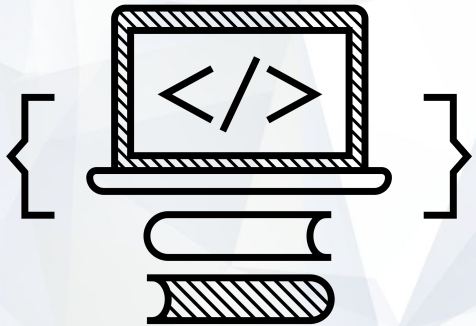
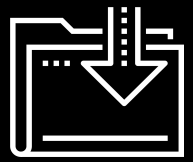


Introduction to React, Components, and JSX

Skills Bootcamp in Front-End Web Development

Lesson 13.1




WELCOME

Learning Objectives

By the end of this lesson, you will:

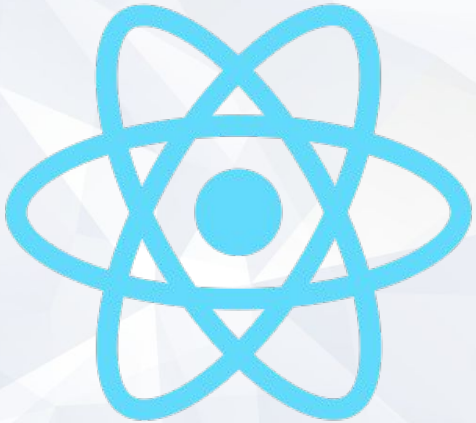
Begin to feel comfortable building static UIs with JSX.

Gain an initial understanding of the component-based paradigm in ReactJS.

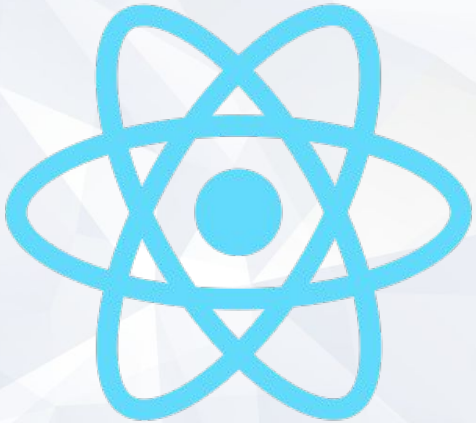
Dissect and build a few simple examples using ReactJS.

Today's class is meant to be a gentle introduction to React.

What Is React?

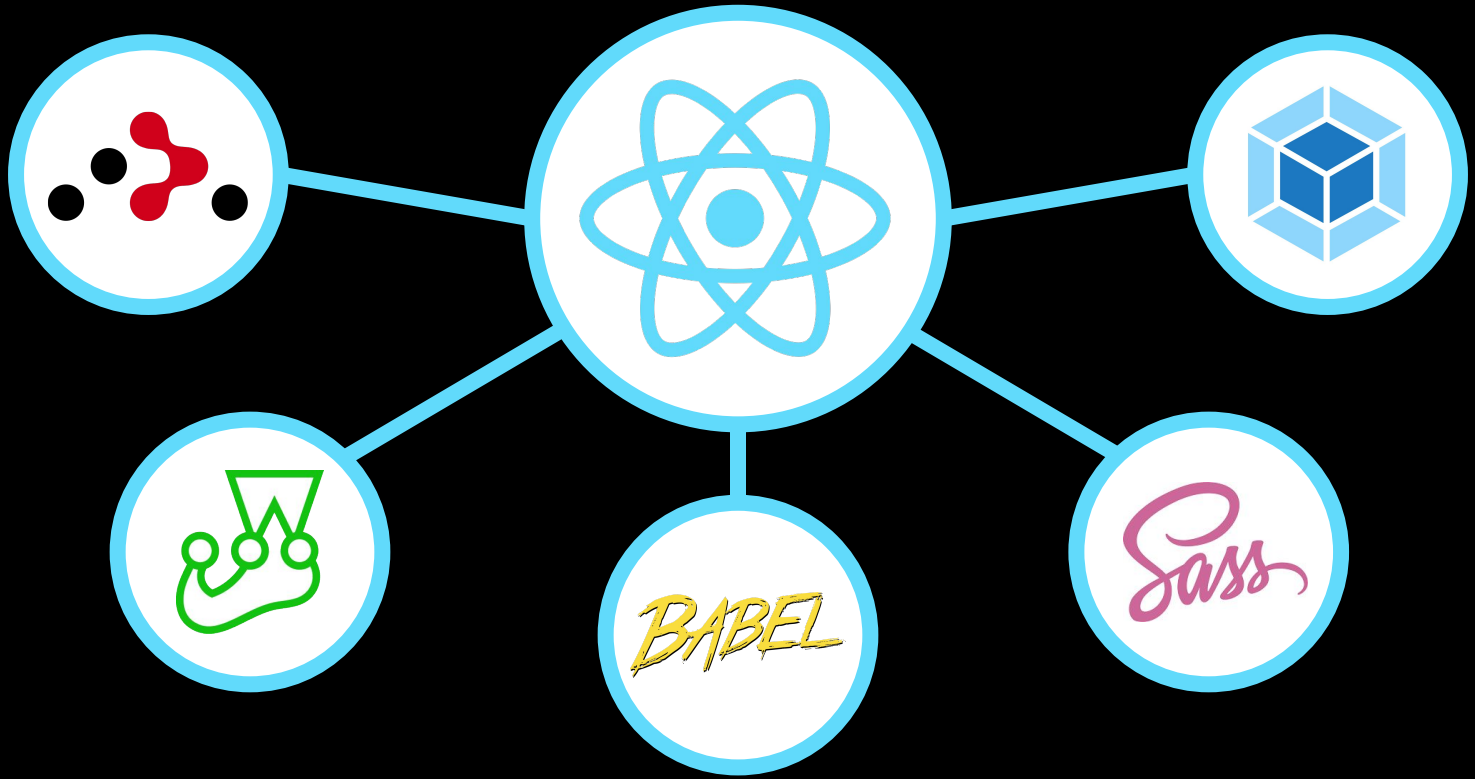


React is one of the most powerful, in-demand front-end JavaScript libraries available today.



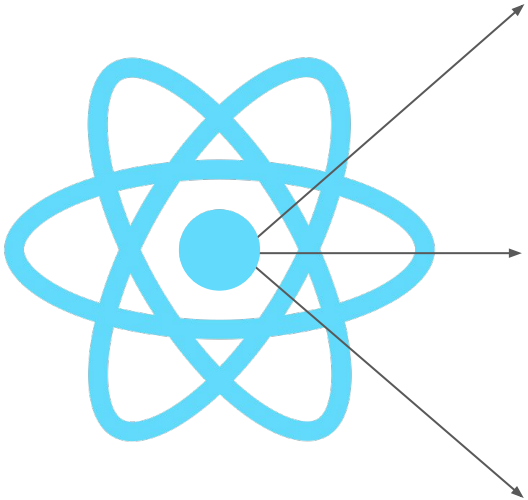
React helps you create complex and responsive single-page applications.

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 Is...



- An open-source JavaScript library for developing UIs developed by facebook.
- Developed to build large apps with rapidly changing data.
- Component-based: UI elements are broken into self-contained components.

What Problem Does React Solve?

What Problem Does React Solve?

- DOM operations are quite expensive in terms of performance, so React creates a **virtual DOM (VDOM)**.
- The VDOM is a representation of the page structure in memory. It tracks what needs to be updated and only updates those specific things.
- React is not opinionated like many other frameworks. It gives the developer the freedom to use Javascript the way they want to use it.

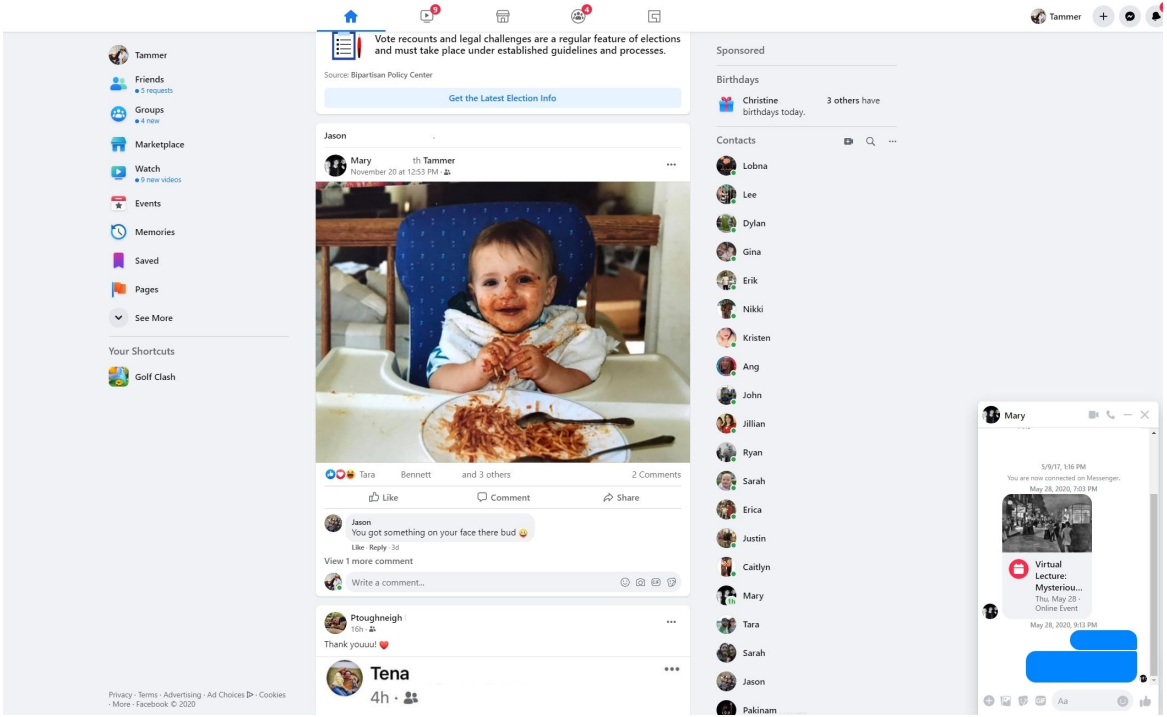
Can You Give Me an Example?

Can You Give Me an Example?

- Facebook’s UI is a great example of React in action.
- Each section of the page is a component that itself may have many real-time updates happening every second.
- The component design pattern allows Facebook to add a search bar and messenger to nearly every page that the user visits.

Facebook's UI Complexities

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



Why Separate UI Components?

Why Separate UI Components?

- Logically decompose a UI into unique parts.
- Easily reuse these parts without rewriting code.
- Separate components are easier to test.
- Helps isolate bugs, saving time.

What Are the Pros and Cons?

React Pros and Cons

Pros

1. Components are reusable.
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.

You may feel a little overwhelmed with the new unusual syntax.

Don’t worry—at the end of the day, we’re still just working with JavaScript .

The most important concept to understand today is components.

Components are self-contained modules that are responsible for producing part of an application’s UI and functionality.

The Concept of Components

Using React, UI elements are broken down into reusable components.
Each subcomponent 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.

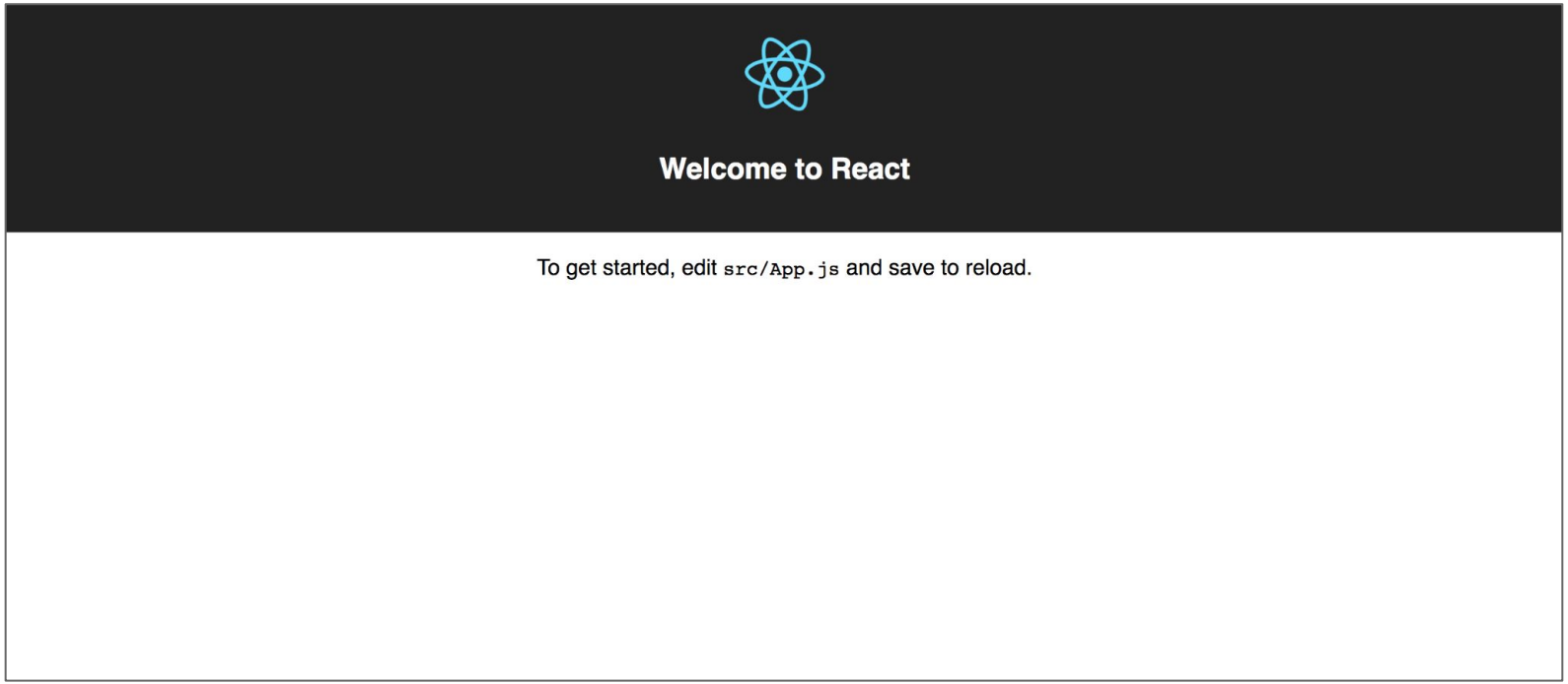
Helps you find bugs and saves time.

Instructor Demonstration

Create React App

Review: Create React App

To scaffold out a React app with Create React App, we run `npx create-react-app` followed by a name for our application.



We’re going to see this setup over and over again. There’s no need to completely memorize every aspect of the Create React App boilerplate right now.

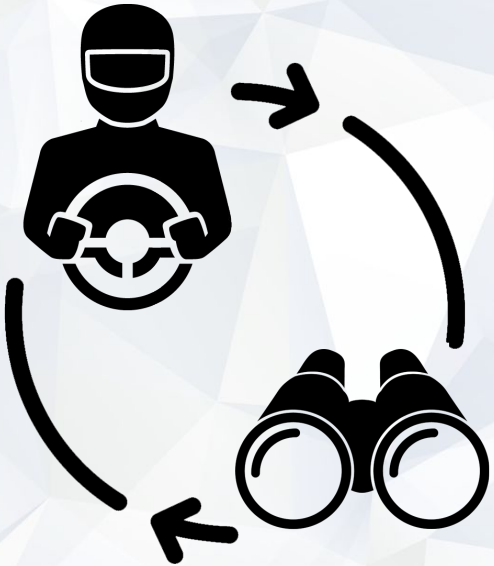
Review: Create React App

The most important takeaways are:

We're going to be writing most of our code inside of the `src` folder.

The "entry" file to our React application will be the `index.js` file.

We start our React app in development mode with the command `npm start`. This means that our app will live update as we change it, which is why we're running our app on a server.



Pair Programming Activity:

Hello World Example

In this activity, you will dissect a simpler example and answer some questions.

Suggested Time:

Time's Up! Let's Review.

JSX can either represent primitive HTML tags or React components.

Review: Hello World Example

The most important takeaways are:

`const` works like var, but it's meant for values that aren't going to be reassigned, otherwise `let` is preferred.

`ES2015 modules` are part of a new module system introduced with ES6. So far we've been working with CommonJS modules (`module.exports` and `require syntax`)—which work similarly.

As we'll see a bit later, ES2015 modules allow for finer-tuned control over what is exported and imported from a module.

Activity: HelloDiv

In this activity, you will write a React component that displays your name and some information about yourself.

Suggested Time:

Time's Up! Let's Review.

Review: HelloDiv

The most important takeaways are:

`HelloDiv` is exported and rendered inside of `App`.

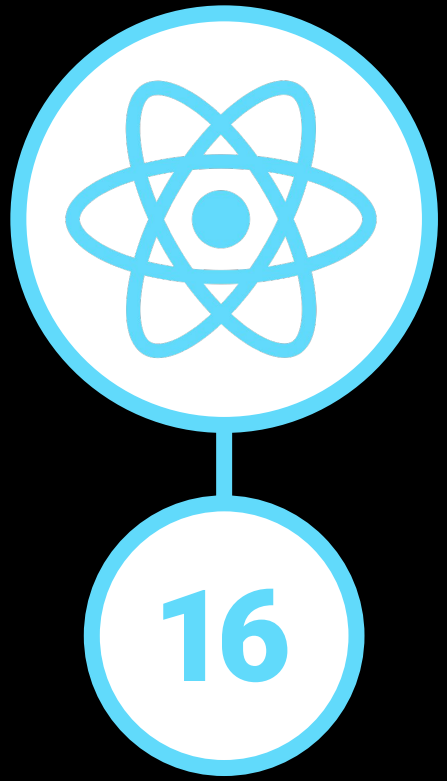
`App` is exported and then rendered inside of `index.js` as the first argument to the `ReactDOM.render` method.

The second argument to the `ReactDOM.render` method is the real DOM element that our React application should be rendered inside of.

`HelloDiv`, like most components we'll write, is a JavaScript function; it returns some JSX.

Normally, we render multiple JSX elements from a component using an enclosing parent tag.

Note: However, as of React 16 (2017), we can also render multiple JSX elements by **returning an array**.



Instructor Demonstration

HelloBootstrap

HelloBootstrap

So far, we've only just begun to work with React, but we've still managed to learn a few key things:

01

In React, we structure our code into components.

02

A component is a JavaScript function that describes some part of our application's UI.

03

Inside of our components, we describe our application's UI using JSX: a markup syntax that resembles HTML.

We’re now going to go over how we can add Bootstrap to a React project.

Activity: HelloBootstrap

In this activity, you will be given slightly less starter code and tasked with creating a React application that renders Bootstrap components to the page.

Suggested Time:

Time's Up! Let's Review.

Review: HelloBootstrap

The most important takeaways are:

If we want to render multiple JSX elements, they should be contained within a single parent element, such as a `div`.

Void elements, such as `input` tags, are represented by JSX tags with a self-closing forward slash (i.e., `<input />`).

We use `className` instead of `class` because `class` is a reserved word in JavaScript.

JSX looks a lot like HTML and has some JavaScript functionality.

Instructor Demonstration

JSX Variables

Activity: JSX Variables

In this activity, you will render JavaScript expressions inside of JSX curly braces.

Suggested Time:

Time's Up! Let's Review.

Instructor Demonstration

CSS Demo

Activity: CSS Props

In this activity, you will change the appearance of an application's components using inline styles.

Suggested Time:

Time's Up! Let's Review.


The End