

React Architecture Explained



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React is 100% component based

All React apps start by rendering a single component

Understand how that single component renders to a browser



**Course demonstrations
in NextJS**

**At app start, component
in /app/page.js is
launched**

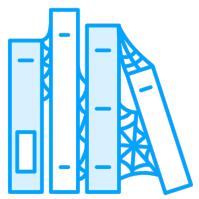
**That page.js contains
the root element of our
React app**

**It's possible to write
React apps with little
understanding**

**Always helpful to
understand what's
happening inside**



Coming Up



React is a library



What it means to be a single-page app (SPA)



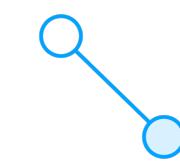
Create a web app with only native DOM calls



Convert DOM calls to React without JSX



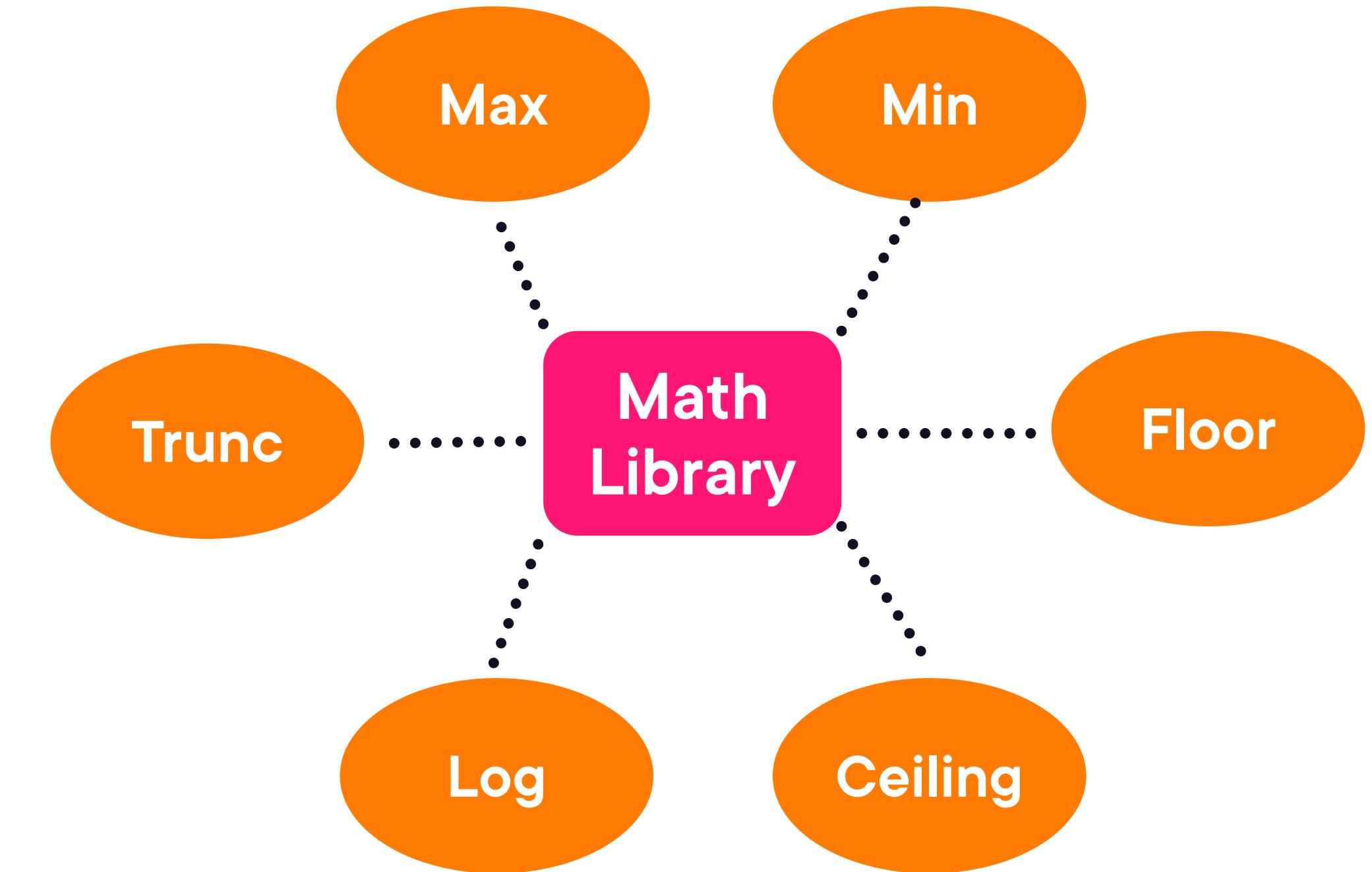
Convert React JavaScript to use JSX



Explain the meaning of $F(G(x))$ in a component tree



A Library is defined as a group of related functions or classes that perform unique operations.



React is two libraries

Index.js

```
import react from "react";
import ReactDOM from "react-dom";
```



**Everything in this module
uses very simple JavaScript
and coding along is optional**



https://react.dev/blog/2024/04/25/react-19-upgrade-guide#umd-builds-removed

v18.3.1 Search Learn Reference Community **Blog**

UMD builds removed

UMD was widely used in the past as a convenient way to load React without a build step. Now, there are modern alternatives for loading modules as scripts in HTML documents. Starting with React 19, React will no longer produce UMD builds to reduce the complexity of its testing and release process.

To load React 19 with a script tag, we recommend using an ESM-based CDN such as [esm.sh](#).

```
<script type="module">
  import React from "https://esm.sh/react@19/?dev"
  import ReactDOMClient from "https://esm.sh/react-dom@19/client?dev"
  ...
</script>
```

Libraries depending on React internals may block upgrades

This release includes changes to React internals that may impact libraries that ignore our pleas to not use internals like `SECRET_INTERNALS_DO_NOT_USE_OR_YOU_WILL_BE_FIRED`. These changes are necessary to land improvements in React 19, and will not break libraries that follow our guidelines.

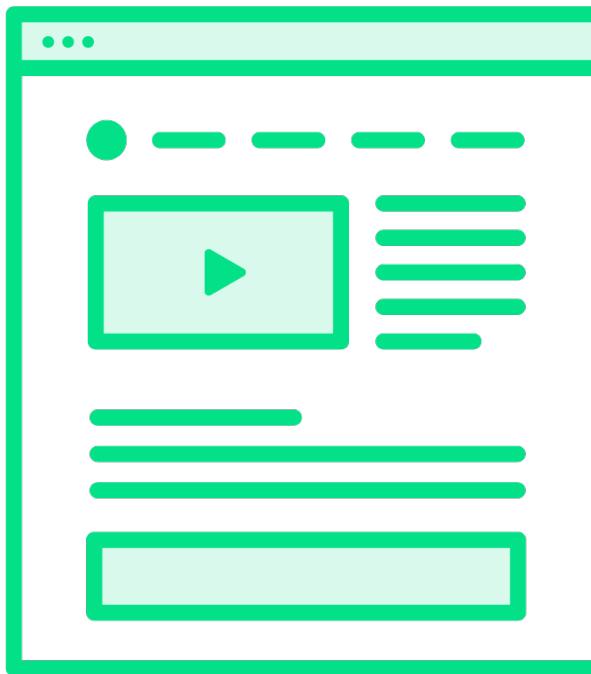
Based on our [Versioning Policy](#), these updates are not listed as breaking changes, and we are not including

A library is defined as a group of related functions or classes that perform unique operations.



**A framework is a collection of
programming tools with a
specific goal in mind.**





Goals

Building a website

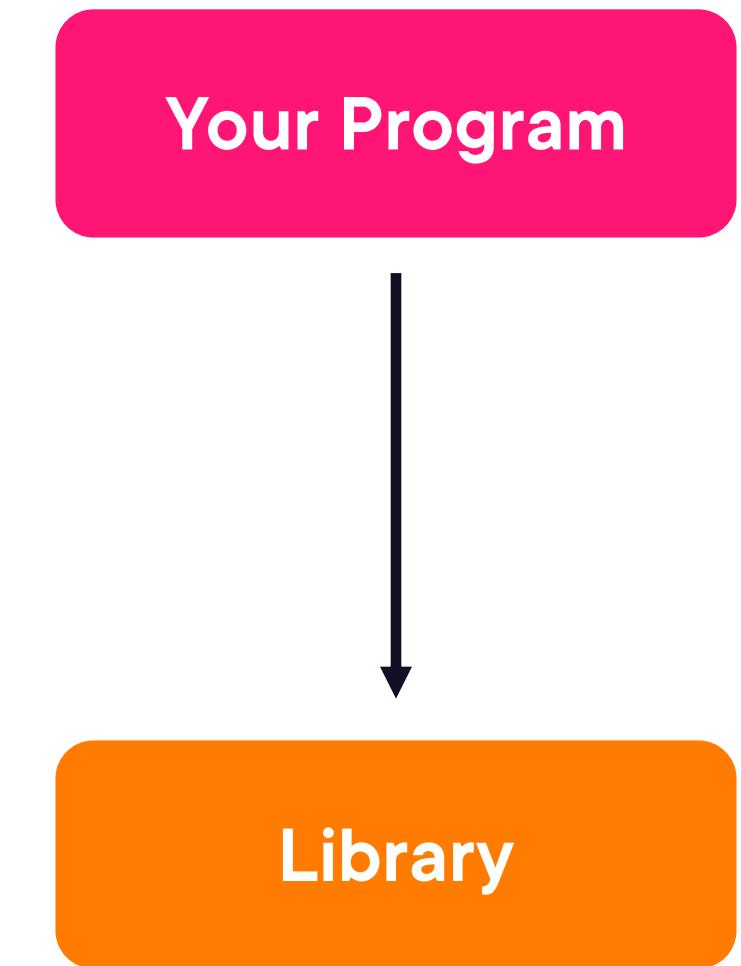
Deploying a website

Framework
It is in control

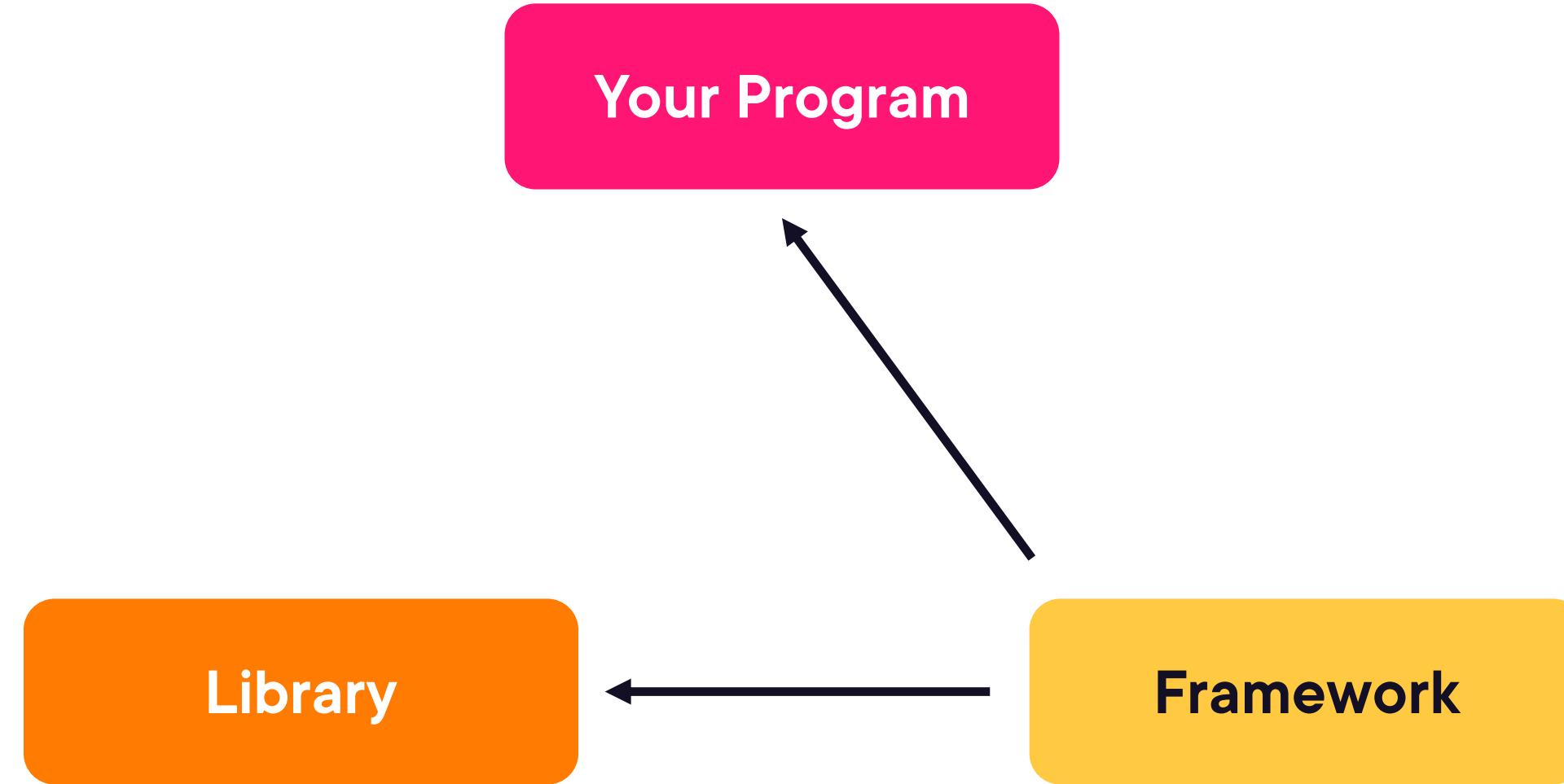
Library
You are in control



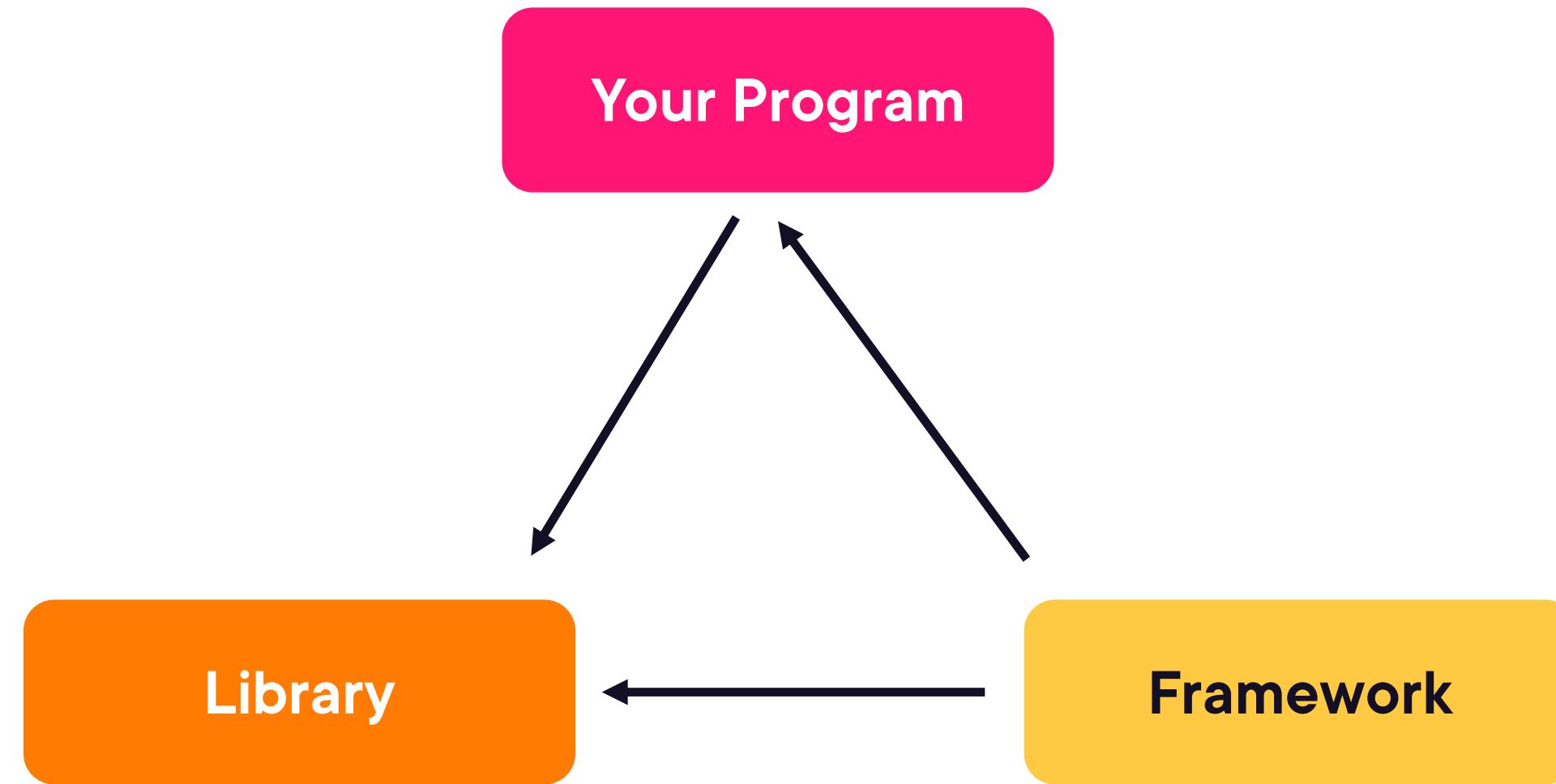
Library vs. Framework



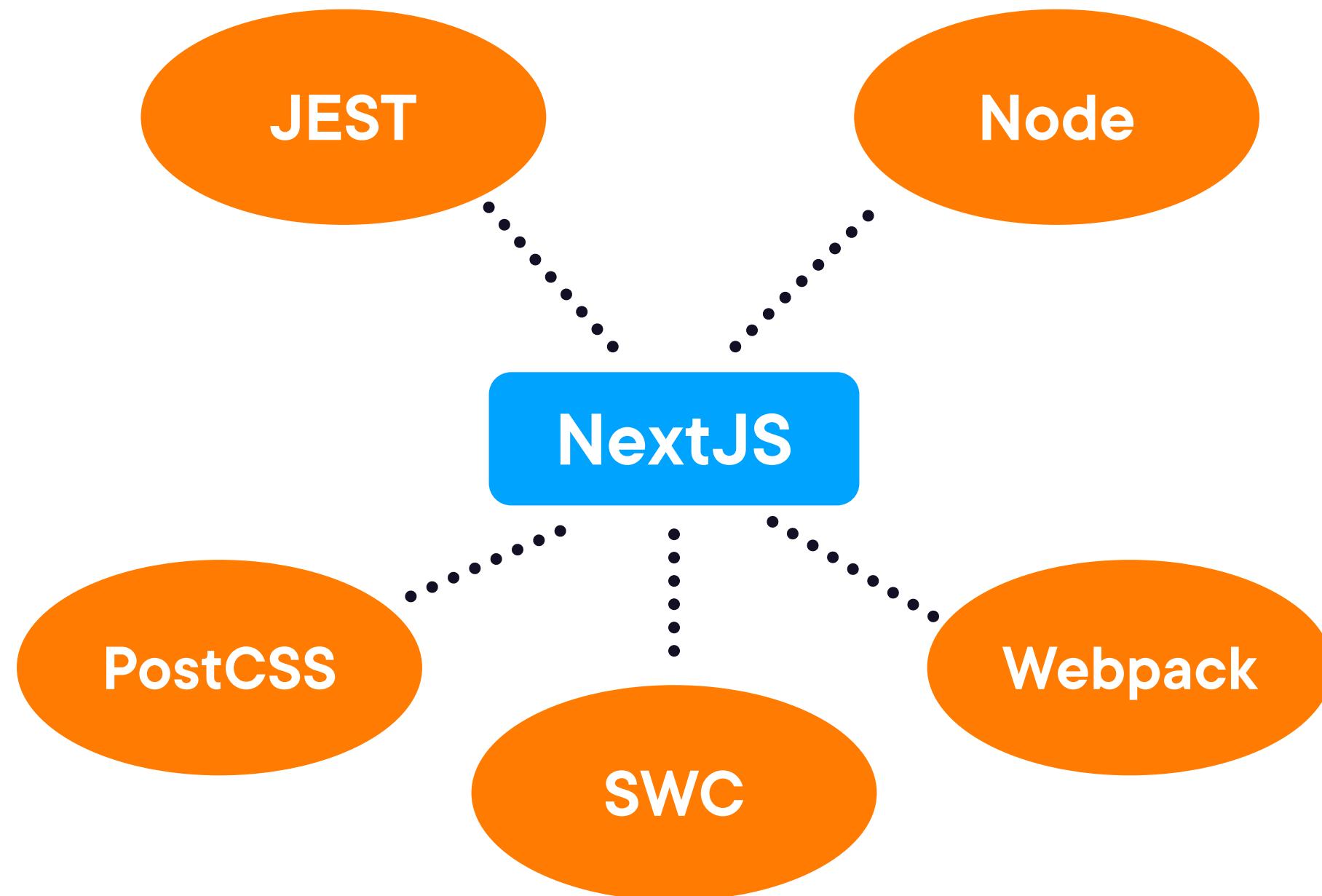
Library vs. Framework



Library vs. Framework



Next.js Framework



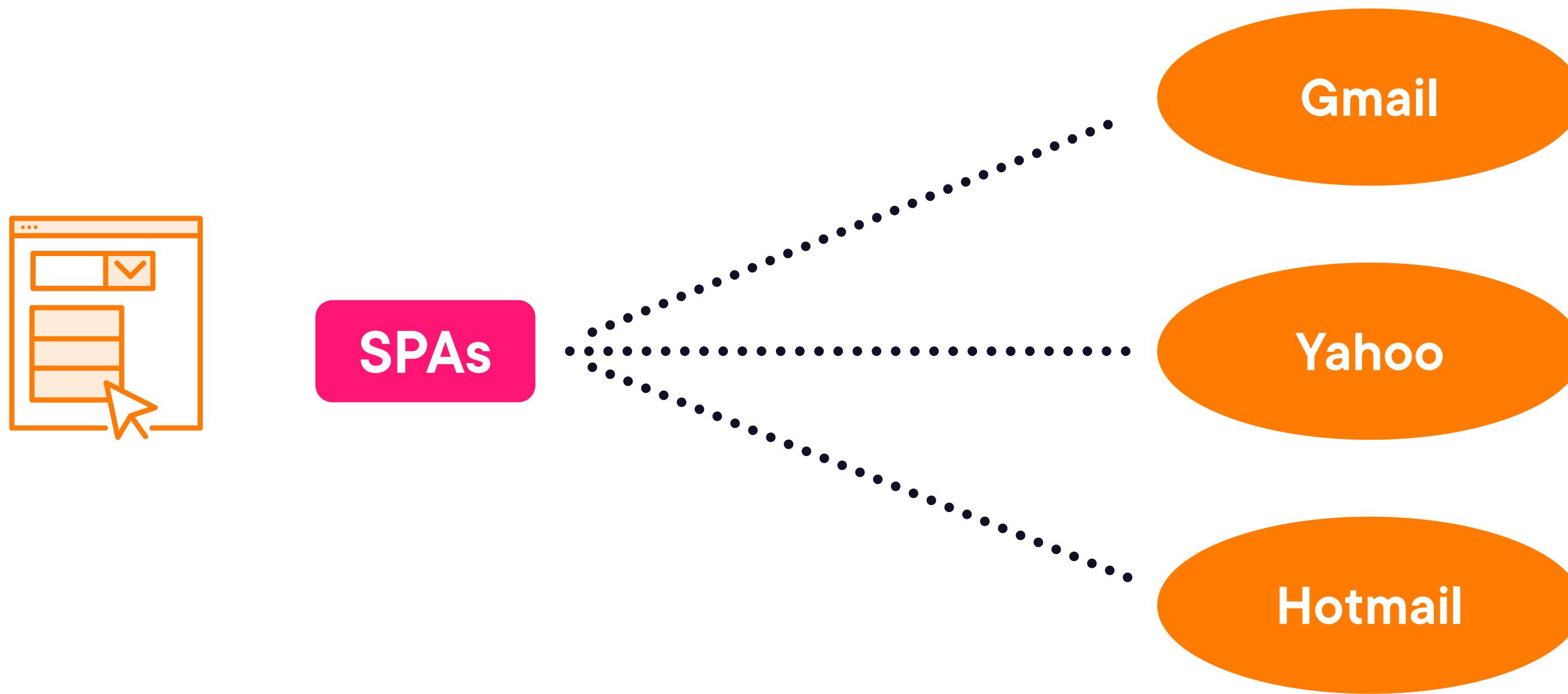
SPAs (Single Page Apps) Are Not New



SPAs



SPAs (Single Page Apps) Are Not New



What It Means to Be a SPA

When a web page is requested by a browser, the page downloaded includes minimal HTML and JavaScript, and that from then on, there are no more full-page requests made from the browser.

Gmail

Yahoo

Hotmail



Does being a SPA mean there are no server interactions once the browser page downloads?



No.

There is almost always server interaction once the full page is downloaded.



No.

There is almost always server interaction once the full page is downloaded.

To be a SPA, just no full-page downloads after first page load.



Demo

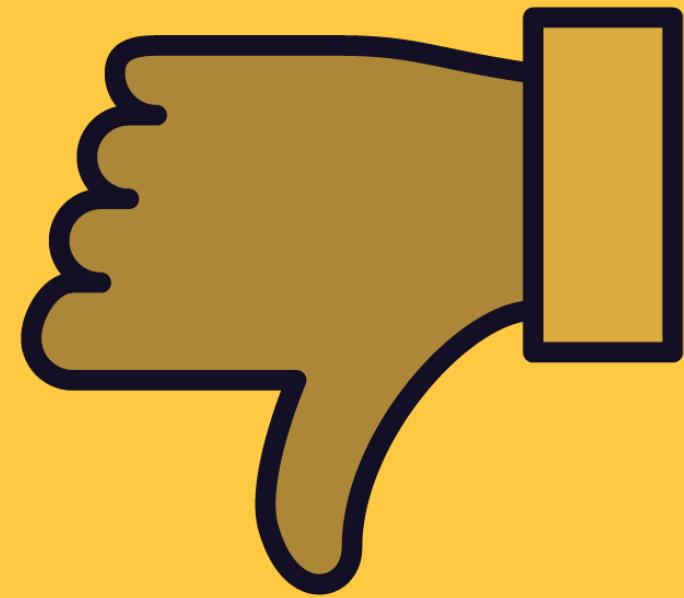
Creating a simple SPA





You can build a complete React app
without using a toolchain, but ...





**I can assure you,
almost nobody does that!**

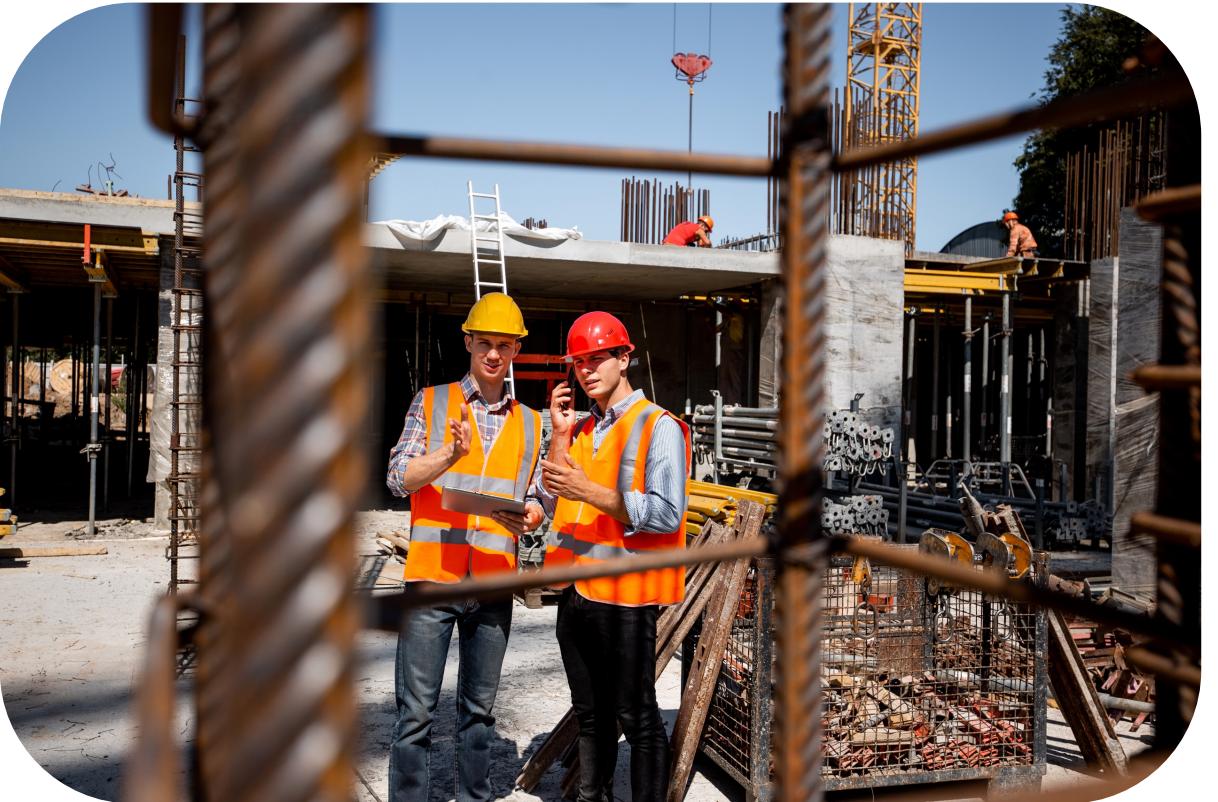


React's Mission:

**“Build a JavaScript library
that helps to build high
performance web sites
efficiently.”**



Create-React-App



In 2016, Facebook decides to build their own toolchain, and called it “Create React App”

Create React App became very popular and was the most popular way to build React apps





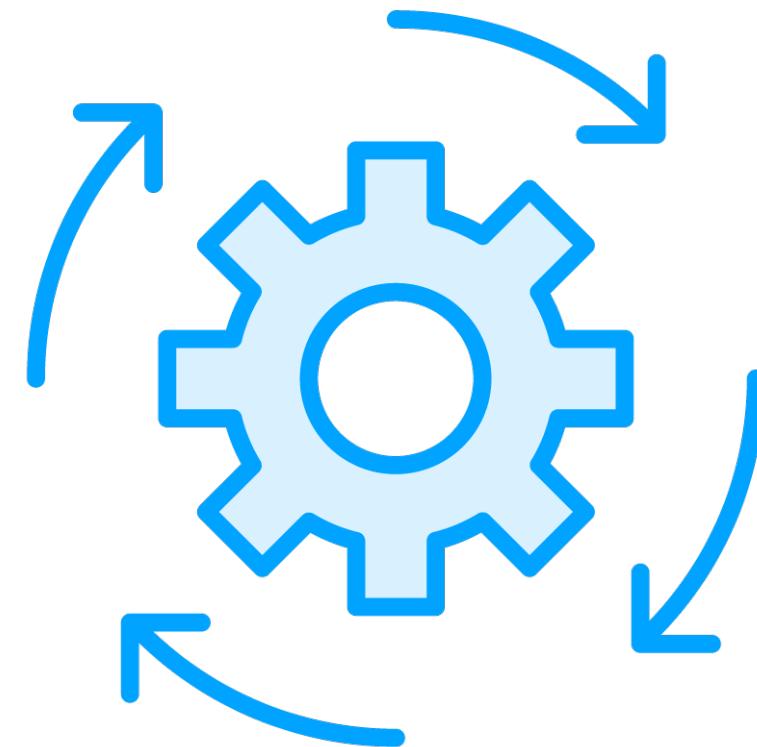
React Toolchain Evolution

Create-React-App no longer in React docs

Next.js has become the most popular toolchain for building React apps

Many apps in production built with Create-React-App so worth knowing





The plan now is to build the identical app we already built with just the React API, but instead with a Toolchain and JSX

