

Next.js

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30.11.2023

- ▶ React + Serverside Rendering (SSR) + Static Website Generation
- ▶ Based on
  - ▶ HTML
  - ▶ Javascript
  - ▶ Typescript
  - ▶ JSX
  - ▶ React
  - ▶ CSS
  - ▶ Webpack
  - ▶ HTTP

# Learning resources

- ▶ Javascript/CSS/HTML
  - ▶ Javascript
  - ▶ CSS
  - ▶ HTML
- ▶ Typescript
  - ▶ Typescript
  - ▶ Typescript-Playground
- ▶ React / JSX
  - ▶ React.dev
- ▶ Next.js
  - ▶ Next.js Documentation
  - ▶ Next-Learn
- ▶ Data
  - ▶ Dummy Json Data

# Good Tutorials and Podcasts

## Tutorials

- ▶ Net Ninja Modern React
- ▶ 12 React mistakes
- ▶ CSS Flexbox
- ▶ CSS Grid

## Podcasts

- ▶ Syntax
- ▶ Podrocket

## Alternativen

- ▶ Zu React . . . Angular, Vue.js, SvelteKit, Solid.js

## Erweiterungen, Gui Libs

- ▶ Rest/Http: Axios
- ▶ UI: Carbon, Chakra-UI, React-Bootstrap, TailwindCSS, Mantine, Bulma
- ▶ Fonts,Icons: React-Icons, Google-Fonts
- ▶ Testing: Jest, Cypress, Vitest
- ▶ Development: ESLint, Prettier

# Workshop 1, Typescript und React

## Inhalte:

1. Komponenten in React und JSX erstellen
2. CSS-Klassen mit CSS-Modules
3. Wiederholung
  - ▶ Destructuring, Spread und Rest
  - ▶ ?: Operator
  - ▶ && und ??
  - ▶ Arrays map, reduce, find
4. Typsichere Props (ReactNode, PropsWithChildren)
5. Typsichere Styles (CSSProperties)
6. Typisierung von States (Primitives und Objekte) (useState)
7. Typisierung von Event-Handlern
8. Typisierung von References (useRef)

## Typsichere Props

```
import { ReactNode } from "react"
export type ExampleProps = {
  stringValue: string
  numericValue: number
  booleanValue: boolean
  optionalValue?: string
  children: ReactNode
}
export function Example(props: ExampleProps) {
  const {
    stringValue,
    numericValue,
    booleanValue,
    optionalValue = "standard" // initialize default
  } = props
  return (
    <div>stringValue={stringValue}...
      <div>{props.children}</div>
    </div>
  )
}
```



## Typsichere Events

```
import { MouseEvent } from "react"

export function Example() {
  const divclick = (e: MouseEvent<HTMLDivElement>) => {
    const nativeEvent = e.nativeEvent
  }

  return (
    <div onClick={divclick}>Click me</div>
  )
}
```

## Typsichere Refs

```
import { useEffect, useRef } from "react"

export function Example() {

  const myref = useRef<HTMLDivElement>(null)

  useEffect(() => {
    console.log(myref.current)
  }, [])

  return (
    <div ref={myref}>Click me</div>
  )
}
```

## Typsichere State-Objekte

```
import { MouseEvent, useState } from "react"

type UserForm = {
  firstname: string; lastname: string; email: string
}

export function Example() {
  const [userForm, setUserFrom] = useState<UserForm>()
  const onDivClick = (e: MouseEvent<HTMLDivElement>) => {
    const newUserForm: UserForm = {
      firstname: "Karl",
      lastname: "Hansen",
      email: "hans@karl.de"
    }
    setUserFrom(newUserForm)
  }
  return (<div onClick={onDivClick}>
    Email={userForm?.email??"nicht gesetzt"}</div>)
}
```

## Standalone React Projekte erstellen

Wenn man etwas einfach testen will oder nur React benötigt, dann empfiehlt sich Vite. Hier Beispiel für Typescript

```
npm create vite@latest \  
  001_helloworld -- --template react-ts  
cd 001_helloworld  
npm install
```

danach mit HMR entwickeln:

```
npm run dev
```

## Next.js

Was ist SSR und Next.js in a nutshell

Pseudocode

```
/* handle request on the server */
const app = express()
app.handleRequest(request => {
  const s = loadScript(request)
  if (is_serverside(s)) {
    /* here all of node.js is available
     * but nothing from the browser (=client) */
    return runAndRenderIntoString(s)
  } else {
    /* script is not executed but send to the
     * browser (=client) */
    return s
  }
})
```

## Workshop 2, Next.js

Anlegen einer Next.js Anwendung mit

```
npx create-next-app@latest
```

```
npx next telemetry status
```

```
npx next telemetry disable
```

# Agenda Next.js Basics

- ▶ CSS Modules verwenden
- ▶ Routing
  - ▶ Erstellen eines Layouts (Flexbox)
  - ▶ Navigation erstellen
  - ▶ Links verwenden
  - ▶ Routen definieren
  - ▶ Parallel Routes
  - ▶ Intercepting Routes
  - ▶ Special Pages (Error, Loading etc)
- ▶ Icons einbinden
- ▶ Font einbinden
- ▶ Bilder einbinden
- ▶ APIs mittels route.ts

## Workshop 2 (continued), Next.js

- ▶ Suspense (and fallback)
- ▶ Caching (prerendered static content)  

```
export const dynamic = "force-dynamic"  
fetch option next.cache: "no-cache"  
fetch option next.revalidate: 3600
```
- ▶ There are 2 caches on the server
  - ▶ Full route cache
  - ▶ Data caches
- ▶ and 1 Cache for Routes on the client



## Workshop 3, Next.js und React

- ▶ Interaktion (useState, useEffect)
- ▶ Warenkorb implementieren (useContext)
- ▶ 3rd Party GUI Komponenten einbinden
- ▶ Modale Dialogs, Toasts

## Workshop 3, Next.js + Carbon

- ▶ Server-side Rendering
- ▶ Server-side Datafetching
- ▶ Markdown

## How to add carbon

Carbon benutzt SASS

Projekt anpassen:

```
npm i --save-dev sass  
npm install -S @carbon/react
```

Styles inkludieren:

**globals.css** umbenennen zu **globals.scss** und oben folgendes einfügen:

```
@use '@carbon/react';
```

Und je nach Komponente eine Client-Boundary schaffen ("use client")

## Workshop 4, Next.js

- ▶ APIs mittels `route.ts` (revisited)
- ▶ Server-side Rendering
- ▶ Server-side Datafetching
- ▶ Markdown