React Recap

Let’s do a quick recap on what we know so far

-React is a JavaScript library

-A component is created using JavaScript functions or classes

-The HTML looking stuff is called JSX. It determines the content of our components

Starting a new react project

```
create-react-app <name of your project>
```

-this generates a new project with all the needed dependencies, like babel(translates any kind of JS into plain old ES5 JS so it can run on any browser)- this is what Chris showed you on Thursday

```
cd <name of your project>
```

```
npm start
```

Components have 3 parts

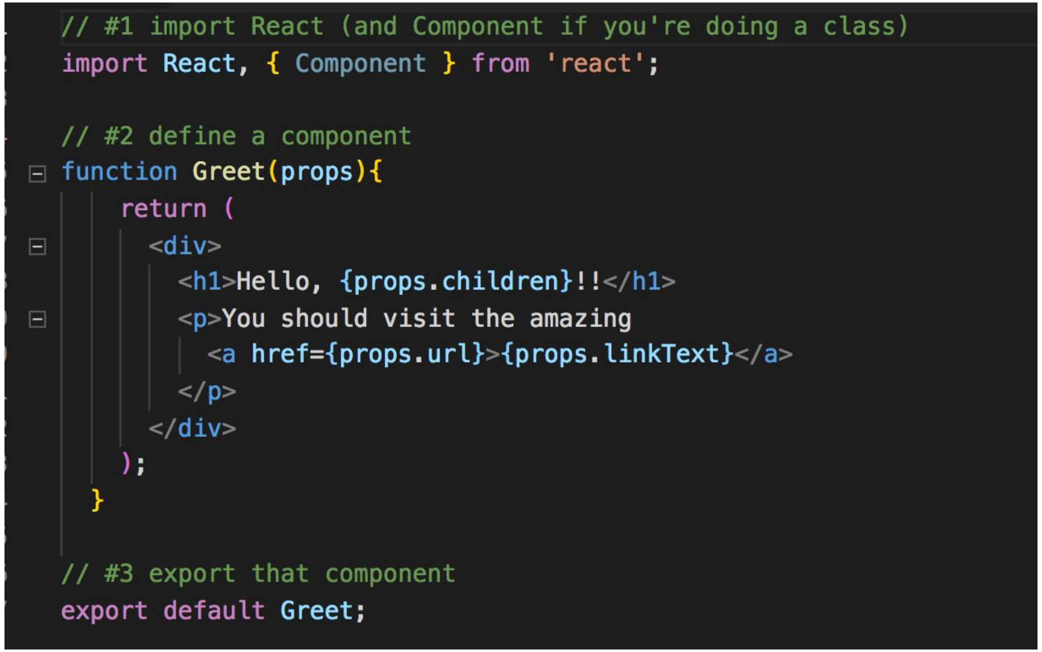
1. Import react (and Component if you’re doing class)
2. Define a component
3. Export the component

   Check out this sweet plug-in for VScode:

https://marketplace.visualstudio.com/items?itemName=xabikos.ReactSnippets

Components can be Class or Functional

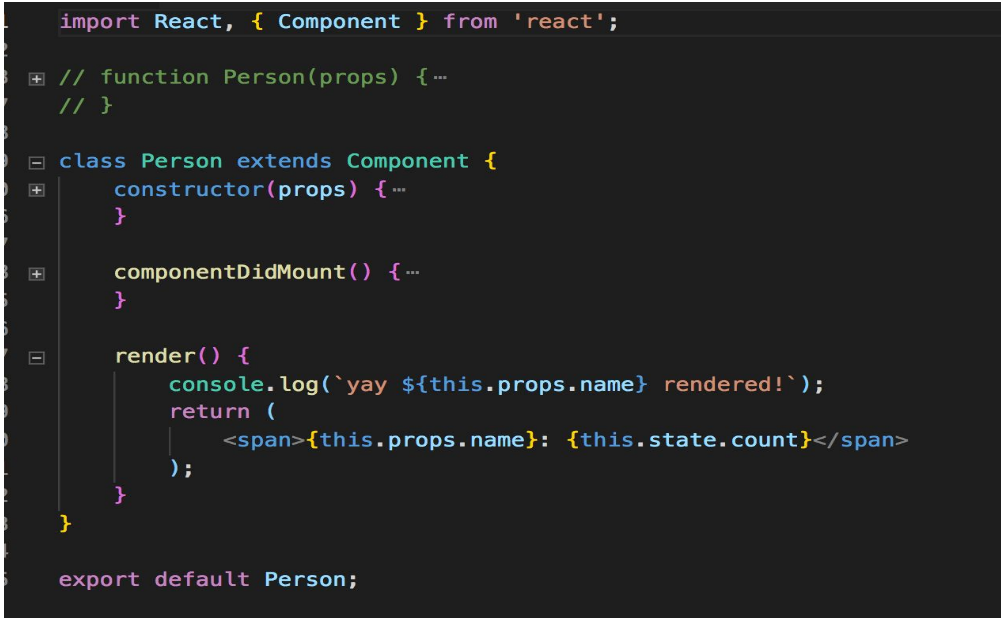
- A functional component is just a JS function. It can only receive props. It does not have state..We'll go over state in a minute…. These are sometimes called stateless components.



```
// #1 import React (and Component if you're doing a class)
import React, { Component } from 'react';

// #2 define a component
function Greet(props){
    return (
      <div>
        <h1>Hello, {props.children}!!</h1>
        <p>You should visit the amazing
          <a href={props.url}>{props.linkText}</a>
        </p>
      </div>
    );
  }

// #3 export that component
export default Greet;
```

Components can be Class or Functional

-Class components: this is a JS class. It had some super powers the Functional component doesn't have, including a required render method. It does have other lifecycle hooks and it can have state
https://reactjs.org/docs/react-component.html#render



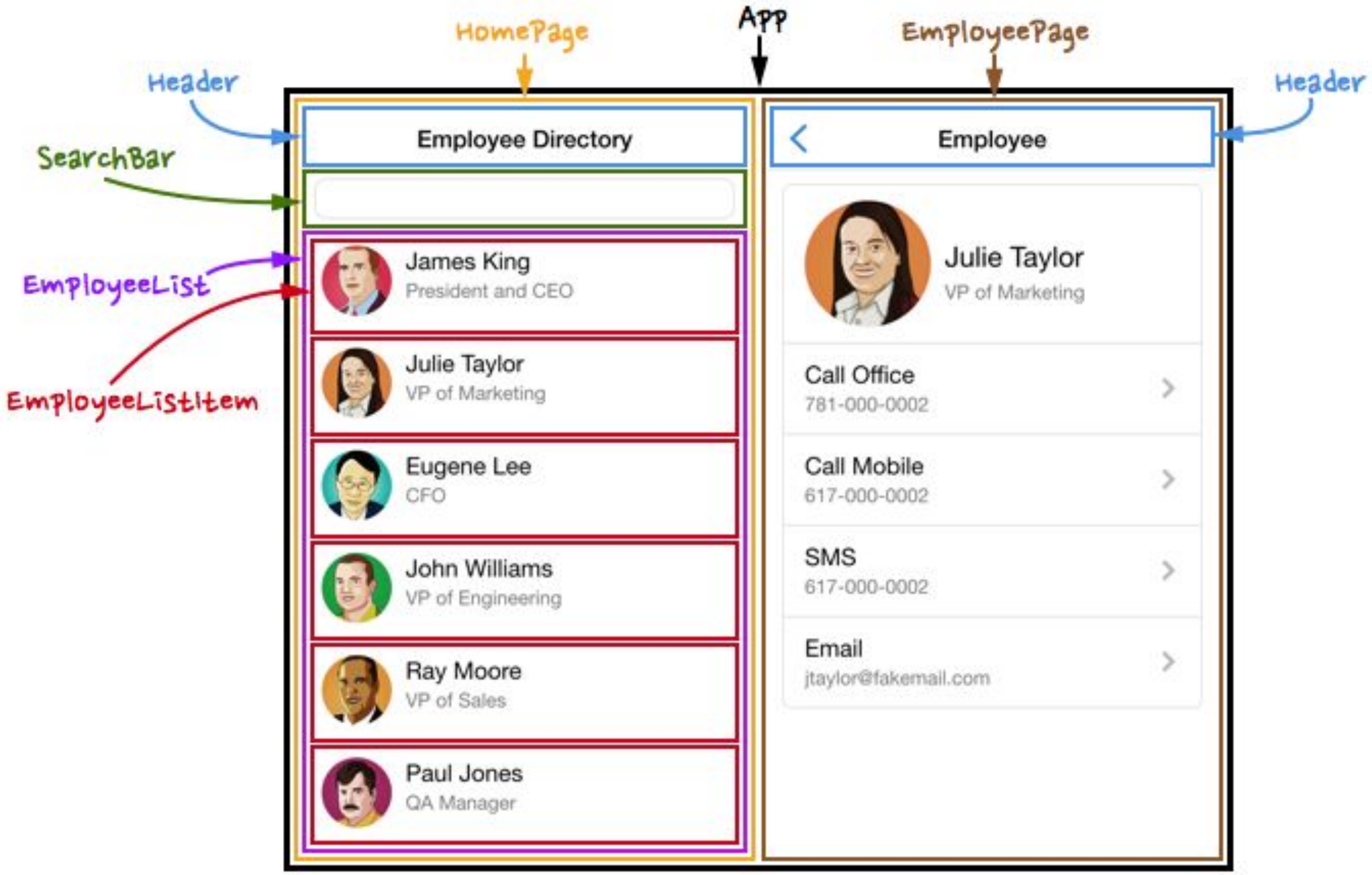
```
import React, { Component } from 'react';

// function Person(props) {…
// }

class Person extends Component {
    constructor(props) {…
    }

    componentDidMount() {…
    }

    render() {
        console.log(`yay ${this.props.name} rendered!`);
        return (
            <span>{this.props.name}: {this.state.count}</span>
        );
    }
}

export default Person;
```

Components continued...

-Components can be **nested** inside of other components- for example: We have the Person component nested inside of our App component

-We want to make components **reusable** so we can use them in different parts of our application. Example: Maybe we have multiple buttons or text fields like comments. We can build one “button” component to use in many different parts of our app

-Components should be **configurable**. Example: In our app, we want give each person a different name.



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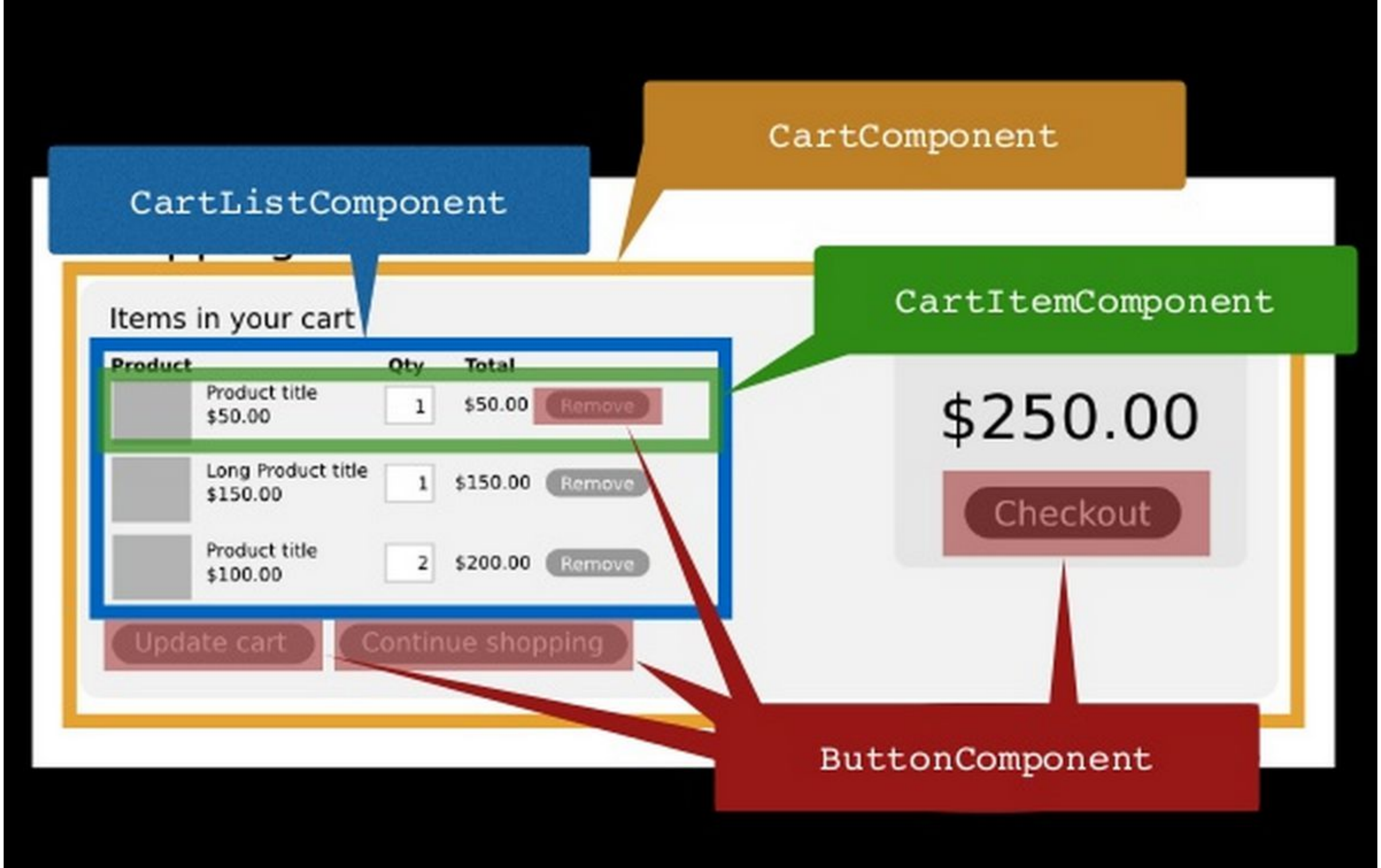

CartComponent
CartListComponent
CartItemComponent
ButtonComponent
Items in your cart
Product
Qty
Total
Product title
$50.00
1
$50.00
Remove
Long Product title
$150.00
1
$150.00
Remove
Product title
$100.00
2
$200.00
Remove
Update cart
Continue shopping
$250.00
Checkout

What’s with props?

-Props make components reusable by giving components the ability to receive data from the parent component in the form of props.

-Props are immutable data that gets passed to children components.

-In our person-counter, the Parent component <App /> can pass down a name prop to each <Person /> component

Passing down a prop

-The parent passes down some information to the child component

<Person name=”Jeffles” />

Prop name

prop value

Receiving a prop

To reference the passed down props, the child has to expect to receive props.

-In functional components, like the <Greet />, we just pass in props as an argument

-In class components, like our <Person /> we use constructor(props) to receive the props.

Constructor and Super

Do I need Constructor in every component?

-Nope, only if your component is class based and you have set an initial state (we’ll get to state in a sec)

Do I have to call super?

-Only if you need access to props inside the constructor of class. You call super(props).

-You are giving the child component access to the parent’s props so you can say, ‘this.props’

-It says “i'm overriding the constructor I've inherited from React.Component, I need to manually trigger all the goodness it sets up for me, including making the `props` available as `this.props` in any of my other methods, such as `render` or `componentDidMount` or `_incrementFarts`, or any other method" ----wise words from Chris.

Without passing super(props)

```
class Person extends Component {

  constructor(props){

    super();

    this.state = {

      firstName: this.props.firstName; // here props would be undefined.

    };

  }

  render () {

    return (

      <p> Name: { this.state.firstName }</p>

    );

  }
```

What the state?

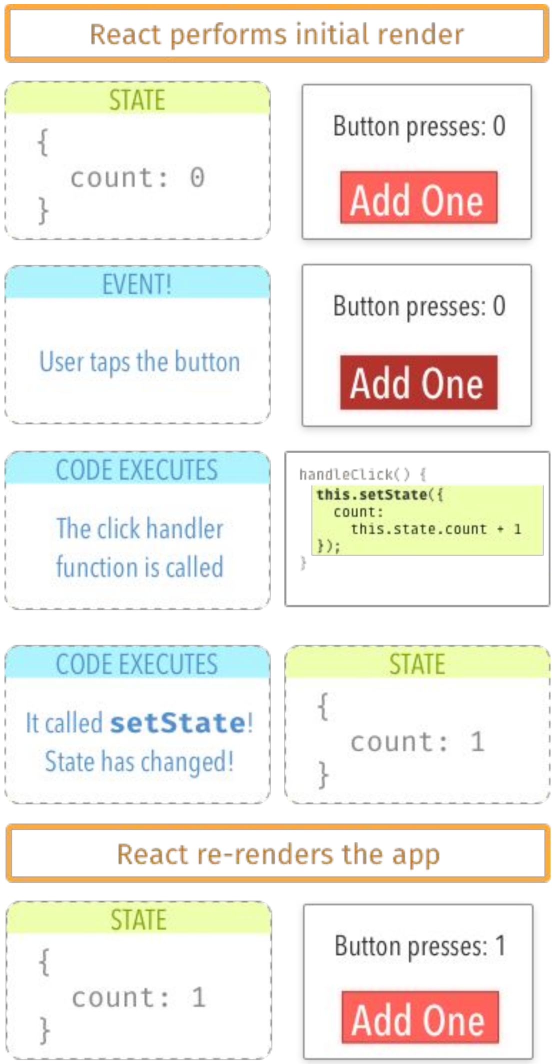
-Think of the state of matter: we can have gas, liquid or solid.

-State is mutable data, meaning it can be changed

-State is managed by the component it is in

-When state is changed (setState), it almost instantly caused the component to re-render

-props vs state is one of the hard concepts in React



```
handleClick() {
  this.setState({
    count:
      this.state.count + 1
  });
}
```

Code- along Scoreboard.

At the top level (`App.js`), there's a piece of state that is an array of playerScores:

```
this.state = {
 scores: [
   {
     id: 1,
     name: 'alice',
     score: 1001
   },
   {
     id: 2,
     name: 'bob',
     score: 20
   },
   {
     id: 3,
     name: 'carol',
     score: 500
   },
 ]
};
```

How would we render each score?

Once we do, how do we solve the error in the console?

-

Let’s add an increment button to increase the score

-Whats up with ‘onClick’?

It’s an event listener!

-Why do we pass in an anonymous function?

-What happens if we don’t wrap it up in an anonymous function?

-let’s console.log it

What does it mean to increase the score of one of the objects?

One rule about state: you can't update it manually. That is, you are never, ever, ever, ever allowed to just re-assign something in state. It breaks React's rendering optimizations.

This.state = “12” is not how it works, because it does not guarantee a rerender

Calling setState will not mutate the state and it will intentionally cause a re-render

What's the solution? Make a copy, then call `this.setState`, passing it the copy.

And when you want to copy an array, but transform/replace at least one of the items… we use map and sprinkles(spread operator).

Can we refactor a bit?

-Lets make a scorecard component

-What’s with bind?

-If you don’t to use anonymous functions, we have to use bind

https://reactjs.org/docs/handling-events.html

Exercises

```
small exercise: make it so you can "decrease score"
-----------------------------------------------------
-add a "decrement" button to what is rendered in the `ScoreCard`
-add an `onClick` to the button
   - for now, have it console.log
-create a method in `App.js` that can decrement a score by id
-pass a handleDecrement prop to `ScoreCard`, setting it to the decrement method
-connect the decrement button's onclick to the handleDecrement prop

medium exercise: add a button to App.js that adds another score to state
------------------------------------------------------------------------
-for now, set the name to "jeff" or "bruce"
-start the score at 0

large exercise: add a button to each ScoreCard that removes its score object from App's
this.state
-------------------------------------------------------------------------------------------
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```

Another walkthrough: Walky-Talky aka a Todo App

-Let’s identify:

- -the parts that should be components
- who has state (that is, who needs to keep track of variables between renders)
- who needs to show what variables

- who is responding to user interaction
- how the data is passed around from component to component
  - focus on the fact that children can't talk to each other, they have to go through the parent