CS47: Cross-Platform Mobile Development

Lecture 2B: Components, Props + State, Hooks

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Fall 2019

Overview for today

- Live demo (throughout lecture)
  - Putting basic components to use
  - Styling layouts using Flexbox
- Class Components
  - Props
  - State
- Functional Components
  - Hooks

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Live Demo

Jedi ID Card

STARTER CODE

Live Demo

Jedi ID Card

STARTER CODE

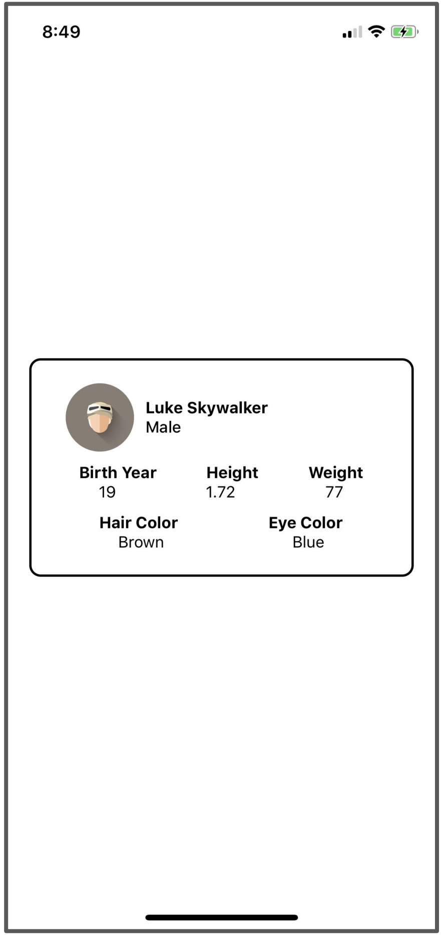
1) Run `npm install`
2) Open with Expo

Live Demo

Jedi ID Card

Create an application that shows the following details about a Jedi:

- Name
- Gender
- Birth Year
- Height
- Weight
- Hair Color
- Eye Color
- Picture?



8:49

Luke Skywalker
Male

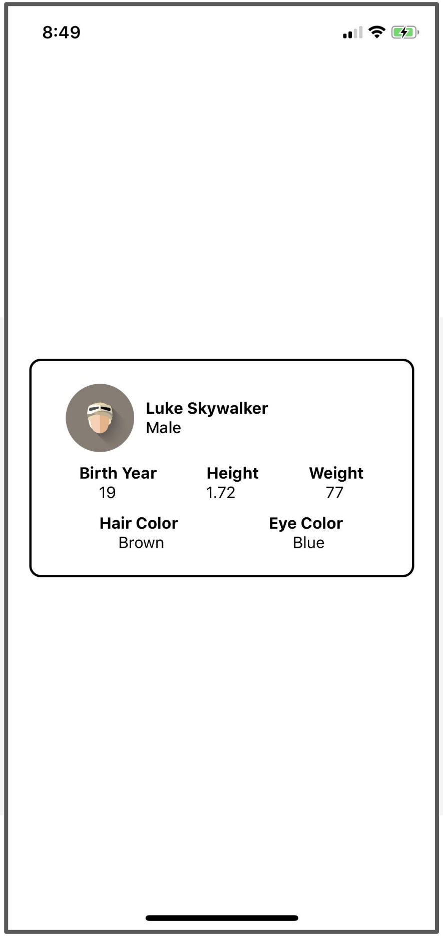
Birth Year	Height	Weight
19	1.72	77

Hair Color	Eye Color
Brown	Blue

Design to Code

BEST PRACTICES

1. Break down the design
2. Choose a component for each part
3. Code the component tree and style it



8:49

Luke Skywalker
Male

Birth Year 19

Height 1.72

Weight 77

Hair Color Brown

Eye Color Blue

USEFUL LINKS / React Native Docs / React Native Express / Cheatsheet

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Class Component

A `Component` that is declared using ES6 class syntax.

Class Component

A `Component` that is declared using ES6 class syntax.

```
import React from 'react';
import { StyleSheet, Text, View } from 'react-native';

export default class App extends React.Component {
    render() {
        return (
            <View style={styles.container}>
                <Text>Hello World!</Text>
            </View>
        );
    }
}
```

How do I make my app respond to changes?

(e.g. a button click, network request fetch, etc.)

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Props

The parameters passed to the constructor of a `Component`.

```
<Image
  source={{uri: "https://facebook.github.io/react-native/docs/assets/favicon.png"}}
/>
```

Class Components

Props

```
<Image
  source={{uri: "https://facebook.github.io/react-native/docs/assets/favicon.png"}}
/>
```

Class Components

Props

```
<Image
  source={{uri: "https://facebook.github.io/react-native/docs/assets/favicon.png"}}
/>
```

```
<Button
  onPress={onPressLearnMore}
  title="Learn More"
  color="#841584"
  accessibilityLabel="Learn more about this purple button"
/>
```

Class Components

Props

```
<Button
  onPress={onPressLearnMore}
  title="Learn More"
  color="#841584"
  accessibilityLabel="Learn more about this purple button"
/>
```

Class Components

Props

Props

The parameters passed to the constructor of a `Component`.

Props are
only passed from
PARENT TO CHILD

Parent

```
export default class Parent extends React.Component {
     render() {
           return (
                <Image
                  source={{uri: "https://facebook.github.io/react-native/docs/assets/favicon.png"}}
                />

                <Button
                  onPress={onPressLearnMore}
                  title="Learn More"
                  color="#841584"
                  accessibilityLabel="Learn more about this purple button"
                />

           );
     }
}
```

Props

The parameters passed to the constructor of a `Component`.

Props are
only passed from
PARENT TO CHILD

Child

```
export default class Child extends React.Component {
    constructor(props) {
        super(props);

        // nothing has been rendered yet
        // you can change what is rendered based on the component’s props
        console.log(JSON.stringify(props));
    }
}
```

Child -- Image

```
export default class Image extends React.Component {
    constructor(props) {
        super(props);

        // Prints "https://facebook.github.io/react-native/docs/assets/favicon.png"
        console.log(JSON.stringify(props.source.uri));
    }
}
```

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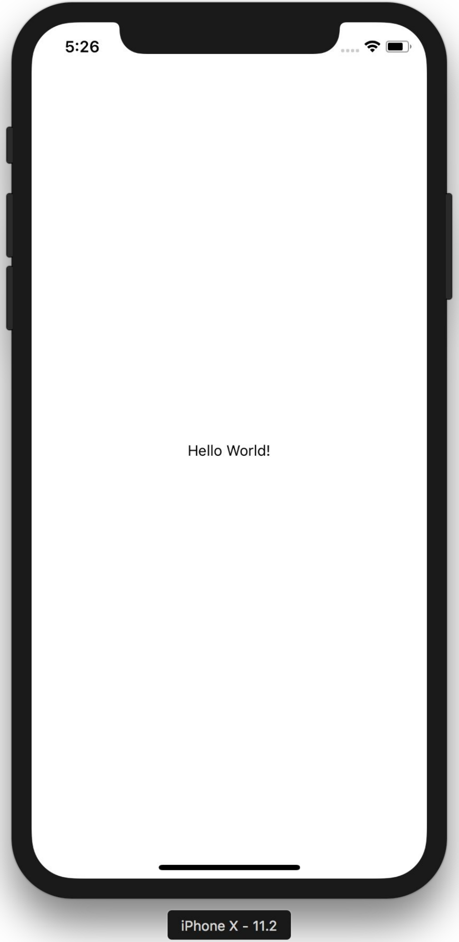
State

An object with details about how a `Component` should render.

This literally is an object named `state`

```
import React from 'react';
import { StyleSheet, Text, View } from 'react-native';

export default class App extends React.Component {
  render() {
    return (
      <View style={styles.container}>
        <Text>Hello World!</Text>
      </View>
    );
  }
}
```



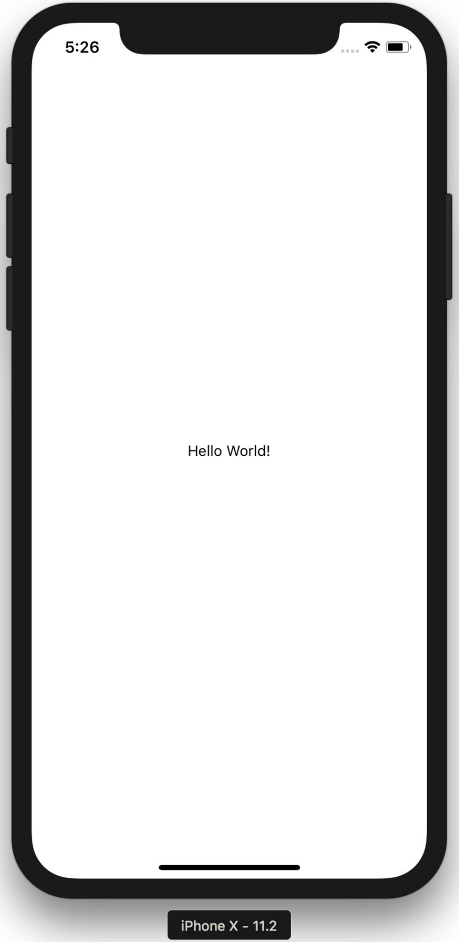
Hello World!

```
import React from 'react';
import { StyleSheet, Text, View } from 'react-native';

export default class App extends React.Component {

  state = {
    headline: 'Welcome to my app!'
  }

  render() {
    return (
      <View style={styles.container}>
        <Text>Hello World!</Text>
      </View>
    );
  }
}
```



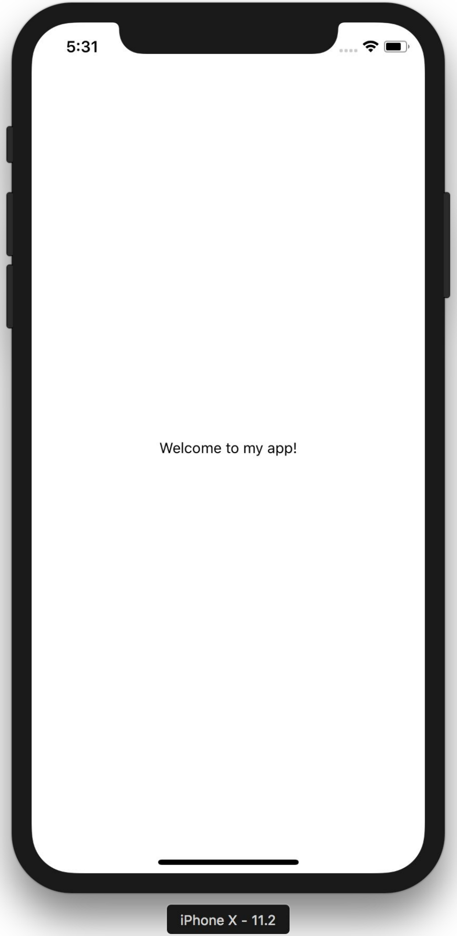
Hello World!

```
import React from 'react';
import { StyleSheet, Text, View } from 'react-native';

export default class App extends React.Component {

  state = {
    headline: 'Welcome to my app!'
  }

  render() {
    return (
      <View style={styles.container}>
        <Text>{this.state.headline}</Text>
      </View>
    );
  }
}
```



Welcome to my app!

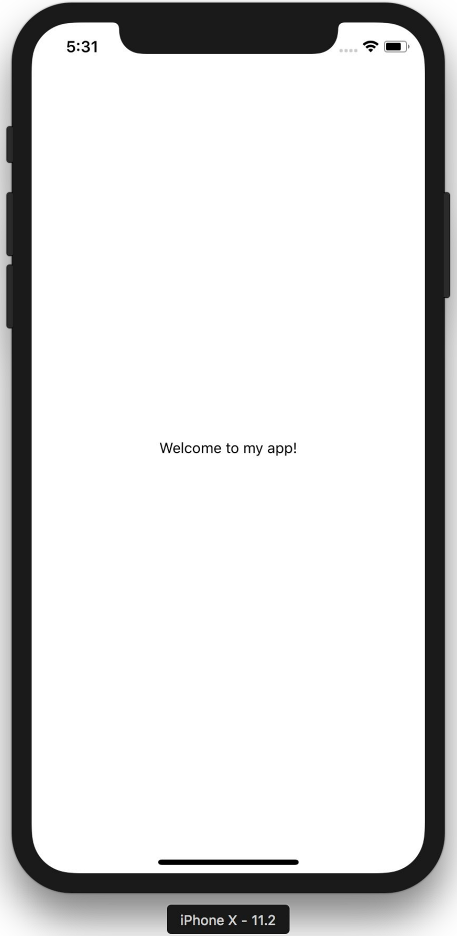
```
import React from 'react';
import { StyleSheet, Text, View } from 'react-native';

export default class App extends React.Component {

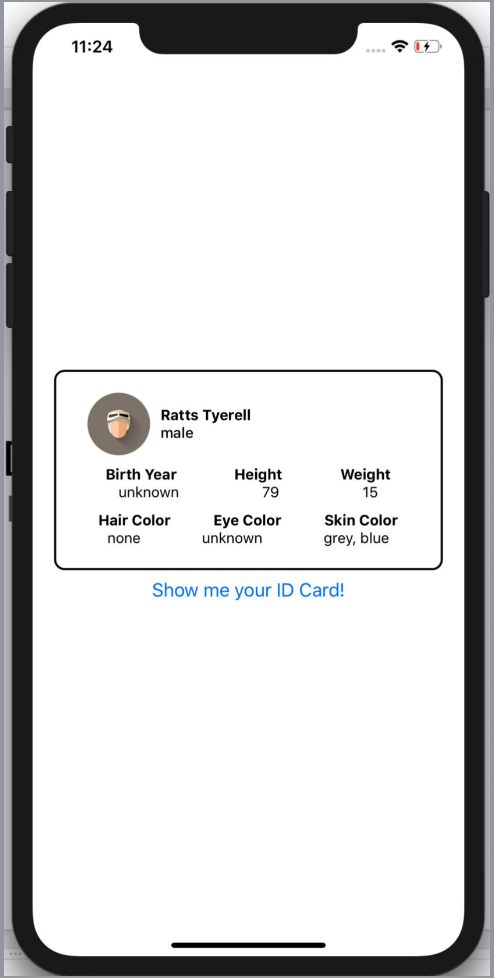
  state = {
    headline: 'Welcome to my app!'
  }

  updateState = () => {
     this.setState({ headline: ‘Welcome back to my app!’ });
  }

  render() {
     ...
  }
}
```



`this.state.x = y` **VS.** `this.setState({x:y})`



11:24

Ratts Tyerell
male

Birth Year
unknown

Height
79

Weight
15

Hair Color
none

Eye Color
unknown

Skin Color
grey, blue

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Functional Component

A `Component` that is declared like a JS function.

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const App = () => {
    return (
        <View style={styles.container}>
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```

Functional Component

A `Component` that is declared like a JS function.

```
const App = (greeting) => {
    return (
         <View style={styles.container}>
              <Text>{greeting}</Text>
         </View>
    );
}
```

Functional Component

A Component that is declared like a JS function.

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const App = (greeting) => {
    return (
        <View style={styles.container}>
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Hooks

Functions that allow you to “hook into” React state and life cycle features from function components.

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Functions that allow you to “hook into” React state and life cycle features from function components.

Two Rules of Hooks

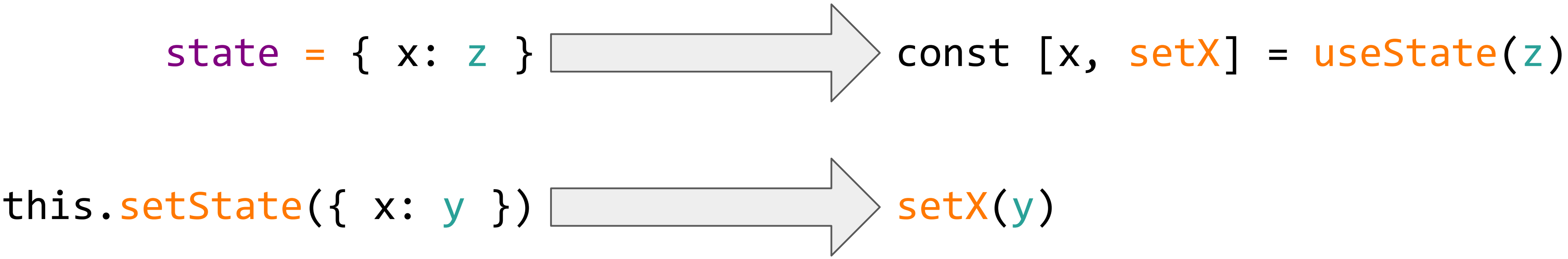
1) Only call Hooks at the **top level**

2) Only call Hooks from React **functional components**

`state` object (Class Components)

`useState` Hook (Functional Components)

```
import { useState } from 'react';
```



```
state = { x: z }
```

→

```
const [x, setX] = useState(z)
```

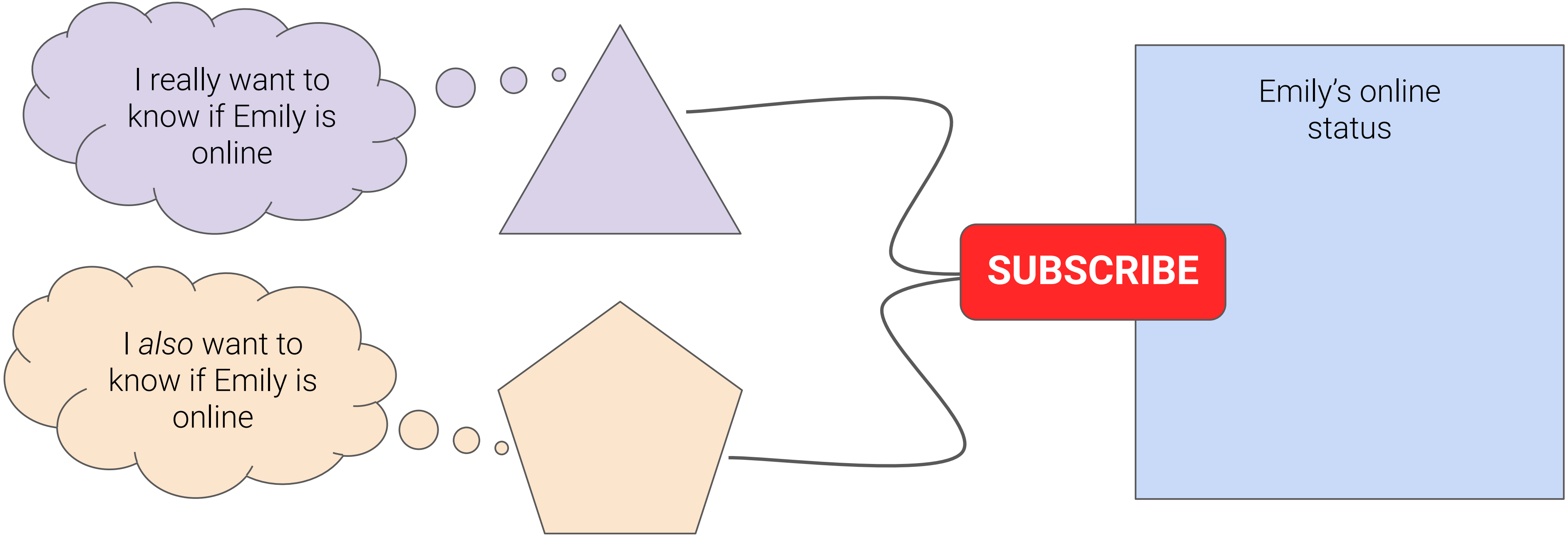
```
this.setState({ x: y })
```

→

```
setX(y)
```

Creating Your Own Hooks

JS function whose name starts with “use” (ex: useX) and may call other Hooks.
These allow functional components to “subscribe” to specific information.



I really want to know if Emily is online
I *also* want to know if Emily is online
SUBSCRIBE
Emily’s online status

How would you change the code for our Jedi ID Card to use ***functional components and the `useState` Hook*** (instead of class components and props/state)?

(We'll leave this as a ***highly recommended*** exercise, but the solution can be found here.)

USEFUL LINKS / React Hooks

Office Hours

Email us directly if you're not available at these times

Abdallah AbuHashem
Monday (12-1 PM) @ Huang Basement
By appointment

Vy Mai
Tuesday (3-4 PM) @ Old Union
By appointment

Cisco Vlahakis
Wednesday (8-9 PM) @ Huang Basement
By appointment

Tiffany Manuel
Thursday (2-3 PM) @ Huang Basement
By appointment

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