Fullstack Development

Data Fetching in React / NextJS

https://github.com/fullstack-66/data-fetching

Time server

Local

- Clone https://github.com/fullstack-66/time-server
- `npm install`, `npm start`
- `http://localhost:3001`

Cloud

- https://time-server-production-f0f6.up.railway.app/

Setup NextJS project

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

Configure import

`tsconfig.json`

```json
{
  "baseUrl": ".",
  "paths": {
    "@app/*": ["app/*"],
    "@components/*": ["components/*"]
  }
}
```

- Note, if you don't define `baseUrl`, you need to prefix the path with `./`.

API Endpoint

`./utils/index.ts`

```ts
if (!process.env.NEXT_PUBLIC_API_URL) {
  throw new Error("NEXT_PUBLIC_API_URL is not set");
}
export const API_URL = process.env.NEXT_PUBLIC_API_URL;
```

Create additional page

`./app/another/page.tsx`

```tsx
export default function AnotherPage() {
  return <div>Another Page</div>;
}
```

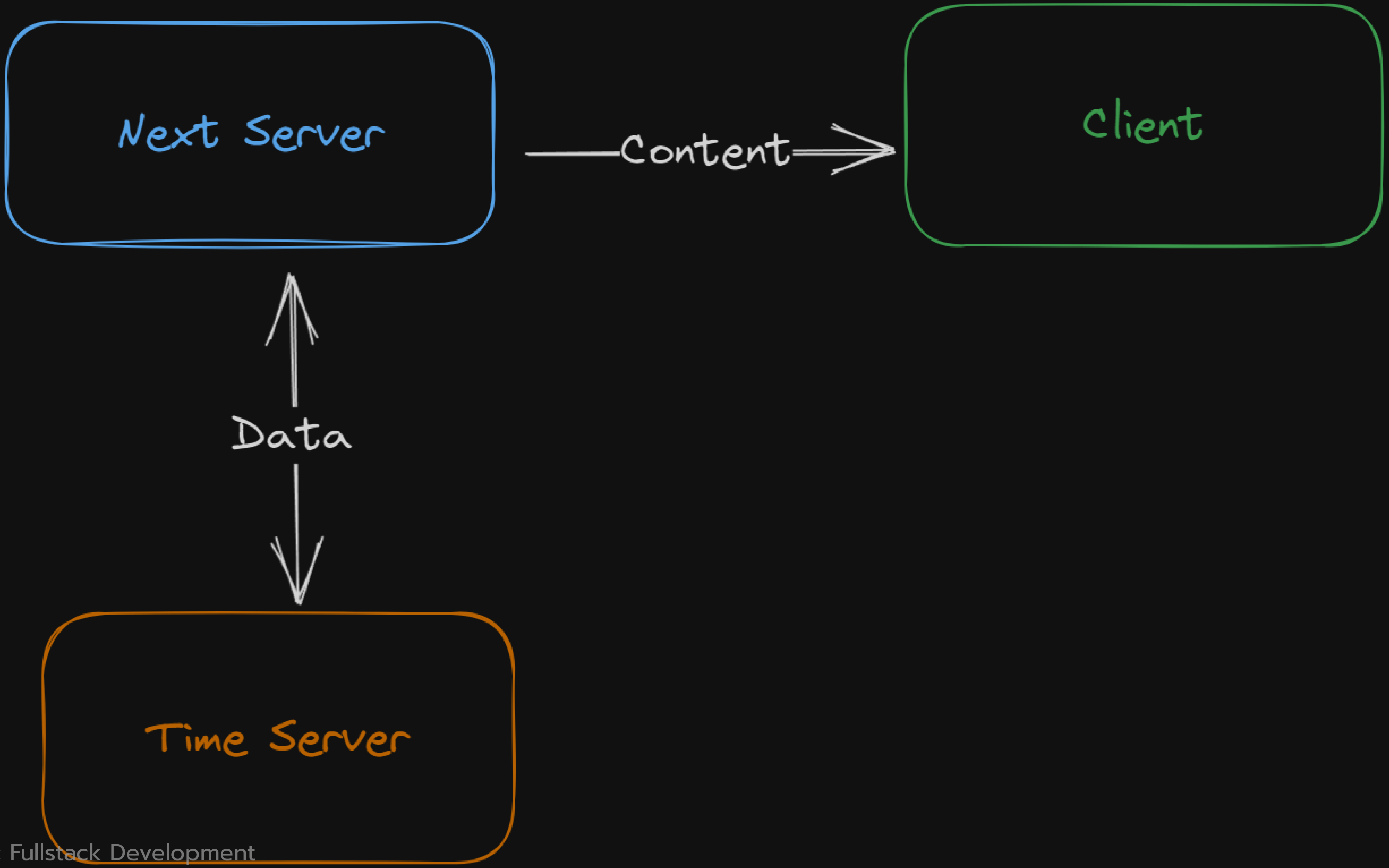
Add navigation

`./app/layout.tsx`

```tsx
import Link from "next/link";
// ...
export default function RootLayout(...) {
  return (
    <html lang="en">
      <body className={inter.className}>
        <div className="flex gap-2 mb-4">
          <Link href="/">Home</Link> 👈
          <Link href="/another">another</Link> 👈
        </div>
        <div className="m-4">{children}</div>
      </body>
    </html>
  );
}
```

Fetching #1: Server component

- `./components/t1_serverComponent/index.tsx`
- Notice the caching behavior.


Next Server
Content
Client
Data
Time Server

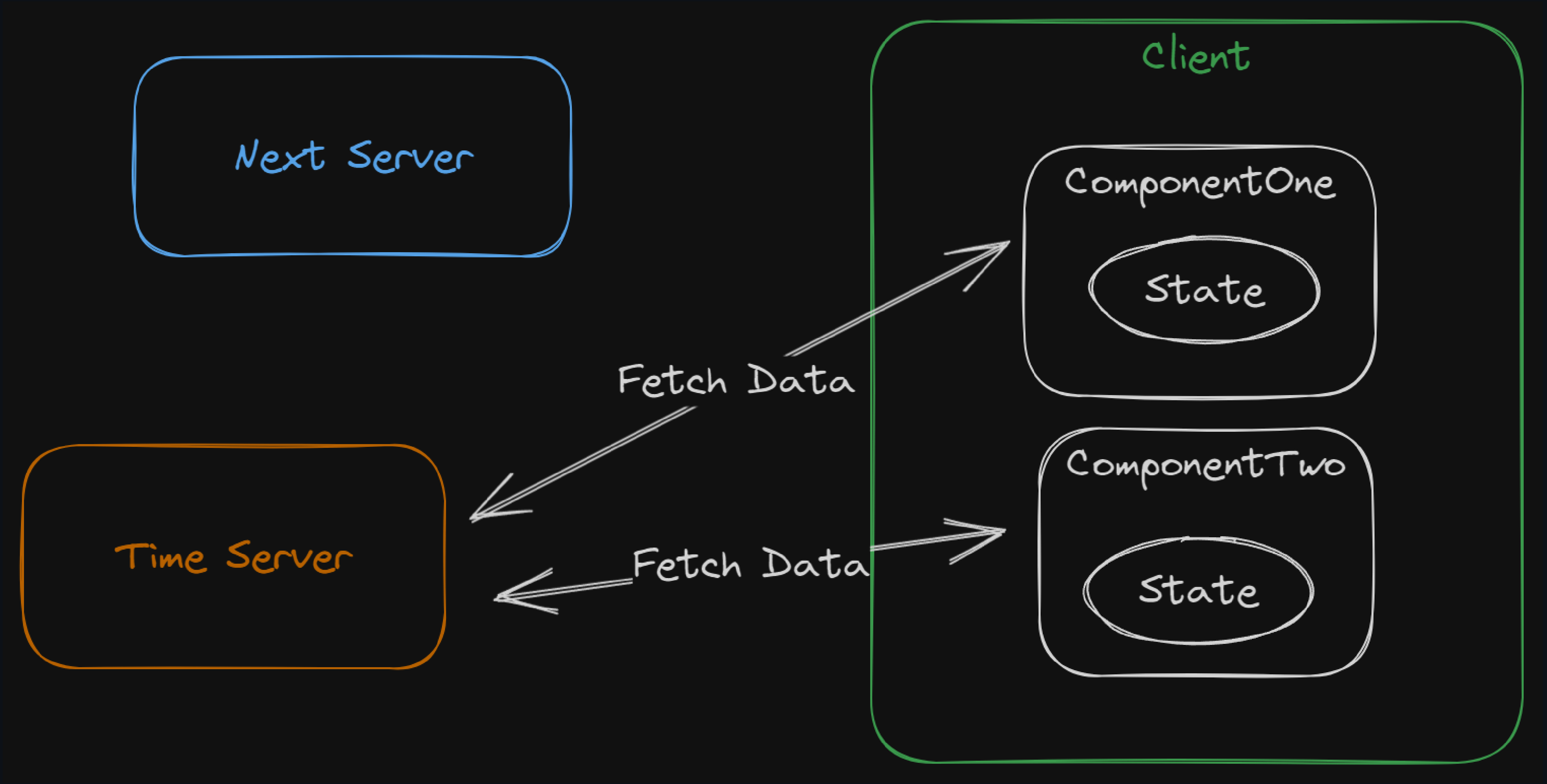
Also used

- `DisplayTime` component from `./components/utils/displayTime.tsx`
- Type from `./components/uitls/types.ts`
  - Generated using `Paste as Code` extension.

Fetching #2: `useEffect` way

`./t2_clientUseEffectOne/index.ts`

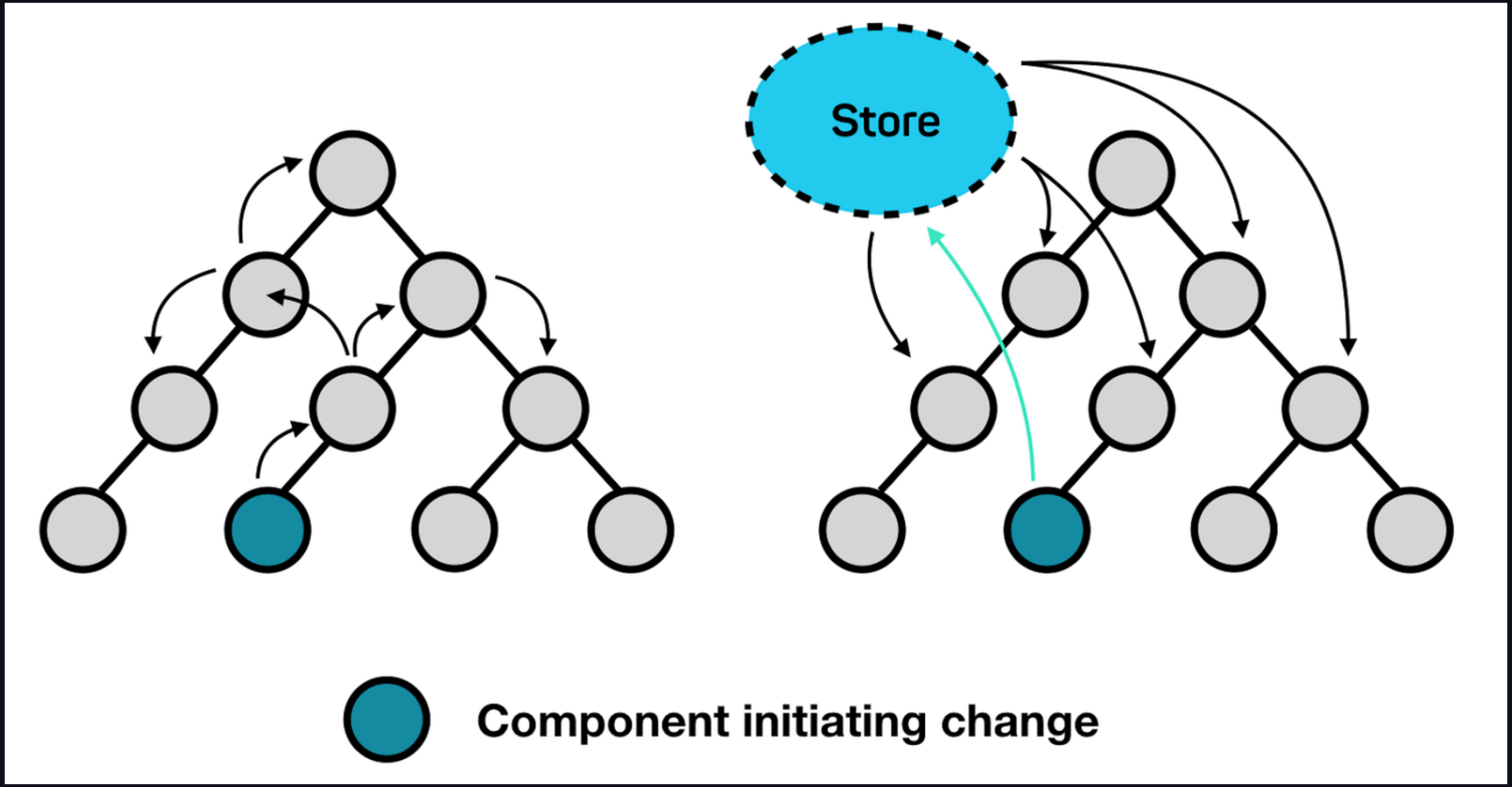
`./t2_clientUseEffectTwo/index.ts`


Next Server
Client
ComponentOne
State
Fetch Data
ComponentTwo
State
Time Server
Fetch Data

Global store pattern

What does using a global store solve?

- Multiple copies of states
- Prop drilling
- Unncessary re-render


Store
Component initiating change

Global store libraries / API

- `React Context`
- `Redux`
- `Jotai`
- `Zustand`

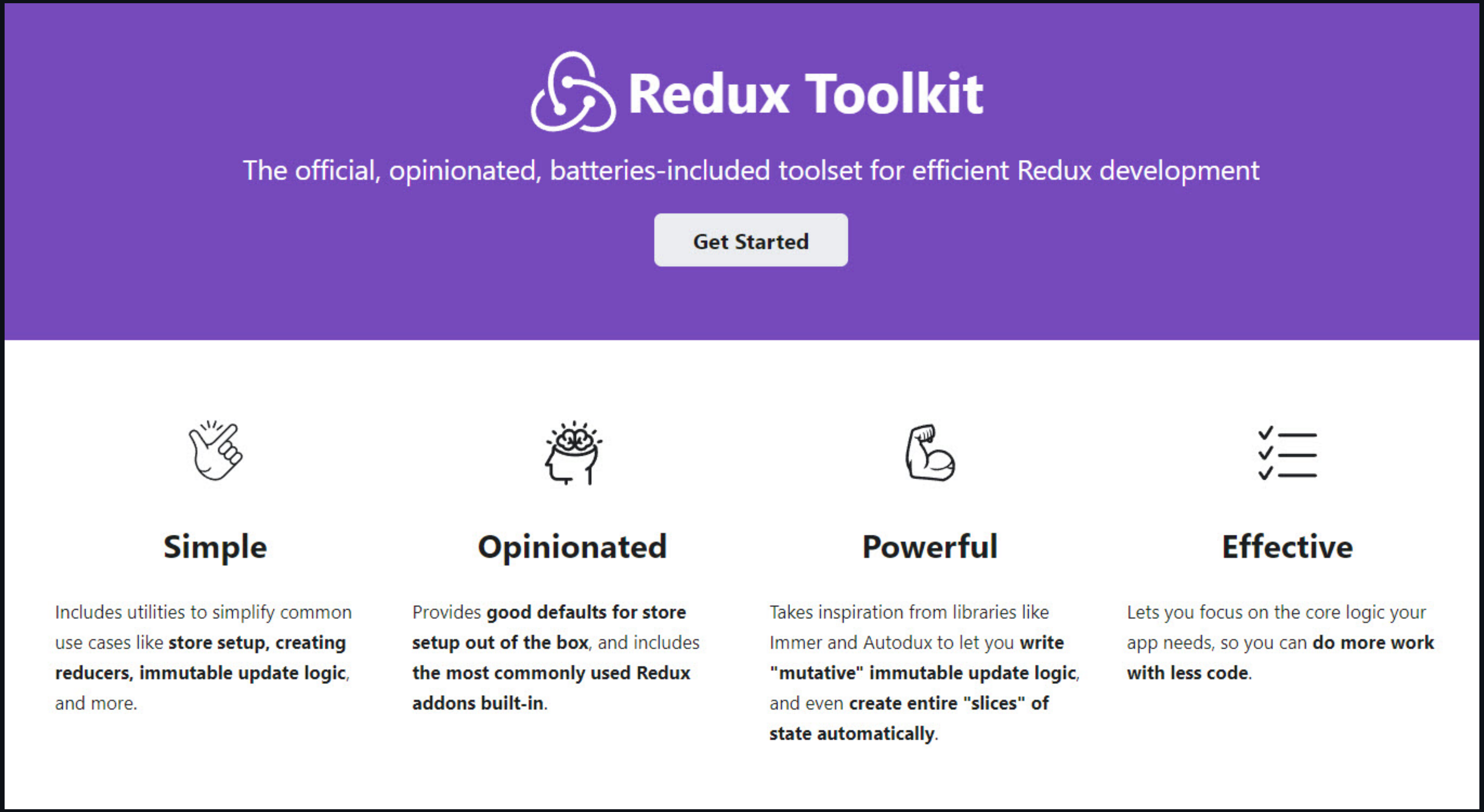
React Context

- Native API
- Fine, but...

```jsx
const App = () => {
  // ... some code
  return (
    <>
      <ReduxProvider value={store}>
        <ThemeProvider value={theme}>
          <OtherProvider value={otherValue}>
            <OtherOtherProvider value={otherOtherValue}>
              {/** ... other providers*/}
              <HellProvider value={hell}>
                <HelloWorld />
              </HellProvider>
              {/** ... other providers*/}
            </OtherOtherProvider>
          </OtherProvider>
        </ThemeProvider>
      </ReduxProvider>
    </>
  );
};
```

Redux

- Powerful
- Has Redux Dev Tool
- Can be used standalone
- Too much boiler plate for small projects


Redux Toolkit

The official, opinionated, batteries-included toolset for efficient Redux development

Simple

Includes utilities to simplify common use cases like **store setup, creating reducers, immutable update logic**, and more.

Opinionated

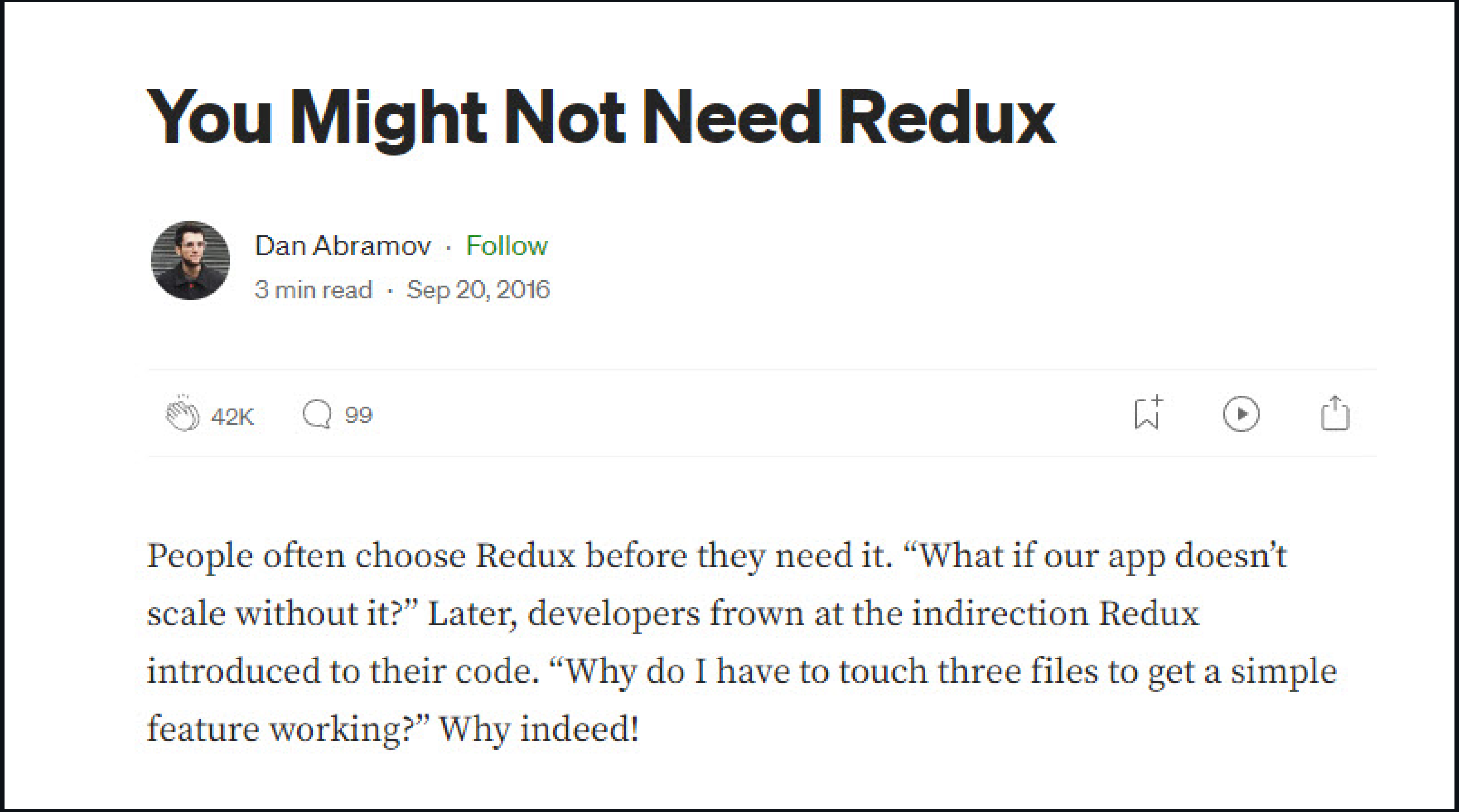
Provides **good defaults for store setup out of the box**, and includes **the most commonly used Redux addons built-in**.

Powerful

Takes inspiration from libraries like Immer and Autodux to let you **write "mutative" immutable update logic**, and even **create entire "slices" of state automatically**.

Effective

Lets you focus on the core logic your app needs, so you can **do more work with less code**.



You Might Not Need Redux

Dan Abramov · Follow
3 min read · Sep 20, 2016

42K 99

People often choose Redux before they need it. “What if our app doesn’t scale without it?” Later, developers frown at the indirection Redux introduced to their code. “Why do I have to touch three files to get a simple feature working?” Why indeed!

Zustand

- Minimalist
- Use Redux-style (flux principle)
- No provider

Jotai

- Another cool library but I never used it.

Zustand

- `npm install zustand`

`./components/utils/store.ts`

```ts
import { create } from "zustand";
import { type Time } from "./types";

interface Store {
  time: Time | null;
  setTime: (time: Time) => void;
}

const useStore = create<Store>((set) => ({
  time: null,
  setTime: (time) => set({ time }),
}));

export default useStore;
```

Fetching #3: Global store

- `./components/t4_clientGlobalStore/index.ts`
- `./components/t5_clientGlobalStoreUpdate/index.ts`
    - Notice how the data change in both components.

Fetching #4: React Query

- Data-fetching + state management library
- Highly recommended!

Installation

- `npm install @tanstack/react-query`
- `npm install -D @tanstack/react-query-devtools`

Provider

- `./components/uitls/reactQueryProvider.tsx`
- `./app/layout.tsx`

```
import ReactQueryProvider from "@components/utils/reactQueryProvider";
...
<ReactQueryProvider>
  <div className="m-4">{children}</div>
</ReactQueryProvider>
...
```

Fetching with React Query

- `./components/t6_clientReactQuery/index.tsx`
- `./components/t7_clientReactQueryTwo/index.tsx`
    - Notice how the data is cached and refetched.

Extra: use custom hook

- `./components/util/reactQueryData.ts`