```
tt()
```

Schedule

1. Events
2. Modules (import and export)
3. Async data fetching
4. All together!

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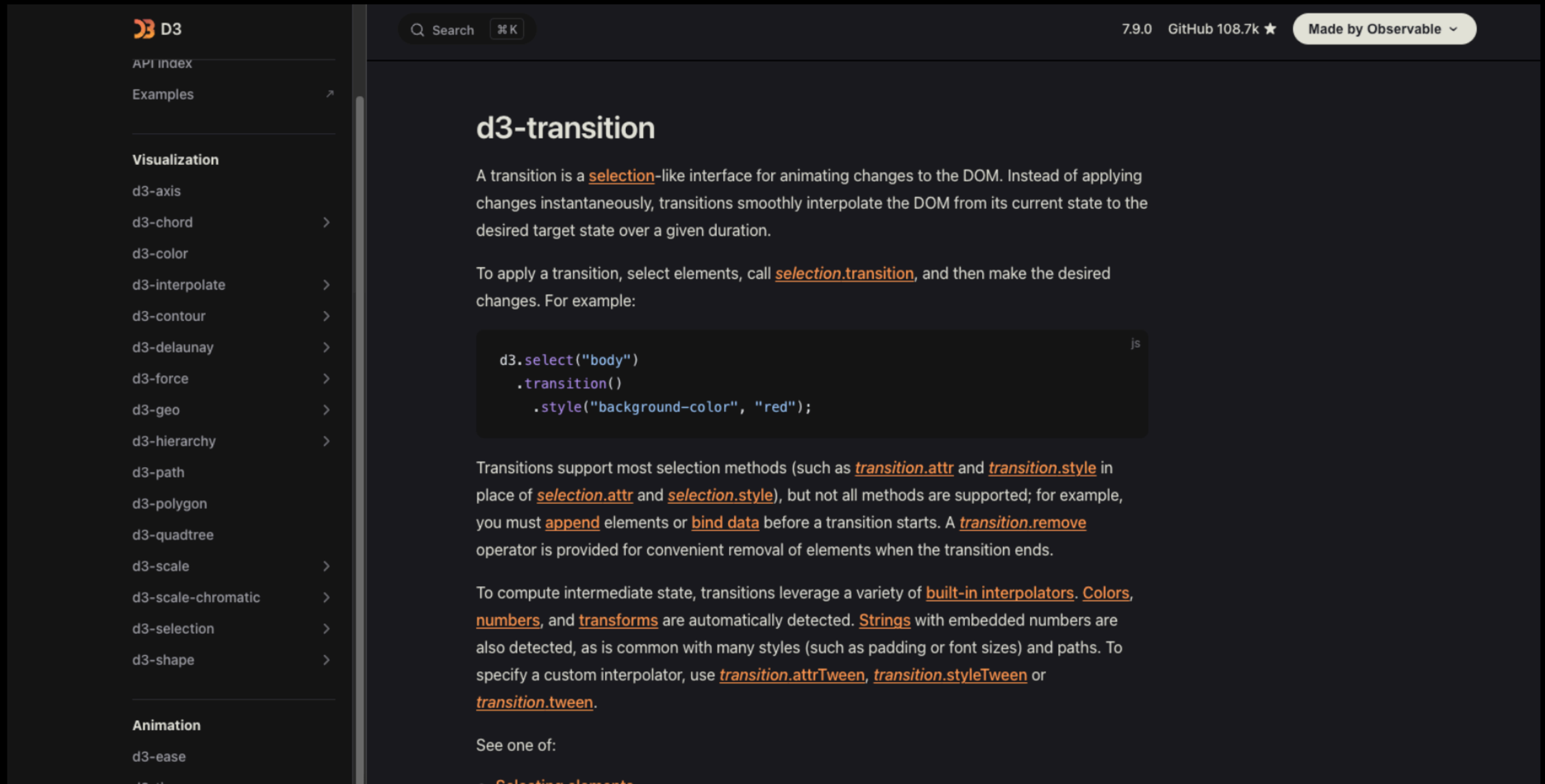
Events

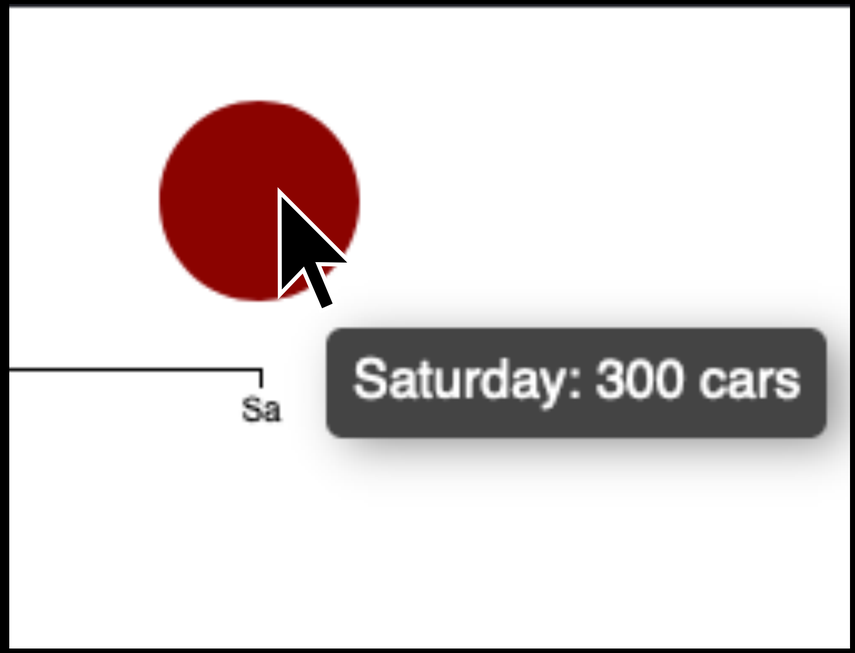
1. Mouse events (clicks, mouseover etc.)
2. Keyboard events (keypress etc.)
3. Touch events (longpress etc.)
4. Drag & Zoom events (drag etc.)

Events (transitions)



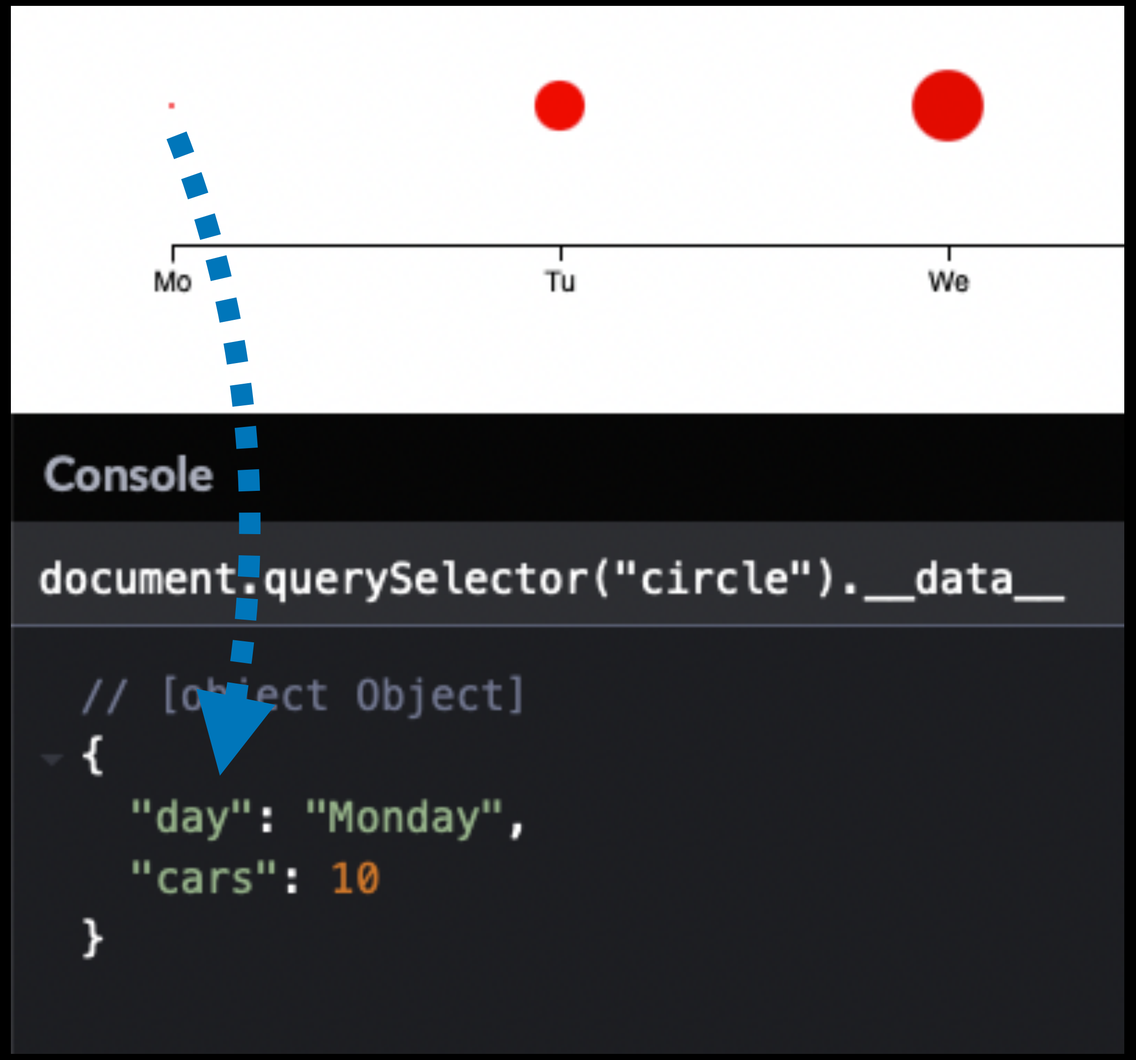
Events

Events help you to add interactivity to your graphs. For example you can add a tooltip or a side panel showing additional details.



Event data

D3 has a magical feature: it adds a __data__ object to all DOM elements you created so you have access to the original data in your event.



Event binding

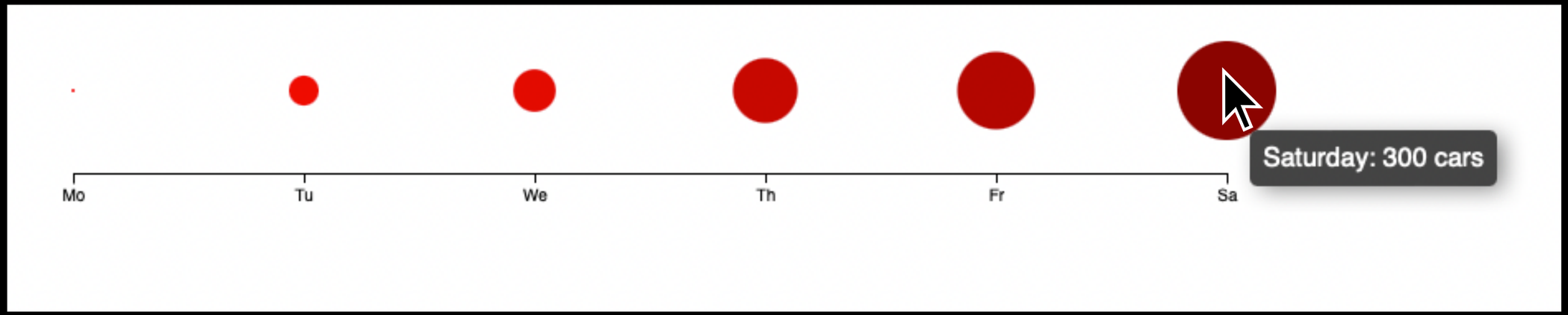
```
d3.select("#scale1")
  .selectAll("circle")
  .data(dataSet)
  .join("circle")
  .on("mouseover", (e, d) =>
    d3.select("#tooltip")
    .style("opacity", 1)
    .text(`${d.day}: ${d.cars} cars`)
  )
  .on("mousemove", (e) =>
    d3
      .select("#tooltip")
      .style("left", e.pageX + 15 + "px")
      .style("top", e.pageY + 15 + "px")
  )
```

You add events by calling d3.on(). D3 will call your event function with two paramenters:

1. Event data
2. Object data used during d3.join()

Tooltip demo

https://codepen.io/dandevri/pen/azdrEQb



Huiswerk

- Maak je visualisatie

Schedule

1. Events
2. **Modules (import and export)**
3. Async data fetching
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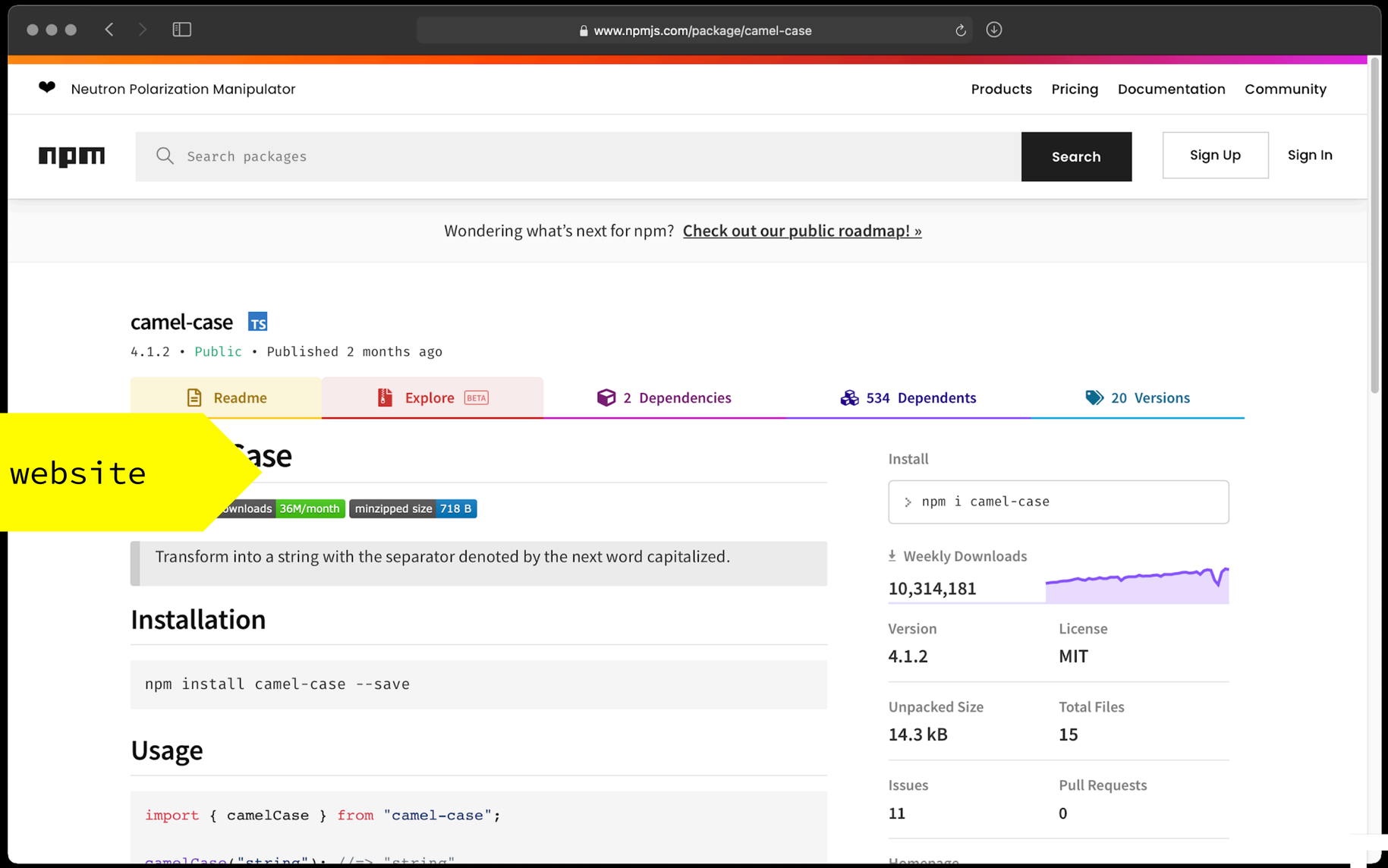
Package manager

npm is a package manager for the JavaScript programming language. It is the default package manager for […] Node.js. It consists of a command line client, also called npm, and an online database of […] packages, called the npm registry.

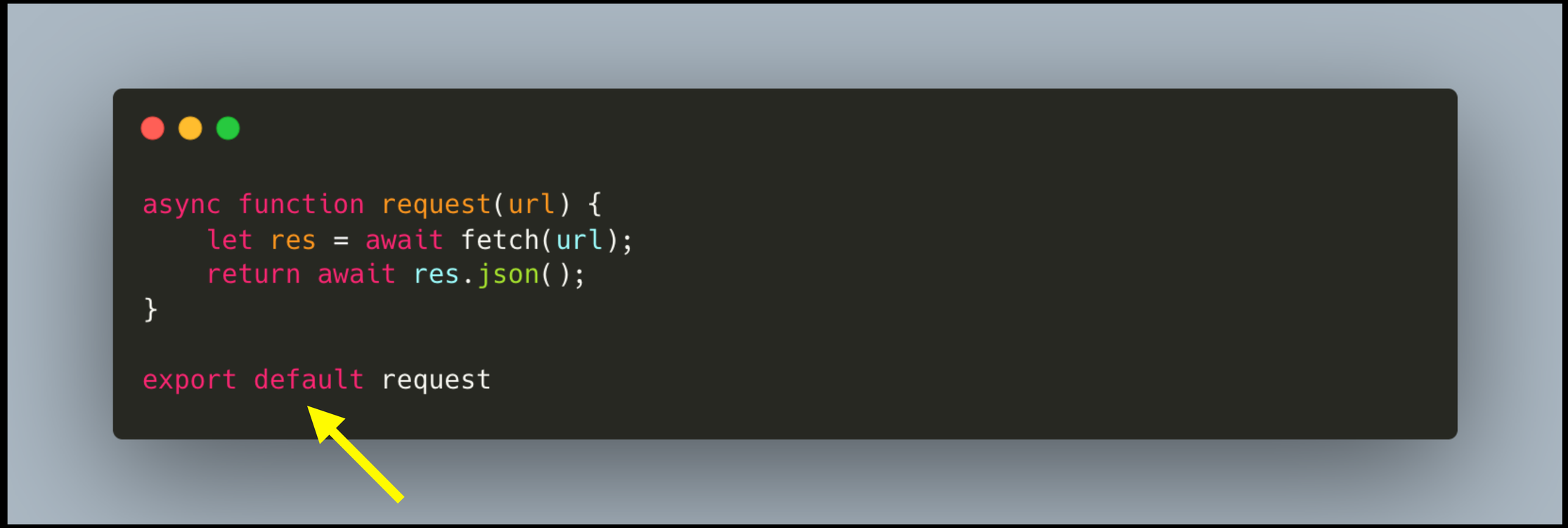


The **npm** website

Import modules

```
import * as d3 from "d3";

import { onMount } from 'svelte';
```

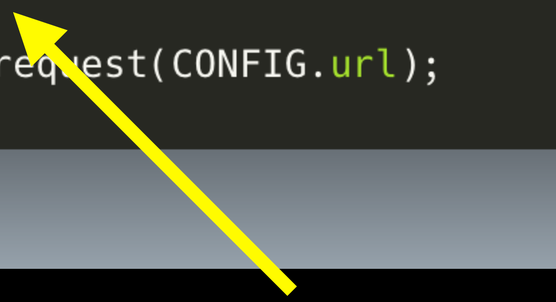
Modules



export default

Modules

```
import CONFIG from './config.js';
import request from './request.js';
import makeHtml from './make.js';

const data = await request(CONFIG.url);
```



Import default

Modules

- `require`: Function-based syntax:

```javascript
const module = require('module-name');
```

CommonJS

- `import`: Declarative syntax (similar to other languages):

```javascript
import module from 'module-name';
```

ES Modules

Modules

- You can export a function or variable from any file
- There are two types of exports, named and default

Named exports

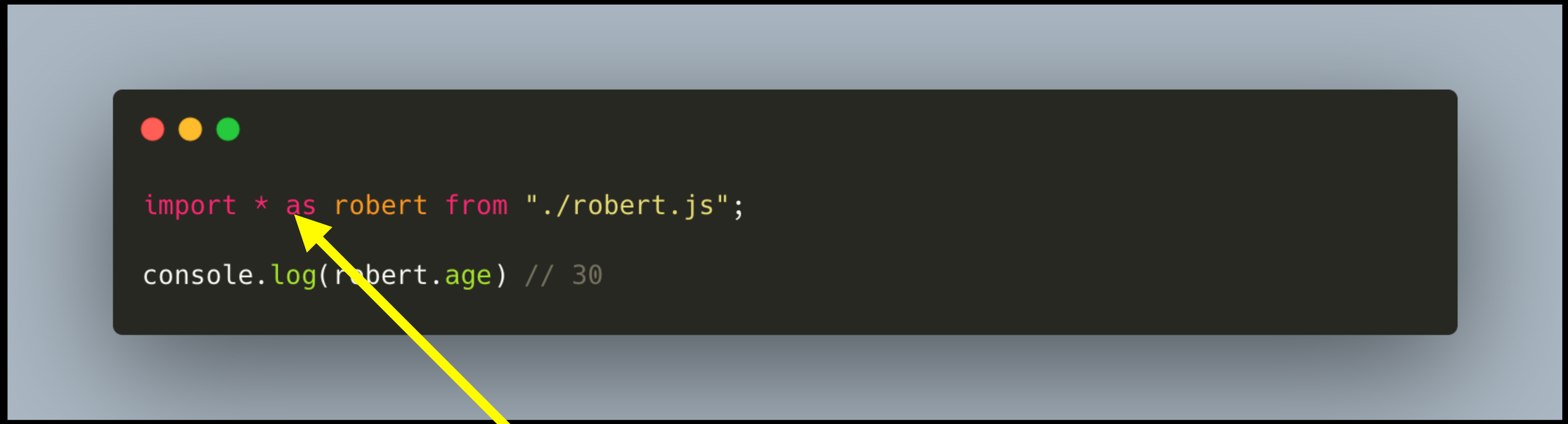
```
// Individually

export const name = "Robert";
export const age = 29;

// All at once as an object

const name = "Robert";
const age = 29;

export { name, age }
```

Exporting as an object, due to the {}

Named imports

Importing as an object, due to the {}

Named imports



Import modules

```
import * as d3 from "d3";
```

```
import { scales, selection } from ‘d3';
```

Components

```
component === module
```

```
import Bar from '../components/Bar.svelte';
```

Modules = functional programming

Referential transparency: The function always gives the same return value for the same arguments. This means that the function cannot depend on any mutable state

Side-effect free: The function cannot cause any side effects. Side effects may include I/O (e.g., writing to the console or a log file), modifying a mutable object, reassigning a variable, etc.

Schedule

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SYNCHRONOUS LOAD

ASYNCHRONOUS LOAD

Fetching in JavaScript

- Callbacks (XMLHTTPrequest)
- Promises (Fetch)
- Async / Await (Fetch)

Sync vs async

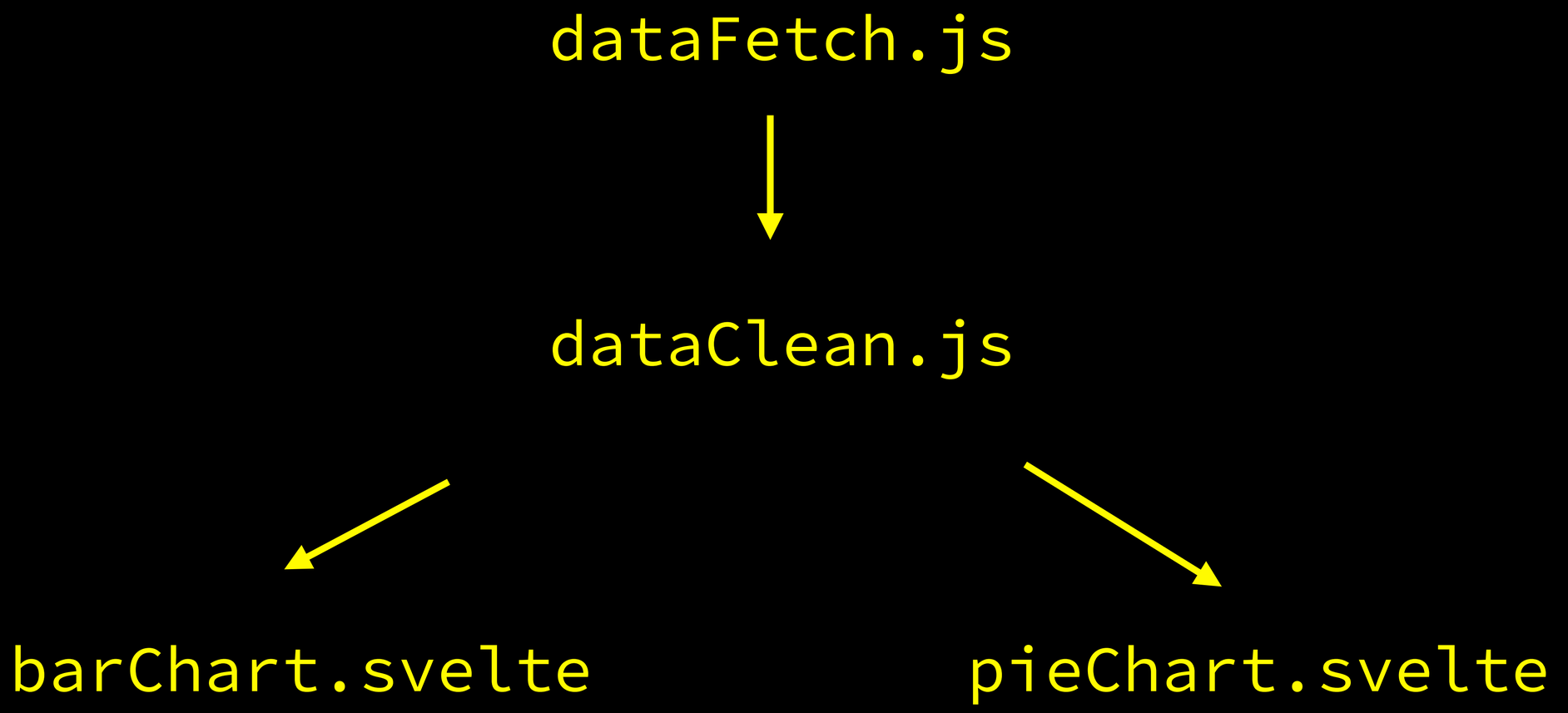
why?

Getting data from a resource (API) takes time. It needs to **fetch** the resource, parse it etc. But also, what if the data isn’t available (no internet connection e.g.) how should *errors* be handled?

Separation of concerns

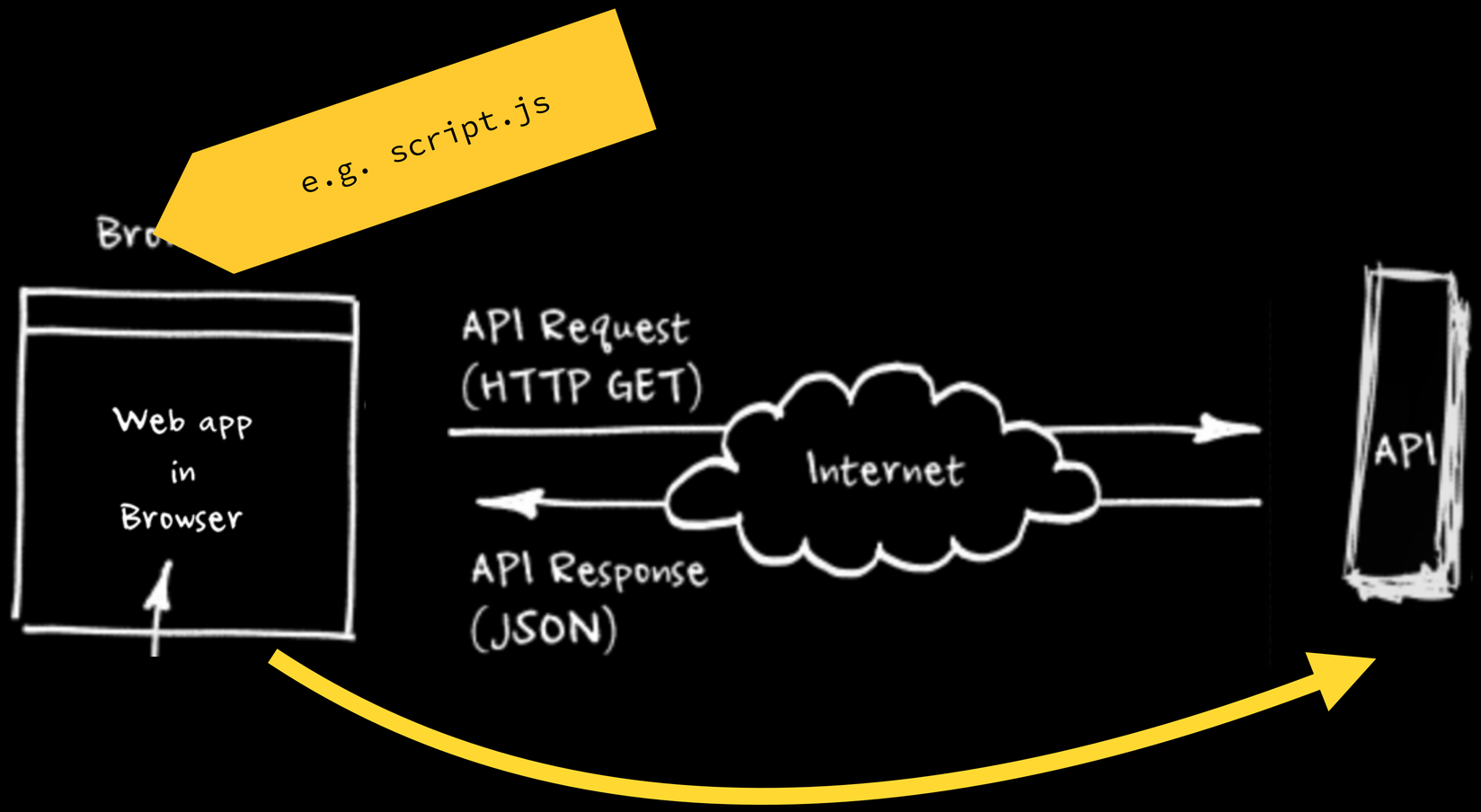
1. Data fetchen (fetch API)
2. Data transformeren (functional, map filter)
3. Renderen van de Charts (d3, scales)

Utility function



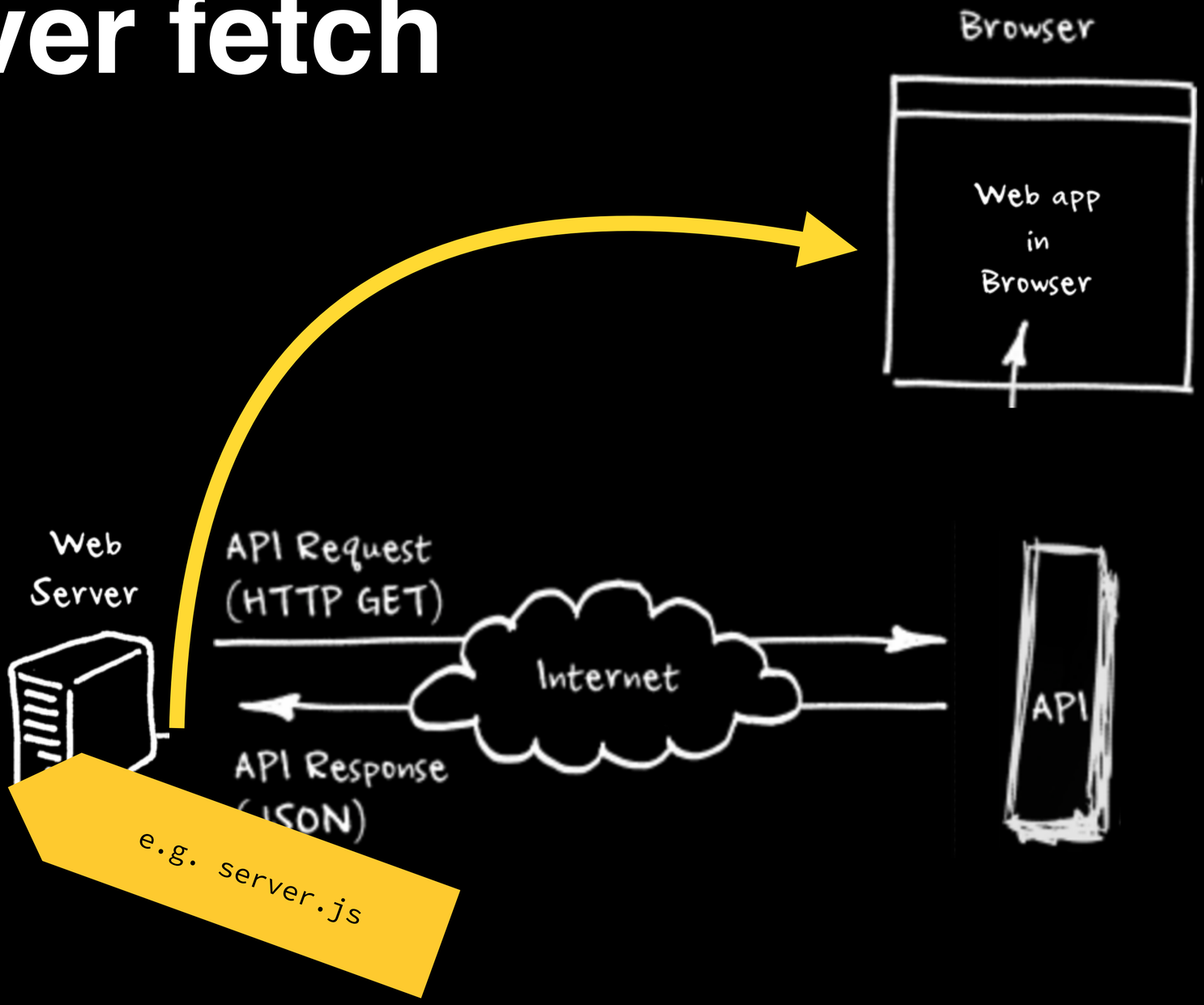
Client fetch

API



Server fetch

API



.env

```
# .env file
USER_ID="239482"
USER_KEY="foobar"
NODE_ENV="development"
```

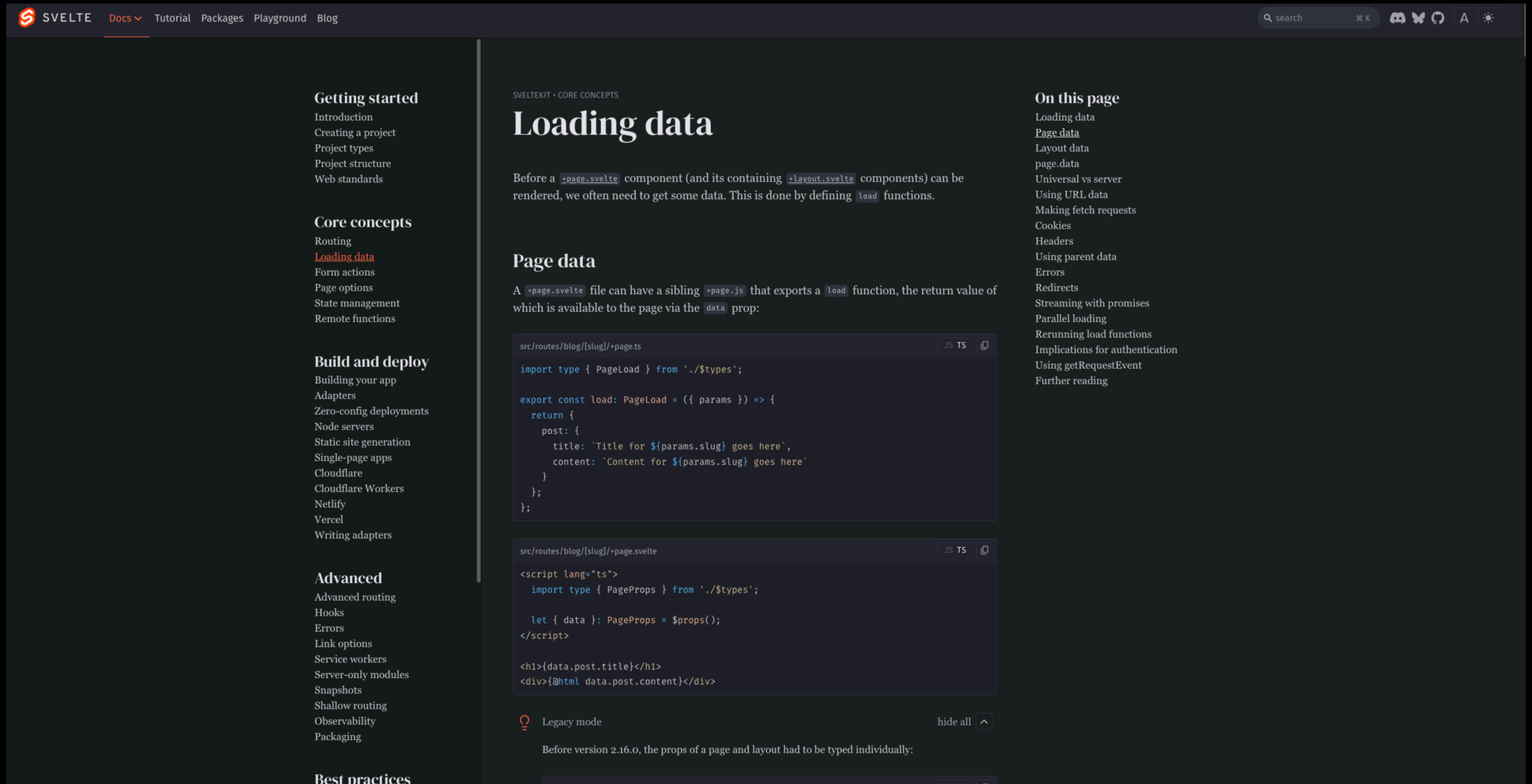
server.js

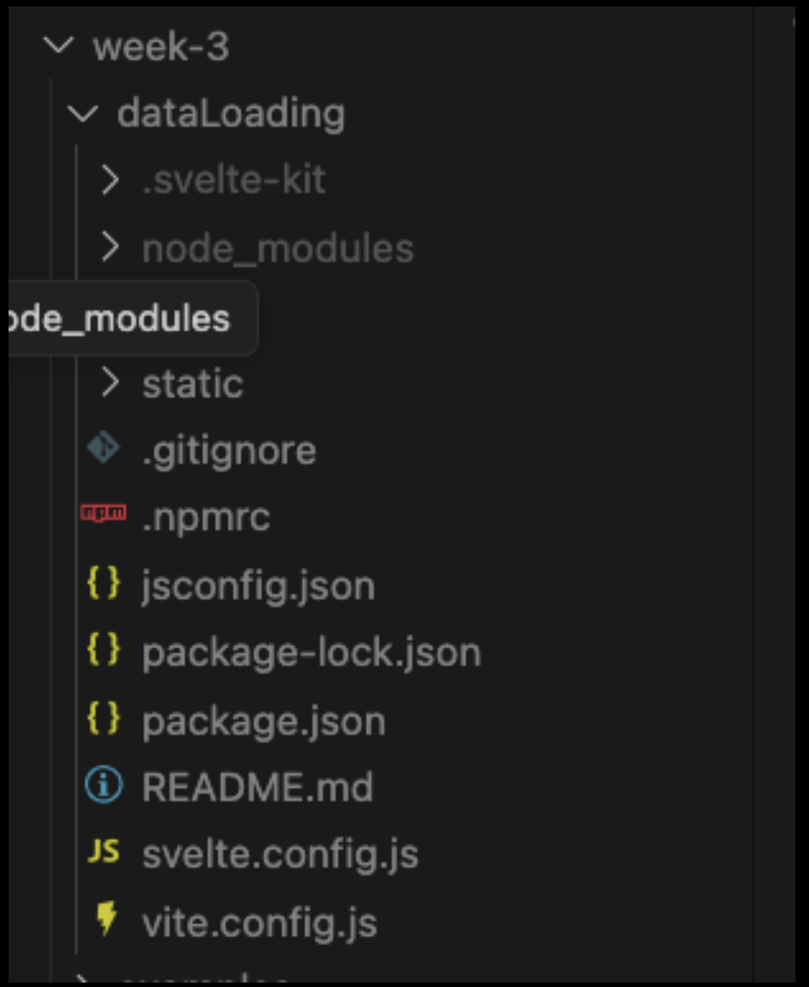
```
require('dotenv').config();

process.env.USER_ID; // "239482"
process.env.USER_KEY; // "foobar"
process.env.NODE_ENV; // "development"
```

Data fetch module in Svelte

Methode	Reactief	Bereik	Gebruik
1. Stores	✅	Globaal	App-brede state
2. Import/export	❌	Globaal	Constanten, helpers
3. Load + data	✅ (SSR)	Pagina/layout	Serverdata, API’s

https://svelte.dev/docs/kit/load




week-3
dataLoading
.svelte-kit
node_modules
ode_modules
static
.gitignore
.npmrc
jsconfig.json
package-lock.json
package.json
README.md
svelte.config.js
vite.config.js

Schedule

1. Events
2. Modules (import and export)
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Huiswerk

* Kies een strategie voor data fetchen
* Zorg ervoor dat je fetchen async doet
* Doe functioneel (pure functie met return)

Uncaught SyntaxError
Unexpected end of input