL">
      <input type="email" name="phone" placeholder="PHONE">
      <input type="text" name="img" placeholder="IMAGE URL">
      <input type="text" name="position" placeholder="POSITION">
      <button type="button" name="button" onclick="createTeacher()">Save</button>
    </form>
  </section>
  <!-- main js file -->
  <script src="js/main.js"></script>
</body>
```

```
function createTeacher() {
    // get the values from the input fields
    let name = document.querySelector('#add-teacher-form input[name=name]').value;
    let initials = document.querySelector('#add-teacher-form input[name=initials]').value;
    let mail = document.querySelector('#add-teacher-form input[name=mail]').value;
    let phone = document.querySelector('#add-teacher-form input[name=phone]').value;
    let img = document.querySelector('#add-teacher-form input[name=img]').value;
    let position = document.querySelector('#add-teacher-form input[name=position]').value;

    // create a new object
    let newteacher = {
        name: name,
        initials: initials,
        mail: mail,
        phone: phone,
        img: img,
        position: position
    };

    // push the new object to the array
    teachers.push(newteacher);

    // reset grid
    document.querySelector("#grid-teachers").innerHTML = "";
    // call appendTeachers to append all teachers again
    appendTeachers(teachers);
}
```

# TEACHERS

Search



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Rasmus Cederdorff

Lecturer  
[race@baaa.dk](mailto:race@baaa.dk)

```
<body>
  <header>
    <h1>TEACHERS</h1>
  </header>
  <input type="search" placeholder="Search" onkeyup="search(this.value)">
  <section id="grid-teachers" class="grid-container"></section>
  <!-- main js file -->
  <script src="js/main.js"></script>
</body>
```

```
function search(value) {
  console.log(value);
  let filteredTeachers = [];
  for (let teacher of teachers) {
    let name = teacher.name.toLowerCase();
    if (name.includes(value.toLowerCase())) {
      filteredTeachers.push(teacher);
    }
  }

  console.log(filteredTeachers);
  appendTeachers(filteredTeachers);
}
```

WEB APP  
ACCESSIBLE ANYWHERE, ANYTIME

# WEB APP

- Actions and functions
- Stored on a web server
- Using the browser as it's client: Launched and executed by the browser
- Accessible anywhere, anytime - on any device through the browser
- JavaScript, HTML & CSS
- Single Page Application
- Fetches data from (different) data sources.



# TYPES OF WEB APPS

WEB BASED

BROWSER BASED

API BASED

SOFTWARE AS A SERVICE

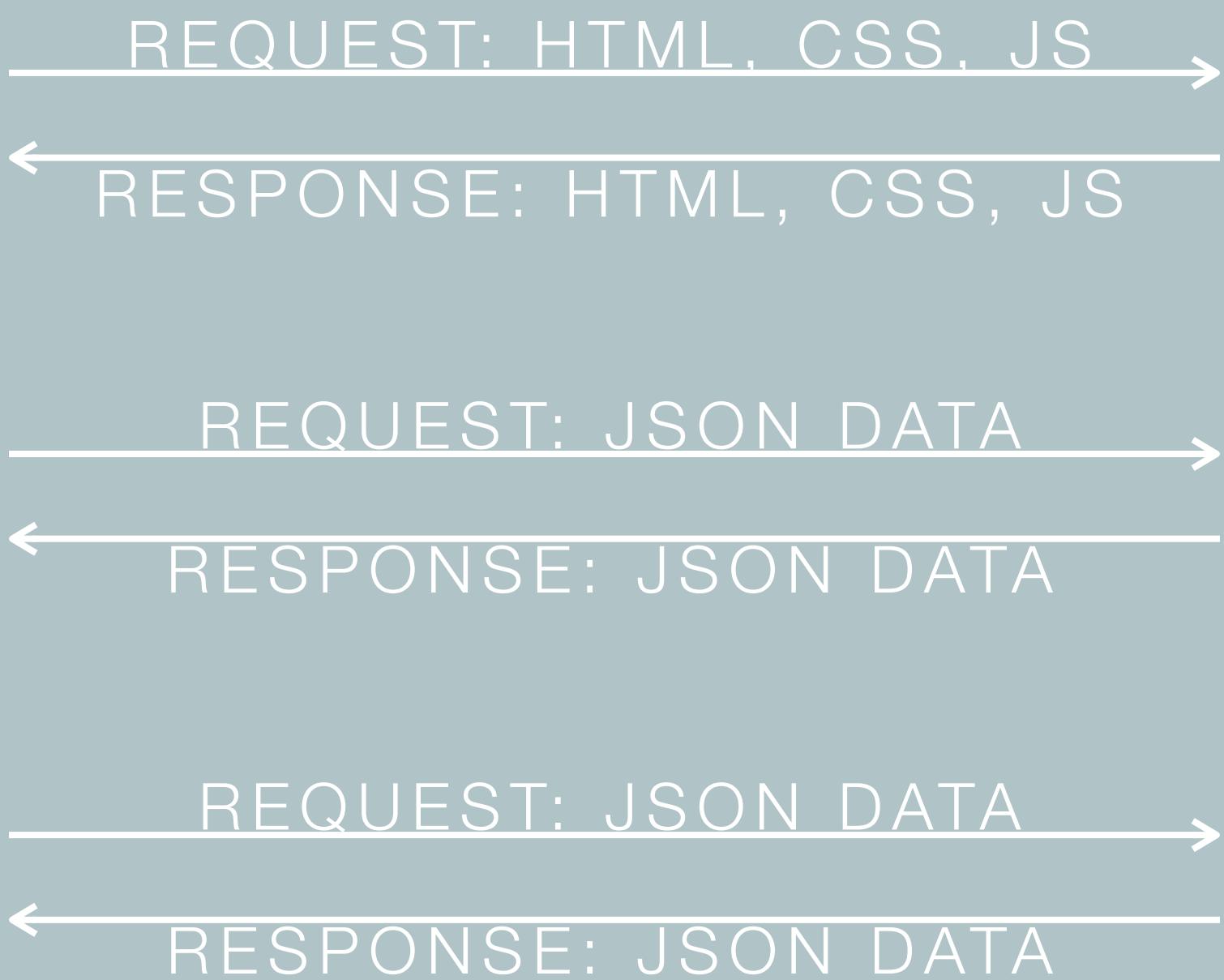
NATIVE WEB APP/ HYBRID APPS

PROGRESSIVE WEB APP

# CLIENT SERVER



CLIENT



SERVER

C O D E   E V E R Y   D A Y !