GENERAL ASSEMBLY

JAVASCRIPT DEVELOPMENT

Sasha Vodnik, Instructor

HELLO!

1. Pull changes from the `svodnik/JS-SF-12-resources` repo to your computer
2. Open the `18-react > starter-code` folder in your editor

INTRODUCTION TO REACT

LEARNING OBJECTIVES

At the end of this class, you will be able to

- Understand the roles of model, view, and controller
- Describe the difference between frameworks and libraries
- Recognize the primary uses of React
- Build a React component function
- Create a React component class
- Implement composition in a React app

AGENDA

- Model View Controller (MVC)
- Frameworks and libraries
- React overview
- Creating React components

WEEKLY OVERVIEW

WEEK 10	(holiday) / React
WEEK 11	Final project presentations!

Final Project Checkin

ACTIVITY

KEY OBJECTIVE

- Check in on final project

TYPE OF EXERCISE

- Groups of 3

TIMING

10 min

1. Take turns checking in about where you are with your final project. If you have a working prototype, display your app in your browser, demonstrate its functionality, and explain what you plan to add to your app.
2. Share a challenge you've run into with your project. If you've overcome it, describe how. If not, brainstorm resources and next steps with your group members.

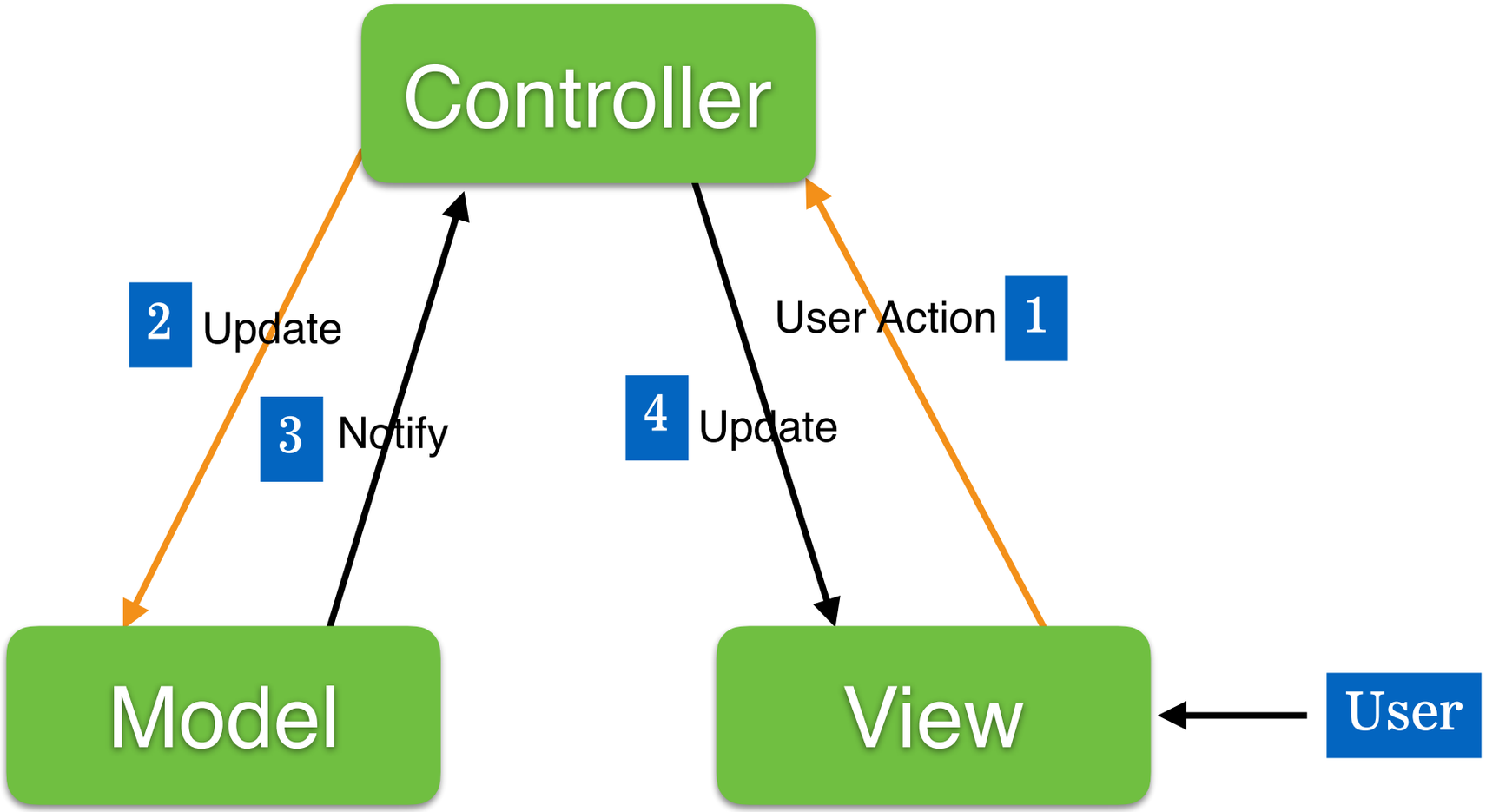
What methods & properties have we used to change the DOM?

REACT BASICS

MODEL-VIEW-CONTROLLER (MVC)

- **Model**: data
- **View**: user interface
- **Controller**: coordinates between model and view

MODEL-VIEW-CONTROLLER (MVC)



LIBRARIES VS FRAMEWORKS

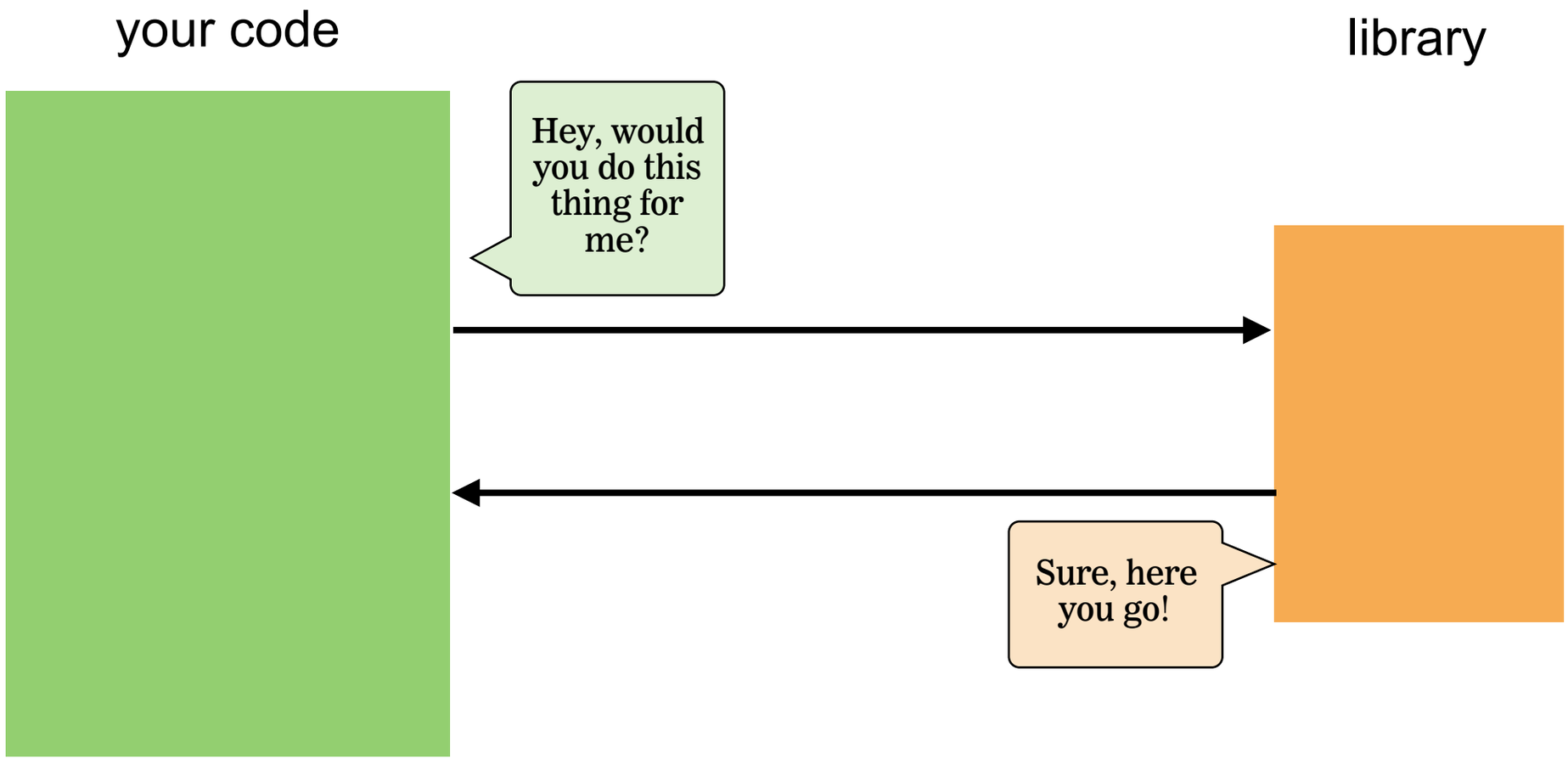
Libraries

LIBRARIES VS FRAMEWORKS

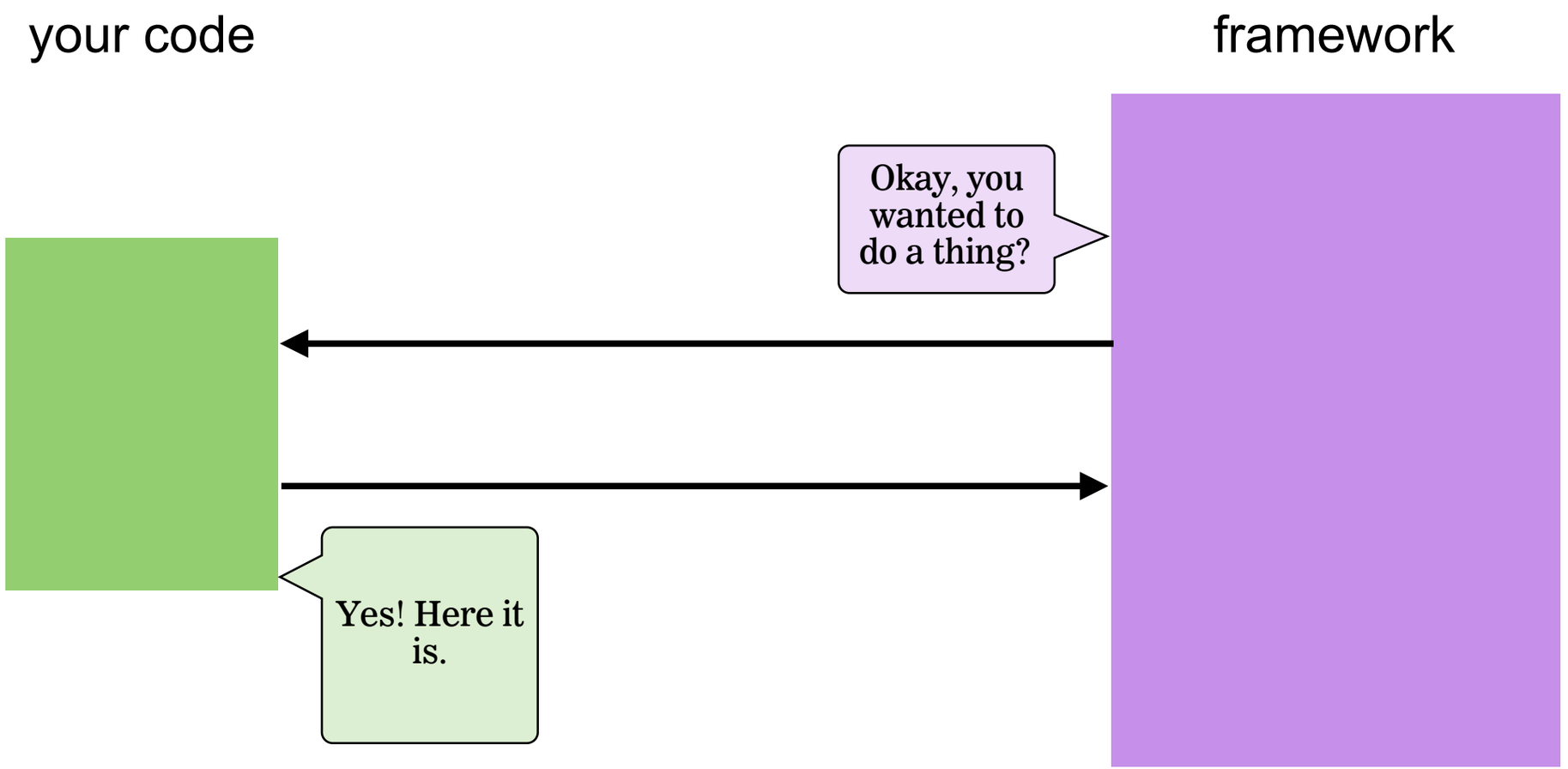
Libraries

Frameworks

YOUR CODE CALLS A LIBRARY

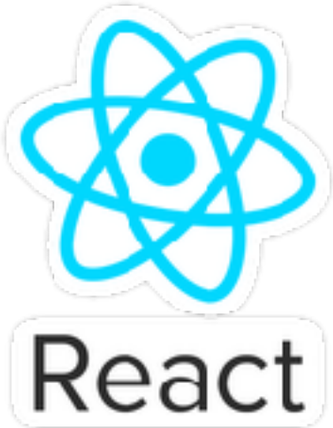


A FRAMEWORK CALLS YOUR CODE



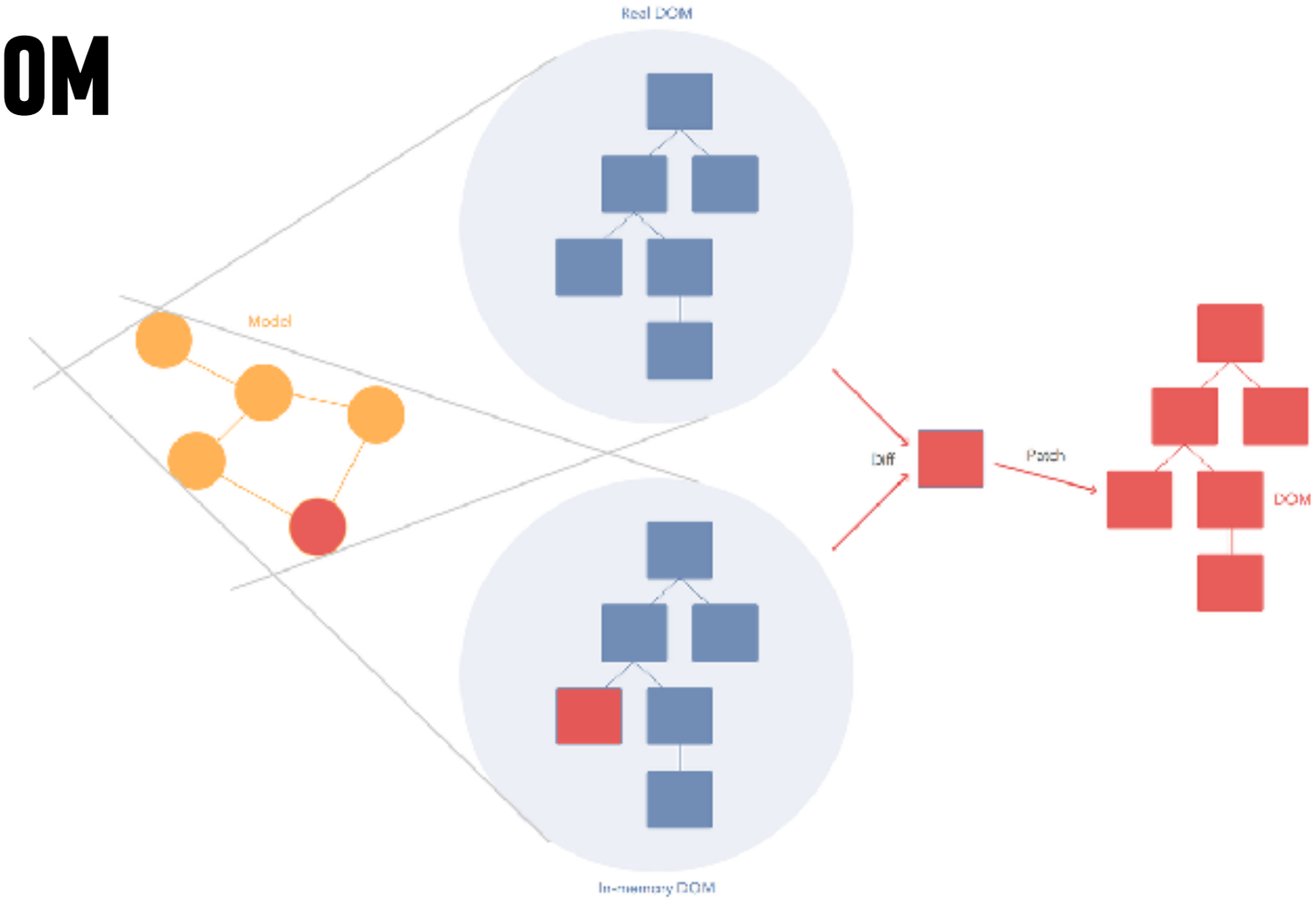
LIBRARIES VS FRAMEWORKS

Libraries



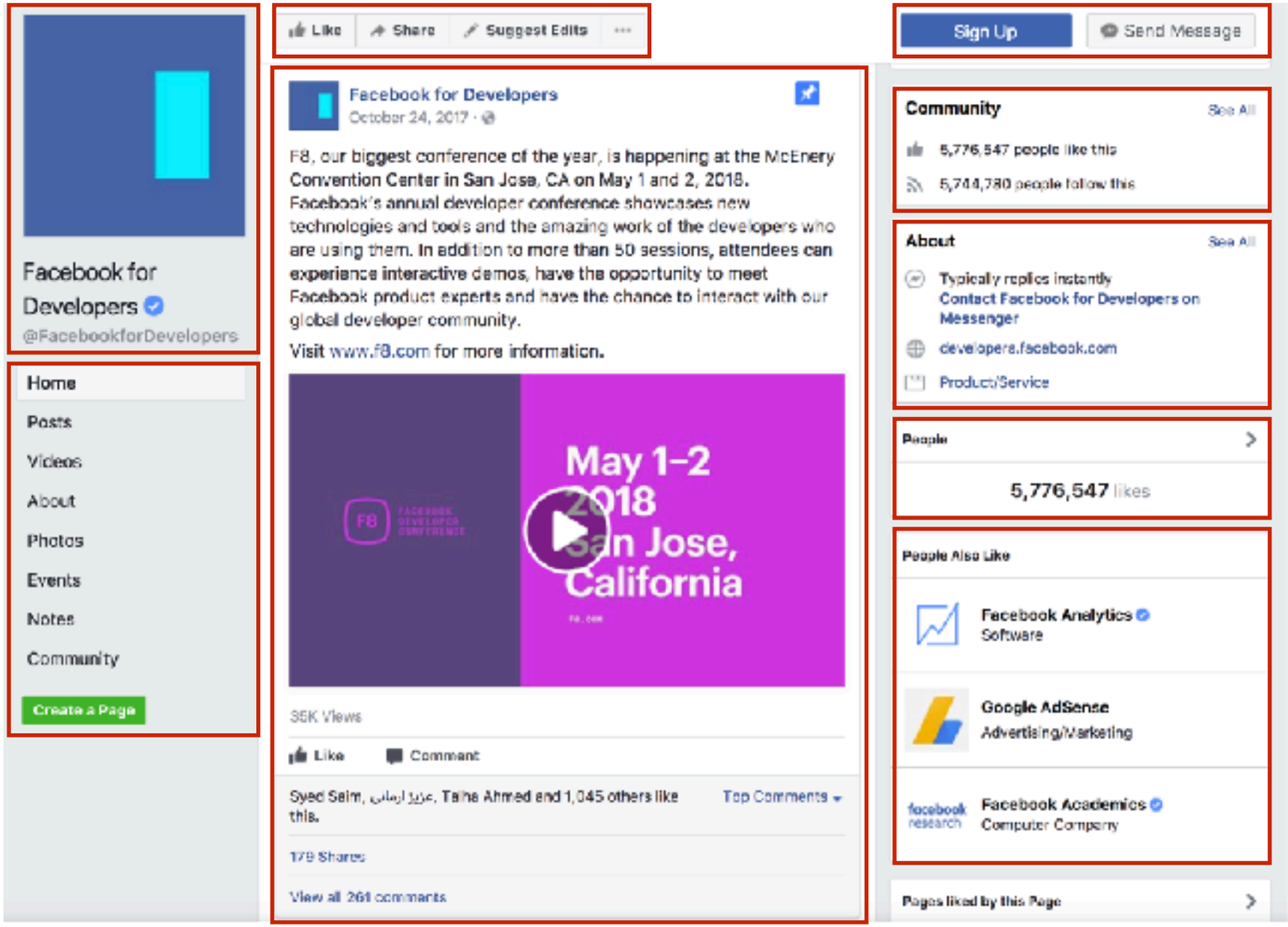
Frameworks

VIRTUAL DOM

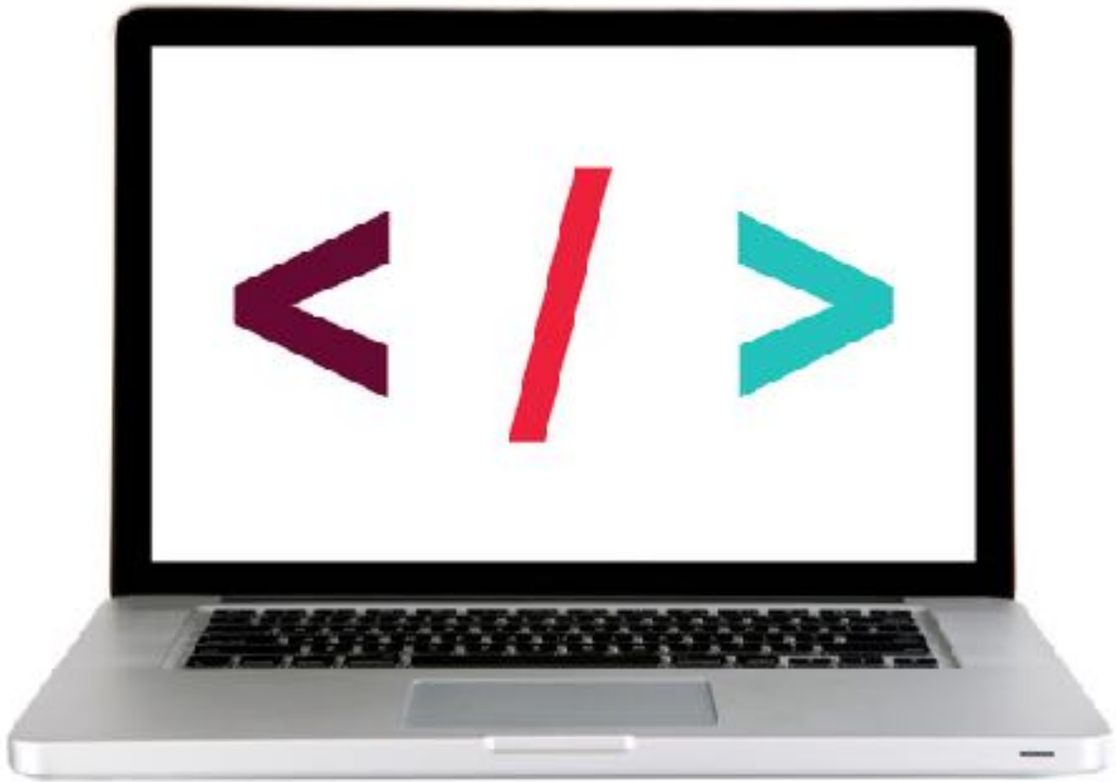


from https://stackoverflow.com/questions/21109361/why-is-reacts-concept-of-virtual-dom-said-to-be-more-performant-than-dirty-mode#23995928

COMPONENTS


Like
Share
Suggest Edits
Sign Up
Send Message
Facebook for Developers
@FacebookforDevelopers
Facebook for Developers
October 24, 2017
F8, our biggest conference of the year, is happening at the McEnery Convention Center in San Jose, CA on May 1 and 2, 2018. Facebook's annual developer conference showcases new technologies and tools and the amazing work of the developers who are using them. In addition to more than 50 sessions, attendees can experience interactive demos, have the opportunity to meet Facebook product experts and have the chance to interact with our global developer community.
Visit www.f8.com for more information.
May 1–2
2018
San Jose,
California
Home
Posts
Videos
About
Photos
Events
Notes
Community
Create a Page
35K Views
Like
Comment
Top Comments
179 Shares
View all 261 comments
Community
See All
5,776,547 people like this
5,744,780 people follow this
About
See All
Typically replies instantly
Contact Facebook for Developers on Messenger
developers.facebook.com
Product/Service
People
5,776,547 likes
People Also Like
Facebook Analytics
Software
Google AdSense
Advertising/Marketing
Facebook Academics
Computer Company
Pages liked by this Page

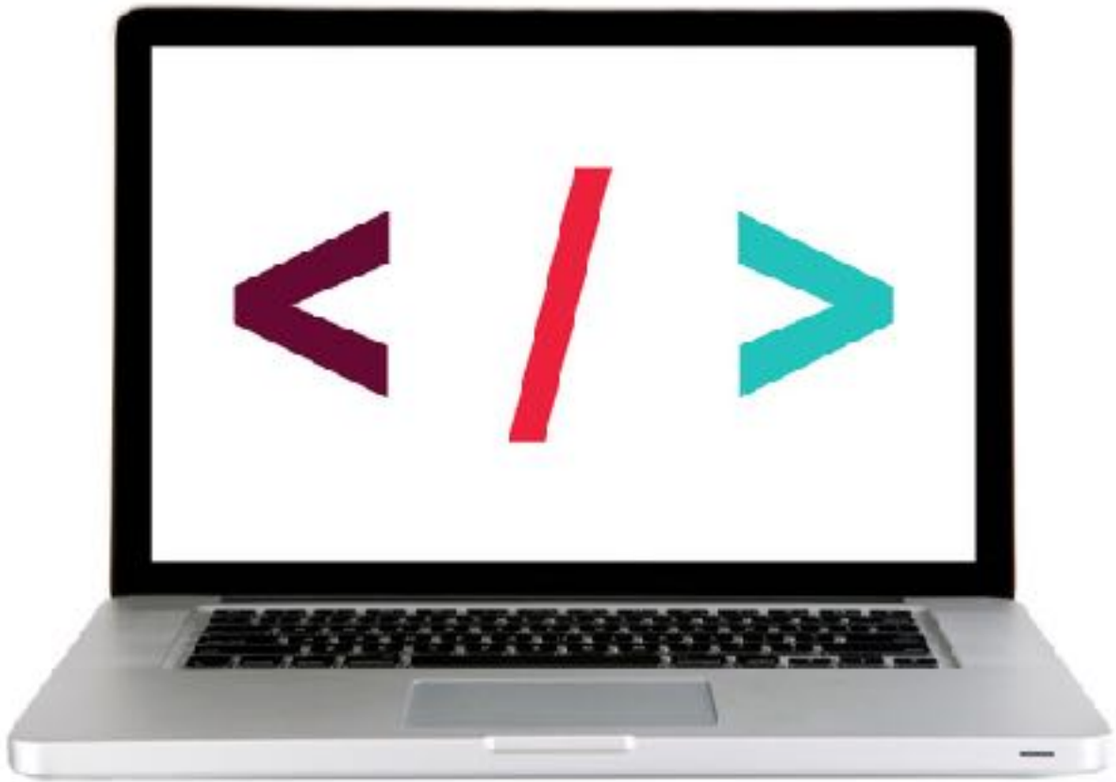
LET'S TAKE A CLOSER LOOK



REACT DEVELOPER TOOLS

- Chrome browser extension
- adds developer tools tab for inspecting rendered React components

LET'S TAKE A CLOSER LOOK



CREATING REACT COMPONENTS

FUNCTIONAL COMPONENTS

FUNCTIONAL COMPONENTS

function name has an initial cap

```
function Welcome(props) {
  return <h1>Hello, {props.name}</h1>;
}
```

FUNCTIONAL COMPONENTS

standard parameter name is `props`

```
function Welcome(props) {
  return <h1>Hello, {props.name}</h1>;
}
```

FUNCTIONAL COMPONENTS

```
function Welcome(props) {
  return <h1>Hello, {props.name}</h1>;
}
```

function always includes a `return` statement

FUNCTIONAL COMPONENTS

```
function Welcome(props) {
  return <h1>Hello, {props.name}</h1>;
}
```

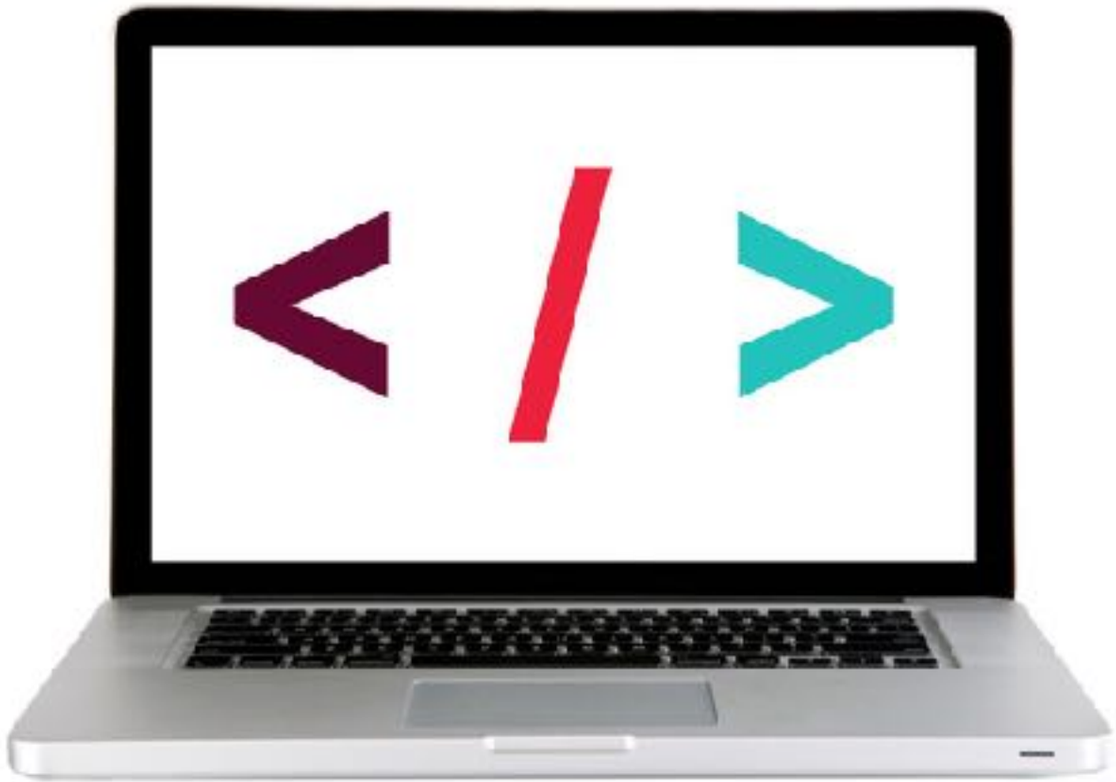
content of the `return` statement is JSX

FUNCTIONAL COMPONENTS

```
function Welcome(props) {
  return <h1>Hello, {props.name}</h1>;
}
```

JSX can include JavaScript expressions wrapped in {}

LET'S TAKE A CLOSER LOOK



JSX

- Extension to JavaScript
- Lets you write JavaScript code that looks like HTML (actually XML)
- Compiles to a JavaScript object
- Supports JavaScript expressions in curly braces

ES6 SPREAD OPERATOR

- . . . characters
- lets you specify an object as the parameter of a function, but transforms that argument into key-value pairs at runtime
- essentially setting key-value pairs as HTML attributes in the React code
- only evaluated at runtime, so it's based on the current value of the state at runtime

ES6 SPREAD OPERATOR

```
{
  firstName: 'Ben',
  lastName: ‘Hector'
}

return <Greeting {...props} />;
```

is parsed as

```
return <Greeting firstName="Ben" lastName="Hector" />;
```

LOOPING IN REACT COMPONENTS

- Commonly used for an array of values
- `array.map()` function built into JavaScript
  - accepts a function as an argument
  - loops through the array, executing the specified function with each element as the argument
  - can return a JSX expression to build out an HTML structure based on a set of values

EXERCISE — CREATE FUNCTIONAL COMPONENTS

KEY OBJECTIVE

- Build a React functional component

TYPE OF EXERCISE

- Solo or in pairs

LOCATION

- `starter-code > 1-functional-component-exercise`

TIMING

10 min

1. The start file contains the components we've already been working with, along with additional data in the state variable.
2. Create variables storing references to the two new elements in the DOM.
3. Create components to render the contents of the new state properties.
4. Call the render method for each of your two new components.

CLASS COMPONENTS

CLASS COMPONENTS

class name has an initial cap

```
class Welcome extends React.Component {
  render() {
    return (
      <p>Hello, {this.props.name}</p>
    );
  }
}
```

CLASS COMPONENTS

component class is always based on `React.Component`

```
class Welcome extends React.Component {
  render() {
    return (
      <p>Hello, {this.props.name}</p>
    );
  }
}
```

CLASS COMPONENTS

class definition always calls the `render()` function

```
class Welcome extends React.Component {
   render() {
      return (
         <p>Hello, {this.props.name}</p>
      );
   }
}
```

CLASS COMPONENTS

`render` function call always includes a `return` statement

```
class Welcome extends React.Component {
  render() {
    return (
      <p>Hello, {this.props.name}</p>
    );
  }
}
```

CLASS COMPONENTS

content of the `return` statement is JSX

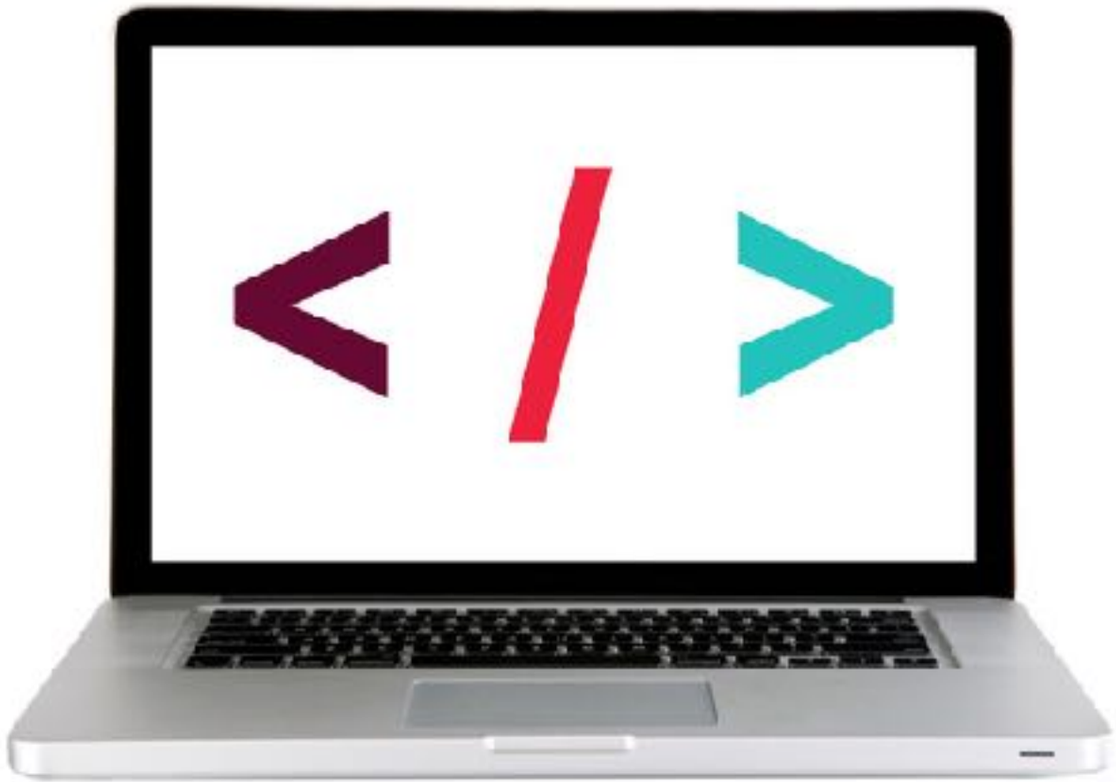
```
class Welcome extends React.Component {
  render() {
    return (
      <p>Hello, {this.props.name}</p>
    );
  }
}
```

CLASS COMPONENTS

JSX can include JavaScript expressions wrapped in {}

```
class Welcome extends React.Component {
  render() {
    return (
      <p>Hello, {this.props.name}</p>
    );
  }
}
```

LET'S TAKE A CLOSER LOOK



EXERCISE — CREATE CLASS COMPONENTS

KEY OBJECTIVE

- Build a React class component

TYPE OF EXERCISE

- Solo or in pairs

LOCATION

- `starter-code > 3-class-component-exercise`

TIMING

10 min

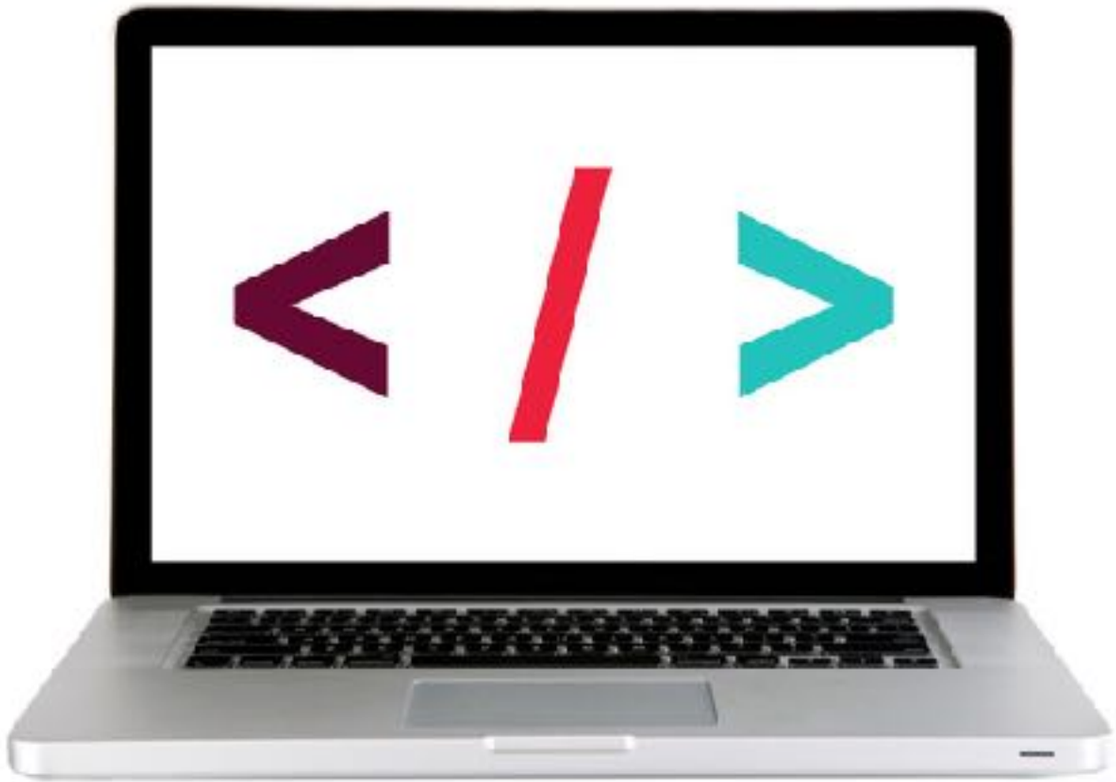
1. The start file contains the components we've already been working with, along with additional data in the state variable.
2. Create variables storing references to the two new elements in the DOM.
3. Create components to render the contents of the new state properties.
4. Call the render method for each of your two new components.

COMPOSITION

COMPOSITION

- In parent class, call each child with JSX using element syntax
- Pass necessary props as attributes, referencing `this.props`
- For child classes, move data manipulation outside of `render()` method, and reference the result instead
- Call `ReactDOM.render()` only on parent class

LET'S TAKE A CLOSER LOOK



EXERCISE — REUSE COMPONENTS WITH COMPOSITION

KEY OBJECTIVE

- Implement composition in a React app

TYPE OF EXERCISE

- Solo or in pairs

LOCATION

- `starter-code > 5-composition-exercise`

TIMING

20 min

1. Open `CawCaw comp.png` and examine the view you'll be creating.
2. Follow the instructions in script.js to build the `User`, `Content`, `Date`, and `App` components.

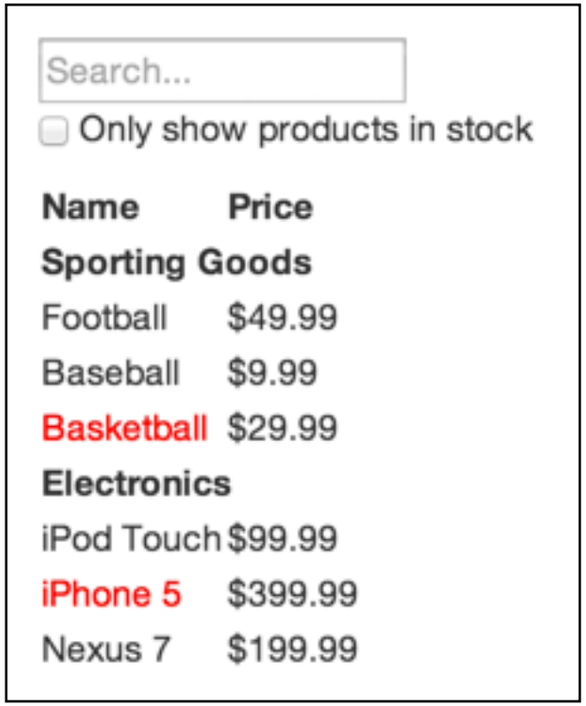
THINKING IN REACT

THINKING IN REACT

Data returned from a JSON API

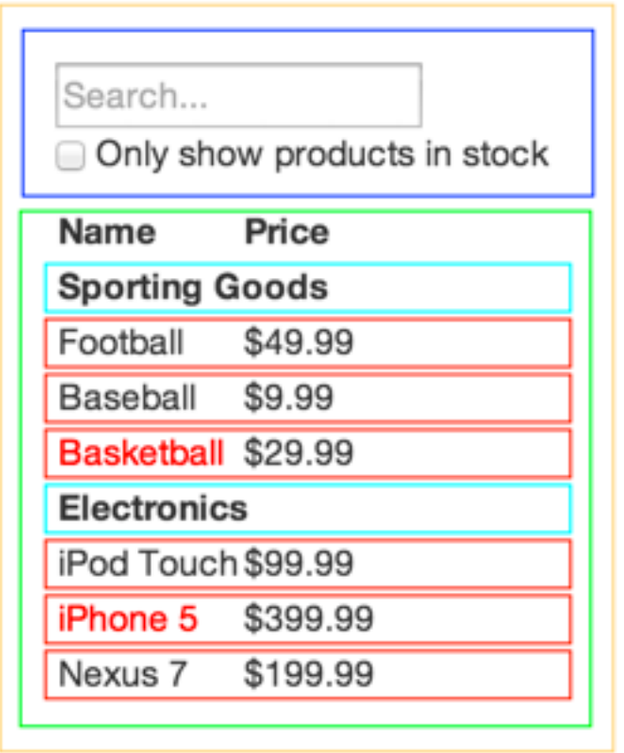
```
[
  {category: "Sporting Goods", price: "$49.99", stocked: true, name: "Football"},
  {category: "Sporting Goods", price: "$9.99", stocked: true, name: "Baseball"},
  {category: "Sporting Goods", price: "$29.99", stocked: false, name: "Basketball"},
  {category: "Electronics", price: "$99.99", stocked: true, name: "iPod Touch"},
  {category: "Electronics", price: "$399.99", stocked: false, name: "iPhone 5"},
  {category: "Electronics", price: "$199.99", stocked: true, name: "Nexus 7"}
];
```

Mock from designer



THINKING IN REACT

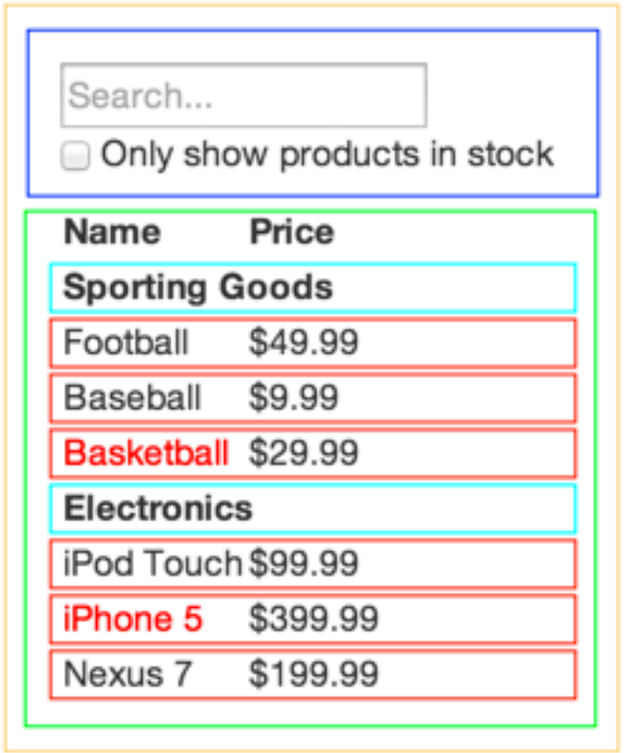
DRAW SOME BOXES



THINKING IN REACT

NAME THE BOXES (SEMANTICALLY!)

- FilterableProductTable
- SearchBar
- ProductTable
- ProductCategoryRow
- ProductRow

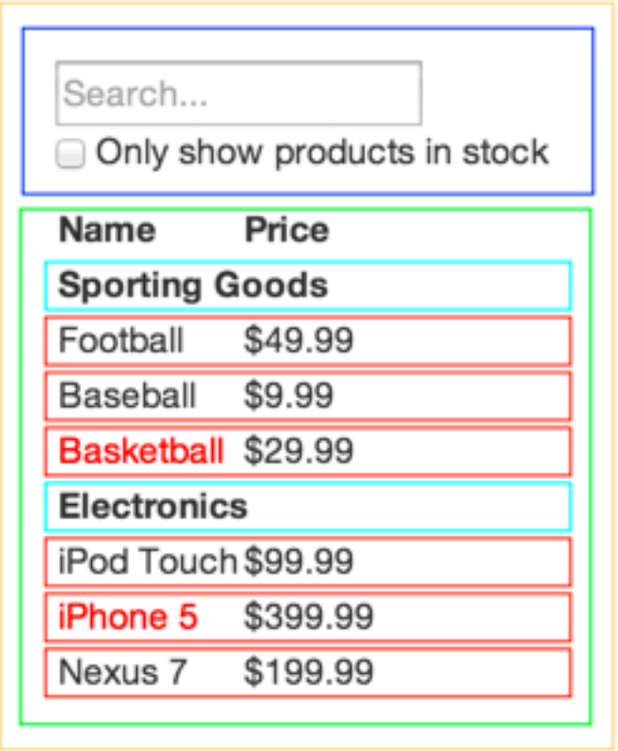


THINKING IN REACT

MAKE A HIERARCHY

components!

- FilterableProductTable
  - SearchBar
  - ProductTable
    - » ProductCategoryRow
    - » ProductRow



EXERCISE

KEY OBJECTIVE

- Create a component hierarchy

TYPE OF EXERCISE

- Individual/pair

TIMING

10 min

1. Choose a section of your favorite website
2. Write down the component hierarchy (remember the steps: 1. Mock, 2. Boxes, 3. Name, 4. Hierarchy)
3. Don’t forget to use semantic names!

Exit Tickets!

(Class #18)

LEARNING OBJECTIVES - REVIEW

- Understand the roles of model, view, and controller
- Describe the difference between frameworks and libraries
- Recognize the primary uses of React
- Build a React component function
- Create a React component class
- Implement composition in a React app

Q&A