NextJS (Client side) 1 of 14

Step 1 - NextJS Intro, Pre-requisites

Pre-requisites

You need to understand basic Frontend before proceeding to this track.

You need to know what React is and how you can create a simple application in it

NextJS Intro

NextJS was a framework that was introduced because of some minor inconviniences in React

1. In a React project, you have to maintain a separate Backend project for your API routes
2. React does not provide out of the box routing (you have to use react-
3. React is not SEO optimised

Back to home | Jump To | Prev | Next | Go to Top

1. not exactlv true today because of React Server components

)on why

4. Waterfalling problem

Let's discuss some of these problems in the next slides

Step 2 - SEO Optimisation

Google/Bing has a bunch of crawlers that hit websites and figure out what the website does.

It ranks it on Google based on the HTML it gets back

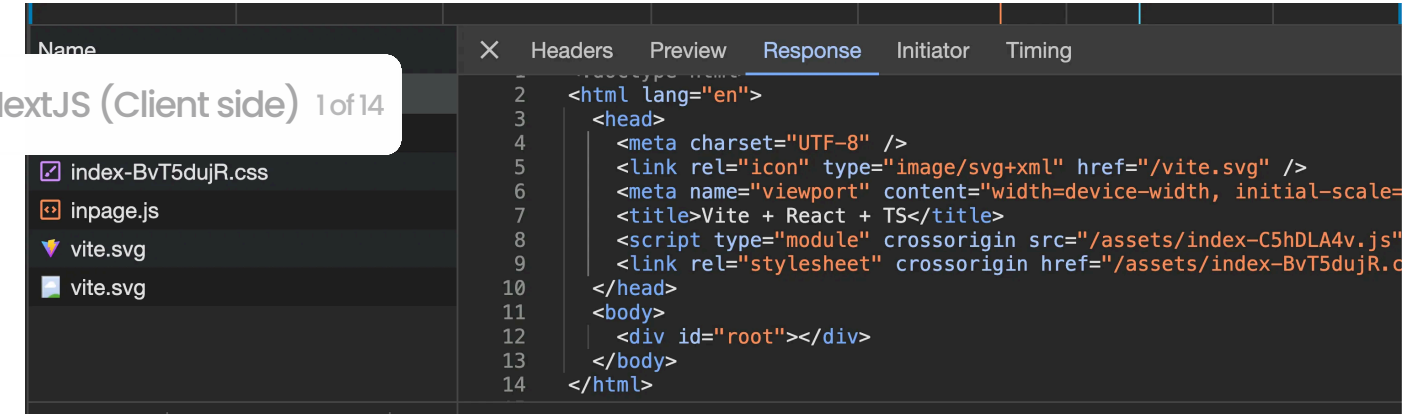
The crawlers DONT usually run your JS and render your page to see the final

NextJS (Client side) 1 of 14

While Googlebot can run JavaScript, dynamically generated content is harder for the scraper to index

Try visiting a react website

What does the Googlebot get back when they visit a website written in



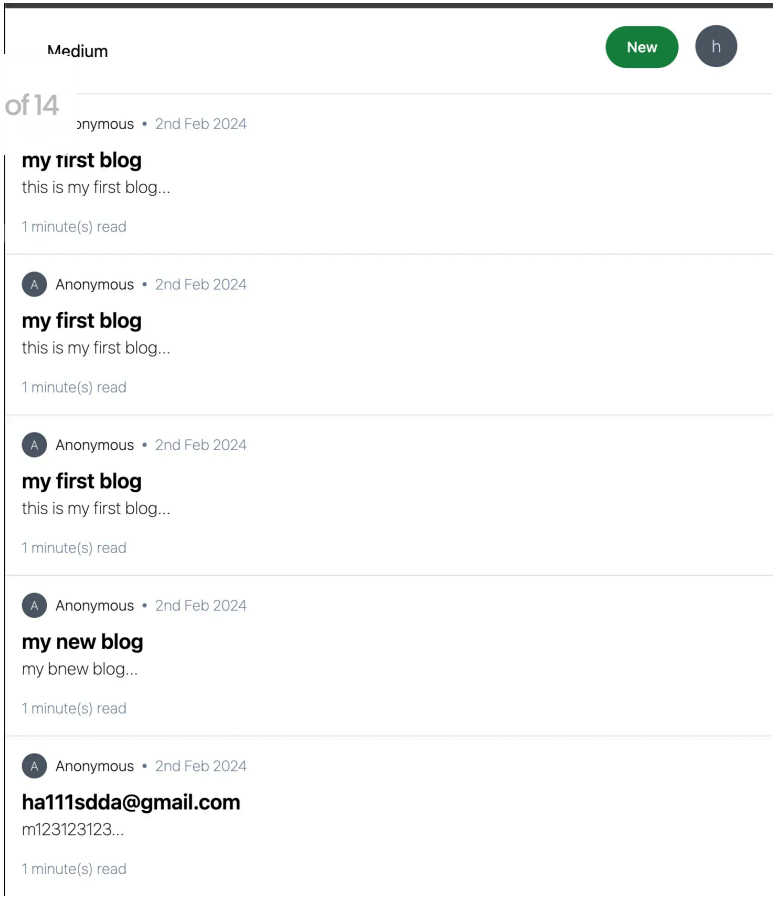
Googlebot has no idea on what the project is. It only sees Vite + React + TS in the original HTML response.

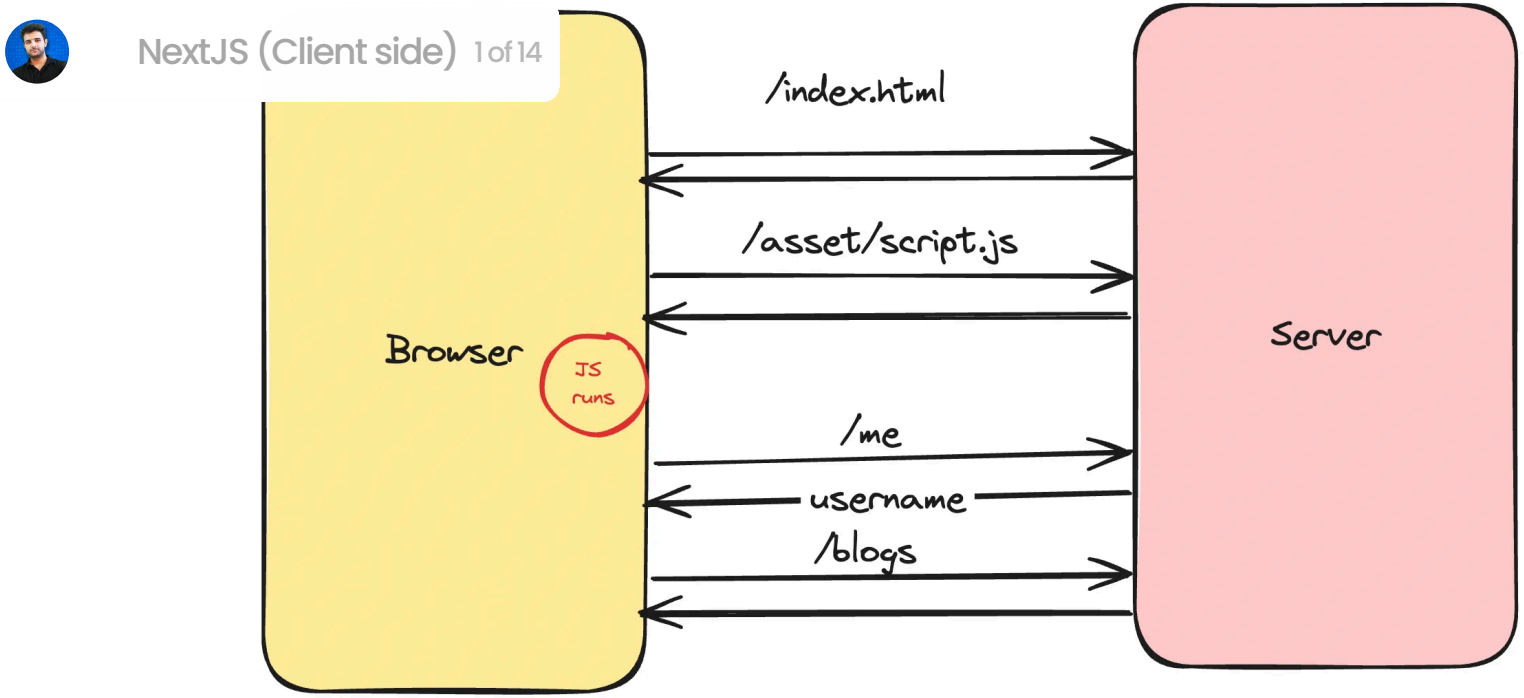
Ofcourse when the JS file loads eventually, things get rendered but the Googlebot doesn't discover this content very well.

Step 3 - Waterfalling problem

Let's say you built a blogging website in react, what steps do you think the

NextJS (Client side) 1 of 14





1. Fetching the index.html from the CDN
2. Fetching script.js from CDN
3. Checking if user is logged in (if not, redirect them to /login page)
4. Fetching the actual blogs

There are 4 round trips that happen one after the other (sequentially)

are chained or dependent on each other in a way that leads to
ng behavior.

What does nextjs provide you?

Step 4 - Next.js offerings

Next.js provides you the following upsides over React

1. Server side rendering - Get's rid of SEO problems
2. API routes - Single codebase with frontend and backend
3. File based routing (no need for react-router-dom)
4. Bundle size optimisations, Static site generation
5. Maintained by the Vercel team

Downsides -

NextJS (Client side) 1 of 14 ed via a CDN, always needs a server running that does server side rendering and hence is expensive

2. Very opinionated, very hard to move out of it

Step 5 - Let's bootstrap a simple Next app

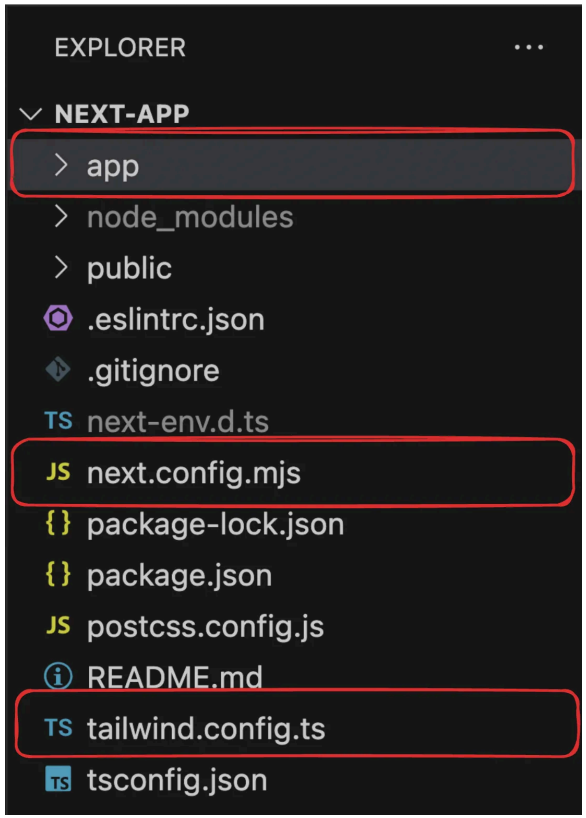
```
npx create-next-app@latest
```

NextJS (Client side) 1 of 14

```
➜  Projects npx create-next-app@latest
                                  llowing packages:

✔ What is your project named? … next-app
✔ Would you like to use TypeScript? … No / Yes
✔ Would you like to use ESLint? … No / Yes
✔ Would you like to use Tailwind CSS? … No / Yes
✔ Would you like to use `src/` directory? … No / Yes
✔ Would you like to use App Router? (recommended) … No / Yes
✔ Would you like to customize the default import alias (@/*)? … No / Yes
Creating a new Next.js app in /Users/harkiratsingh/Projects/next-app.

Using npm.

Initializing project with template: app-tw


Installing dependencies:
- react
- react-dom
- next

Installing devDependencies:
- typescript
- @types/node
- @types/react
- @types/react-dom
- autoprefixer
- postcss
- tailwindcss
- eslint
- eslint-config-next
```

File structure

NextJS (Client side) 1 of 14



1. next.config.mjs - Nextjs configuration file
2. tailwind.config.js - Tailwind configuration file
3. app - Contains all your code/components/layouts/routes/apis

Bootstrap the project

NextJS (Client side) 1 of 14

Understanding routing in Next

NextJS (Client side) 1 of 14 ıct

https://blog-six-tan-47.vercel.app/signup

```
function App() {

  return (
    <>
      <BrowserRouter>
        <Routes>
          <Route path="/signup" element={<Signup />} />
          <Route path="/signin" element={<Signin />} />
          <Route path="/blog/:id" element={<Blog />} />
        </Routes>
      </BrowserRouter>
    </>
  )
}
```

Routing in Next.js

NextJS (Client side) 1 of 14

Next.js has a file based router (https://nextjs.org/docs/app/building-your-defining-routes)

This means that the way you create your files, describes what renders on a route

1. Let's add a new folder in app called signup
2. Let's add a file called page.tsx inside app/signup

▼ page.tsx

```
export default function Signup() {
  return (
    <div>
      hi from the signup page
    </div>
  );
}
```

1. Start the application locally

```
npm run dev
```

NextJS (Client side) 1 of 14

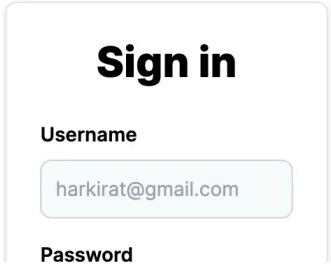
Final folder structure

Step 7 - Prettify the signin page

Let's replace the signup page with a prettier one

```
export default function Signin() {
  return <div className="h-screen flex justify-center flex-col">
    <div className="flex justify-center">
    <a href="#" className="block max-w-sm p-6 bg-white border border-
        <div>
          <div className="px-10">
            <div className="text-3xl font-extrabold">
              Sign in
            </div>
          </div>
          <div className="pt-2">
            <LabelledInput label="Username" placeholder="harkirat@gmail
            <LabelledInput label="Password" type={"password"} placeholde
            <button type="button" className="mt-8 w-full text-white bg-g
          </div>
        </div>
      </a>
    </div>
```

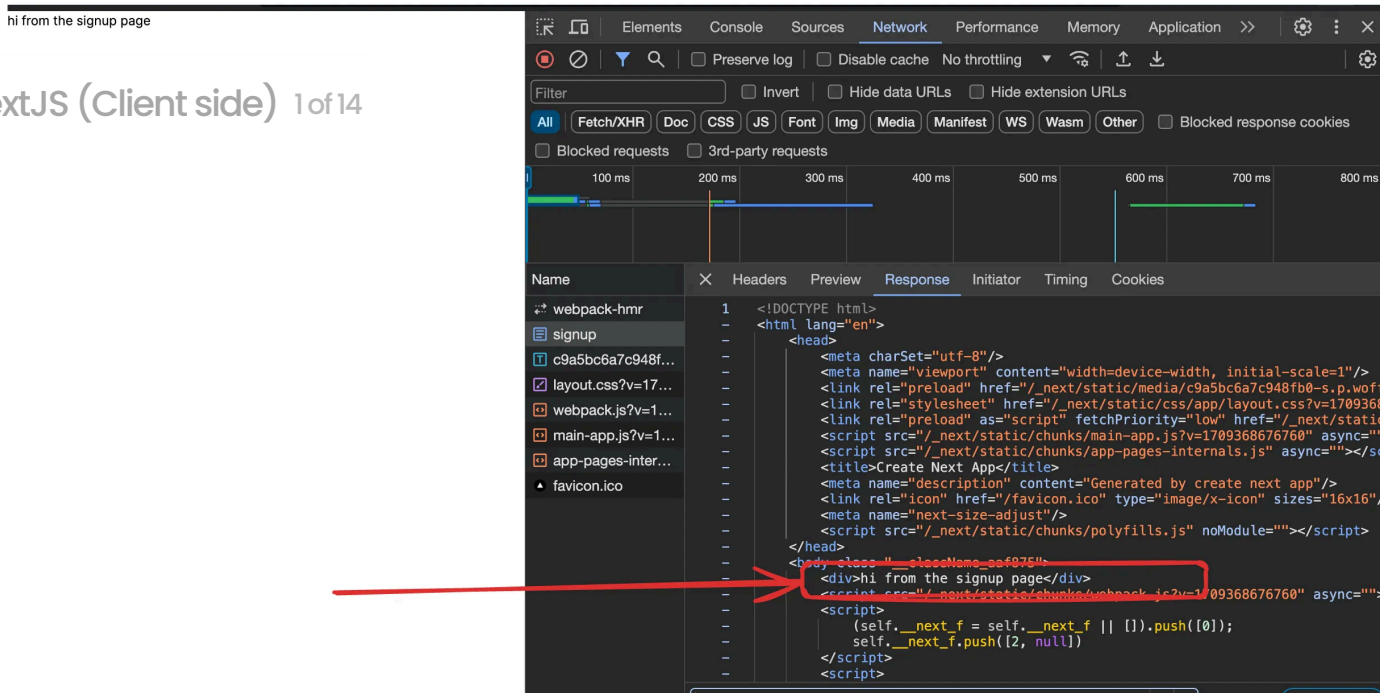

```
interface LabelledInputType {
                                                    ing;
    type?: string;
}

function LabelledInput({ label, placeholder, type }: LabelledInputType) {
    return <div>
        <label className="block mb-2 text-sm text-black font-semibold pt-4">
        <input type={type || "text"} id="first_name" className="bg-gray-50 bor
    </div>
}
```



Step 8 - Server side rendering

Let's try exploring the response from the server on the /signup route

1. Run npm run dev
2. Visit http://localhost:3000/signup
3. Notice the response you get back in your HTML file



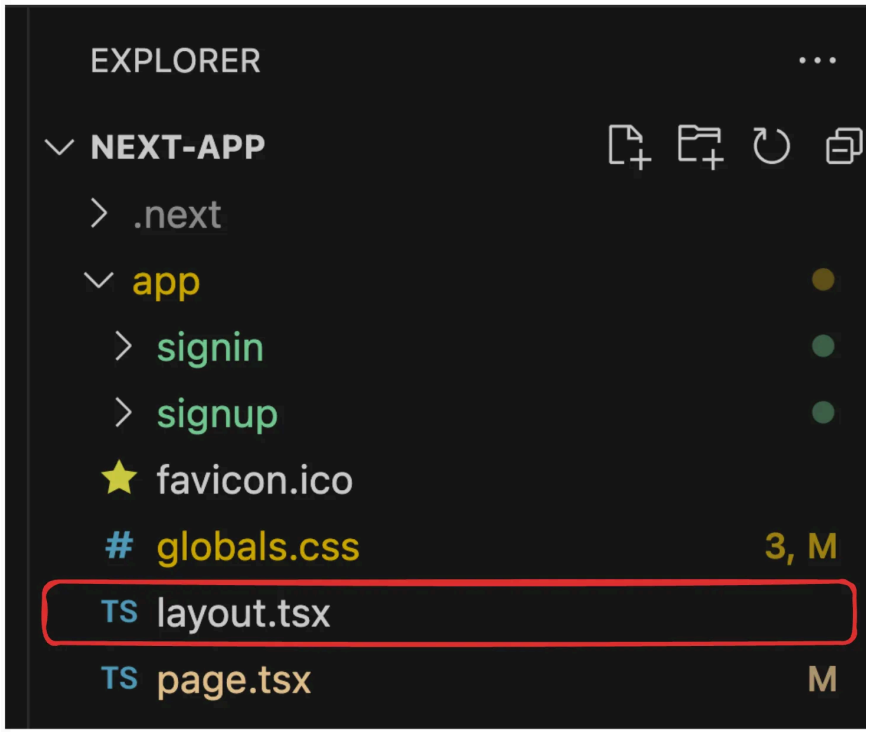
Now if GoogleBot tries to scrape your page, it'll understand that this is a signup page without running any Javascript.

The first index.html file it get's back will have context about the page since it was server side rendered

Step 3 - layouts

You'll notice a file in your app folder called layout.tsx

NextJS (Client side) 1 of 14 ges (Ref https://nextjs.org/docs/app/building-your-application/routing/pages-and-layouts)



What are layouts

Layouts let you wrap all child pages inside some logic.

Let's explore layout.tsx

NextJS (Client side) 1 of 14

```tsx
import type { Metadata } from "next";
                from "next/font/google";
s.css";

const inter = Inter({ subsets: ["latin"] });

export const metadata: Metadata = {
  title: "Create Next App",
  description: "Generated by create next app",
};

export default function RootLayout({
  children,
}: Readonly<{
  children: React.ReactNode;
}>) {
  return (
    <html lang="en">
      <body className={inter.className}>
        {children}
      </body>
    </html>
  );
}
```

import styles

metadata of the page

Adding font globally

The page handler component

Assignment

Try adding a simple Appbar

NextJS (Client side) 1 of 14

```
return (
    <html lang="en">
      <body className={inter.className}>
        <div className="p-4 border-b">
          Medium
        </div>
        {children}
      </body>
    </html>
);
```

Medium

hi there

Step 10 - Layouts in sub routes

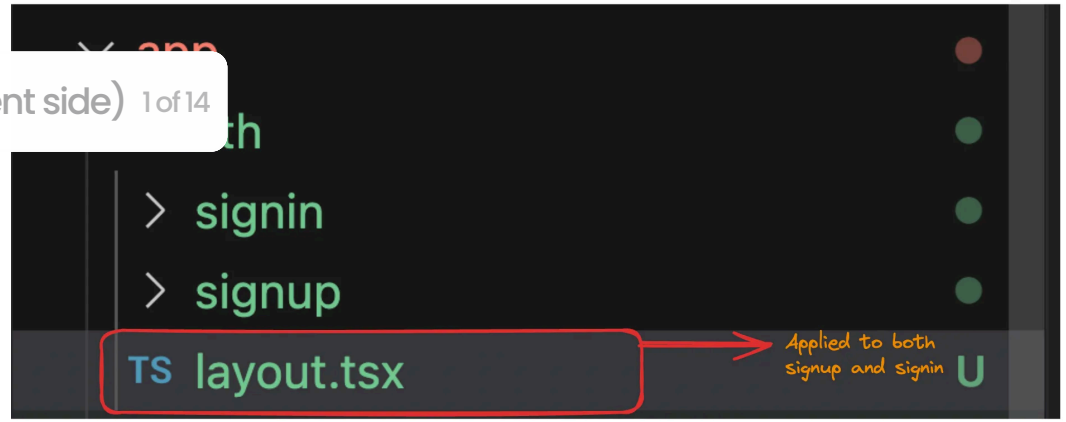
What if you wan't all routes that start with `/signin` to have a `banner` that says `Login now to get 20% off`

Step 11 - Merging routes

What if you wan't to get the banner in both signup and signin ?

Approach #1

Move both the signin and signup folder inside a auth folder where we have the layout



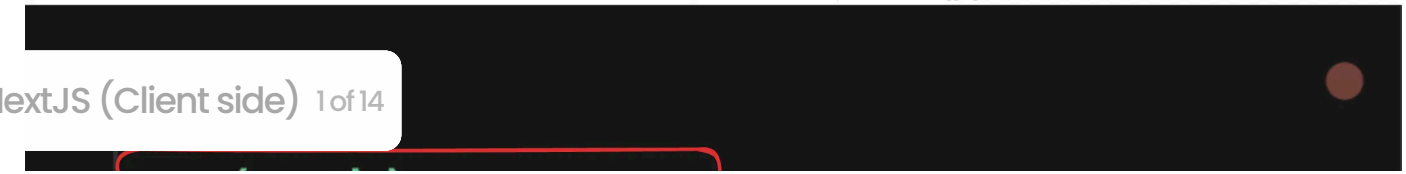
You can access the routes at

http://localhost:3000/auth/signup and http://localhost:3000/auth/signin

Approach #2

You can use create a new folder with () around the name.

This folder is ignored by the router.



Step 12 - components directory

You should put all your components in a components directory and use them in the app routes rather than shoving everything in the route handler

1. Create a new folder called components in the root of the project
2. Add a new component there called Signin.tsx
3. Move the signin logic there
4. Render the Signin component in app/(auth)signin/page.tsx

Solution

NextJS (Client side) 1 of 14

```
export function Signin() {
  return <div className="h-screen flex justify-center flex-col">
    <div className="flex justify-center">
      <a href="#" className="block max-w-sm p-6 bg-white border bord
        <div>
          <div>
            <div>
              <div>
                Sign in
              </div>
            </div>
            <div>
              <LabelledInput label="Username" placeholder="harkirat@gm
              <LabelledInput label="Password" type={"password"} placeho
              <button type="button" className="mt-8 w-full text-white bg
            </div>
          </div>
        </a>
      </div>
    </div>
  }

  interface LabelledInputType {
    label: string;
    placeholder: string;
    type?: string;
  }

  function LabelledInput({ label, placeholder, type }) {
    return <div>
```

```
<label className="block mb-2 text-sm text-black font-semibold pt-
e={type || "text"} id="first_name" className="bg-gray-50 b
}
```

app/(auth)/Signin.tsx

```
import { Signin as SigninComponent } from "@/components/Signin";

export default function Signin() {
  return <SigninComponent />
}
```

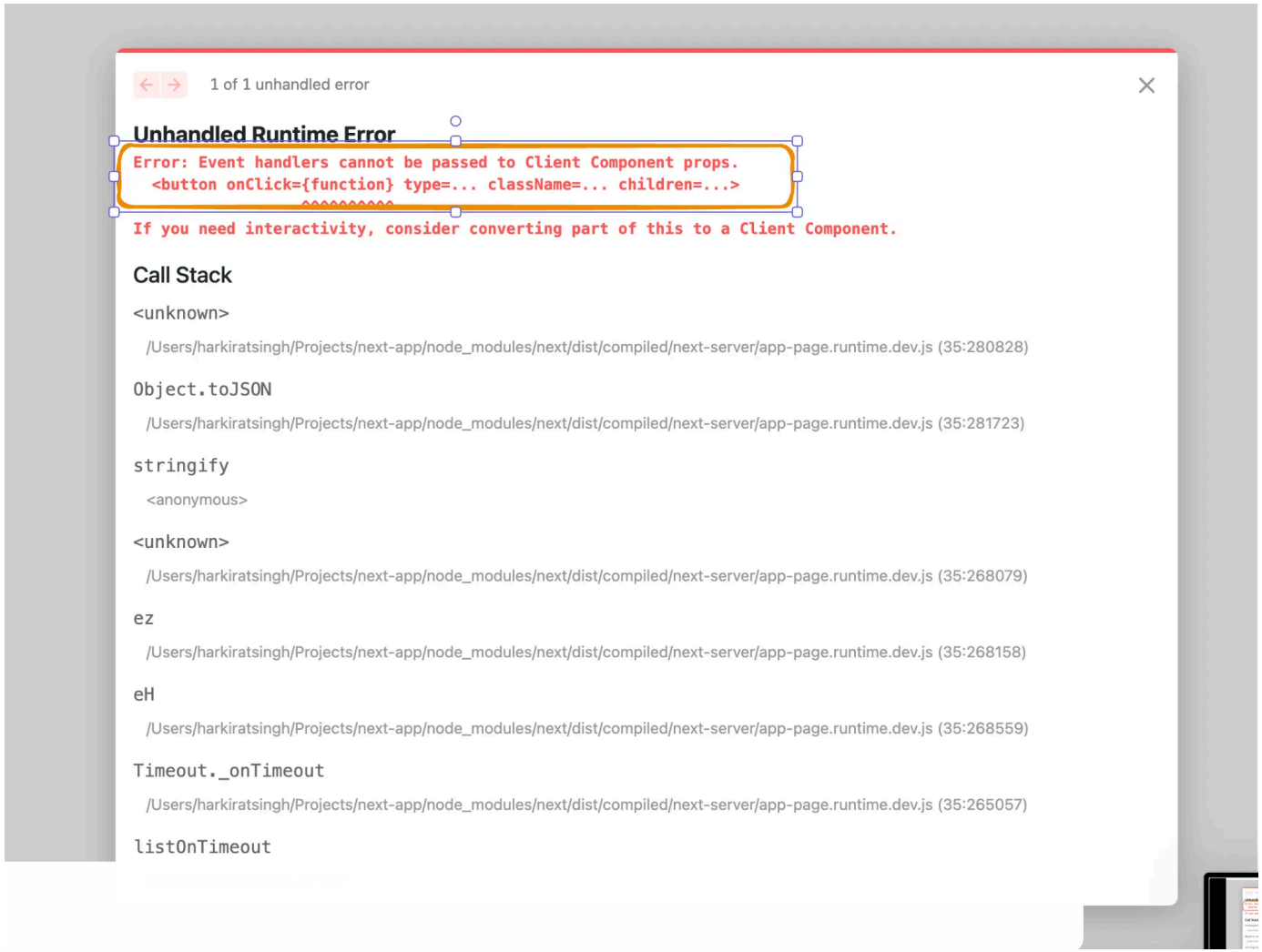
Step 13 - Add a button onclick handler

Now try adding a `onClick` handler to the `button` on the signin page

NextJS (Client side) 1 of 14

```
<button onClick={() => {
    er clicked on signin")
  type="button" className="mt-8 w-full text-white bg-gray-800 focus:ring
```

You will notice an error when you open the page



 happening here? Let's explore in the next slide

Step 14 - Client and server components

Ref - https://nextjs.org/learn/react-foundations/server-and-client-

NextJS (Client side) 1 of 14

NextJS expects you to identify all your components as either `client` or `server`

As the name suggests

1. Server components are rendered on the server
2. Client components are pushed to the client to be rendered

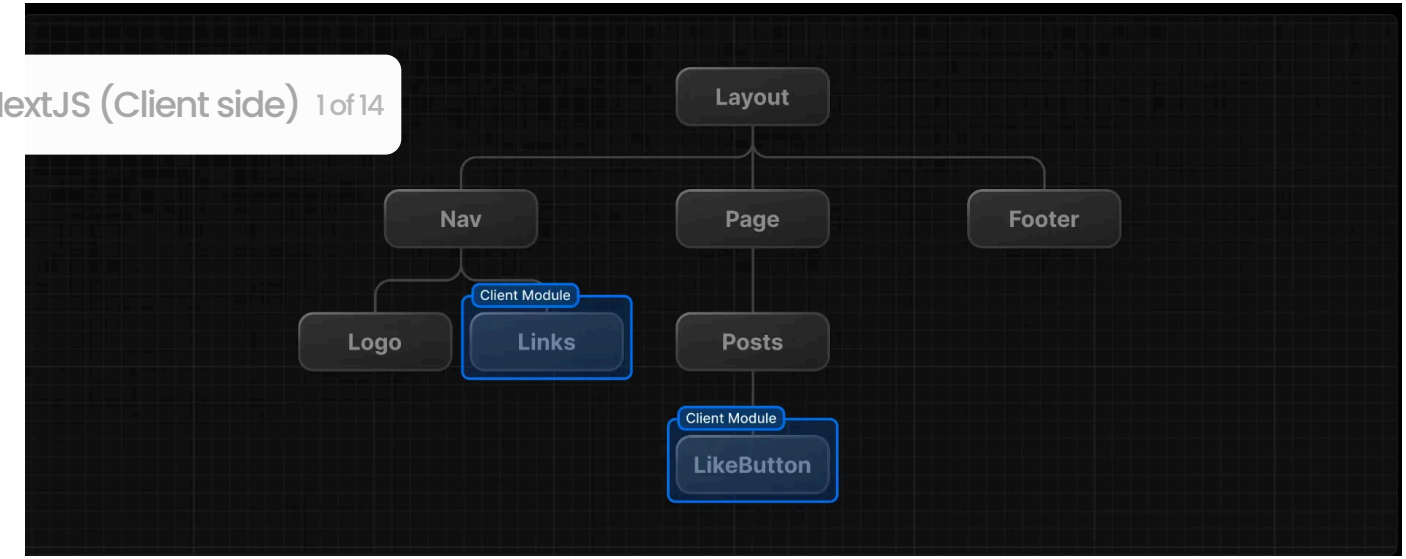
By default, all components are `server` components.

If you wan't to mark a component as a `client` component, you need to add the following to the top of the component -

```
"use client"
```

When should you create `client components` ?

1. Whenever you get an error that tells you that you need to create a client component
2. Whenever you're using something that the server doesn't understand (useEffect, useState, onClick...)



Assignment

Try updating components/Signin.tsx to make it a client component

You will notice that the error goes away

Some nice readings -

https://github.com/vercel/next.js/discussions/43153