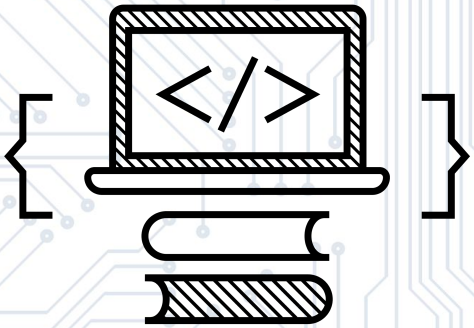
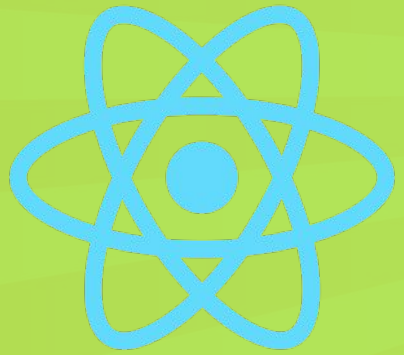


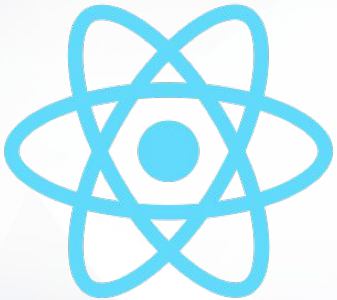
Intro to React, Components, and JSX

Web Development

Lesson 10.2



React is one of the most powerful, in-demand front-end JavaScript libraries available today.



Just about every popular UI library that came after React borrows from it.

Libraries are like fads that come and go, but the ideas introduced by React appear to be here to stay.

React

React is:

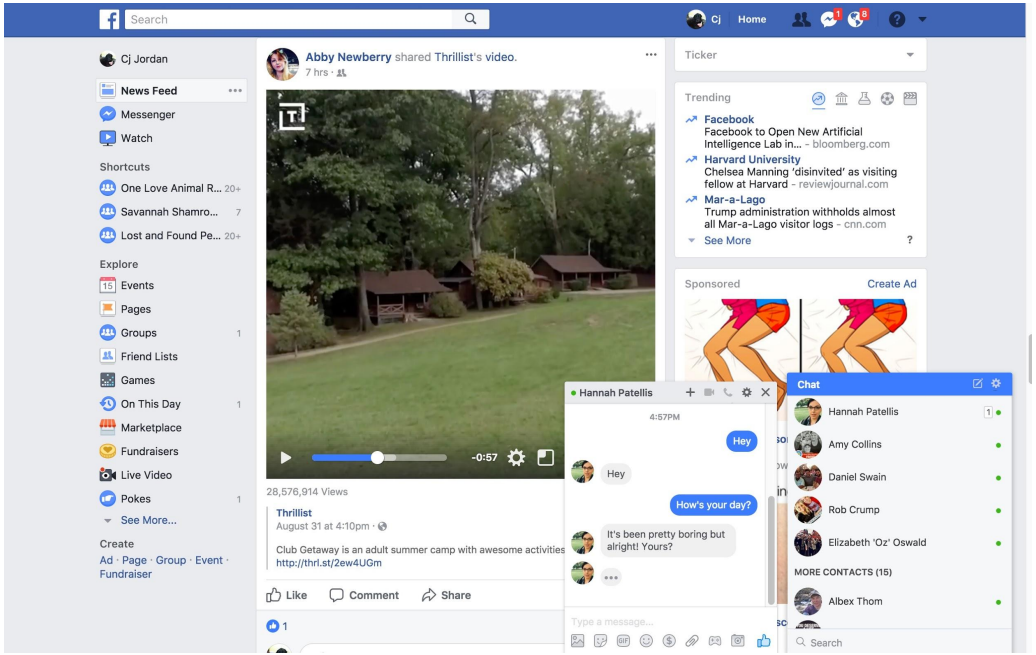
An open-source JavaScript library developed by Facebook for developing UIs.

Developed to build large apps with rapidly changing data.

Component-based: UI elements are broken into self-contained components.

Facebook's UI Complexities

Facebook buzzes with interactive options, live-updating data, and tightly interacting elements. This poses a challenge to simple DOM.



The Concept of Components

Using React, UI elements are broken down into reusable components.
Each sub-component behaves in a way that it is fully contained.

The Power of Components

Why separate UI elements into components?

Logically decompose a UI into unique parts

Easily reuse these parts without re-coding

Easier to test

Helps you find bugs and saves time

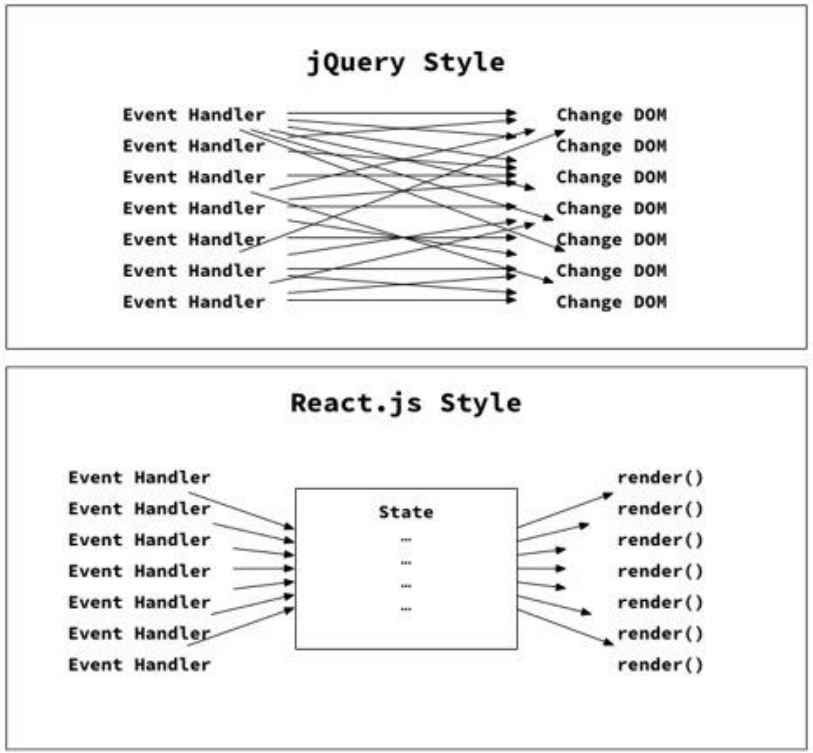
Data-Shifting Applications

How Is This Different Than jQuery?

In jQuery, the application's state and UI are updated independently of each other.

With React, whenever the application's state changes, the DOM updates to reflect it.

With React, the UI is a pure function of the application's state.

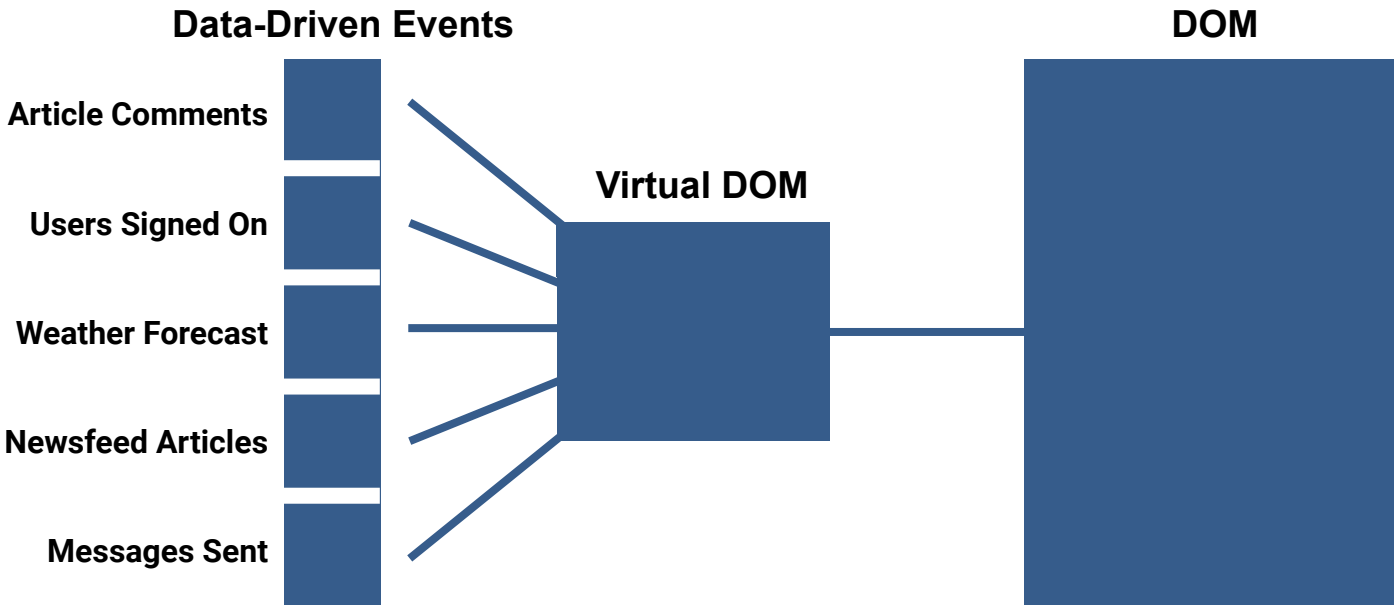


Rapid Data Changes: Option #1 jQuery

JavaScript is FAST, but whenever we update the DOM, the browser needs to recalculate the CSS, update the layout, and repaint the web page. This can be a slow process.

Rapid Data Changes: Option #2 React

React's Virtual DOM serves as an intermediary and avoids unnecessary trips to the DOM.

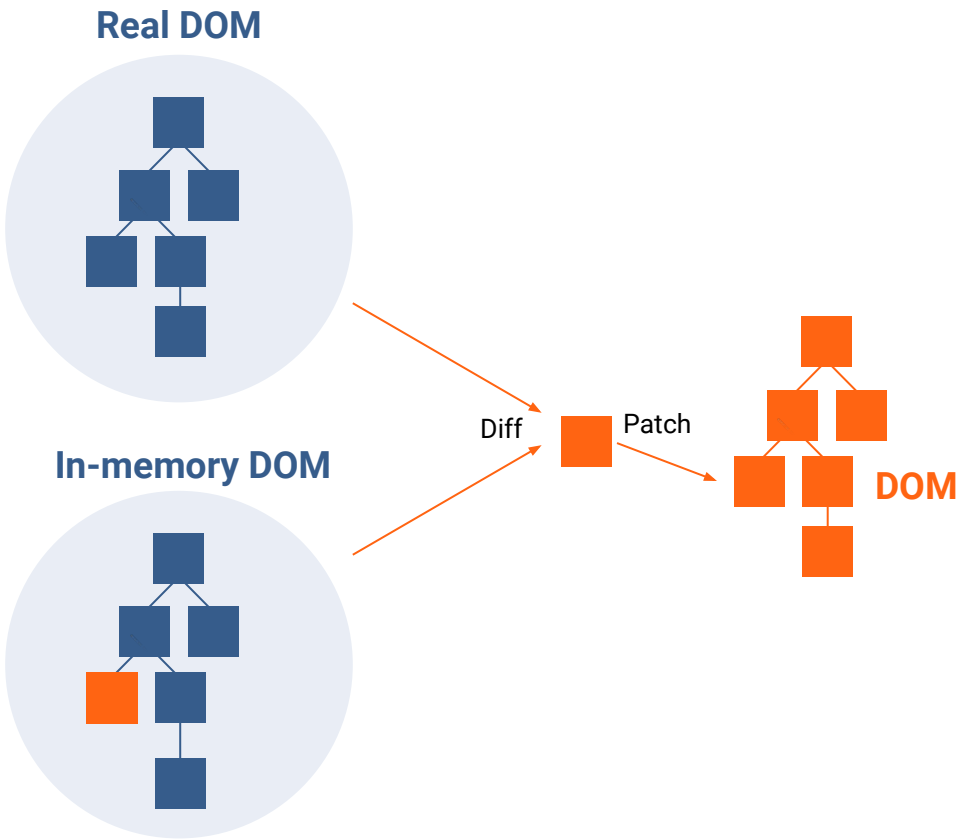


Virtual DOM

What?

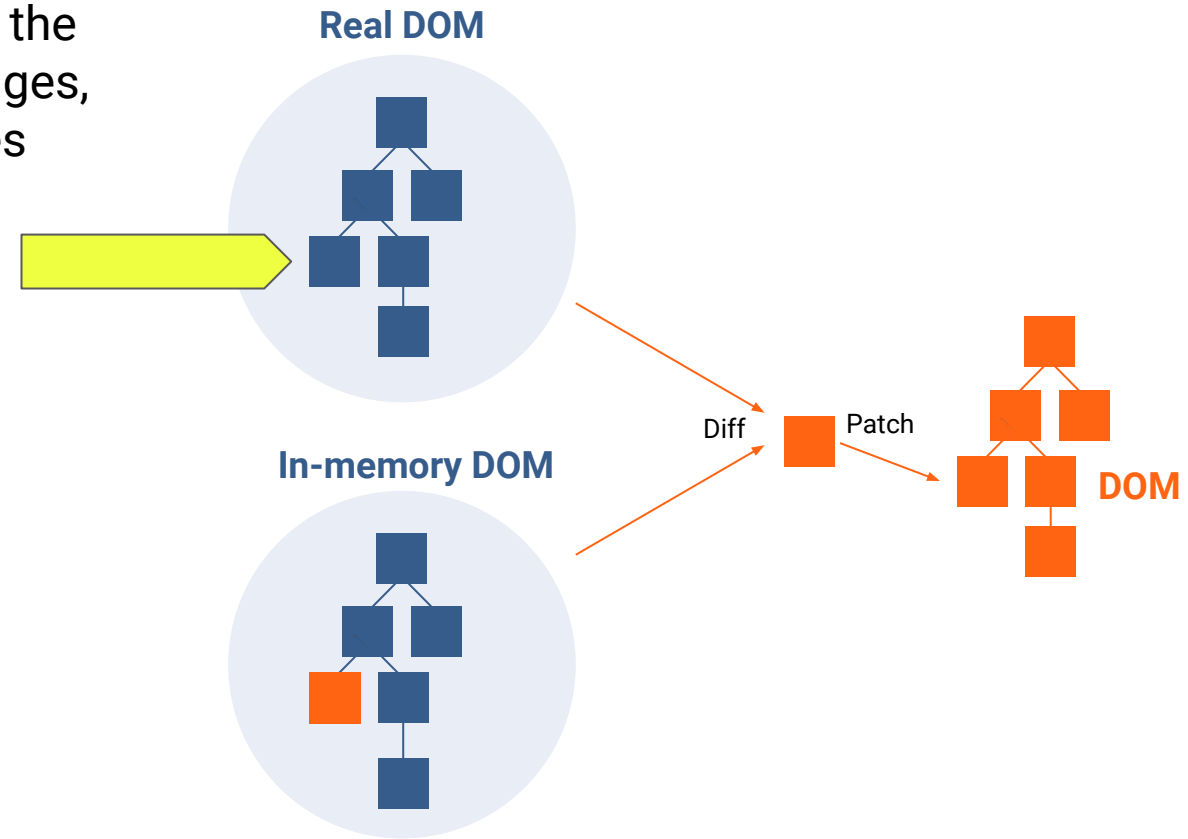
Document Object Model (DOM)

A Virtual DOM is a JavaScript object that models the real DOM.



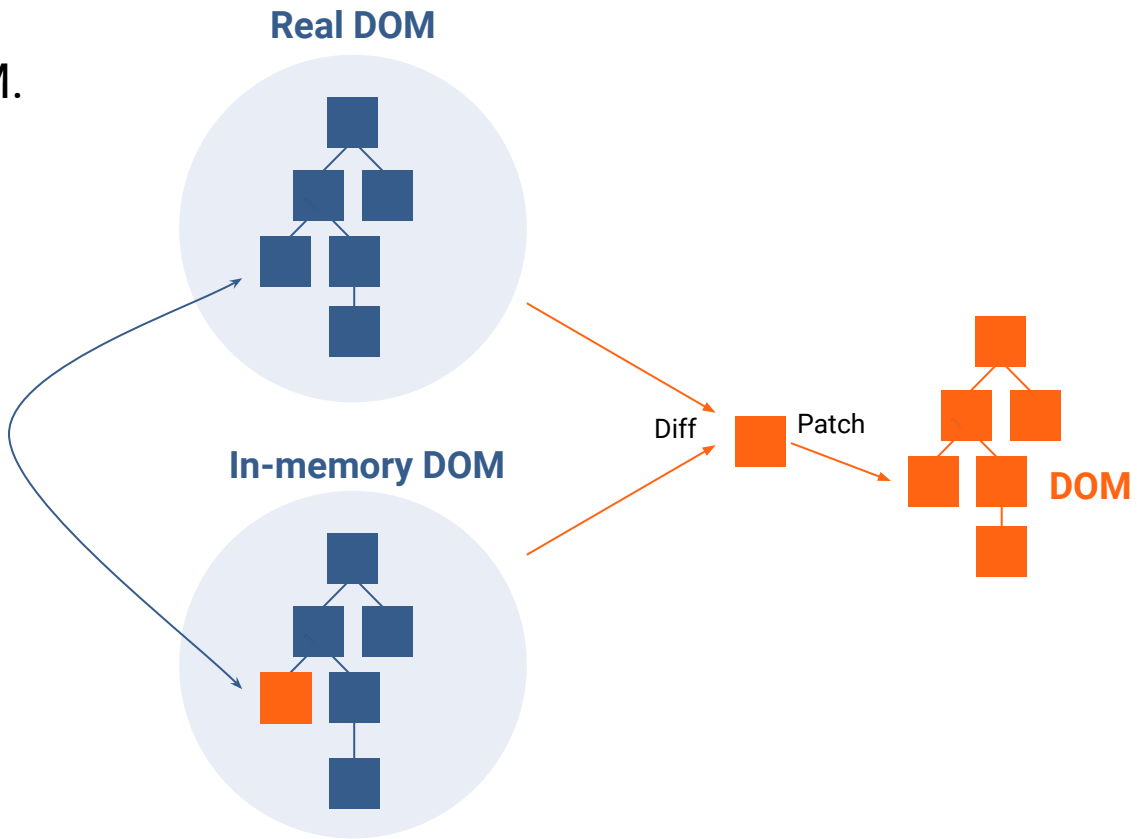
Document Object Model (DOM)

Whenever some part of the application's state changes, the Virtual DOM receives the UI updates first.



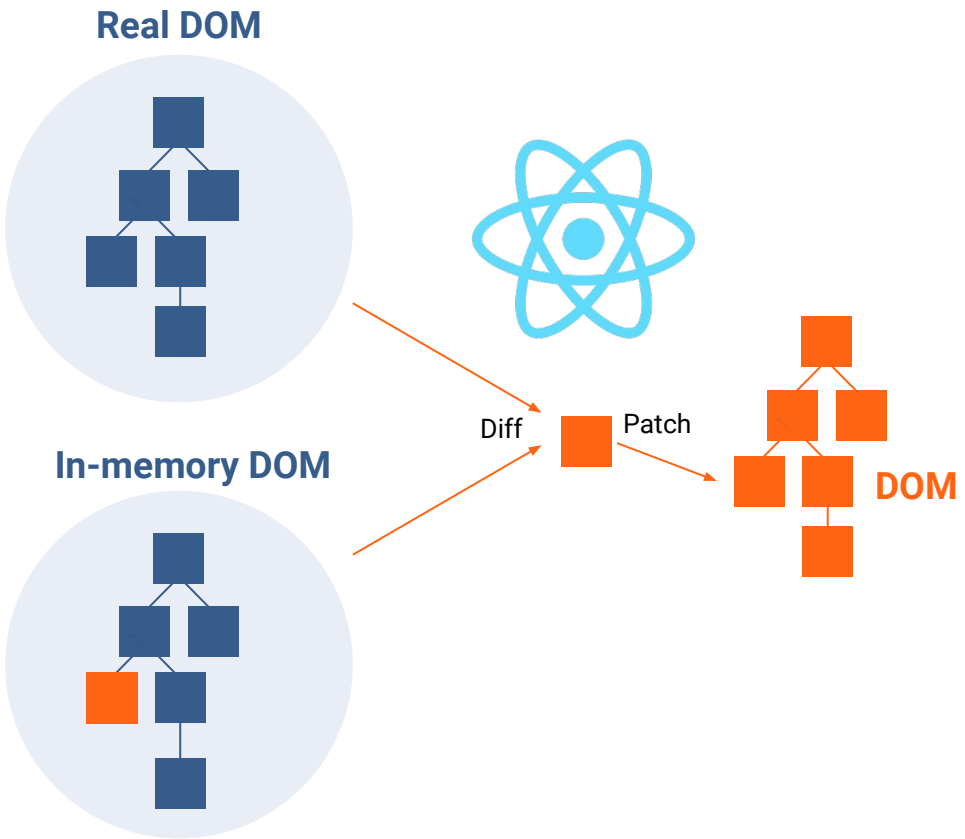
Document Object Model (DOM)

Then the Virtual DOM is compared to the real DOM.



Document Object Model (DOM)

React then aims to update with the smallest number of changes.

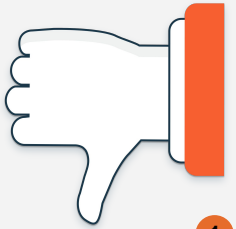


React Pros and Cons

Pros

1. Reusable components
2. UI updates in response to state change, reducing DOM manipulation code needed.
3. Can build applications on web, server, and native applications.
4. Easier to learn and more popular than other front-end JavaScript libraries and frameworks.

Cons



1. React is a view library concerned with rendering user interfaces. You have to pull in other libraries to accomplish things like HTTP requests.
2. Can require more configuration than other libraries.

React Is Magical!

Tools: webpack

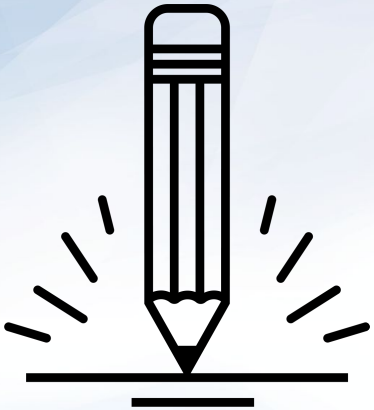
Webpack lets you modularize front-end code the same way you do in Node with CommonJS modules (require, module.exports). Webpack also lets you apply various transformations on your assets via plugins.

Babel Is a JavaScript Compiler

Babel lets you transpile next-generation JavaScript (ES6, ES7, ES8) into ES5 JavaScript that most browsers understand.

Can’t I just use a **CDN** for all of this?


You could, but it’d
be **SUPER** slow.



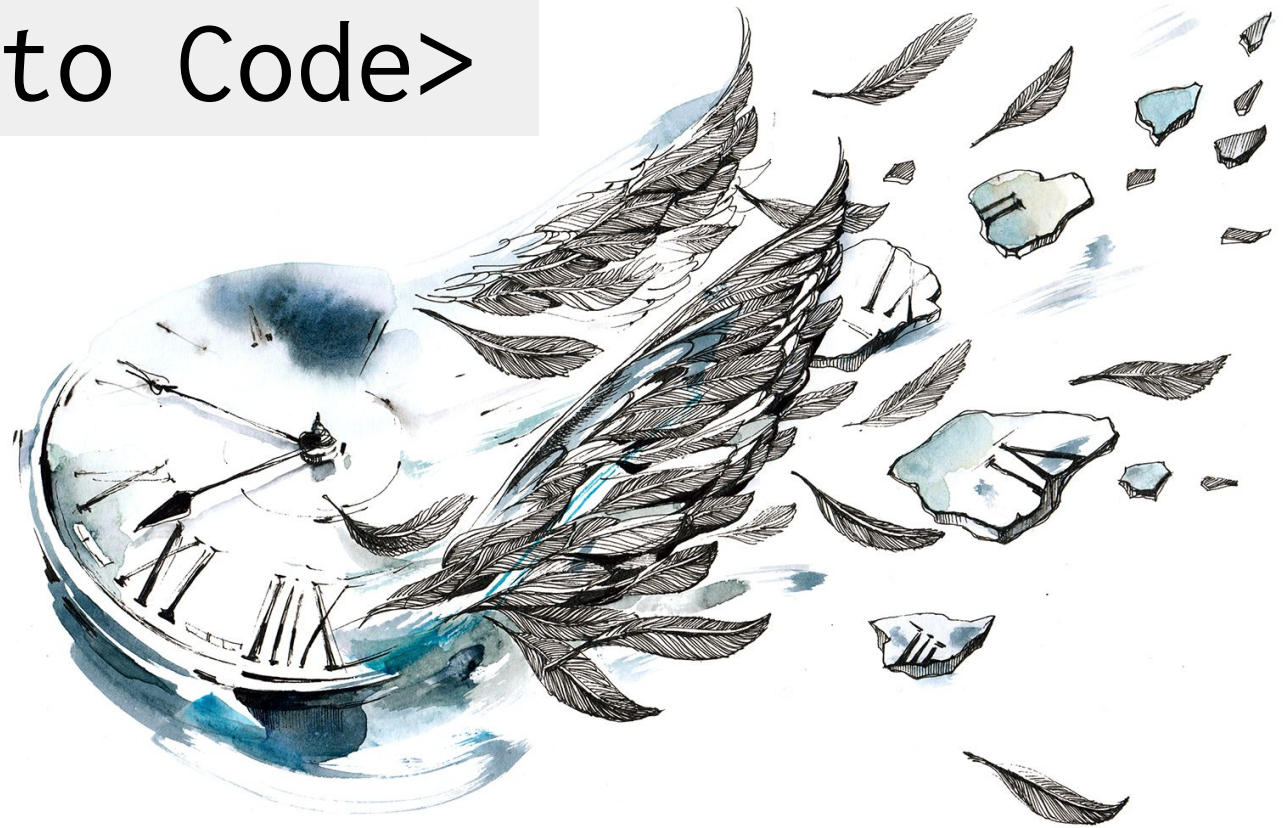
Activity: Installation + Documentation Research

Instructions sent out via Slack

Suggested Time:
10 minutes

Time’s Up! Let’s Review.

<Time to Code>



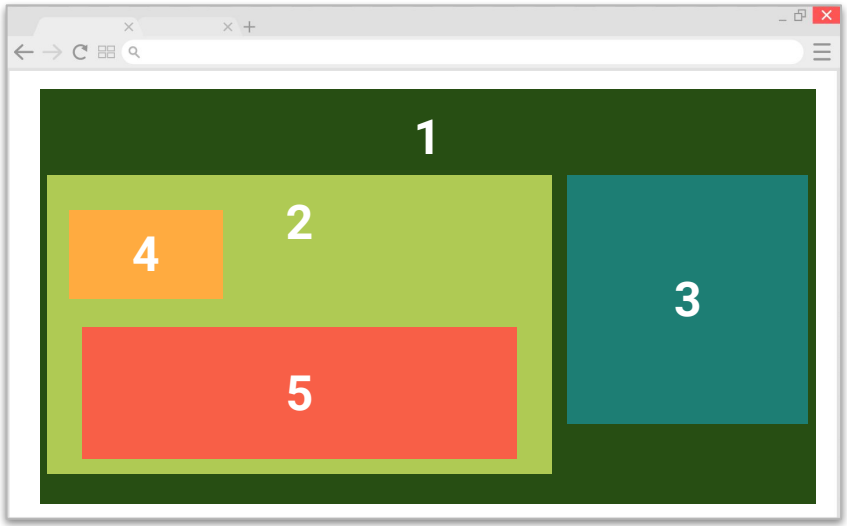
Take a Break!

Components

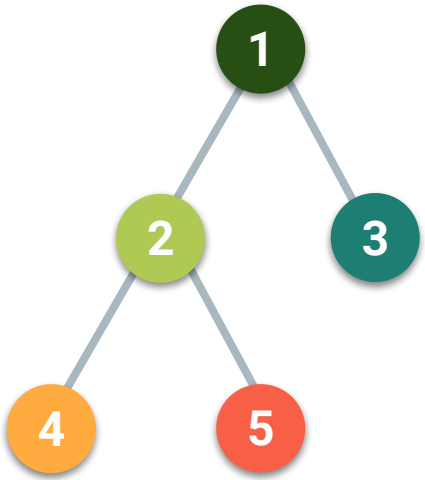
Components

Components are JavaScript functions that return a part of an application's UI. Think of them as the building blocks of a React application.

Browser



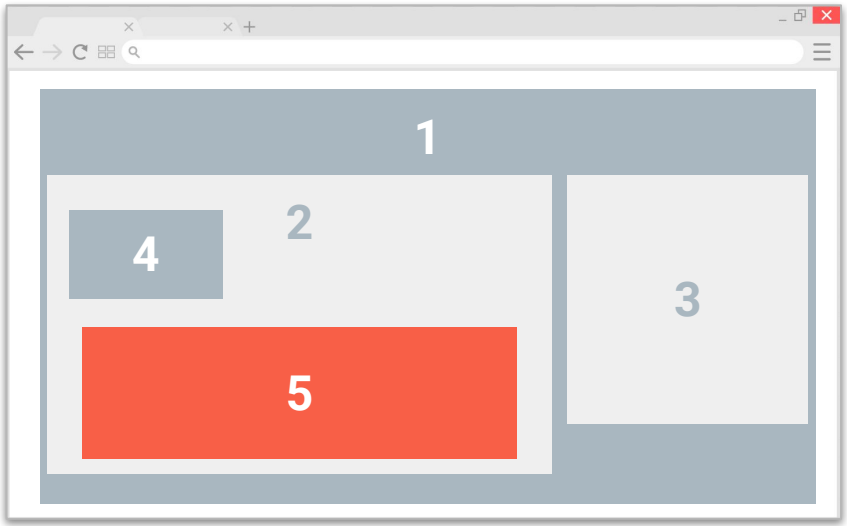
UI Tree



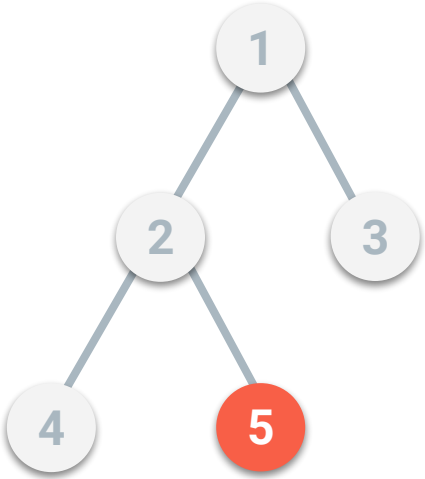
Components

Components let you split the UI into independent, reusable pieces and to consider each piece in isolation.

Browser

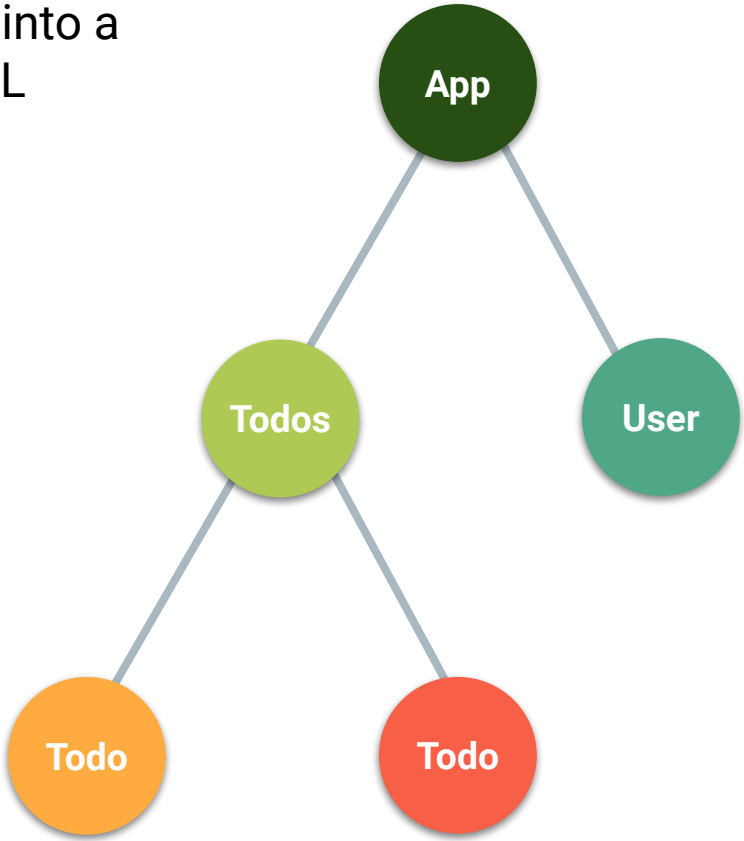


UI Tree



Components

Components are organized into a tree structure, just like HTML elements in the DOM.



Components

By separating elements into components:

01

Layout and logic are bundled together in a self-contained package.

02

Components can be reused throughout the application without needing to be re-coded.

03

Testing is easier (e.g., having one reusable component means only one UI element needs to be tested).

JSX

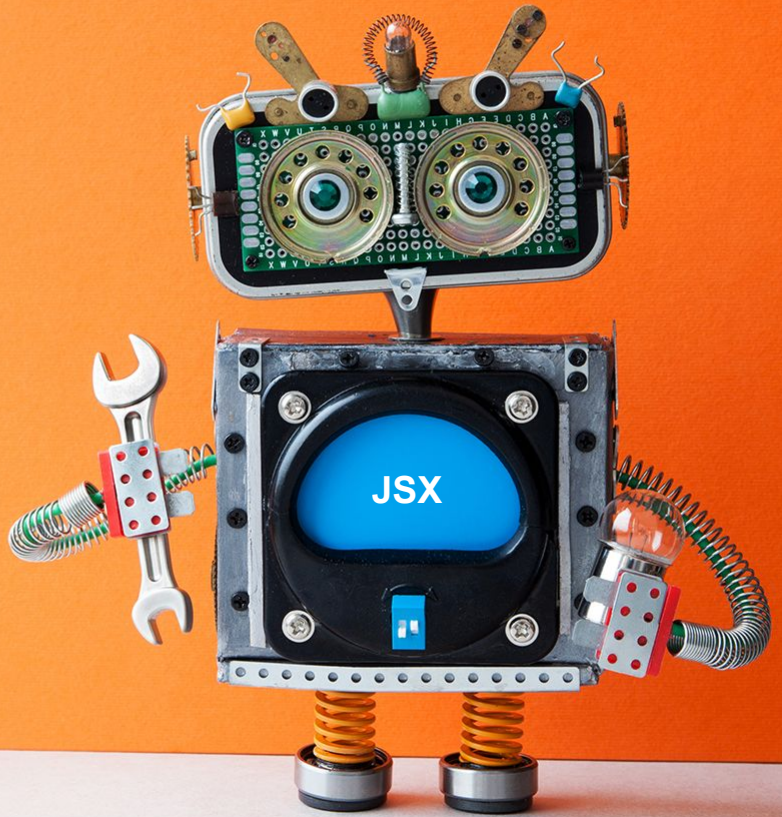
JSX is a preprocessor step that adds XML syntax to JavaScript.

JSX makes React more elegant.

JSX

JSX looks like HTML, but there are some differences you need to know about.

React’s documentation covers the gotchas to look out for.



JSX Curly Braces

Use curly braces `{ }` in JSX code to embed JavaScript expressions.

Evaluating a JavaScript variable:

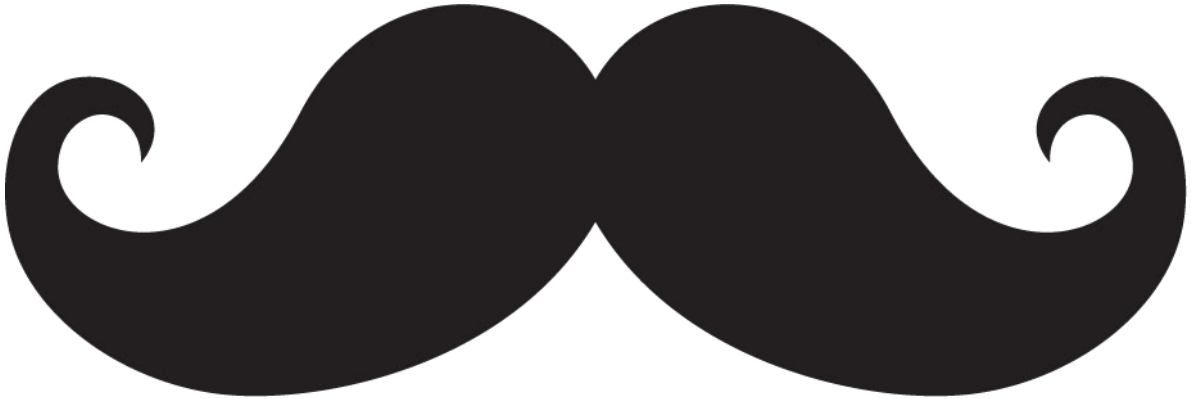
```
const yellowStyle={color: 'yellow'}
<Star style={yellowStyle} />
```

Which is same as:

```
<Star style={{color: 'yellow'}} />
```

JSX Curly Braces

JSX curly braces { } can be compared to the double curly braces {{ }} in Handlebars.



Props

Props are like function arguments that you can pass to components for them to use.

Props

01

Can be passed to a component by attaching attributes to the JSX that render the component, similar to how you attach attributes to HTML elements.

02

Considered immutable (something you can't change).

03

Can be used to change the default behavior of a component.

ReactDOM.render

ReactDOM.render

01 **ReactDOM**

ReactDOM is a library separate from React with methods for working with the DOM.

02 **ReactDOM.render()**

`ReactDOM.render()` renders a single root component to the Virtual DOM, and then the real HTML DOM. We typically call this method only once per React application.

Questions?

<Time to Code>