race.js is loading...

Check out: spa-canvas-users

FROM JAVASCRIPT TO REACT

FRONTEND DEVELOPER

BUSINESS ACADEMY AARHUS
UNIVERSITY OF APPLIED SCIENCES

AGENDA

Wrap up: Canvas Users Case & Fetch

Function-based JS & JS Basics

Web App, SPA & Routing

Canvas Users SPA Case

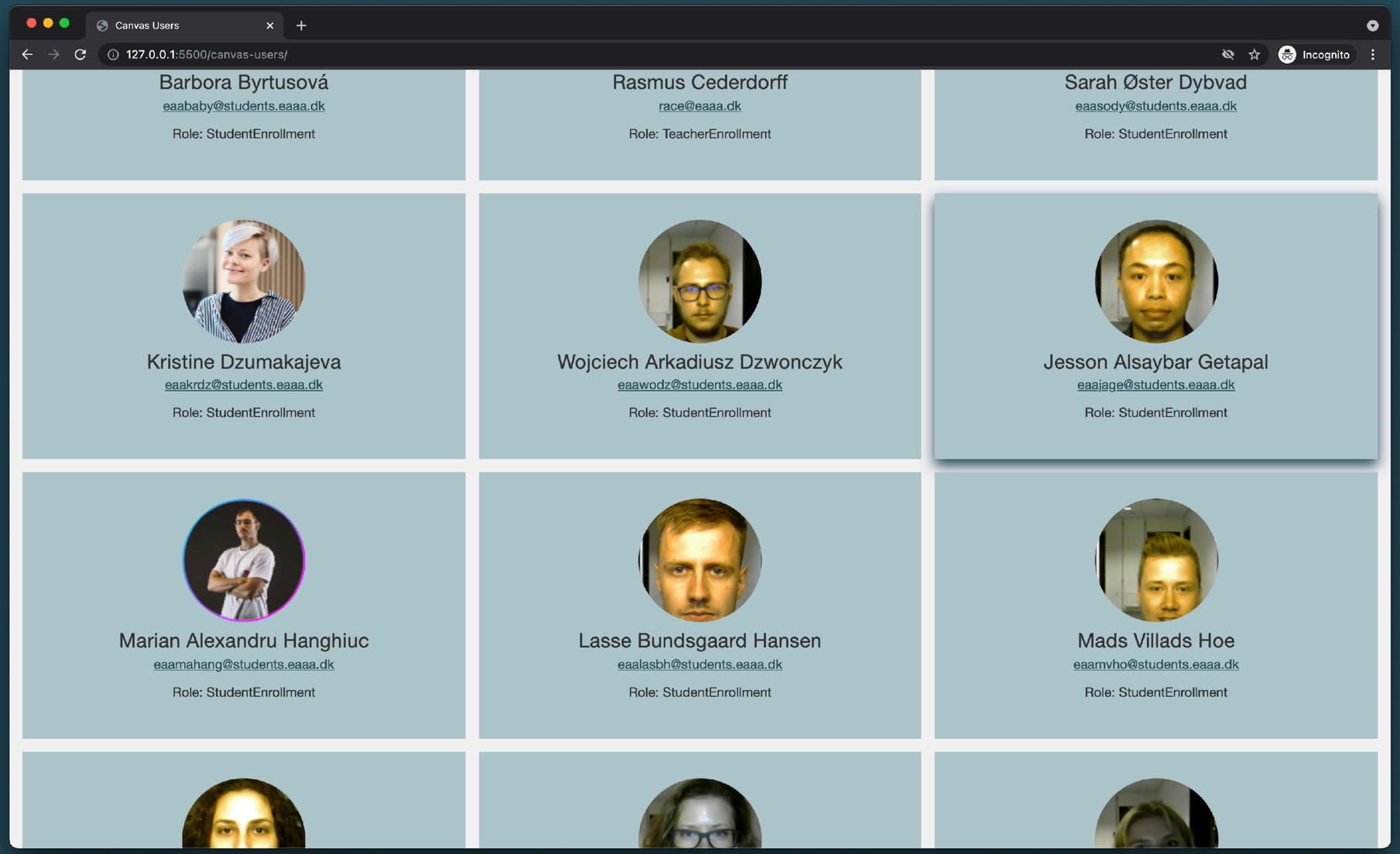
EXERCISES

Wrap up: Canvas Users Case

Canvas Users SPA Case

Product SPA

WRAP UP: CANVAS USERS CASE



CANVAS USERS CASE #2

BACK

FETCH USERS FROM JSON & DISPLAY IN GRID

1. Make a copy of your previous project.
2. In your `app.js` create a function called `fetchUsers()`.
3. In `fetchUsers()` implement the logic to fetch users from the following url: https://cederdorff.github.io/web-frontend/canvas-users/data.json
4. Use `console.log` to test the result (the fetched data).
5. Remove the *in script* defined `users` array (from previous exercise) and save the fetched result in the `users` variable.
6. Execute and use `appendUsers(…)` to append the newly fetched users from the json file.

FETCH(...)

HTTP REQUEST IN JAVASCRIPT

...A WAY TO GET & POST DATA FROM & TO A DATA SOURCE

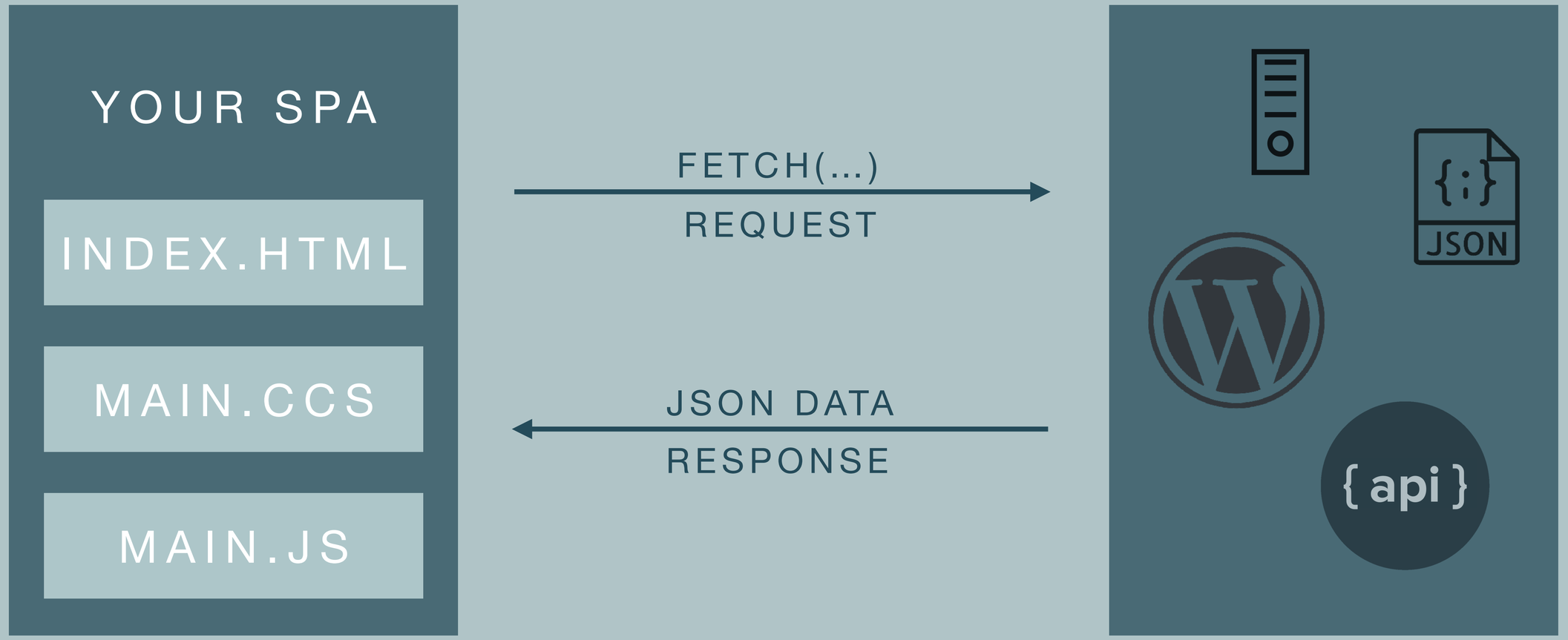
```
fetch('json/persons.json')
  .then(function(response) {
    return response.json();
  })
  .then(function(json) {
    console.log(json);
    appendPersons(json);
  });
```

FETCH

WEB APP

(API)

DATA SOURCE



```js
/*
Fetches json data from the file persons.json
*/
fetch('json/persons.json')
  .then(function (response) {
    return response.json();
  })
  .then(function (jsonData) {
    console.log(jsonData);
    appendPersons(jsonData)
  });

/*
Appends json data to the DOM
*/
function appendPersons(persons) {
  let htmlTemplate = "";
  for (let person of persons) {
    htmlTemplate += /*html*/`
      <article>
        <img src="${person.img}">
        <h4>${person.name}</h4>
        <p>${person.age} years old</p>
        <p>Hair color: ${person.hairColor}</p>
        <p>Relation: ${person.relation}</p>
      </article>
    `;
  }
  document.querySelector("#persons").innerHTML = htmlTemplate;
}
```


```json
[
  {
    "name": "Peter Madsen",
    "age": 52,
    "hairColor": "blonde",
    "relation": "dad",
    "img": "img/dad.jpg"
  },
  {
    "name": "Ane Madsen",
    "age": 51,
    "hairColor": "brown",
    "relation": "mom",
    "img": "img/ane.jpg"
  },
  {
    "name": "Rasmus Madsen",
    "age": 28,
    "hairColor": "blonde",
    "relation": "brother",
    "img": "img/IMG_0526_kvadrat.jpg"
  },
  {
    "name": "Mie Madsen",
    "age": 25,
    "hairColor": "brown",
    "relation": "blonde",
    "img": "img/mie.jpg"
  },
  {
    "name": "Mads Madsen",
    "age": 18,
    "hairColor": "dark",
    "relation": "blonde",
    "img": "img/mads.jpg"
  },
  {
    "name": "Jens Madsen",
    "age": 14,
    "hairColor": "blonde",
    "relation": "uncle",
    "img": "img/jenspeter.jpg"
  }
]
```

```js
/*
Fetches json data from the file persons.json
*/
fetch('json/persons.json')
  .then(function (response) {
    return response.json();
  })
  .then(function (jsonData) {
    console.log(jsonData);
    appendPersons(jsonData)
  });

/*
Appends json data to the DOM
*/
function appendPersons(persons) {
  let htmlTemplate = "";
  for (let person of persons) {
    htmlTemplate += /*html*/`
      <article>
        <img src="${person.img}">
        <h4>${person.name}</h4>
        <p>${person.age} years old</p>
        <p>Hair color: ${person.hairColor}</p>
        <p>Relation: ${person.relation}</p>
      </article>
    `;
  }
  document.querySelector("#persons").innerHTML = htmlTemplate;
}
```

REQUEST (fetch)

RESPONSE (then)

```json
[
  {
    "name": "Peter Madsen",
    "age": 52,
    "hairColor": "blonde",
    "relation": "dad",
    "img": "img/dad.jpg"
  },
  {
    "name": "Ane Madsen",
    "age": 51,
    "hairColor": "brown",
    "relation": "mom",
    "img": "img/ane.jpg"
  },
  {
    "name": "Rasmus Madsen",
    "age": 28,
    "hairColor": "blonde",
    "relation": "brother",
    "img": "img/IMG_0526_kvadrat.jpg"
  },
  {
    "name": "Mie Madsen",
    "age": 25,
    "hairColor": "brown",
    "relation": "blonde",
    "img": "img/mie.jpg"
  },
  {
    "name": "Mads Madsen",
    "age": 18,
    "hairColor": "dark",
    "relation": "blonde",
    "img": "img/mads.jpg"
  },
  {
    "name": "Jens Madsen",
    "age": 14,
    "hairColor": "blonde",
    "relation": "uncle",
    "img": "img/jenspeter.jpg"
  }
]
```

```
/*
Fetches json data from the file persons.json
*/
fetch('json/persons.json')
  .then(function (response) {
    return response.json();
  })
  .then(function (jsonData) {
    console.log(jsonData);
    appendPersons(jsonData)
  });

/*
Appends json data to the DOM
*/
function appendPersons(persons) {
  let htmlTemplate = "";
  for (let person of persons) {
    htmlTemplate += /*html*/`
      <article>
        <img src="${person.img}">
        <h4>${person.name}</h4>
        <p>${person.age} years old</p>
        <p>Hair color: ${person.hairColor}</p>
        <p>Relation: ${person.relation}</p>
      </article>
    `;
  }
  document.querySelector("#persons").innerHTML = htmlTemplate;
}
```

```
},
{
  "name": "Rasmus Madsen",
  "age": 28,
  "hairColor": "blonde",
  "relation": "brother",
  "img": "img/IMG_0526_kvadrat.jpg"
},
{
  "name": "Mie Madsen",
  "age": 25,
  "hairColor": "brown",
  "relation": "blonde",
  "img": "img/mie.jpg"
},
{
  "name": "Mads Madsen",
  "age": 18,
  "hairColor": "dark",
  "relation": "blonde",
  "img": "img/mads.jpg"
},
{
```

JSON

... A SYNTAX FOR STORING AND EXCHANGING DATA OVER THE WEB

SEPARATION OF CONCERNS

STRUCTURE
CONTENT

FUNCTIONALITY
BEHAVIOR

LAYOUT
PRESENTATION

JSON

DATA
PERSISTENCE

JAVASCRIPT OBJECT NOTATION

- Collection of key-value pair: “`key`”: “`value`”
- List of values, collections or objects
- Lightweight data-interchange format
- Syntax for storing and exchanging data over the web
- Human and machine readable **text**: small, fast and simple
- Language independent
- Can be parsed directly to JavaScript Object
- JavaScript Objects can be converted directly to JSON

```
[{
    "name": "Peter Hansen",
    "age": 52,
    "hairColor": "brown",
    "relation": "dad"
  }, {
    "name": "Alicia Hansen",
    "age": 51,
    "hairColor": "blonde",
    "relation": "mom"
  }, {
    "name": "Martin Hansen",
    "age": 22,
    "hairColor": "dark",
    "relation": "brother"
  },{
    "name": "Jesper Petersen",
    "age": 35,
    "hairColor": "brown",
    "relation": "uncle"
  }]
```

JSON

… a syntax for storing and exchanging data over the web

```
{
  "name": "Alicia",
  "age": 6
}
```

JSON OBJECT

```
[{
  "name": "Alicia",
  "age": 6
}, {
  "name": "Peter",
  "age": 22
}]
```

LIST OF JSON OBJECTS

JSON

FORMATTER & VALIDATOR

HTTPS://JSONFORMATTER.CURIOUSCONCEPT.COM

FETCH

JSON, DATA SOURCES & API'S

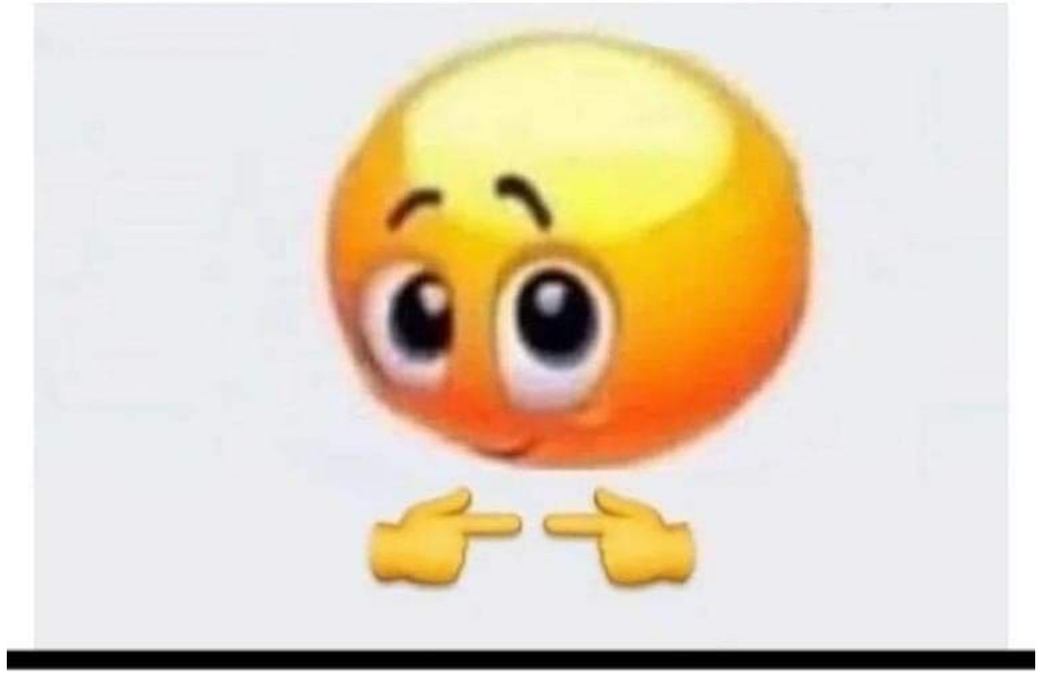
```
// Simple javascipt 😊

//Synchronous fetch using async/await.

// Usual way
✓ const jsonData = fetch('URL')
                    .then(response ⇒ response.json())
                    .then(json ⇒ console.log(json));

// Using await
✓ const jsonData = await fetch('URL').then(res ⇒ res.json())


// Shorter syntax 😍
✓ const jsonData = await (await fetch('URL')).json();
```

https://www.instagram.com/p/B0nxQjXj9Zi/

FETCH WITH CALLBACKS OR ASYNC/AWAIT

```
// fetch with callbacks
fetch("https://cederdorff.github.io/web-frontend/canvas-users/data.json")
    .then(function (response) {
        return response.json();
    })
    .then(function (data) {
        console.log(data);
    });
//
//
// or with async/await
const response = await fetch("https://cederdorff.github.io/web-frontend/canvas-users/data.json");
const data = await response.json();
console.log(data);
```

will you be async to my await?



ASYNC / AWAIT

WORKING WITH PROMISES

WAIT FOR A PROMISE TO FINISH

ASYNC / AWAIT

MAKING ASYNCHRONOUS PROGRAMMING EASIER WITH ASYNC AND AWAIT

"ASYNC AND AWAIT MAKE PROMISES EASIER TO WRITE"

ASYNC MAKES A FUNCTION RETURN A PROMISE

AWAIT MAKES A FUNCTION WAIT FOR A PROMISE

https://www.w3schools.com/js/js_async.asp

FETCH RETURNS A PROMISE

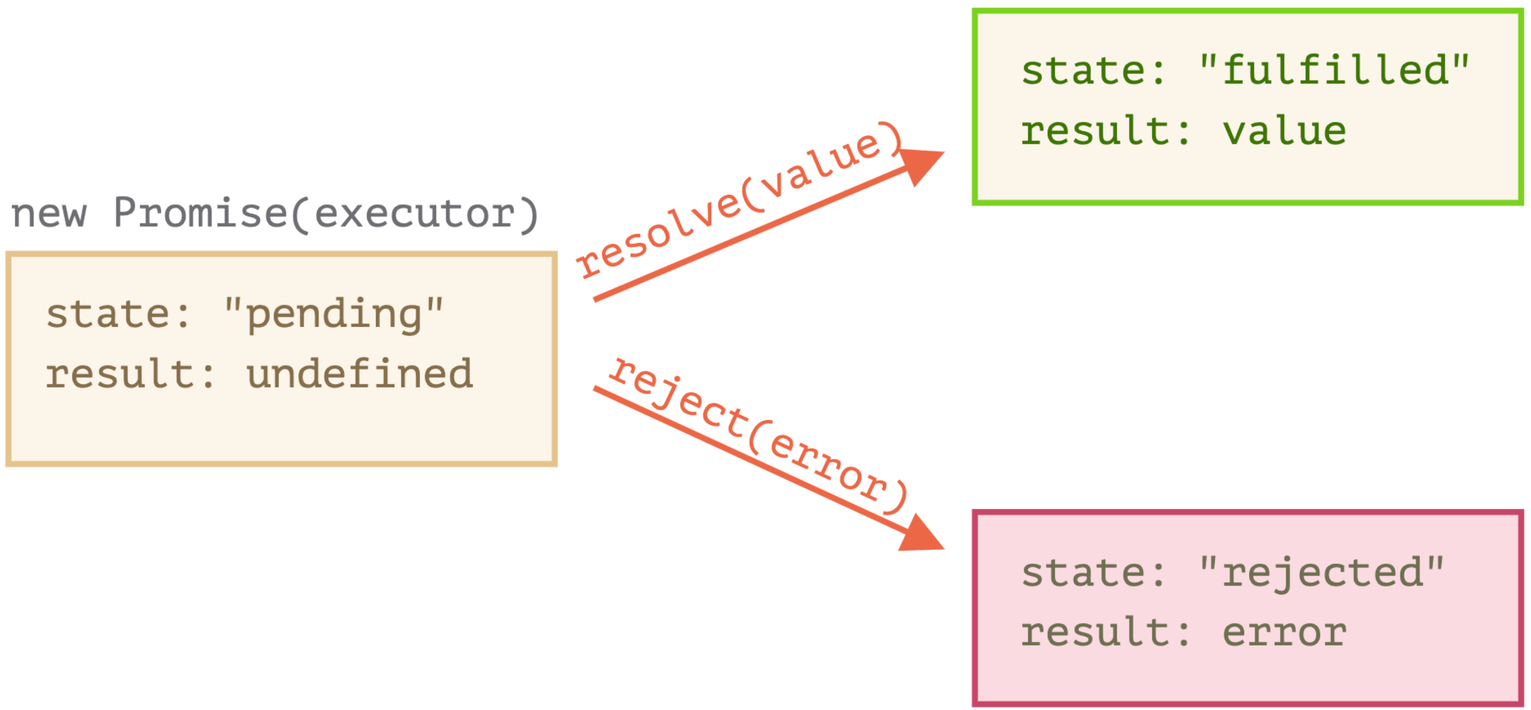
ASYNC MAKES A FUNCTION RETURN A PROMISE

AWAIT MAKES A FUNCTION WAIT FOR A PROMISE

WE CAN USE AWAIT TO WAIT FOR FETCH TO FINISH

https://www.w3schools.com/js/js_async.asp

THE TWO STATES OF PROMISE

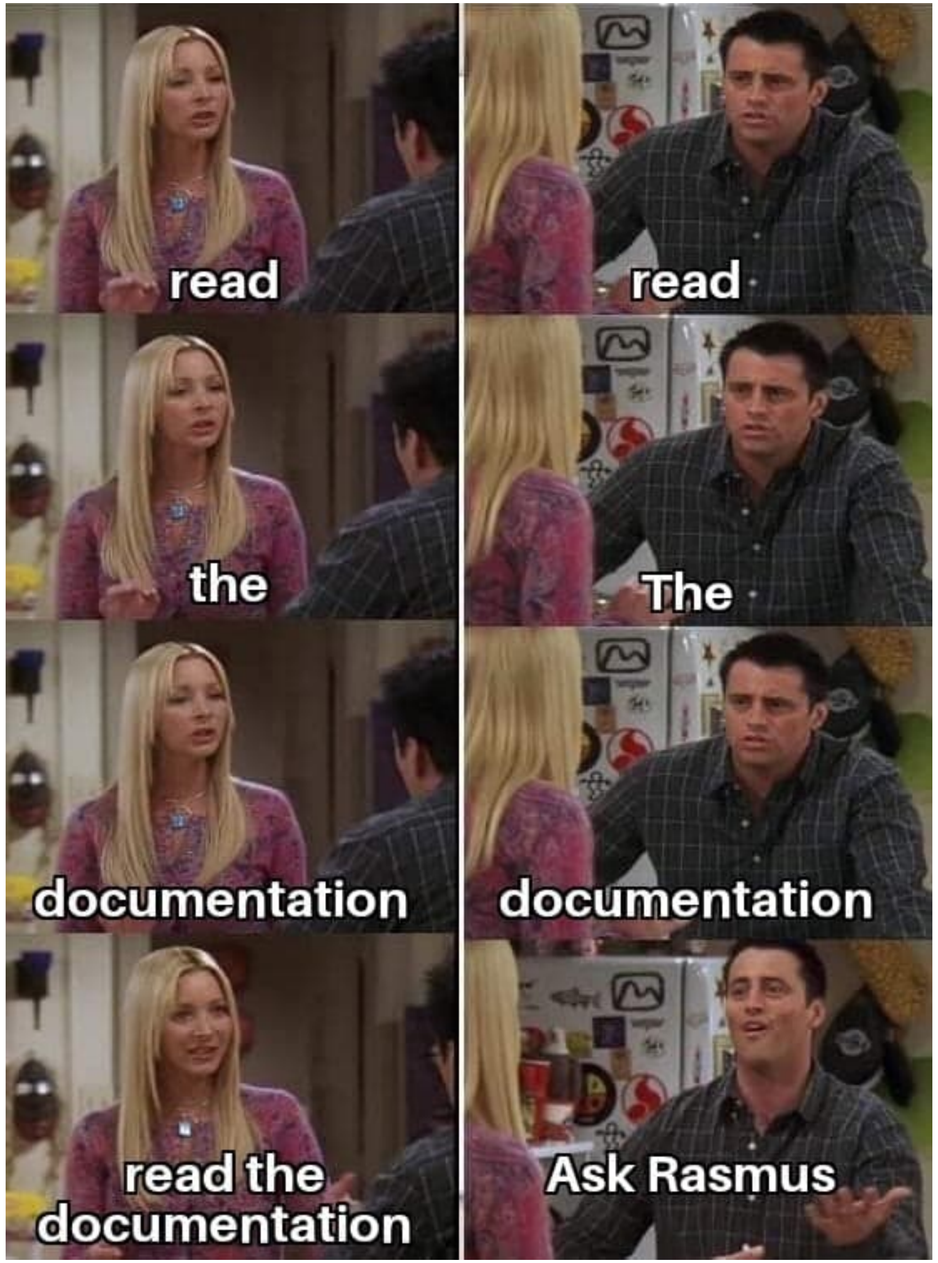


https://javascript.info/promise-basics

https://www.instagram.com/p/CVQGdNIjWMx/

```
let myPromise = new Promise(function (resolve, reject) {
  // "Producing Code" (May take some time)
  // Making coffee ...
  resolve("Yaaay, here's your coffee"); // when successful
  reject("Ohh, f***. Something went wrong");  // when error
});

// "Consuming Code" (Must wait for a fulfilled Promise)
myPromise.then(
  function (value) {
    /* code if successful */
    console.log(value); // Yaaay, here's your coffee
  },
  function (error) {
    /* code if some error */
    console.log(error); // Ohh, f***. Something went wrong
  }
);
```

https://www.w3schools.com/js/js_promise.asp


read
the
documentation
read the documentation
read
The
documentation
Ask Rasmus

GLOBAL VARIABLES

VARIABLES OUTSIDE A FUNCTION (AND SCOPES)
ARE GLOBAL VARIABLES

Local variables

A variable declared inside a function is only visible inside that function.

For example:

```
function showMessage() {
  let message = "Hello, I'm JavaScript!"; // local variable

  alert( message );
}

showMessage(); // Hello, I'm JavaScript!

alert( message ); // <-- Error! The variable is local to the function
```

Outer variables

A function can access an outer variable as well, for example:

```
let userName = 'John';

function showMessage() {
  let message = 'Hello, ' + userName;
  alert(message);
}

showMessage(); // Hello, John
```

The function has full access to the outer variable. It can modify it as well.

```
let userName = 'John';

function showMessage() {
  userName = "Bob"; // (1) changed the outer variable

  let message = 'Hello, ' + userName;
  alert(message);
}

alert( userName ); // John before the function call

showMessage();

alert( userName ); // Bob, the value was modified by the function
```

https://javascript.info/function-basics#outer-variables

Global variables

Variables declared outside of any function, such as the outer `userName` in the code above, are called *global*.

Global variables are visible from any function (unless shadowed by locals).

It's a good practice to minimize the use of global variables. Modern code has few or no globals. Most variables reside in their functions. Sometimes though, they can be useful to store project-level data.

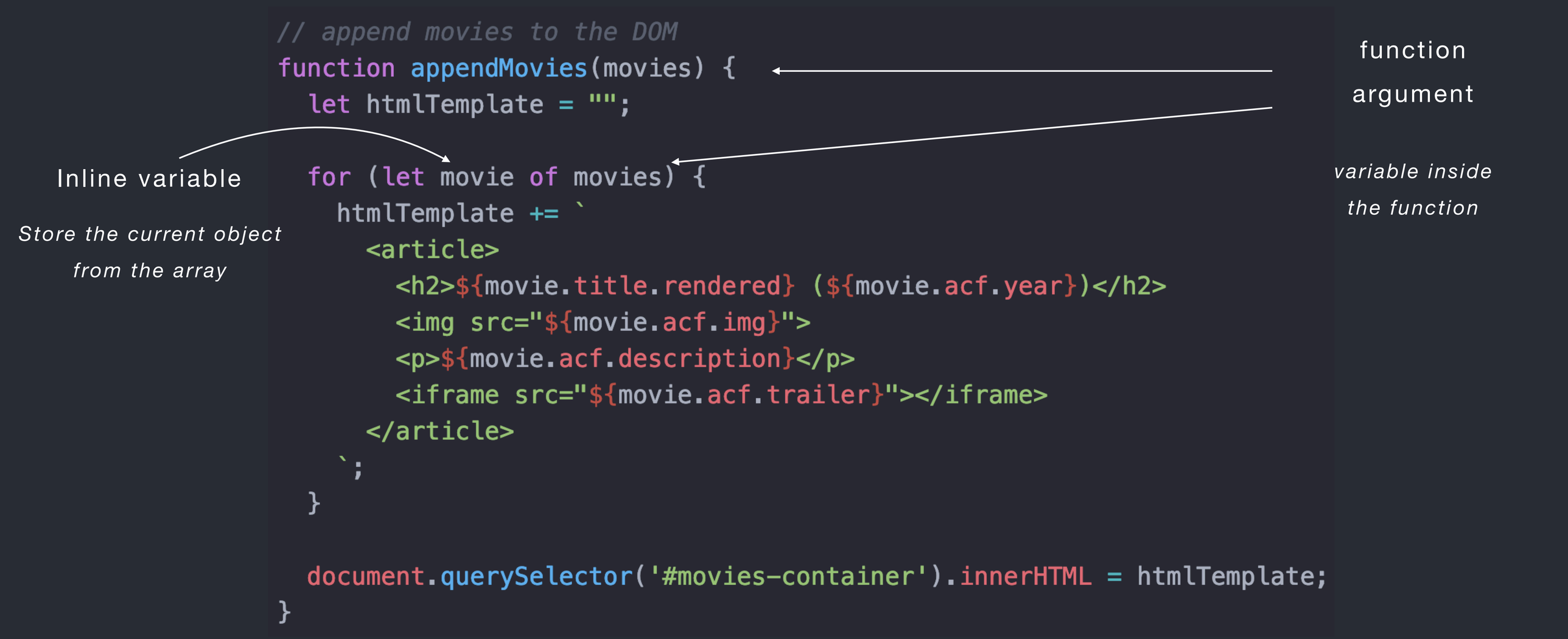
https://javascript.info/function-basics#outer-variables

Global Variable

ARRAY

movies

```
let _movies = [];

// fetch all movies from WP
async function getMovies() {
  let response = await fetch("https://movie-api.cederdorff.com/wp-json/wp/v2/posts");
  let data = await response.json();
  console.log(data);
  _movies = data;
  appendMovies(data);
  showLoader(false);
}

getMovies();
```


// append movies to the DOM
function appendMovies(movies) {
let htmlTemplate = "";
for (let movie of movies) {
htmlTemplate += `
<article>
<h2>${movie.title.rendered} (${movie.acf.year})</h2>
<img src="${movie.acf.img}">
${movie.acf.description}
<iframe src="${movie.acf.trailer}"></iframe>
</article>
`;
}
document.querySelector('#movies-container').innerHTML = htmlTemplate;
}
function argument
variable inside the function
Inline variable
Store the current object from the array

```
let _movies = [];

// fetch all movies from WP
async function getMovies() {
  let response = await fetch("https://movie-api.cederdorff.com/wp-json/wp/v2/posts");
  let data = await response.json();
  console.log(data);
  _movies = data;
  appendMovies(data);
  showLoader(false);
}

getMovies();

// append movies to the DOM
function appendMovies(movies) {
  let htmlTemplate = "";

  for (let movie of movies) {
    htmlTemplate += `
      <article>
        <h2>${movie.title.rendered} (${movie.acf.year})</h2>
        <img src="${movie.acf.img}">
```

function argument

variable inside the function

Inline variable

Store the current object from the array

```
// ========== Product functionality ========== //
/*
global variables: _products, _selectedProductId
*/
let _products = [];
let _selectedProductId;

/*
Fetches json data from the file products.json
*/
async function fetchData() {
  const response = await fetch('json/products.json');
  const data = await response.json();
  _products = data;
  console.log(_products);
  appendProducts(_products);
  showLoader(false);
}

fetchData();

function appendProducts(products) {
  let htmlTemplate = "";
  for (let product of products) {
    htmlTemplate += /*html*/`
      <article class="${product.status}">
        <article onclick="showDetailView(${product.id})">
```

FUNCTION-BASED JS

OR FUNCTIONAL PROGRAMMING

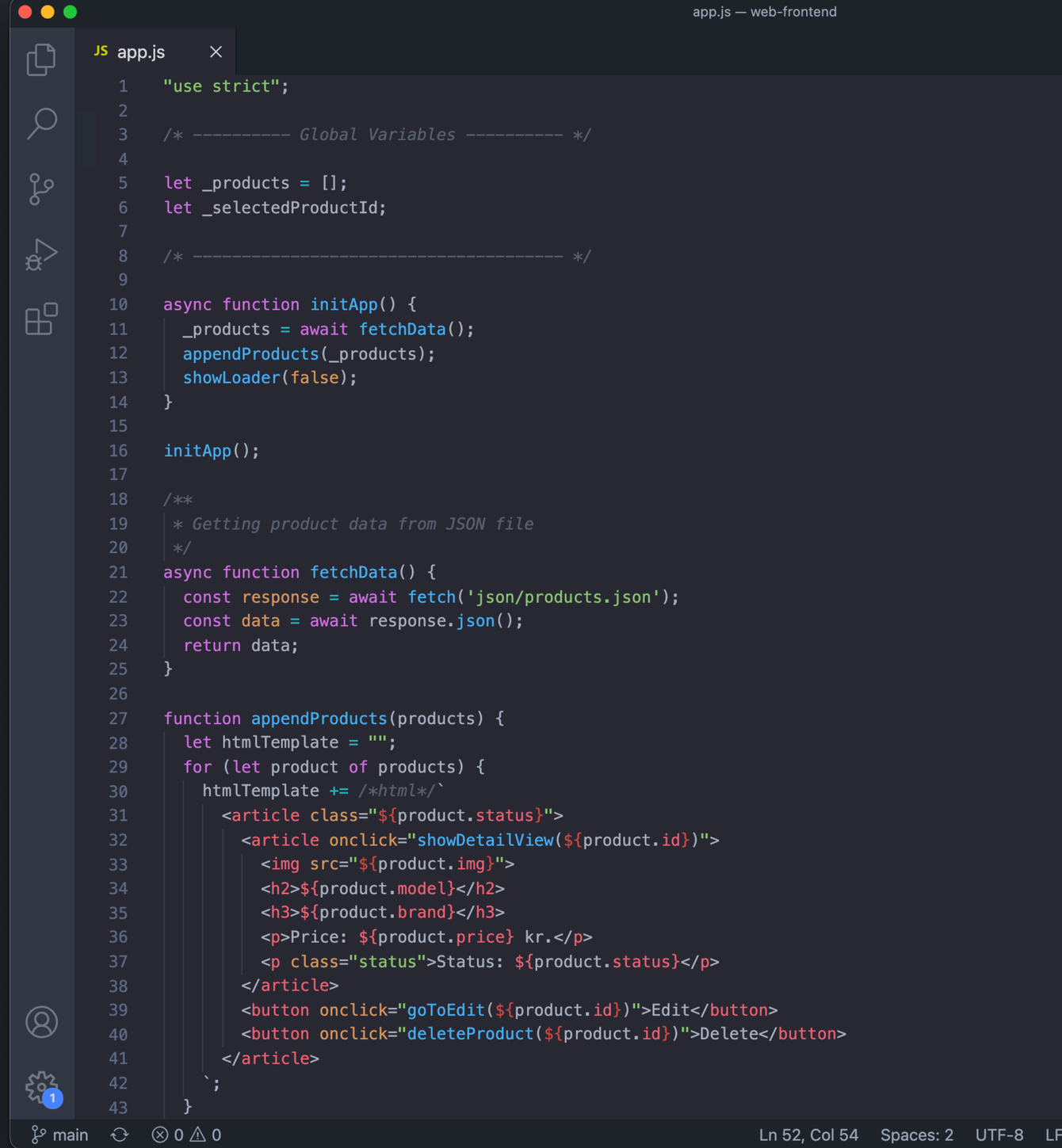
FUNCTION-BASED JS

Functions, functions & functions

Your code and scripts are (mostly) structured using functions ... a bunch of functions

Action and event based.

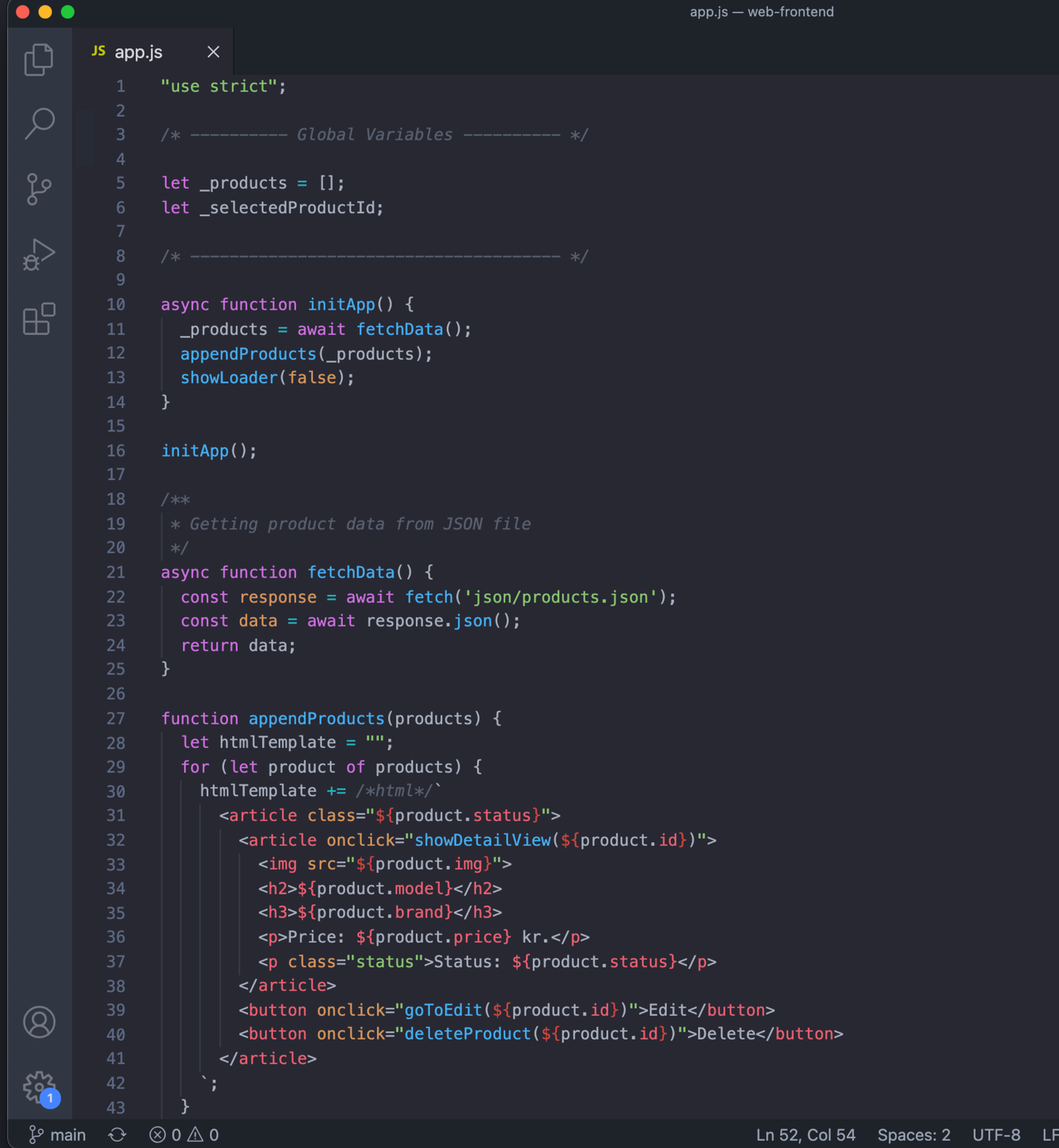
Functions take input which is called arguments.



It’s clean and straightforward.

Some would say it’s easier.

It depends 🤷‍♂️



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

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

BEST PRACTICE: WRITE REUSABLE CODE

https://scrimba.com/p/pPPeCy/cpKZdcQ

FUNCTIONS

FUNCTION DECLARATION

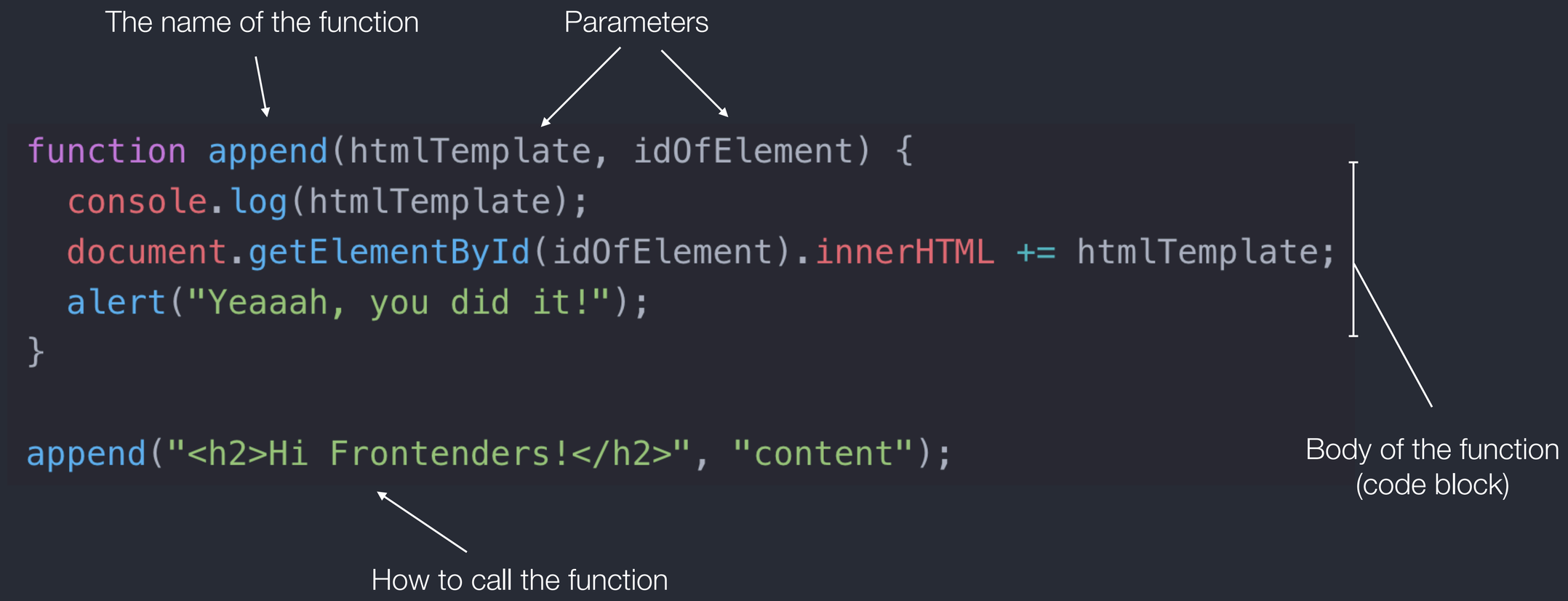
```
console.log("Hi Frontenders!");
console.log("Good job!");
console.log("I'm testing something!");
console.log("Hola");
```

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

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

https://javascript.info/function-basics

FUNCTIONS

FUNCTION DECLARATION



https://javascript.info/function-basics

FUNCTIONS

ARRAY & LOOPS

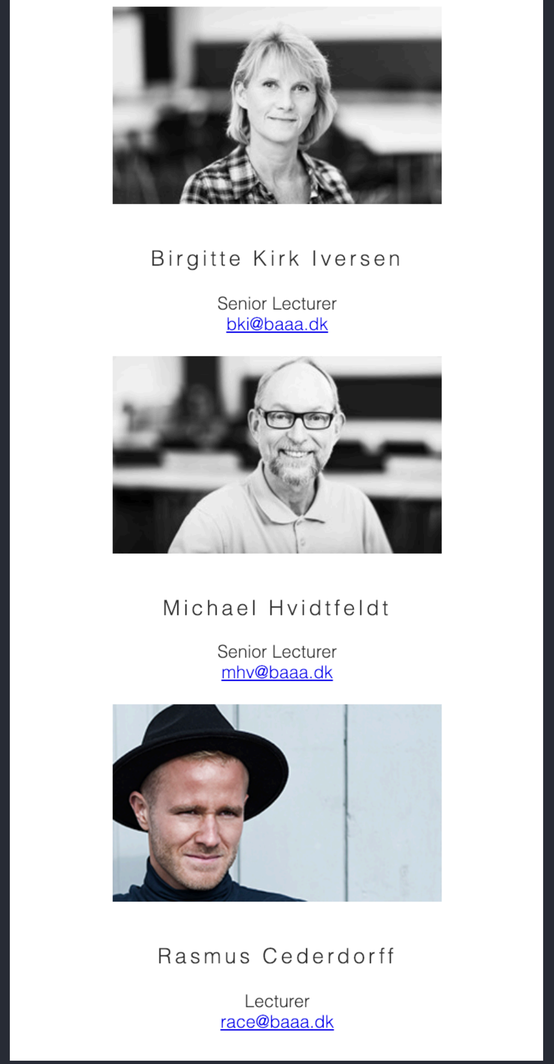
The name of the function

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);
```

Body of the function (code block)

How to call the function



FUNCTION CALLED BY ANOTHER FUNCTION

```
let users = [⋯
    }];

function appendUsers(users) {
    let htmlTemplate = "";
    for (const user of users) {
        console.log(user);
        htmlTemplate += /*html*/`
            <article>
                <img src="${user.avatar_url}">
                <h2>${user.name}</h2>
                <a href="mailto:${user.email}">${user.email}</a>
                <p>Role: ${user.enrollment_type}</p>
            </article>
        `;
    }
    document.querySelector("#users").innerHTML = htmlTemplate;
}

function initApp() {
    appendUsers(users);
}

initApp();
```

Use the name of the function to call / execute

`users` refers to our declared variable, `users`, (global variable)

ARROW FUNCTIONS

SHORTER & SIMPLYFIED FUNCTION SYNTAX

ARROW FUNCTIONS

```
fetch('json/persons.json')
  .then(function (response) {
    return response.json();
  })
  .then(function (data) {
    appendPersons(data)
  });
```

FUNCTION DECLARATION

```
fetch('json/persons.json')
  .then(response => response.json())
  .then(data => appendPersons(data));
```

ARROW FUNCTION

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

FOR OF LOOP

.FILTER & ARROW FUNCTION

```
function search(value) {
  let searchValue = value.toLowerCase();
  let filteredTeachers = _teachers.filter(teacher => teacher.title.rendered.toLowerCase().includes(searchValue));
  appendTeachers(filteredTeachers);
}
```

```
function orderByBrand() {
  _products.sort((product1, product2) => {
    return product1.brand.localeCompare(product2.brand);
  });
  appendProducts(_products);
}

function orderByModel() {
  _products.sort((product1, product2) => {
    return product1.model.localeCompare(product2.model);
  });
  appendProducts(_products);
}

function orderByPrice() {
  _products.sort((product1, product2) => {
    return product1.price - product2.price;
  });
  appendProducts(_products);
}
```

.SORT & ARROW FUNCTIONS
INSIDE FUNCTIONS DECLARATIONS

ARROW FUNCTIONS

```
function orderByBrand() {
  _products.sort(function (product1, product2) {
    return product1.brand.localeCompare(product2.brand);
  });
  appendProducts(_products);
}
```

FUNCTION DECLARATION

```
function orderByBrand() {
  _products.sort((product1, product2) => {
    return product1.brand.localeCompare(product2.brand);
  });
  appendProducts(_products);
}
```

ARROW FUNCTION

```
function orderByBrand() {
  _products.sort((product1, product2) => product1.brand.localeCompare(product2.brand));
  appendProducts(_products);
}
```

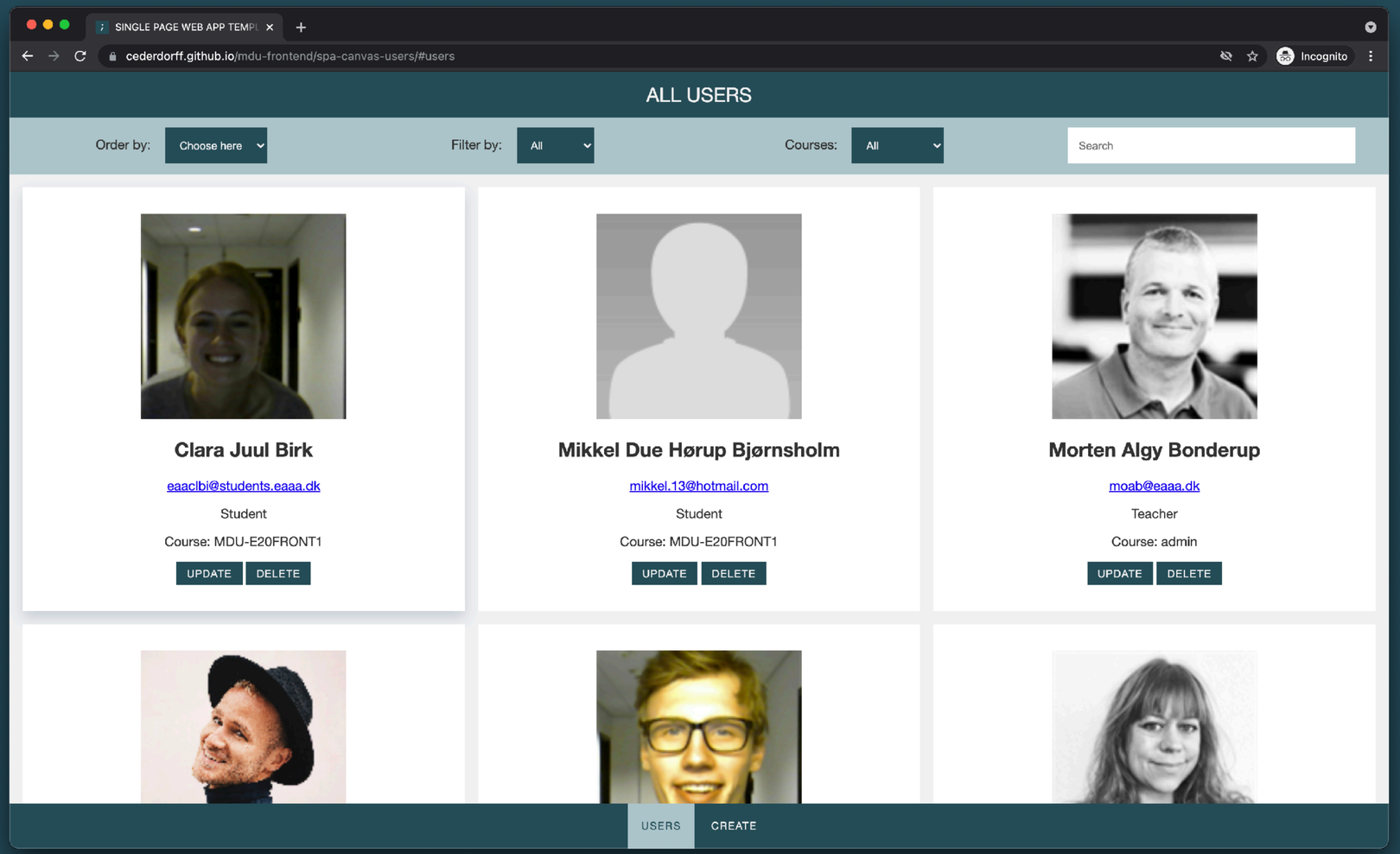
ONE LINE ARROW FUNCTION

WHEN TO USE?

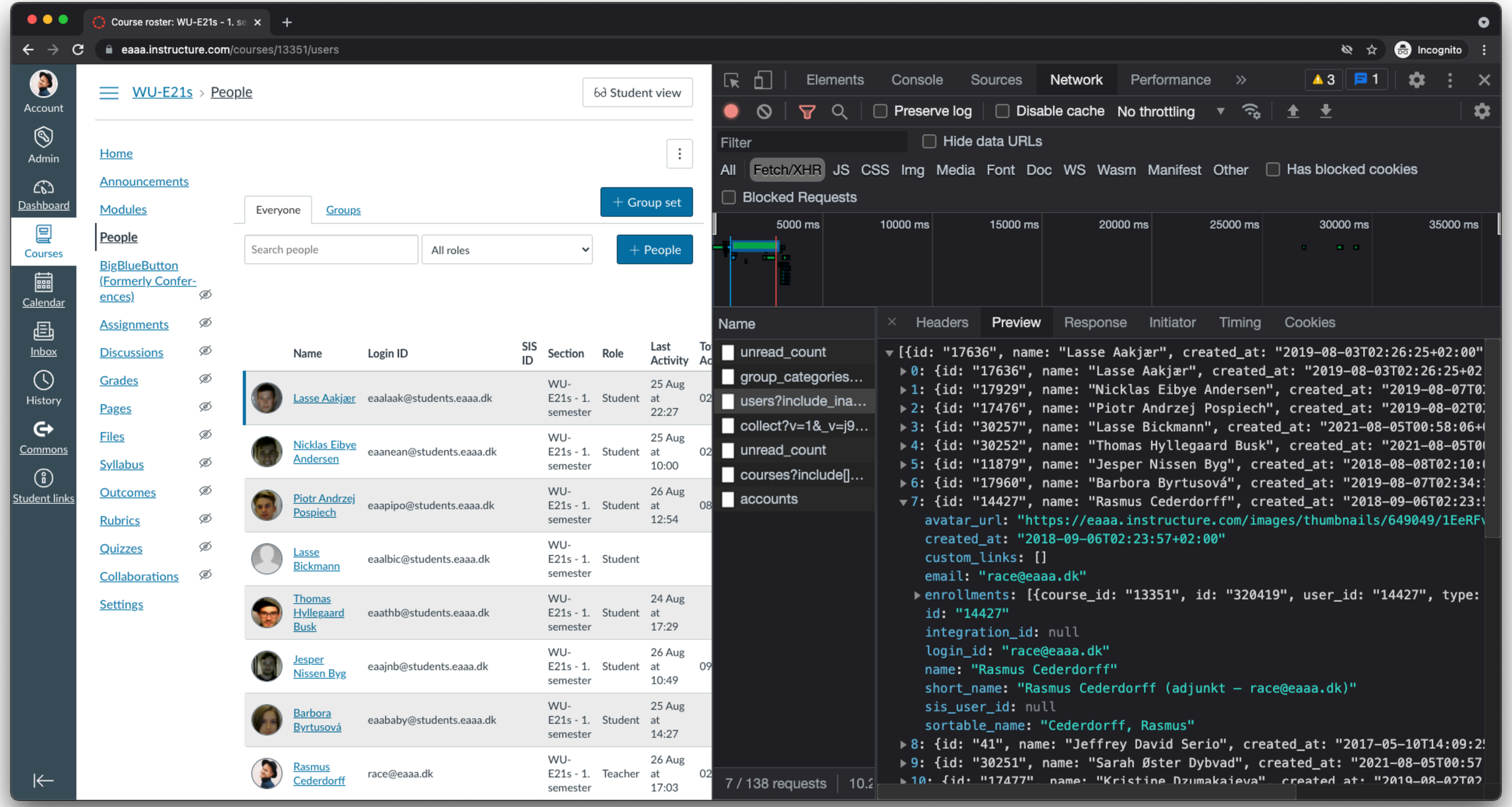
IT’S UP TO YOU 🤷

CANVAS USERS SPA CASE

BACK



Template: `spa-canvas-users-template`


Course roster: WU-E21s - 1. se
eaaa.instructure.com/courses/13351/users
Incognito
Account
Admin
Dashboard
Courses
Calendar
Inbox
History
Commons
Student links
WU-E21s › People
Student view
Home
Announcements
Modules
People
BigBlueButton (Formerly Confer-ences)
Assignments
Discussions
Grades
Pages
Files
Syllabus
Outcomes
Rubrics
Quizzes
Collaborations
Settings
Everyone
Groups
+ Group set
Search people
All roles
+ People
Name
Login ID
SIS ID
Section
Role
Last Activity
Lasse Aakjær
eaalaak@students.eaaa.dk
WU-E21s - 1. semester
Student
25 Aug at 22:27
Nicklas Eibye Andersen
eaanean@students.eaaa.dk
WU-E21s - 1. semester
Student
25 Aug at 10:00
Piotr Andrzej Pospiech
eaapipo@students.eaaa.dk
WU-E21s - 1. semester
Student
26 Aug at 12:54
Lasse Bickmann
eaalbic@students.eaaa.dk
WU-E21s - 1. semester
Student
Thomas Hyllegaard Busk
eaathb@students.eaaa.dk
WU-E21s - 1. semester
Student
24 Aug at 17:29
Jesper Nissen Byg
eaajnb@students.eaaa.dk
WU-E21s - 1. semester
Student
26 Aug at 10:49
Barbora Byrtusová
eaababy@students.eaaa.dk
WU-E21s - 1. semester
Student
25 Aug at 14:27
Rasmus Cederdorff
race@eaaa.dk
WU-E21s - 1. semester
Teacher
26 Aug at 17:03
Elements
Console
Sources
Network
Performance
Preserve log
Disable cache
No throttling
Filter
Hide data URLs
All
Fetch/XHR
JS
CSS
Img
Media
Font
Doc
WS
Wasm
Manifest
Other
Has blocked cookies
Blocked Requests
5000 ms
10000 ms
15000 ms
20000 ms
25000 ms
30000 ms
35000 ms
Name
unread_count
group_categories...
users?include_ina...
collect?v=1&_v=j9...
unread_count
courses?include[]...
accounts
7 / 138 requests
Headers
Preview
Response
Initiator
Timing
Cookies
[{id: "17636", name: "Lasse Aakjær", created_at: "2019-08-03T02:26:25+02:00"
0: {id: "17636", name: "Lasse Aakjær", created_at: "2019-08-03T02:26:25+02
1: {id: "17929", name: "Nicklas Eibye Andersen", created_at: "2019-08-07T0
2: {id: "17476", name: "Piotr Andrzej Pospiech", created_at: "2019-08-02T0
3: {id: "30257", name: "Lasse Bickmann", created_at: "2021-08-05T00:58:06+
4: {id: "30252", name: "Thomas Hyllegaard Busk", created_at: "2021-08-05T0
5: {id: "11879", name: "Jesper Nissen Byg", created_at: "2018-08-08T02:10:
6: {id: "17960", name: "Barbora Byrtusová", created_at: "2019-08-07T02:34:
7: {id: "14427", name: "Rasmus Cederdorff", created_at: "2018-09-06T02:23:
avatar_url: "https://eaaa.instructure.com/images/thumbnails/649049/1EeRF
created_at: "2018-09-06T02:23:57+02:00"
custom_links: []
email: "race@eaaa.dk"
enrollments: [{course_id: "13351", id: "320419", user_id: "14427", type:
id: "14427"
integration_id: null
login_id: "race@eaaa.dk"
name: "Rasmus Cederdorff"
short_name: "Rasmus Cederdorff (adjunkt – race@eaaa.dk)"
sis_user_id: null
sortable_name: "Cederdorff, Rasmus"
8: {id: "41", name: "Jeffrey David Serio", created_at: "2017-05-10T14:09:2
9: {id: "30251", name: "Sarah Øster Dybvad", created_at: "2021-08-05T00:57

SINGLE PAGE WEB APP TEMPL | Products

127.0.0.1:5501/spa-products-fetch-json-enhanced/index.html

PRODUCTS

Order by: Choose here

Show out of stock

Search

MacBook Pro 13"

Apple

Price: 11799 kr.

Status: outOfStock

EDIT DELETE

MacBook Pro 15"

Apple

Price: 21499 kr.

Status: inStock

EDIT DELETE

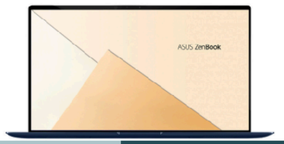
Zenbook 14"

ASUS

Price: 8099 kr.

Status: outOfStock

EDIT DELETE



PRODUCTS ADD PRODUCT

spa-products-fetch-json-enhanced

CANVAS USER SPA #1

BACK

Template: `spa-canvas-users-template`

1. Create a single page application based on user data fetched from: https://cederdorff.github.io/web-frontend/canvas-users/data.json
2. Append and display all users in a view in your SPA. Use a grid view or flex box to display all users, and make sure it adjusts to the width of the screen.
3. Display at least the following for every user: `name`, `avatar_url`, `email` & `enrollment_type`
4. Implement search functionality searching on `name` and/or other properties. You might have to use a `for of` or `.filter`
5. Implement a create view and implement the create functionally using `array.push(...)`. Remember generating a dummy id when adding a new user.

CANVAS USER SPA #2

BACK

Template: `spa-canvas-users-template`

1. Implement sort functionality in order to sort by `name` (first name) and `sortableName` (last name). Use a select-option (dropdown).
2. Make it possible to filter users on `enrollment type`. You could use select and option, checkbox, and/or create different pages.
3. Create and implement an update view using the `id` of the user to `.find` and update properties of the user in the users array.
4. Implement delete functionality using the `id` to filter the users array. You must display a delete confirm dialog before deleting.
5. Create a detail view displaying all properties of the selected user.
6. Implement spinner/ loader to tell the user every time the script is loading og executing functions. We must give the user some feedback.
7. Reimplement the styling. Create a full page layout with grid and/or flexbox. Please, style it different than a RACE.js SPA.

VARIABLE

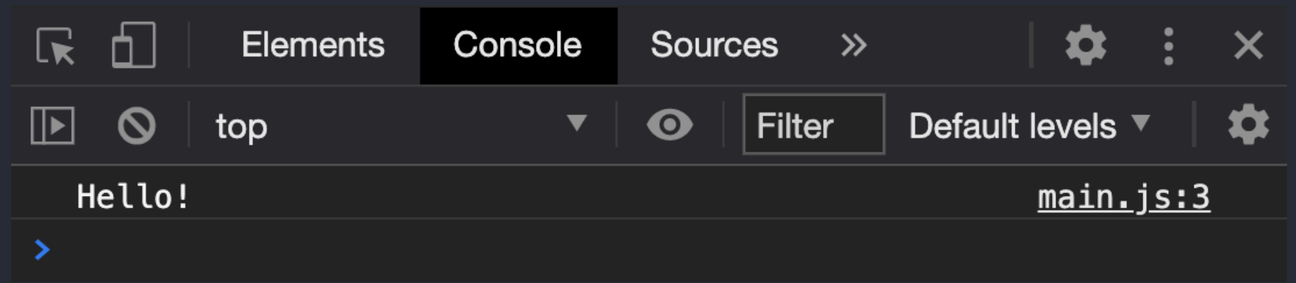
A variable is a “named storage” and stored in the memory of the browser.

The variable `message` can be imagined as a box labeled `"message"` with the value `"Hello!"` in it. We can put any value in the box.

VARIABLES

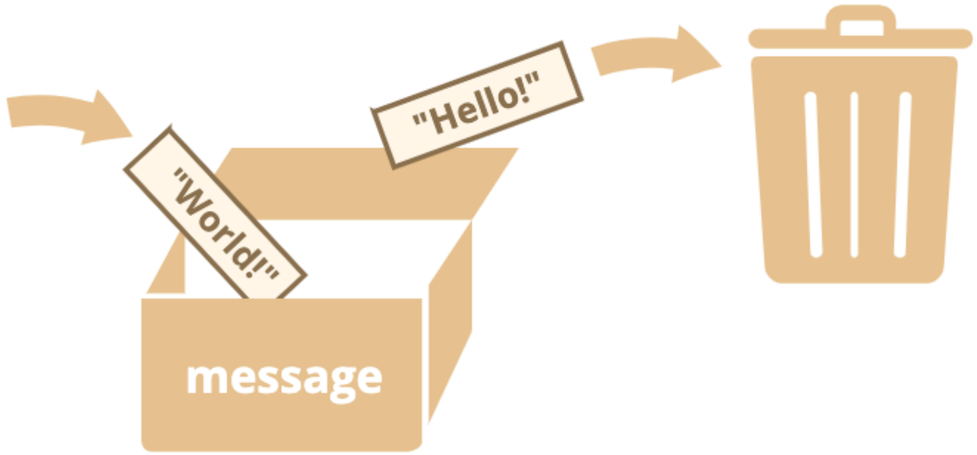
... STORE DATA IN THE MEMORY

```
let message = "Hello!";

console.log(message);
```



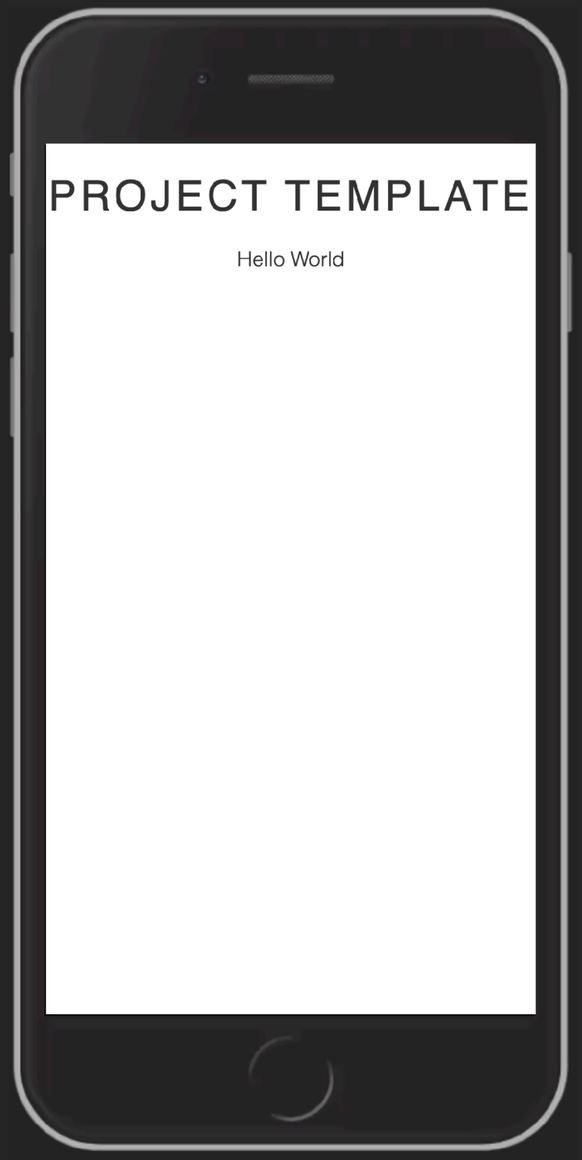
VARIABLE

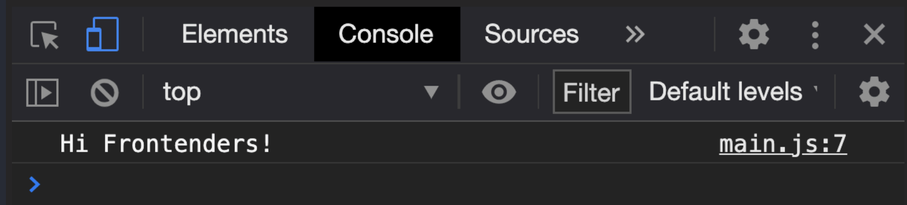
A variable is a “named storage” and stored in the memory of the browser.



We can change the value of the variables as many times as we want.

```
// 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;
```





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-vs-let

```
// “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
```

var-vs-let

CONST

Const is an unchanging variable.

```
const myBirthday = "12-03-1990";
myBirthday = "12-03-1989";
// Uncaught TypeError: can't reassign the constant!
```

`const` cannot be reassigned.

If you try to, an `error` will be thrown.

CONST CAN'T BE REASSIGNED

```
const myBirthday = "12-03-1990";
myBirthday = "12-03-1989"; // Uncaught TypeError: can't reassign the constant!

const person = {
    name: "Kasper",
    mail: "kato@eaaa.dk",
    age: 32
};

person.age = 33; // no error

person = {
    name: "Rasmus",
    mail: "race@eaaa.dk",
    age: 31
}; // Uncaught TypeError: can't reassign the constant!
```

USE LET & CONST INSTEAD OF VAR

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

Name things right

Talking about variables, there's one more extremely important thing.

A variable name should have a clean, obvious meaning, describing the data that it stores.

Variable naming is one of the most important and complex skills in programming. A quick glance at variable names can reveal which code was written by a beginner versus an experienced developer.

In a real project, most of the time is spent modifying and extending an existing code base rather than writing something completely separate from scratch. When we return to some code after doing something else for a while, it's much easier to find information that is well-labeled. Or, in other words, when the variables have good names.

Please spend time thinking about the right name for a variable before declaring it. Doing so will repay you handsomely.

Some good-to-follow rules are:

- Use human-readable names like `userName` or `shoppingCart`.
- Stay away from abbreviations or short names like `a`, `b`, `c`, unless you really know what you're doing.
- Make names maximally descriptive and concise. Examples of bad names are `data` and `value`. Such names say nothing. It's only okay to use them if the context of the code makes it exceptionally obvious which data or value the variable is referencing.
- Agree on terms within your team and in your own mind. If a site visitor is called a "user" then we should name related variables `currentUser` or `newUser` instead of `currentVisitor` or `newManInTown`.

https://javascript.info/variables#name-things-right

DATA TYPES

In variables we store values. Values are of a certain data type.

In JavaScript we have 8 basic data types.

`number` for numbers of any kind: integer or floating-point, integers are limited by `±(2^53-1)`.

`bigint` is for integer numbers of arbitrary length.

`string` for strings. A string may have zero or more characters, there's no separate single-character type.

`boolean` for `true`/`false`.

`null` for unknown values – a standalone type that has a single value `null`.

`undefined` for unassigned values – a standalone type that has a single value `undefined`.

`object` for more complex data structures.

`symbol` for unique identifiers.

https://javascript.info/types

OBJECTS

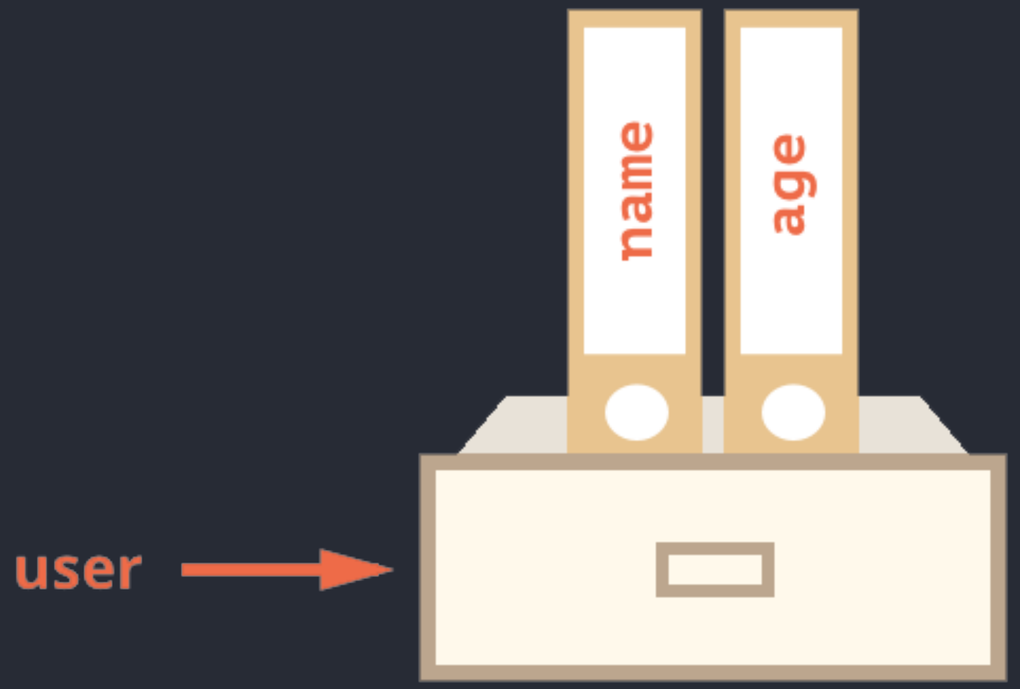
Objects are used to store keyed collections of various data

Containers for named values called properties. A property is a “`key: value`” pair

OBJECTS

A SET OF NAMED VALUES

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

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




```
Alicia is 6 years old.          main.js:11
>
```

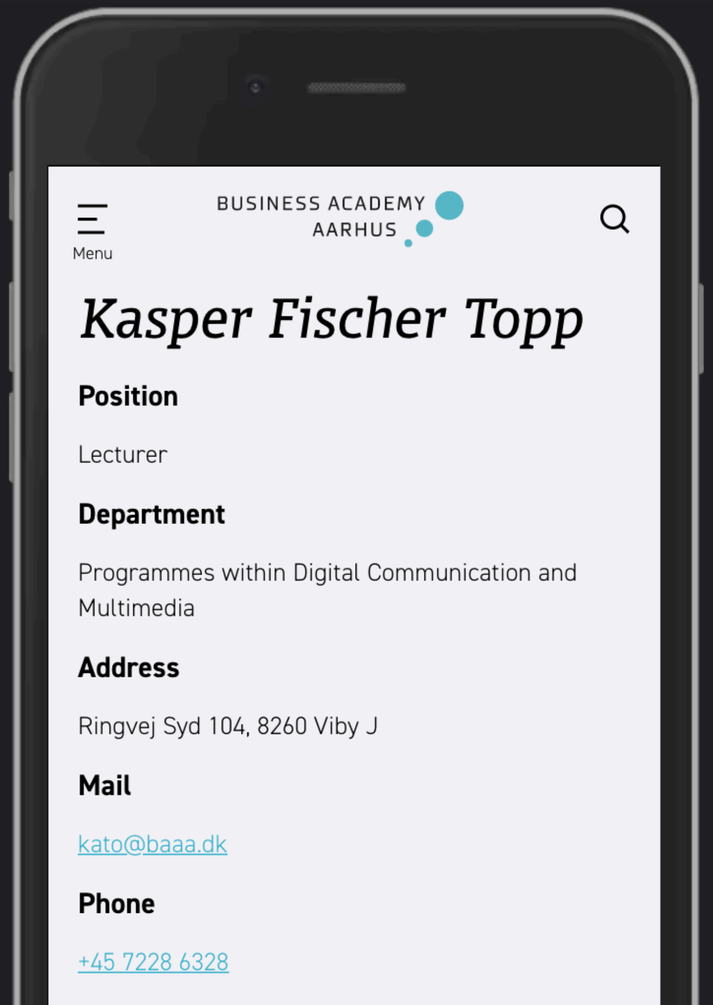
OBJECTS

A SET OF NAMED VALUES

property

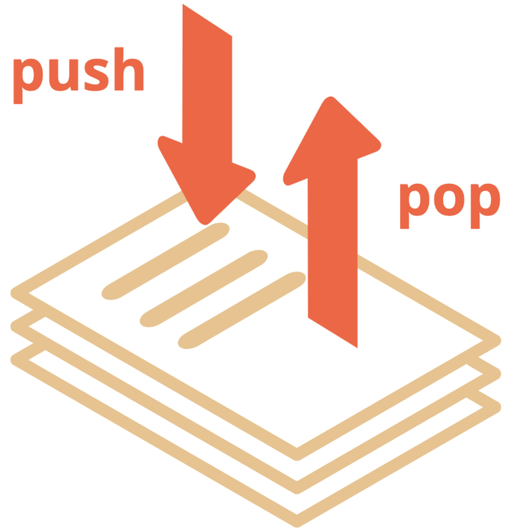
value

```
const mrBackend = {
  name: "Kasper Fischer Topp",
  mail: "kato@eaaa.dk",
  phone: "72286328",
  position: "Lecturer",
  favTechnologies: ["PHP", "SQL"]
};
```



ARRAYS

Arrays are ordered collections

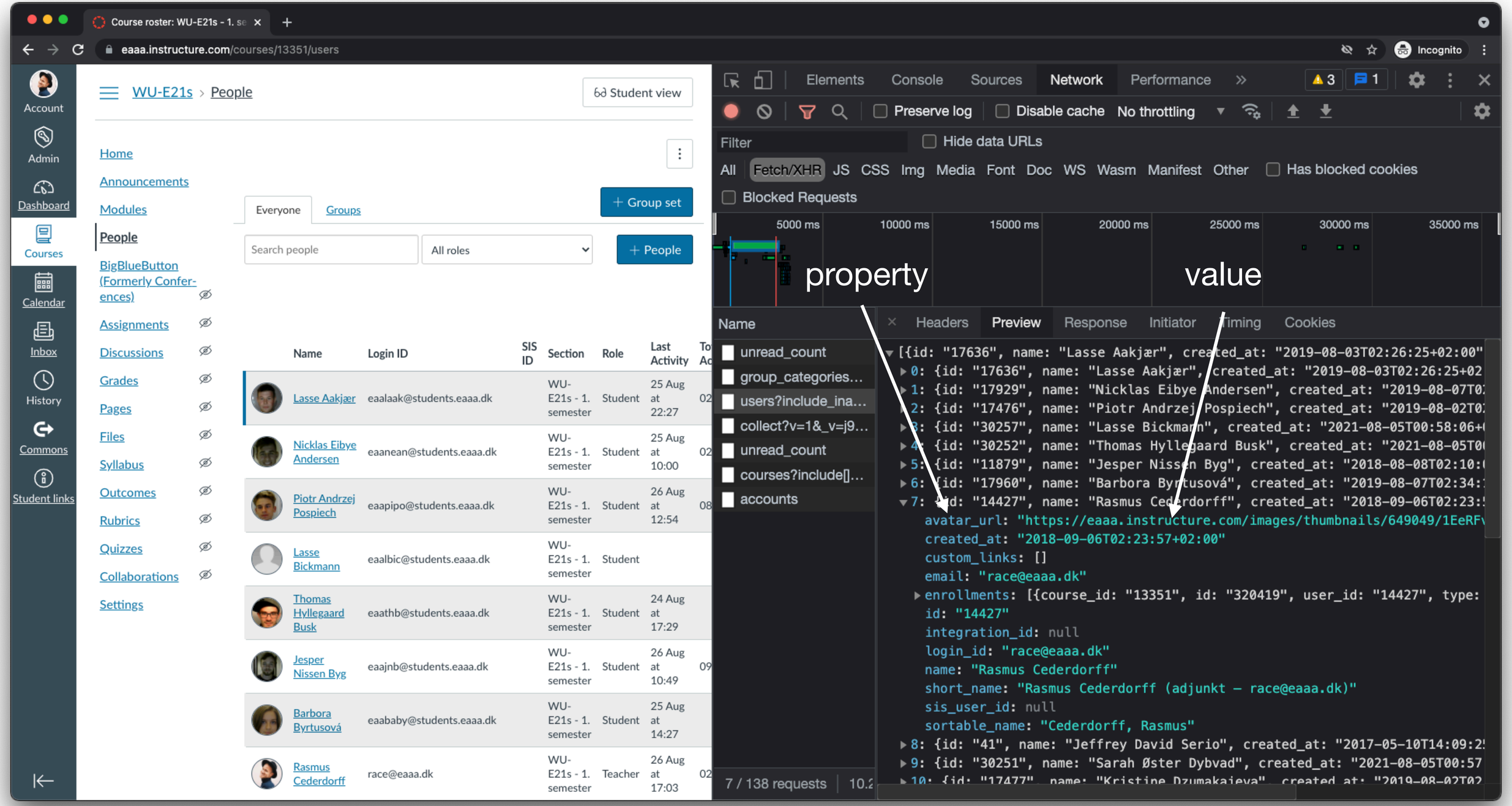


An array is a way to hold more than one value at a time we have a 1st, a 2nd, a 3rd, a 4th element and so on.

```
let todaysLecturers = [
  {
    name: "Kasper Fischer Topp",
    mail: "kato@eaaa.dk",
    phone: "72286328",
    position: "Lecturer",
    favTechnologies: ["PHP", "SQL"],
    nickname: "Mr. Backend"
  },
  {
    name: "Rasmus Cederdorff",
    mail: "race@eaaa.dk",
    phone: "72286318",
    position: "Lecturer",
    favTechnologies: ["JavaScript"],
    nickname: "Mr. Frontend"
  }
];
```

First element

Second element


Course roster: WU-E21s - 1. se
eaaa.instructure.com/courses/13351/users
Incognito
Account
Admin
Dashboard
Courses
Calendar
Inbox
History
Commons
Student links
WU-E21s › People
Student view
Home
Announcements
Modules
People
BigBlueButton (Formerly Confer-ences)
Assignments
Discussions
Grades
Pages
Files
Syllabus
Outcomes
Rubrics
Quizzes
Collaborations
Settings
Everyone
Groups
+ Group set
Search people
All roles
+ People
Name
Login ID
SIS ID
Section
Role
Last Activity
Lasse Aakjær
eaalaak@students.eaaa.dk
WU-E21s - 1. semester
Student
25 Aug at 22:27
Nicklas Eibye Andersen
eaanean@students.eaaa.dk
WU-E21s - 1. semester
Student
25 Aug at 10:00
Piotr Andrzej Pospiech
eaapipo@students.eaaa.dk
WU-E21s - 1. semester
Student
26 Aug at 12:54
Lasse Bickmann
eaalbic@students.eaaa.dk
WU-E21s - 1. semester
Student
Thomas Hyllegaard Busk
eaathb@students.eaaa.dk
WU-E21s - 1. semester
Student
24 Aug at 17:29
Jesper Nissen Byg
eaajnb@students.eaaa.dk
WU-E21s - 1. semester
Student
26 Aug at 10:49
Barbora Byrtusová
eaababy@students.eaaa.dk
WU-E21s - 1. semester
Student
25 Aug at 14:27
Rasmus Cederdorff
race@eaaa.dk
WU-E21s - 1. semester
Teacher
26 Aug at 17:03
Elements
Console
Sources
Network
Performance
Preserve log
Disable cache
No throttling
Filter
Hide data URLs
All
Fetch/XHR
JS
CSS
Img
Media
Font
Doc
WS
Wasm
Manifest
Other
Has blocked cookies
Blocked Requests
5000 ms
10000 ms
15000 ms
20000 ms
25000 ms
30000 ms
35000 ms
property
value
Name
unread_count
group_categories...
users?include_ina...
collect?v=1&_v=j9...
unread_count
courses?include[]...
accounts
7 / 138 requests
Headers
Preview
Response
Initiator
Timing
Cookies
[{id: "17636", name: "Lasse Aakjær", created_at: "2019-08-03T02:26:25+02:00"
0: {id: "17636", name: "Lasse Aakjær", created_at: "2019-08-03T02:26:25+02
1: {id: "17929", name: "Nicklas Eibye Andersen", created_at: "2019-08-07T0
2: {id: "17476", name: "Piotr Andrzej Pospiech", created_at: "2019-08-02T0
3: {id: "30257", name: "Lasse Bickmann", created_at: "2021-08-05T00:58:06+
4: {id: "30252", name: "Thomas Hyllegaard Busk", created_at: "2021-08-05T0
5: {id: "11879", name: "Jesper Nissen Byg", created_at: "2018-08-08T02:10:
6: {id: "17960", name: "Barbora Byrtusová", created_at: "2019-08-07T02:34:
7: {id: "14427", name: "Rasmus Cederdorff", created_at: "2018-09-06T02:23:
avatar_url: "https://eaaa.instructure.com/images/thumbnails/649049/1EeRF
created_at: "2018-09-06T02:23:57+02:00"
custom_links: []
email: "race@eaaa.dk"
enrollments: [{course_id: "13351", id: "320419", user_id: "14427", type:
id: "14427"
integration_id: null
login_id: "race@eaaa.dk"
name: "Rasmus Cederdorff"
short_name: "Rasmus Cederdorff (adjunkt – race@eaaa.dk)"
sis_user_id: null
sortable_name: "Cederdorff, Rasmus"
8: {id: "41", name: "Jeffrey David Serio", created_at: "2017-05-10T14:09:2
9: {id: "30251", name: "Sarah Øster Dybvad", created_at: "2021-08-05T00:57

DATA TYPES (& STRUCTURES)

OBJECTS & ARRAYS

FOR OF LOOP

ITERATE OVER ARRAYS OR OTHER ITERABLE OBJECTS

https://scrimba.com/learn/introductiontojavascript/for-loops-cMMM8U9

https://scrimba.com/learn/introductiontojavascript/challenge-for-loops-cPkpJrcv

LOOPS

```
for (const familyMember of familyMembers) {
  console.log(familyMember);
}

for (let index = 0; index < familyMembers.length; index++) {
  const familyMember = familyMembers[index];
  console.log(familyMember);
}
```

https://www.w3schools.com/js/js_loop_for.asp

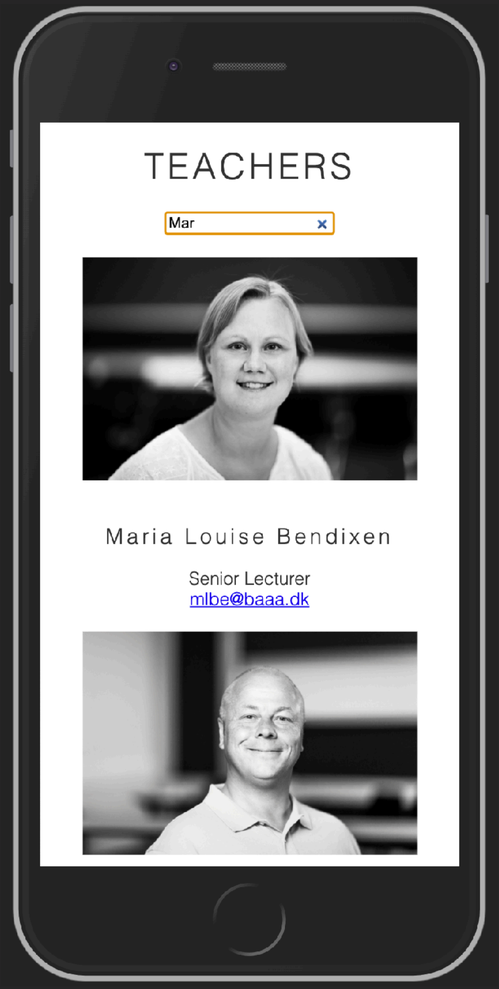
https://javascript.info/array#loops

https://javascript.info/while-for

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);
}
```



array-teachers-search

ARRAYS

.FILTER(...)

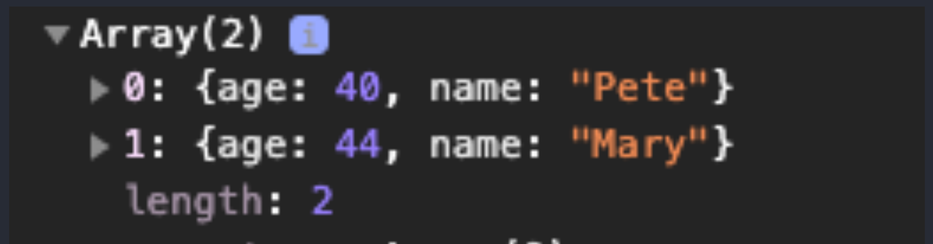
```
searchValue = searchValue.toLowerCase();
let filteredfamilyMembers = familyMembers.filter(function(familyMember) {
  let name = familyMember.name.toLowerCase();
  return name.includes(searchValue);
});

console.log(filteredfamilyMembers);
```

array-teachers-search

ARRAY

.FILTER(...)

```
let users = [
  { age: 35, name: "John" },
  { age: 40, name: "Pete" },
  { age: 44, name: "Mary" }
];

// returns array of with users older than 39
let someUsers = users.filter(item => item.age > 39);

console.log(someUsers);
```



ARRAY METHODS

.PUSH()

.FIND()

.MAP()

.REDUCE()

.FILTER()

.SORT()

.CONCAT()

...

Computer science student

Senior developer, 10+ years experience

https://www.instagram.com/p/BxWAgatgSmn/

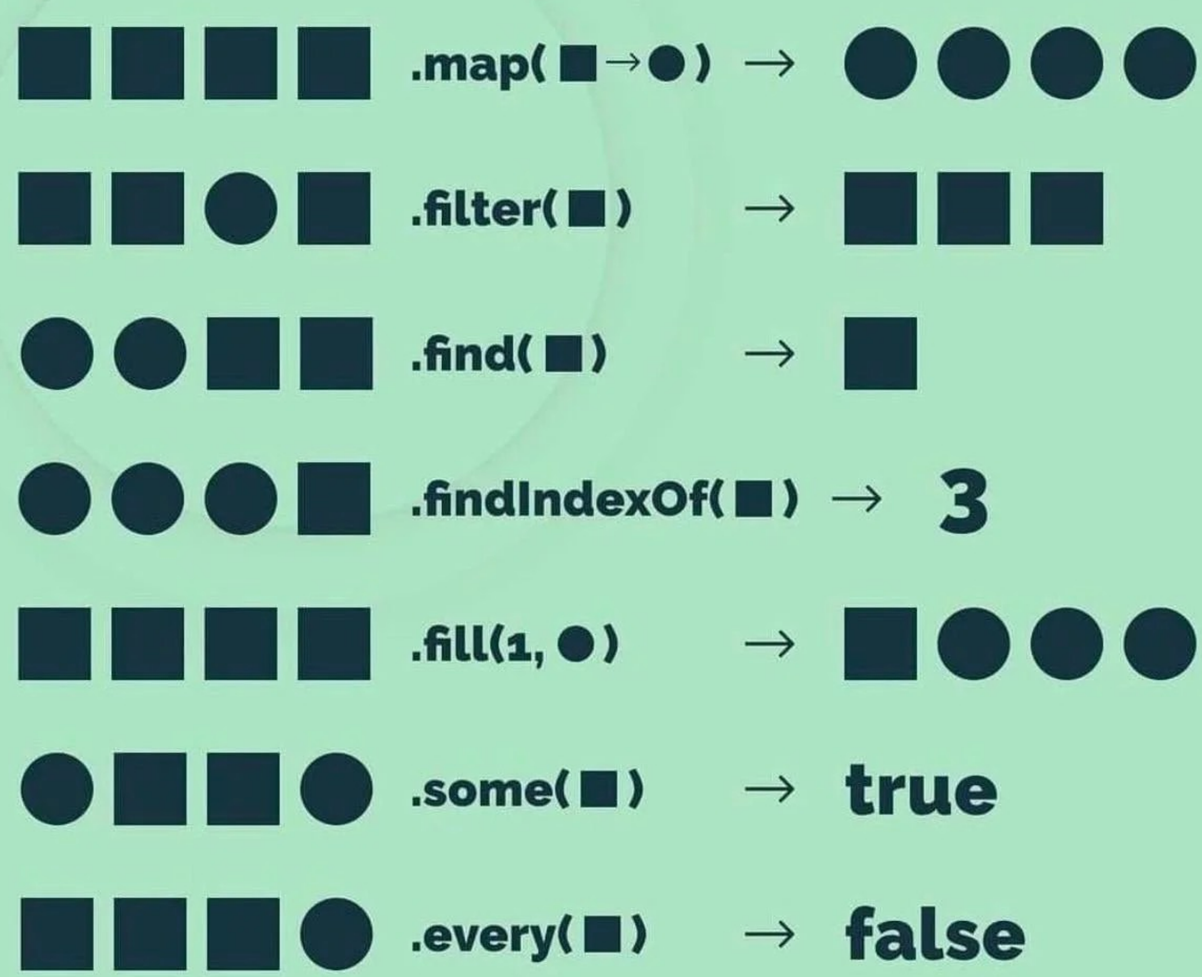
https://www.youtube.com/watch?v=DC471a9qrU4

ARRAY.MAP(...)

...iterate over an array and modify each element.
Array.map(...) calls a callback function for each element in the array.

```
const persons = [
    { firstname: "Birgitte", lastname: "Iversen" },
    { firstname: "Lykke", lastname: "Dahlen" },
    { firstname: "Rasmus", lastname: "Cederdorff" }
];

const mapped = persons.map(person => {
    return {
        name: `${person.firstname} ${person.lastname}`
    };
});

console.log(mapped);
```

```
▼ (3) [{…}, {…}, {…}] i
  ▶ 0: {name: 'Birgitte Iversen'}
  ▶ 1: {name: 'Lykke Dahlen'}
  ▶ 2: {name: 'Rasmus Cederdorff'}
    length: 3
```



https://javascript.info/array-methods
https://medium.com/@mandeepkaur1/a-list-of-javascript-array-methods-145d09dd19a0

ARRAY.MAP(...)

BACK

- Project template: `array-map`
- Use `.map` to map over the `persons` array and concatenate `firstName` and `lastName` to a new property called `name`.
- `console.log()` the result
- Add a property called `birthYear` for each `person` object. Use `map` to map over the array and add the property `birthYear` dynamically based on `birthDate` (hint: use `String.split(…)` or `.slice(…)`).

`TEMPLATE STRING`

BACKTICK STRING / TEMPLATE LITERALS

- Extended functionality
- Simplifies concatenating strings
- Embed values and expression into a string with `${...}`
- Simplifies the syntax and the reading
- Let us create more readable HTML templates

```
let name = "Alicia";
console.log(`Hello, ${name}`);
```

```
Hello, Alicia                                    main.js:8
>
```

`TEMPLATE STRING`

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

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

console.log(`${name} is ${age} years old.`);
```

```
Alicia is 6 years old.          main.js:10
Alicia is 6 years old.          main.js:12
>
```

`TEMPLATE STRING`

...EMBED VARIABLES AND EXPRESSIONS IN A STRING

```
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>";
  }
}
```

```
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>`;
  }
}
```

`ES6 STRING HTML`

https://marketplace.visualstudio.com/items?itemName=hjb2012.vscode-es6-string-html

```
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>`;
  }
}
```

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

WEB APP, SPA & ROUTING

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 AS ACTION

THE USER WANTS TO COMPLETE A TASK

NOT JUST ABOUT MOBILE DEVICES

WEBSITE

THE USER WANTS TO **GET** SOMETHING

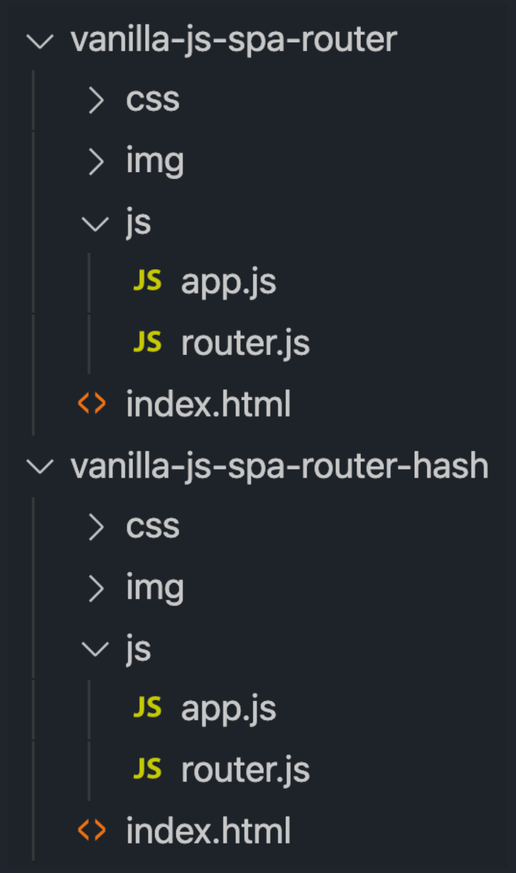
WEB APP

THE USER WANTS TO **DO** SOMETHING

WEB APP

- Stored on a web server
- Launched by the browser
- Accessible anywhere, anytime - on any device through the browser
- JavaScript, HTML & CSS
- Single Page Application
- Fetches data from (different) data sources.

ROUTER & SPA



SPA & ROUTER PROJECTS

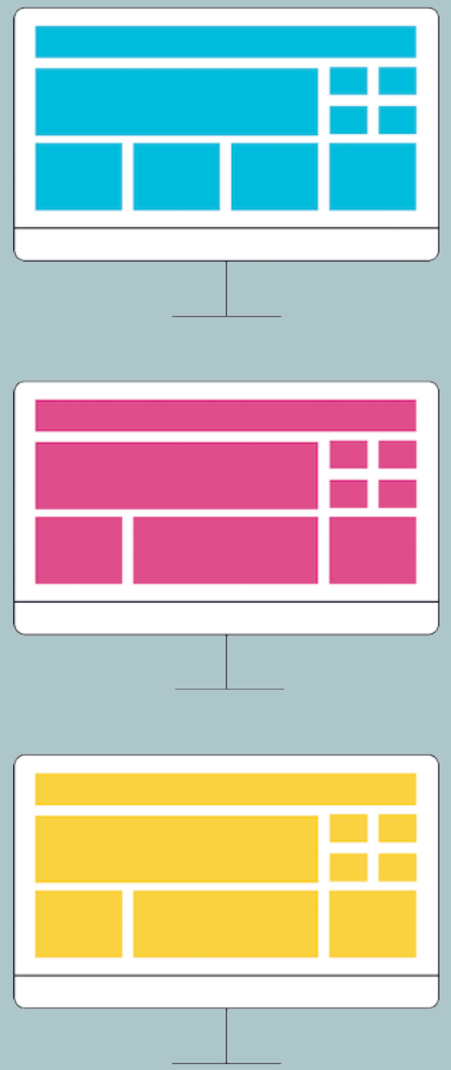
SINGLE PAGE APPLICATION

“A single-page application is an application that loads a single HTML page and all the necessary assets (such as JavaScript and CSS) required for the application to run. Any interactions with the page or subsequent pages do not require a round trip to the server which means the page is not reloaded.”

https://reactjs.org/docs/glossary.html#single-page-application

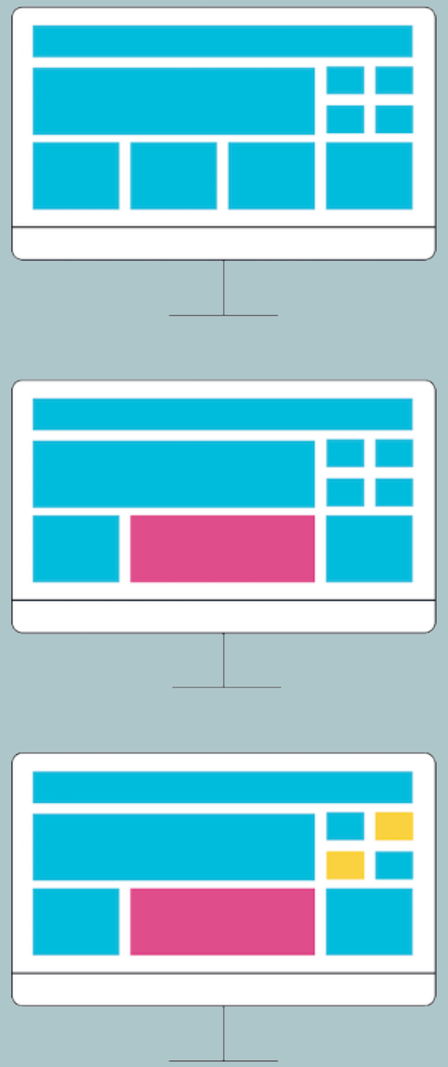
TRADITIONAL

- Every request for new information gives you a new version of the whole page.
- We have to load it all over again every time we want to change data and get new data.
- The browser has to render the page again.

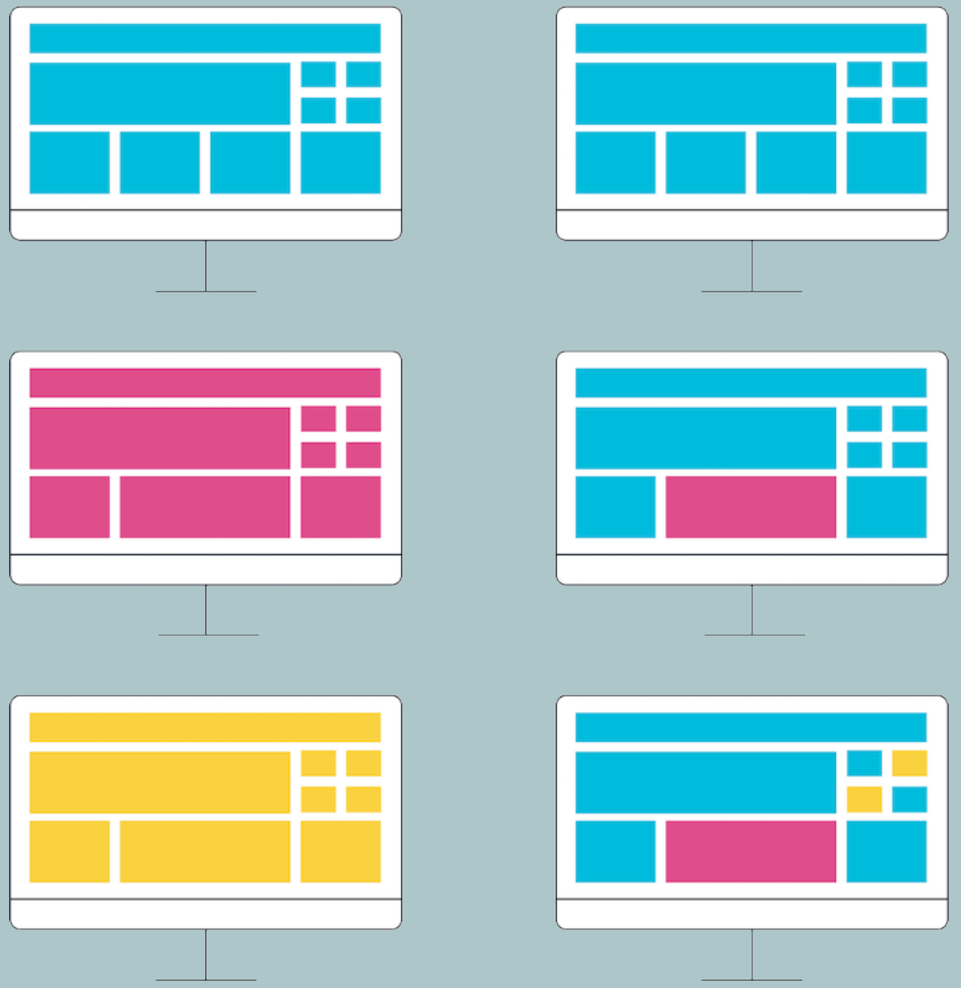


S P A

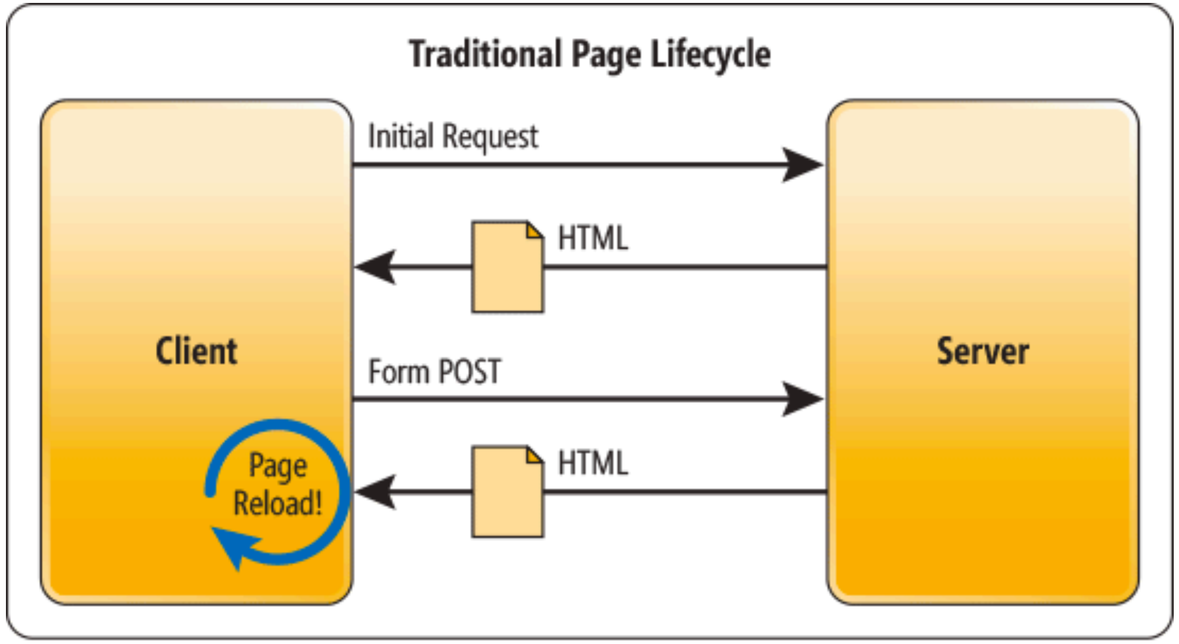
- We only request and load the data we want.
- No page reload/ refresh.
- Client side & JavaScript.
- Less server work required.
- Advanced UI & Animations on page change.
- Better performance.

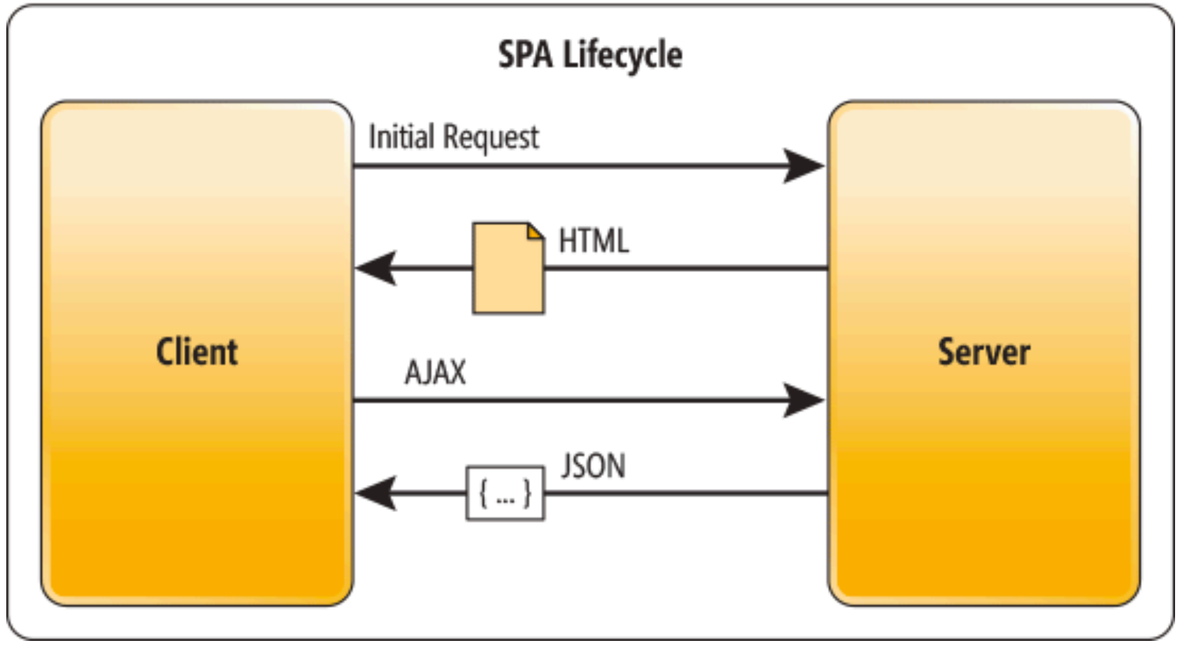


MPA VS SPA



TRADITIONAL VS SPA LIFECYCLE





ROUTER

“It is the piece of software in charge to organize the states of the application, switching between different views.”

It’s a key component in Single Page Applications.

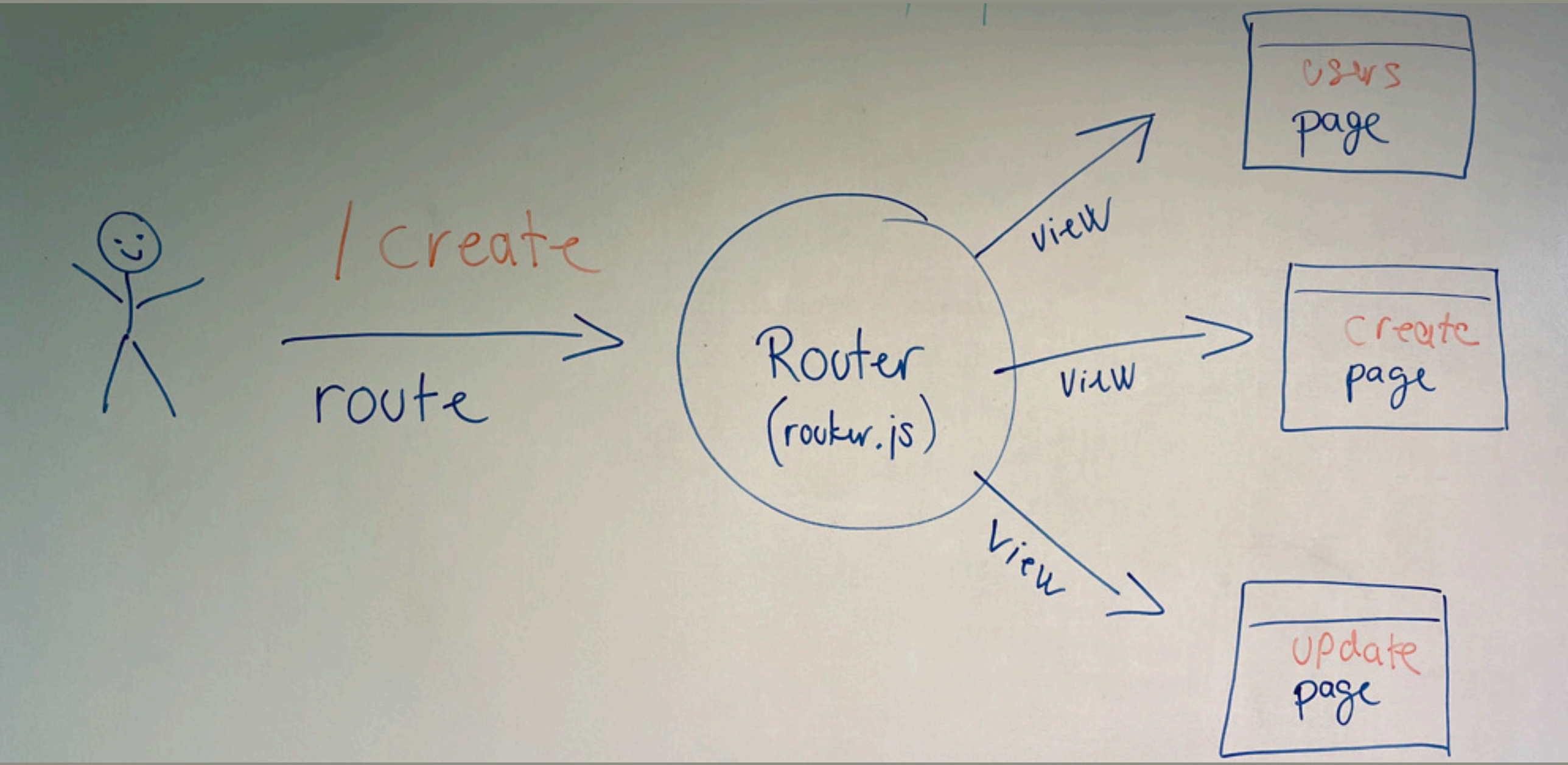
https://medium.com/@fro_g/routing-in-javascript-d552ff4d2921

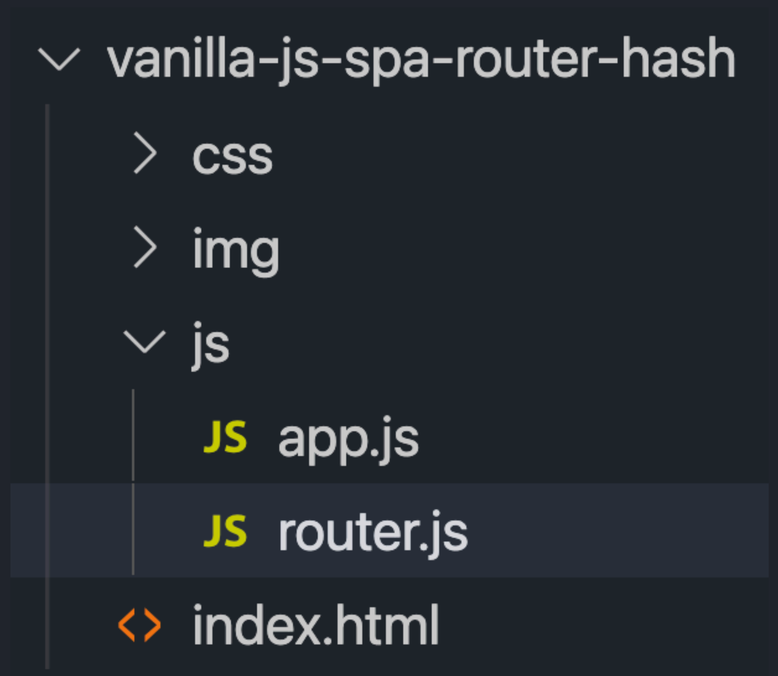
S P A & R O U T E R

In an SPA the router is in charge of displaying the right view by watching changes on the URL.

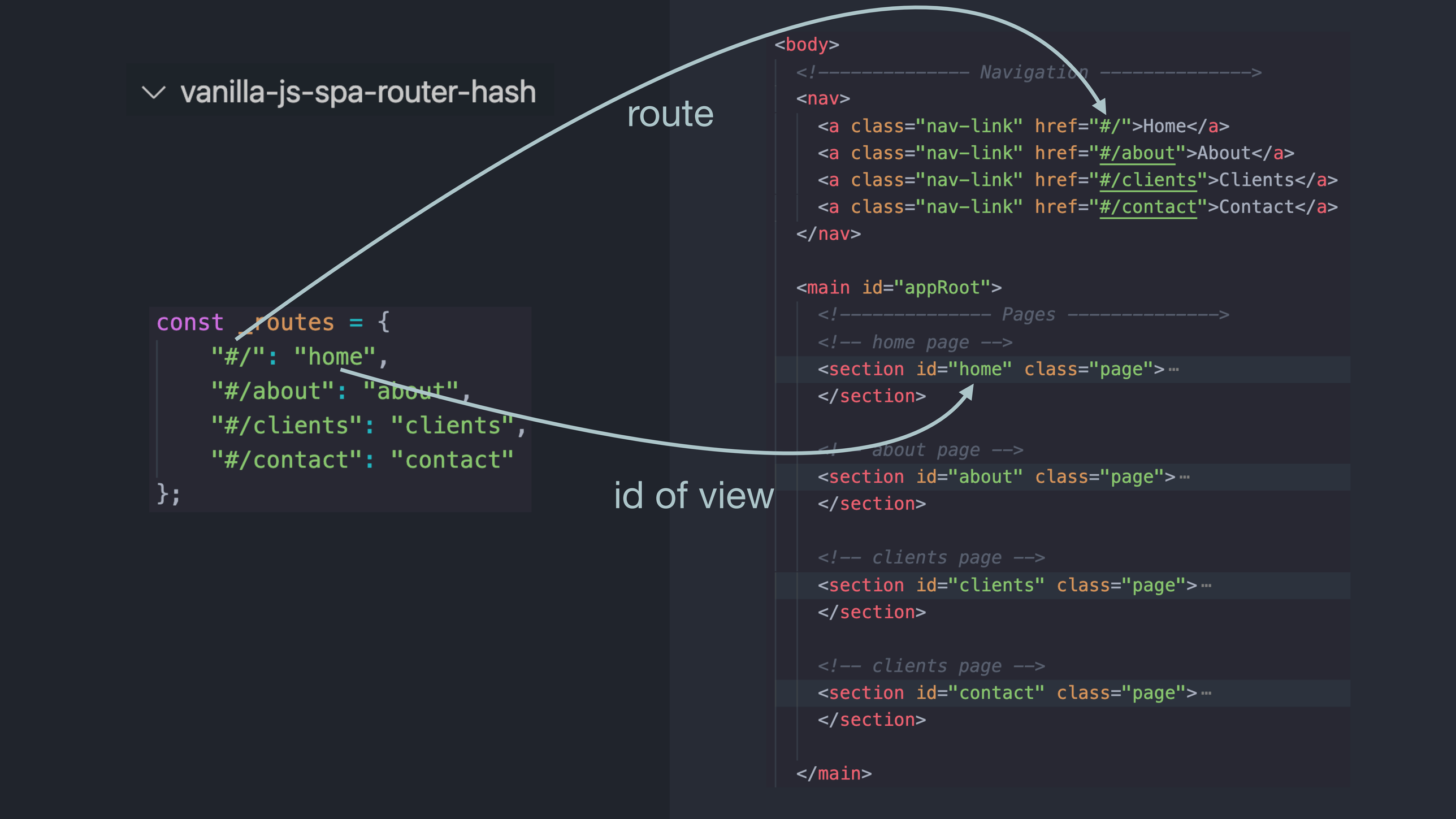
The router makes it looks like the web app has multiple pages and HTML files. But it’s just changing the view, what is displayed, in side of the single `index.html` file. The page transition and change of content, is done dynamically by JavaScript (`router.js`).

https://medium.com/@fro_g/routing-in-javascript-d552ff4d2921


/create
route
Router
(router.js)
view
view
view
users
page
create
page
update
page




```
 * All routes of the SPA
 * "path": "id of page in DOM"
 */
const _routes = {
    "#/": "home",
    "#/about": "about",
    "#/clients": "clients",
    "#/contact": "contact"
};
const _pages = document.querySelectorAll(".page");
const _basePath = location.pathname.replace("index.html", ""); // remove
const _navLinks = document.querySelectorAll("nav a");

/**
 * Changing display to none for all pages
 */
function hideAllPages() {
    for (const page of _pages) {
        page.style.display = "none";
    }
}

/**
 * Navigating SPA to specific page by given path
 */
function navigateTo(path) {
    window.history.pushState({}, path, _basePath + path);
    showPage(path);
}

/**
 * Displaying page by given path
 */
```


vanilla-js-spa-router-hash
route
id of view
const routes = {
"#/": "home",
"#/about": "about",
"#/clients": "clients",
"#/contact": "contact"
};
<body>
<!-------------- Navigation -------------->
<nav>
Home
About
Clients
Contact
</nav>
<main id="appRoot">
<!-------------- Pages -------------->
<!-- home page -->
<section id="home" class="page">…
</section>
<!-- about page -->
<section id="about" class="page">…
</section>
<!-- clients page -->
<section id="clients" class="page">…
</section>
<!-- clients page -->
<section id="contact" class="page">…
</section>
</main>

change default event for all `.nav-link` items

```html
<!-------------- Navigation -------------->
<nav>
  <a class="nav-link" href="#/">Home</a>
  <a class="nav-link" href="#/about">About</a>
  <a class="nav-link" href="#/clients">Clients</a>
  <a class="nav-link" href="#/contact">Contact</a>
</nav>
```

```js
/**
 * Attaching event to nav links and preventing default anchor
 */
function attachNavLinkEvents() {
    const navLinks = document.querySelectorAll(".nav-link");
    for (const link of navLinks) {
        link.addEventListener("click", function (event) {
            const path = link.getAttribute("href");
            navigateTo(path);
            event.preventDefault();
        });
    }
}
```

when a `.nav-link` item is clicked, navigateTo(…) is called with the value of `href`

```html
<!-------------- Navigation -------------->
<nav>
    <a class="nav-link" href="#/">Home</a>
    <a class="nav-link" href="#/about">About</a>
    <a class="nav-link" href="#/clients">Clients</a>
    <a class="nav-link" href="#/contact">Contact</a>
</nav>
```

```js
/**
 * Navigating SPA to specific page by given path
 */
function navigateTo(path) {
    window.history.pushState({}, path, _basePath + path);
    showPage(path);
}

/**
 * Displaying page by given path
 */
function showPage(path) {
    hideAllPages(); // hide all pages
    document.querySelector(`#${_routes[path]}`).style.display = "block"; /
    setActiveTab(path);
}
```

PRODUCT SPA

BACK

SINGLE PAGE WEB APP TEMPL | Products

127.0.0.1:5501/spa-products-fetch-json-enhanced/index.html

PRODUCTS

Order by: Choose here

Show out of stock

Search

MacBook Pro 13"

Apple

Price: 11799 kr.

Status: outOfStock

EDIT DELETE

MacBook Pro 15"

Apple

Price: 21499 kr.

Status: inStock

EDIT DELETE

Zenbook 14"

ASUS

Price: 8099 kr.

Status: outOfStock

EDIT DELETE

PRODUCTS ADD PRODUCT

PRODUCT SPA

BACK

- Use your knowledge about JavaScript and SPA to build a web app with products.
- Use any `spa template` you like as your code base (`vanilla-js-spa-router-hash`).
- Define products as `json` in `json/products.json`
- Add at least 4 JSON objects with the following properties: `model`, `brand`, `id`, `price`, `status` and `img`
- Two of your products must have the `status` “`outOfStock`” and two “`inStock`”.
- Use `fetch()` to get the data from the JSON file. Append and display all products to a page called Products in your SPA.
- Implement search functionality: Search on model and/or brand.
- Implement the add functionality.:Add another page with a form to add new products.
- Extra / advanced:
    - Add functionality to filter and/or sort by the `status`. You could add an input checkbox to show only products “`inStock`”. Make use of your knowledge about functions, loops, filter, etc.
    - Add functionality to handle edit and delete og every product.
    - Reimplement the layout of the SPA by using a fullpage grid and/or flex bow layout
    - Customise and style your web app.

SEARCH, CREATE, UPDATE & DELETE OBJECTS

SEARCH

```
function search(value) {
  let searchQuery = value.toLowerCase();
  let filteredProducts = [];
  for (let product of _products) {
    let model = product.model.toLowerCase();
    let brand = product.brand.toLowerCase();
    if (model.includes(searchQuery) || brand.includes(searchQuery)) {
      filteredProducts.push(product);
    }
  }
  appendProducts(filteredProducts);
}
```

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

FOR OF LOOP

.FILTER & ARROW FUNCTION

```
function search(value) {
  let searchValue = value.toLowerCase();
  let filteredTeachers = _teachers.filter(teacher => teacher.title.rendered.toLowerCase().includes(searchValue));
  appendTeachers(filteredTeachers);
}
```

SEARCH

```
let _products = [];


function search(value) {
  let searchQuery = value.toLowerCase();
  let filteredProducts = [];
  for (let product of _products) {
    let model = product.model.toLowerCase();
    let brand = product.brand.toLowerCase();
    if (model.includes(searchQuery) || brand.includes(searchQuery)) {
      filteredProducts.push(product);
    }
  }
  appendProducts(filteredProducts);
}
```

SEARCH

```
function search(value) {
  let searchQuery = value.toLowerCase();
  let filteredProducts = [];
  for (let product of _products) {
    let model = product.model.toLowerCase();
    let brand = product.brand.toLowerCase();
    if (model.includes(searchQuery) || brand.includes(searchQuery)) {
      filteredProducts.push(product);
    }
  }
  appendProducts(filteredProducts);
}

function search(value) {
  let searchQuery = value.toLowerCase();
  let filteredProducts = _products.filter(product => {
    let model = product.model.toLowerCase();
    let brand = product.brand.toLowerCase();
    if (model.includes(searchQuery) || brand.includes(searchQuery)) {
      return product;
    }
  }
  );
  appendProducts(filteredProducts);
}
```

when you ask Rasmus
for help and he says
"Read documentation"

Table of contents

Related Topics

String.prototype.includes()

The **`includes()`** method performs a case-sensitive search to determine whether one string may be found within another string, returning `true` or `false` as appropriate.

JavaScript Demo: String.includes()

```
1 const sentence = 'The quick brown fox jumps over the lazy dog.';
2
3 const word = 'fox';
4
5 console.log(`The word "${word}" ${sentence.includes(word) ? 'is' : 'is not'} in the sentence`);
6 // expected output: "The word "fox" is in the sentence"
7
```

Run ›
Reset

Syntax

```
includes(searchString)
includes(searchString, position)
```

CREATE

```
/*
global variables: _products, _selectedProductId
*/
let _products = [];

function addNewProduct() {
  showLoader(true);

  let brand = document.querySelector('#brand').value;
  let model = document.querySelector('#model').value;
  let price = document.querySelector('#price').value;
  let img = document.querySelector('#img').value;
  const id = Date.now(); // dummy generated user id

  if (brand && model && price && img) {
    _products.push({
      brand,
      model,
      price,
      img,
      status: 'inStock',
      id
    });

    appendProducts(_products);
    navigateTo('products');
  } else {
```

UPDATE

```
function appendProducts(products) {
  let htmlTemplate = "";
  for (let product of products) {
    htmlTemplate += /*html*/`
      <article class="${product.status}">
        <article onclick="showDetailView(${product.id})">
          <img src="${product.img}">
          <h2>${product.model}</h2>
          <h3>${product.brand}</h3>
          <p>Price: ${product.price} kr.</p>
          <p class="status">Status: ${product.status}</p>
        </article>
        <button onclick="goToEdit(${product.id})">Edit</button>
        <button onclick="deleteProduct(${product.id})">Delete</button>
      </article>
    `;
  }
  document.querySelector('#products-container').innerHTML = htmlTemplate;
}
```

JavaScript Async | Products

127.0.0.1:5501/spa-products-fetch-json-enhanced/index.html

PRODUCTS

Zenbook 14"

ASUS

Price: 8099 kr.

Status: outOfStock

EDIT DELETE

Ideapad S340 14" (platinum grey)

Lenovo

Price: 6099 kr.

button 57.31 × 27.78

EDIT DELETE

ASUSBOOK 12"

ASUS

Price: 2099 kr.

Status: outOfStock

MacBook Pro 13" M2

Apple

Price: 20499 kr.

Status: inStock

PRODUCTS ADD PRODUCT

Elements Console Sources Network 1

```
<article class="outOfStock">…</article>
<article class="inStock">
  <article onclick="showDetailView(1)">…</article>
  <button onclick="goToEdit(1)">Edit</button>
  <button onclick="deleteProduct(1)">Delete</button>
</article>
<article class="outOfStock">…</article>
<article class="inStock">
  <article onclick="showDetailView(3)">…</article>
  <button onclick="goToEdit(3)">Edit</button> == $0
  <button onclick="deleteProduct(3)">Delete</button>
</article>
<article class="outOfStock">…</article>
<article class="inStock">…</article>
</section>
```

… ion#products.page section#products-container.grid-container article.inStock button …

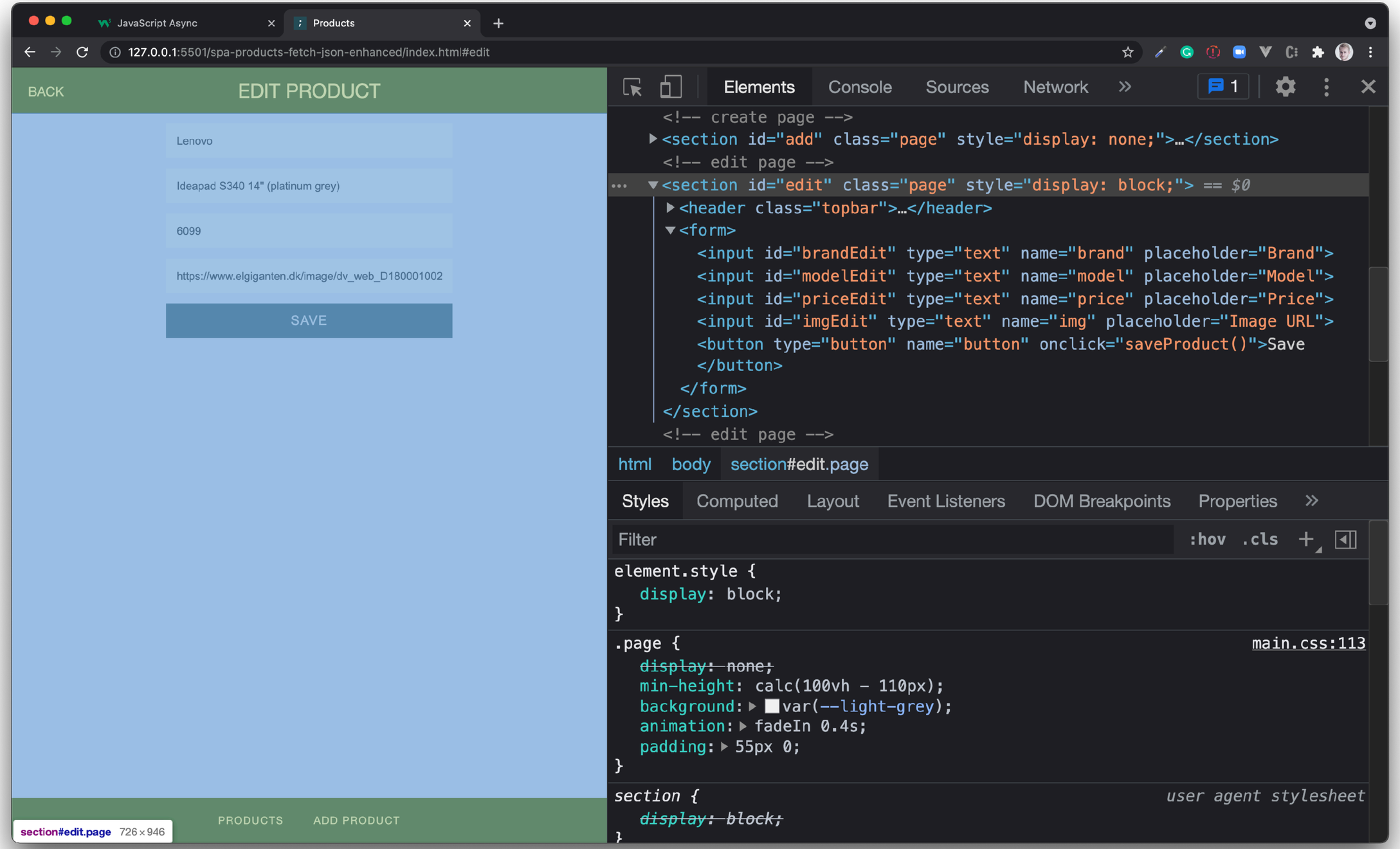
Styles Computed Layout Event Listeners DOM Breakpoints Properties

Filter :hov .cls +

```
element.style {
}
button {                                          main.css:233
  font-weight: 300;
  text-align: center;
  cursor: pointer;
  border: ▸ none;
  border-radius: ▸ 0;
  color: var(--text-color-light);
  background-color: var(--green);
  letter-spacing: 0.05em;
  text-transform: uppercase;
  padding: ▸ .5em 1em;
```

UPDATE

```
function goToEdit(id) {
  // save id in global variable
  _selectedProductId = id;
  // find product to edit by using array.find and id
  const productToEdit = _products.find(product => product.id === _selectedProductId);
  // set input field values with the productToEdit properties
  document.querySelector('#brandEdit').value = productToEdit.brand;
  document.querySelector('#modelEdit').value = productToEdit.model;
  document.querySelector('#priceEdit').value = productToEdit.price;
  document.querySelector('#imgEdit').value = productToEdit.img;
  //navigate to edit view
  navigateTo("edit");
}
```


JavaScript Async
Products
127.0.0.1:5501/spa-products-fetch-json-enhanced/index.html#edit
BACK
EDIT PRODUCT
Lenovo
Ideapad S340 14" (platinum grey)
6099
https://www.elgiganten.dk/image/dv_web_D180001002
SAVE
PRODUCTS
ADD PRODUCT
section#edit.page 726 × 946
Elements
Console
Sources
Network
<!-- create page -->
<section id="add" class="page" style="display: none;">…</section>
<!-- edit page -->
<section id="edit" class="page" style="display: block;"> == $0
<header class="topbar">…</header>
<form>
<input id="brandEdit" type="text" name="brand" placeholder="Brand">
<input id="modelEdit" type="text" name="model" placeholder="Model">
<input id="priceEdit" type="text" name="price" placeholder="Price">
<input id="imgEdit" type="text" name="img" placeholder="Image URL">
<button type="button" name="button" onclick="saveProduct()">Save
</button>
</form>
</section>
<!-- edit page -->
html
body
section#edit.page
Styles
Computed
Layout
Event Listeners
DOM Breakpoints
Properties
Filter
:hov
.cls
element.style {
display: block;
}
.page {
main.css:113
display: none;
min-height: calc(100vh - 110px);
background: var(--light-grey);
animation: fadeIn 0.4s;
padding: 55px 0;
}
section {
user agent stylesheet
display: block;
}

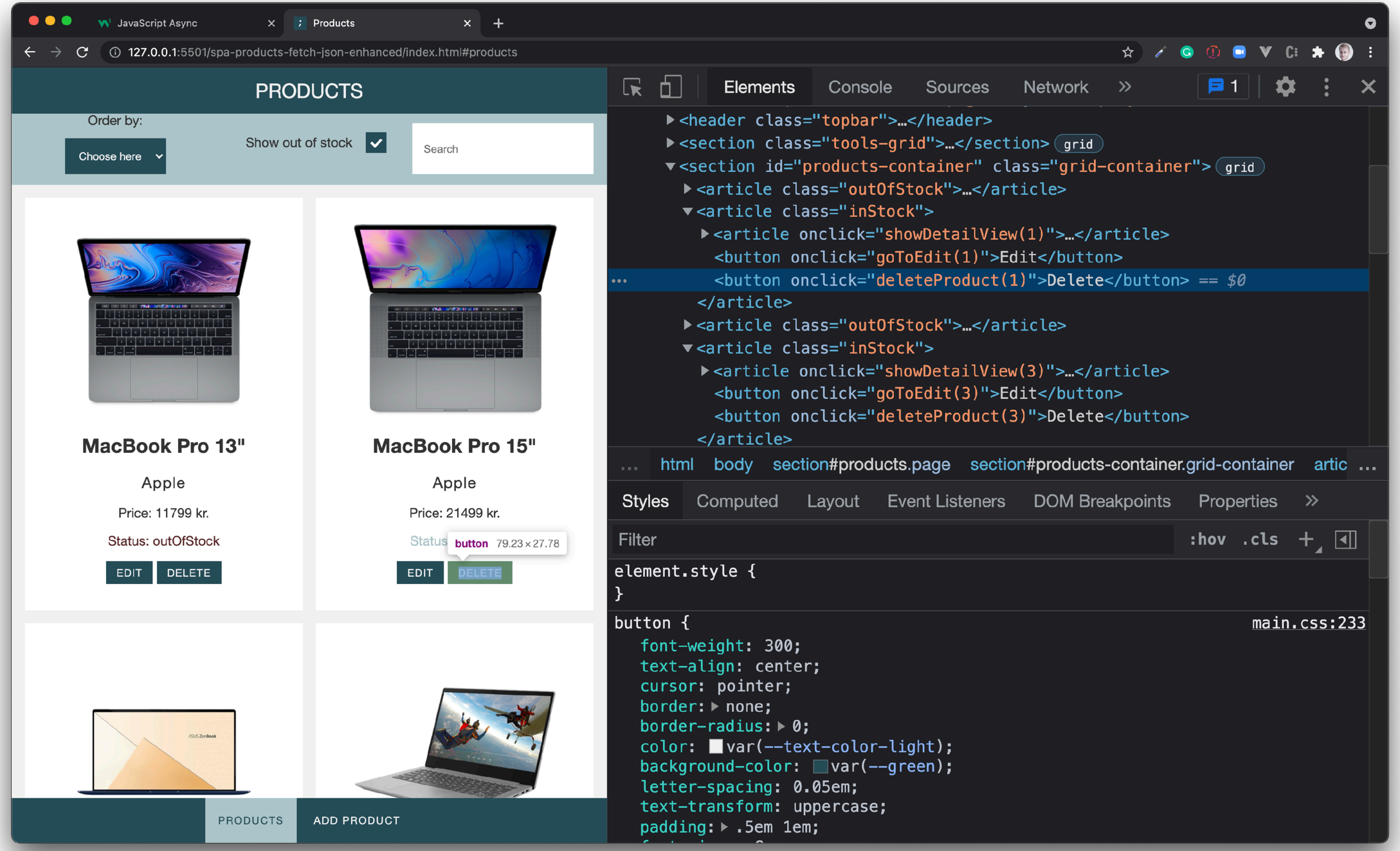
UPDATE

```
function saveProduct() {
  // find index of the product to update in _products
  let index = _products.findIndex(product => product.id === _selectedProductId);
  // update values of user in array
  _products[index].brand = document.querySelector('#brandEdit').value;
  _products[index].model = document.querySelector('#modelEdit').value;
  _products[index].price = document.querySelector('#priceEdit').value;
  _products[index].img = document.querySelector('#imgEdit').value;
  // update dom usind appendProducts()
  appendProducts(_products);
  //navigating back
  navigateTo("products");
}
```

```
// find user to update by given user id
const userToUpdate = _users.find(user => user.id === _selectedUserId);
// update values of user in array
userToUpdate.name = nameInput.value;
userToUpdate.mail = mailInput.value;
```

DELETE

```
function appendProducts(products) {
  let htmlTemplate = "";
  for (let product of products) {
    htmlTemplate += /*html*/`
      <article class="${product.status}">
        <article onclick="showDetailView(${product.id})">
          <img src="${product.img}">
          <h2>${product.model}</h2>
          <h3>${product.brand}</h3>
          <p>Price: ${product.price} kr.</p>
          <p class="status">Status: ${product.status}</p>
        </article>
        <button onclick="goToEdit(${product.id})">Edit</button>
        <button onclick="deleteProduct(${product.id})">Delete</button>
      </article>
    `;
  }
  document.querySelector('#products-container').innerHTML = htmlTemplate;
}
```


JavaScript Async
Products
127.0.0.1:5501/spa-products-fetch-json-enhanced/index.html#products
PRODUCTS
Order by:
Choose here
Show out of stock
Search
MacBook Pro 13"
Apple
Price: 11799 kr.
Status: outOfStock
EDIT
DELETE
MacBook Pro 15"
Apple
Price: 21499 kr.
Status
button 79.23 × 27.78
EDIT
DELETE
PRODUCTS
ADD PRODUCT
Elements
Console
Sources
Network
<header class="topbar">…</header>
<section class="tools-grid">…</section> grid
<section id="products-container" class="grid-container"> grid
<article class="outOfStock">…</article>
<article class="inStock">
<article onclick="showDetailView(1)">…</article>
<button onclick="goToEdit(1)">Edit</button>
<button onclick="deleteProduct(1)">Delete</button> == $0
</article>
<article class="outOfStock">…</article>
<article class="inStock">
<article onclick="showDetailView(3)">…</article>
<button onclick="goToEdit(3)">Edit</button>
<button onclick="deleteProduct(3)">Delete</button>
</article>
html body section#products.page section#products-container.grid-container artic
Styles
Computed
Layout
Event Listeners
DOM Breakpoints
Properties
Filter
:hov .cls
element.style {
}
button { main.css:233
font-weight: 300;
text-align: center;
cursor: pointer;
border: none;
border-radius: 0;
color: var(--text-color-light);
background-color: var(--green);
letter-spacing: 0.05em;
text-transform: uppercase;
padding: .5em 1em;

DELETE

```
function deleteProduct(id) {
  // filter _products - all products that doesnt have the id
  _products = _products.filter(product => product.id !== id);
  appendProducts(_products);
}
```

SORT, FILTER & ARROW FUNCTIONS

JavaScript Async | Products

127.0.0.1:5501/spa-products-fetch-json-enhanced/index.html#products

PRODUCTS

Order by: Choose here | Show out of stock | Search

MacBook Pro 13"

Apple

Price: 11799 kr.

Status: outOfStock

EDIT DELETE

MacBook Pro 15"

Apple

Price: 21499 kr.

Status: inStock

EDIT DELETE

PRODUCTS | ADD PRODUCT

Elements | Console | Sources | 1

```
<section id="products" class="page" style="display: block;">
  <header class="topbar">…</header>
  <section class="tools-grid">  grid
    <label for="sortBy">
      "Order by: "
      <select id="sortBy" onchange="orderBy(this.value)">…
      </select> == $0
    </label>
    <label for="outOfStock" class="checkmark-container">…
    </label>
    <input type="search" placeholder="Search" onkeyup="search
    (this.value)" onsearch="search('')">
  </section>
  <section id="products-container" class="grid-container">
  grid
```

html body section#products.page section.tools-grid label select …

Styles | Computed | Layout | Event Listeners | DOM Breakpoints

Filter :hov .cls

```
element.style {
}
select {                                              main.css:366
  background-color: var(--green);
  border: none;
  color: var(--text-color-light);
  padding: 1em;
  margin: 1em;
  max-width: 350px;
}
select:not(:-internal-list-box) {          user agent stylesheet
  overflow: visible !important;
}
```

SORT

```
function orderBy(option) {
  if (option === "brand") {
    orderByBrand();
  } else if (option === "model") {
    orderByModel();
  } else if (option === "price") {
    orderByPrice();
  }
}

function orderByBrand() {
  _products.sort((product1, product2) => {
    return product1.brand.localeCompare(product2.brand);
  });
  appendProducts(_products);
}
```

```
function orderByBrand() {
  _products.sort((product1, product2) => {
    return product1.brand.localeCompare(product2.brand);
  });
  appendProducts(_products);
}

function orderByModel() {
  _products.sort((product1, product2) => {
    return product1.model.localeCompare(product2.model);
  });
  appendProducts(_products);
}

function orderByPrice() {
  _products.sort((product1, product2) => {
    return product1.price - product2.price;
  });
  appendProducts(_products);
}
```

.SORT & ARROW FUNCTIONS
INSIDE FUNCTIONS DECLARATIONS

JavaScript Async | Products

127.0.0.1:5501/spa-products-fetch-json-enhanced/index.html#products

label.checkmark-container 178.09×72

Order by: Choose here

Show out of stock

Search

MacBook Pro 13"

Apple

Price: 11799 kr.

Status: outOfStock

EDIT DELETE

MacBook Pro 15"

Apple

Price: 21499 kr.

Status: inStock

EDIT DELETE

PRODUCTS ADD PRODUCT

Elements Console Sources 1

```
<header class="topbar">…</header>
<section class="tools-grid">  grid
  <label for="sortBy">
    "Order by: "
    <select id="sortBy" onchange="orderBy(this.value)">…
    </select>
  </label>
  <label for="outOfStock" class="checkmark-container">
    "Show out of stock "
    <input type="checkbox" id="outOfStock" onchange="showHid
    eOfStock(this.checked)" checked> == $0
    <span class="checkmark">…</span>
  </label>
  <input type="search" placeholder="Search" onkeyup="search
  (this.value)" onsearch="search('')">
```

… page section.tools-grid label.checkmark-container input#outOfStock …

Styles Computed Layout Event Listeners DOM Breakpoints

Filter :hov .cls

```
element.style {
}
.checkmark-container input {                    main.css:313
  position: absolute;
  opacity: 0;
  cursor: pointer;
  height: 0;
  width: 0;
}
input {                                         main.css:247
  margin: ▸ 1em auto;
  width: 100%;
  max-width: 350px;
```

FILTER

```
function showHideOfStock(checked) {
  if (checked) {
    appendProducts(_products);
  } else {
    const inStockProducts = _products.filter(product => product.status === "inStock");
    appendProducts(inStockProducts);
  }
}
```

C O D E E V E R Y D A Y !