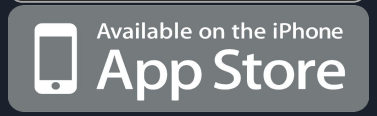
React Native

While you wait:

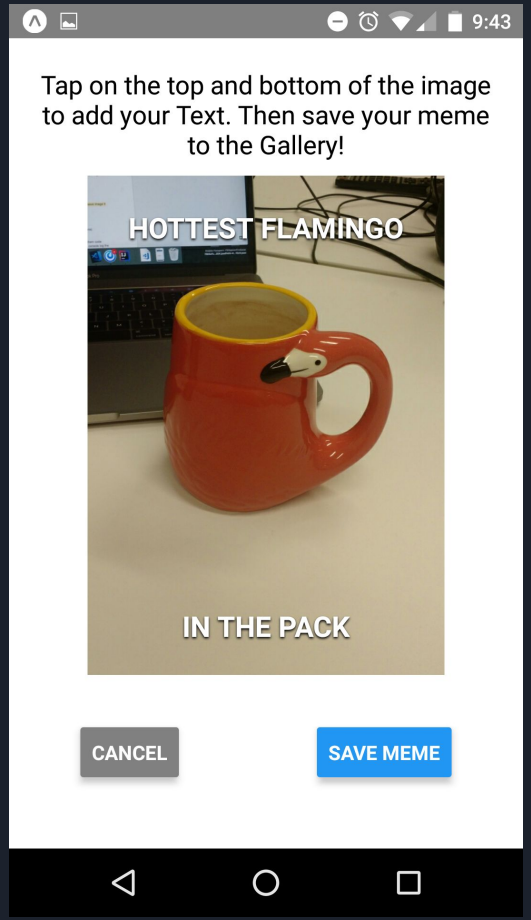
- Download The Expo App from the Play Store or App Store
- Slides - ap.pn/2p90qqo



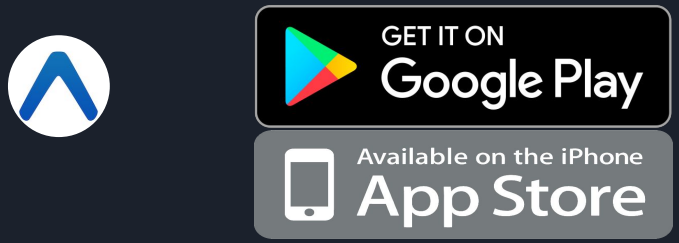
What are we building?

A Meme Creator App

1. Take a picture
2. Add text
3. Save your meme
4. Impress your friends with your original dank memes!



How are we building it?



Expo + Snack

- Online IDE created by Expo for React Native development
- You can create an app in Snack and share it easily with a QR code
- To run it on your phone you just need the corresponding Expo app from the Play or App Store

If you haven't already, open the slides: ap.pn/2p90qqo

Why React Native?

Uses React Lifecycle
Cross-Platform
Reusable Components (Fast to write)
Simple State Management

Structure of our App

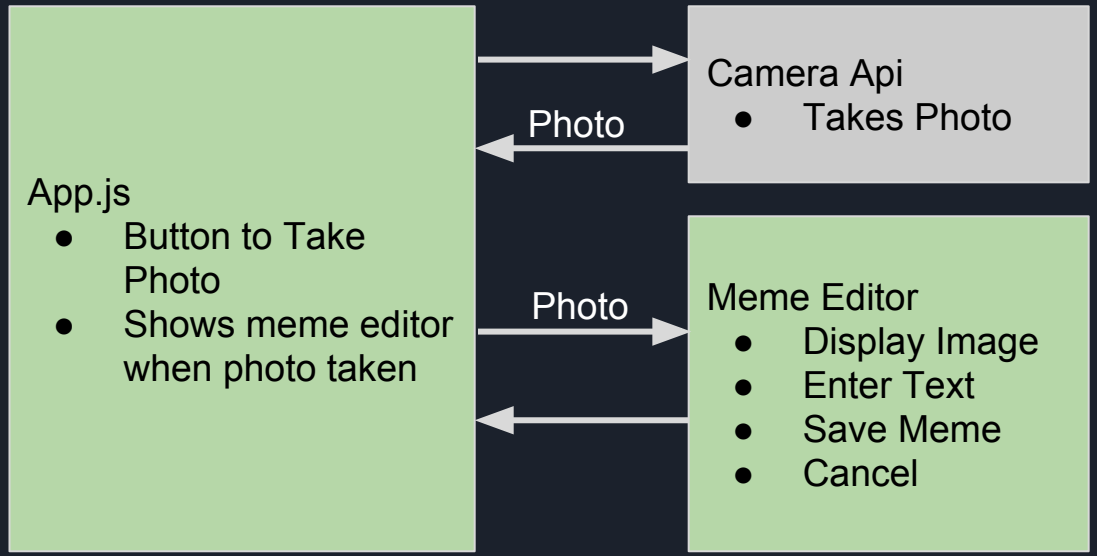


Table of Contents

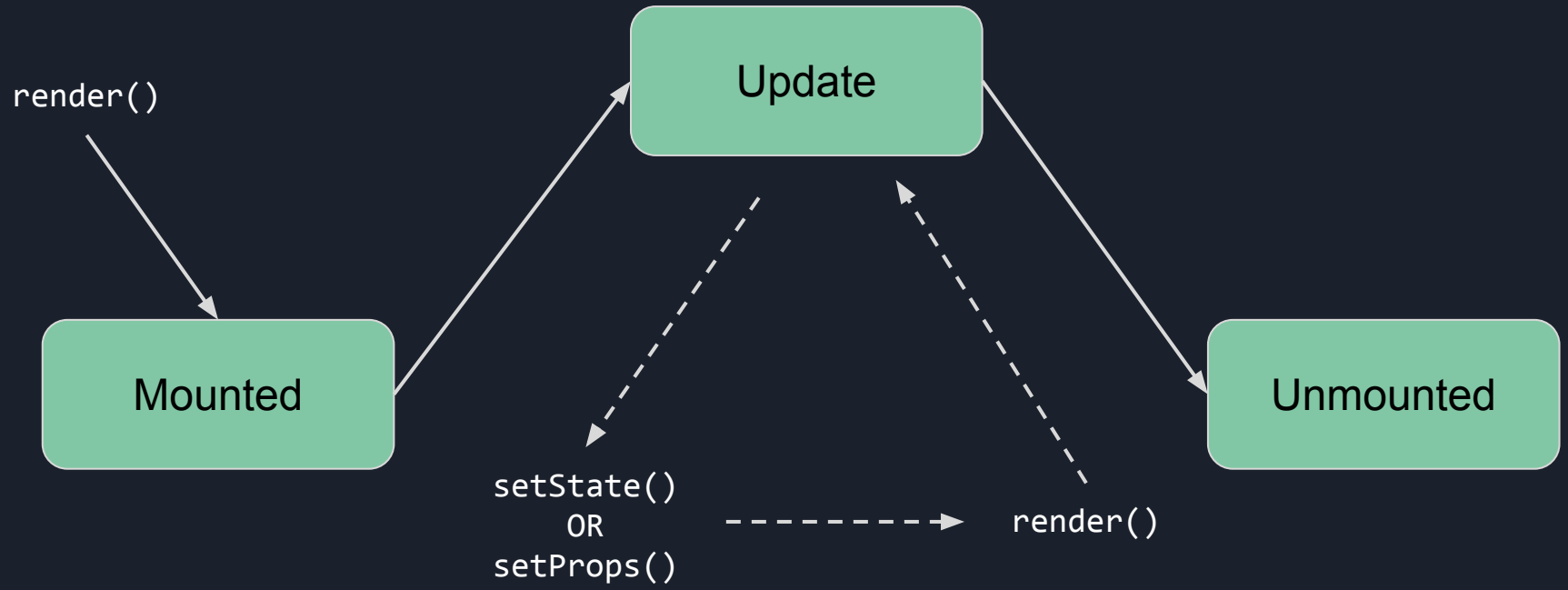
What is a Component

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

Components let you split the UI into independent, reusable pieces, and think about each piece in isolation - React Docs

React Component Documentation

Simplified React Lifecycle



Javascript Functions

Normal JS Functions

```
function myFunction() {
  return <Text>Hello, World!</Text>;
}
```

Arrow Functions (aka “Fat Arrow” Functions)

```
function myBoundFunction = () => {
  return <Text>Hello, {this.props.world}</Text>;
}
```

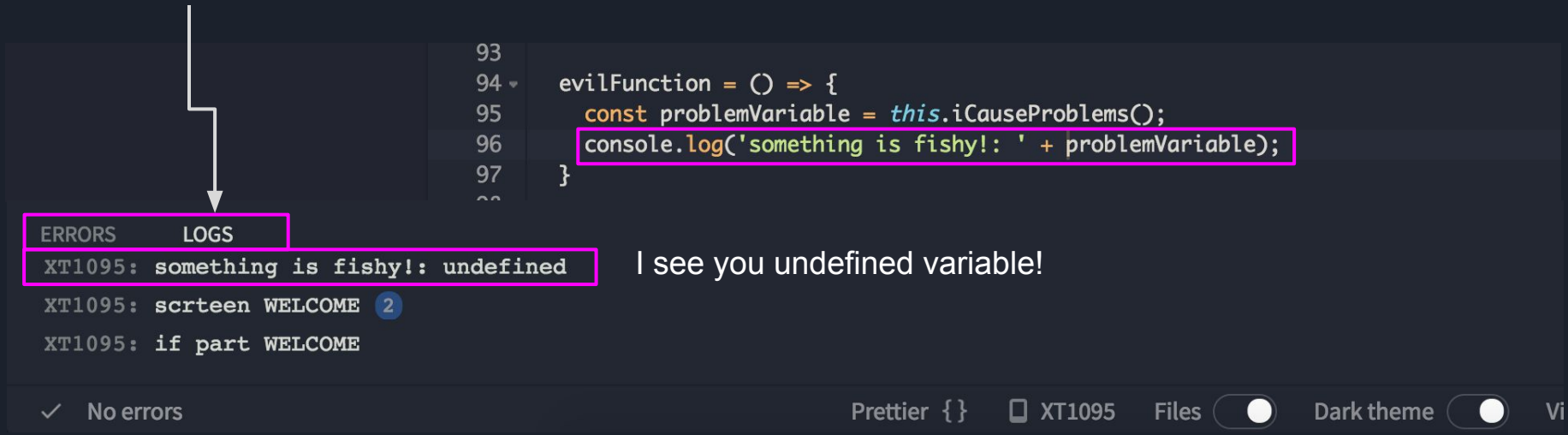
Normal JS Functions
Arrow Functions

Demo Concepts

Console Logs are our Friends

When you are debugging try using console.log(); to print out variables and see where your code is breaking.

Click on the bottom bar in expo to open the log/error drawer.



I see you undefined variable!

Waiting on an API

Some functions may take time to return a result (networking, user interaction, slow processing). We use async & await for these occasions. (The docs for an api will tell you if it is needed).

The Camera Api is an example of this!

```
takePhoto = async () => {
  console.log('taking photo');
  let img = await Expo.ImagePicker.launchCameraAsync();
  if (!img.cancelled) {
    console.log('photo taken');
    this.setState({ photo: img, screen: memeScreen });
  }
};
```

our function must have the "async" keyword to have an await

await the image to return

now we can use the image!

Demo: Taking a Picture

Key Concepts:

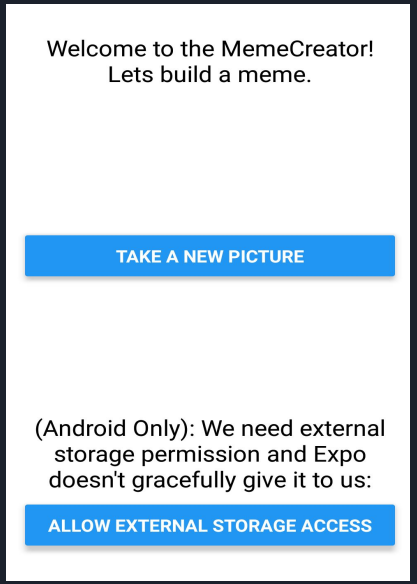
- Async and Await
- Expo Console for logs

Steps:

1. Use the `launchCameraAsync()` function to take a photo.
2. We'll console log the result to make sure it's taken!

[Start coding on Expo from here]

[See the changes on Github]



Adding Components: State and props

Props: “parameters” to a constructor.
Values that we pass into our component*

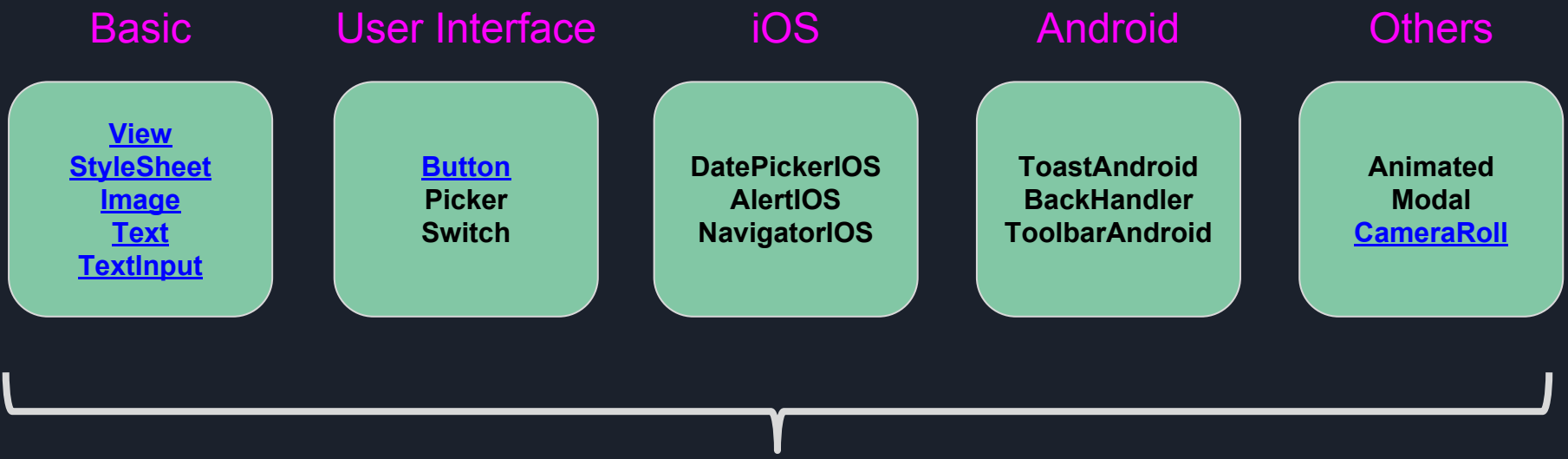
State: “fields” in a class
Changing these causes the component to rerender

Props Passed from App.js

```
export default class App extends Component {
  ...
  render() {
    return <OnOffSwitch color=’blue’>;
  }
}
```

Props & State in OnOffSwitch

```
export default class OnOffSwitch extends Component {
  constructor(props) {
    super(props);
    // Set Initial State
    this.state = { isOn: false };
  }
  render = () => { // Render method that controls what shows on UI
    const buttonText = this.state.isOn ? "ON" : "OFF";
    const buttonColor = {backgroundColor: this.props.color};
    return (
      <Text onPress={this.onPress}>
        {buttonText}
      </Text>
    );
  }
  onPress = () => {
    this.setState({ isOn: !this.state.isOn })
  }
}
```

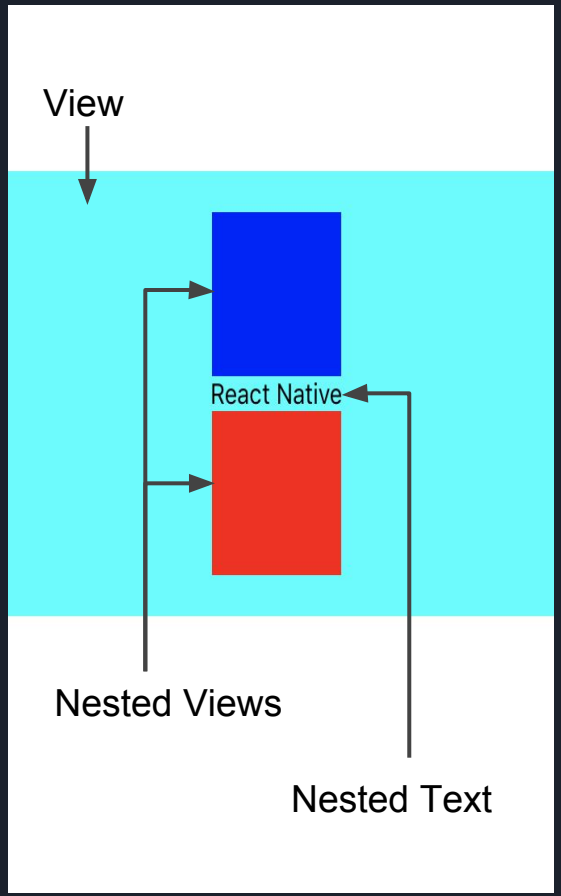


React Native Components

Basic Components: View

- A container for laying out your UI
- You can nest other Views or components inside
- Styling is done with the “style prop”

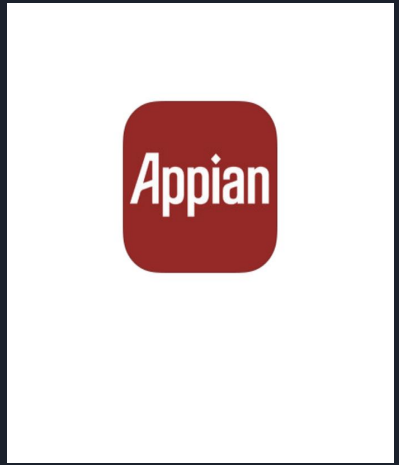
```
<View style={{backgroundColor: 'cyan', … }}>
  <View style={{backgroundColor: 'blue', … }} />
  <Text>React Native</Text>
  <View style={{backgroundColor: 'red', … }}/>
</View>
```



Basic Components: Image

- Pass in a url to a local image or image on the web. And it will display it!
- Manually specify dimensions for images
- Displays most image formats*

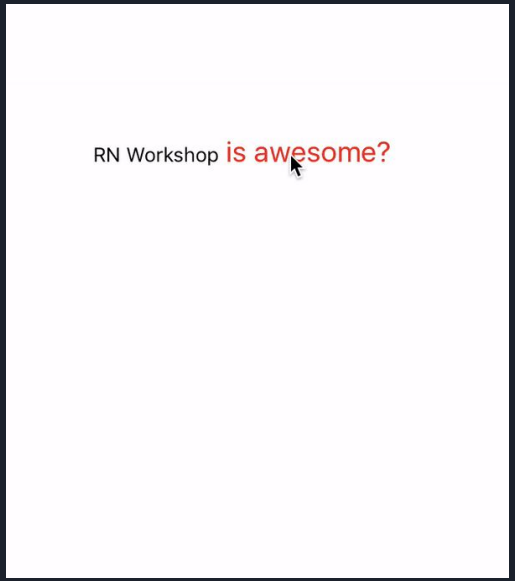
```
<View style={{...}}>
  <Image
    style={{width: 150, height: 150}}
    source={{uri: 'https://d7um.....png'}} />
</View>
```



Basic Components: Text

- Displays text
- Supports nesting, styling and touch handling

```
<View style={{...}}>
  <Text onPress={() => Alert.alert('Incredibly awesome!')}>
    RN Workshop
    <Text style={{color: 'red', fontSize: 20}}>
      {' '}is awesome?
    </Text>
  </Text>
</View>
```



Demo: Showing your image

Key Concepts:

- View and Image Components
- State and Props

Steps:

1. Update the state that determines what screen to show
2. Display the image we took
3. TODO

Start coding on Expo from here
See the changes on Github

Styles: Basics

- Let you customize your components
- We pull our styles out of our JSX, and into stylesheets*

```
<View style={{
    padding: 20,
    alignItems: 'center',
    marginTop: 100
  }}>
  <Image
    style={{width: 150, height: 150}}
    source={{uri: '...'}} />
</View>
```

=

```
const styles =
StyleSheet.create({
  viewStyle: {
    padding: 20,
    alignItems: 'center',
    marginTop: 100
  },
  imageStyle: {
    width: 150,
    height: 150
  }
});
```

+

```
<View style={styles.viewStyle}>
  <Image
    style={styles.imageStyle}
    source={{uri: '...'}} />
</View>
```

*refer to slide notes for details

Styles: Stylesheets

Why Stylesheets?

- Makes code readable
- Reusable
- Easier to maintain

```
const styles =
StyleSheet.create({
  viewStyle: {
    padding: 20,
    alignItems: ‘center’,
    marginTop: 100
  },
  imageStyle: {
    width: 150,
    height: 150
  }
});
```

```
<View style={styles.viewStyle}>
  <Image
    style={styles.imageStyle}
    source={{uri: '...'}} />
</View>
```

Basic Components: TextInput

- Input text in App via keyboard

```
<View style={{...}}>
  <TextInput
    style={{...}}
    onChangeText={(text) => this.setState({text})}
    value={this.state.text}
  />
  <Text style={{...}}>{this.state.text}</Text>
</View>
```

Demo: Adding Text to your Meme

Key Concepts:

- Styling
- State and Props

Steps:

1. Change Image to ImageBackground
2. Add two text fields on our image + styles

[Start coding on Expo from here]

[See the changes on Github]

CameraRoll

- Access to device's camera roll
  - saveToCameraRoll()
    - saves photo/video to camera roll
  - getPhotos()
    - Gets photo from the camera roll

```
const result = await takeSnapshotAsync (this.ref, {
  format: 'png',
  result: 'file',
});
await CameraRoll. saveToCameraRoll (result, 'photo');
```

Demo: Saving Your Meme

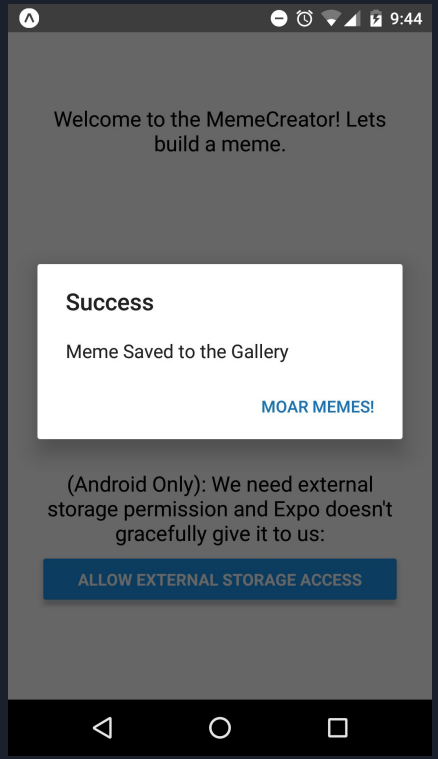
Key Concepts:

- State and Props

Steps:

1. Add a save button with an onPress Listener
2. Save the image and close the editor, in our “onPress” callback

[Start coding on Expo from here]
[See the changes on Github]



Thank you for joining us!

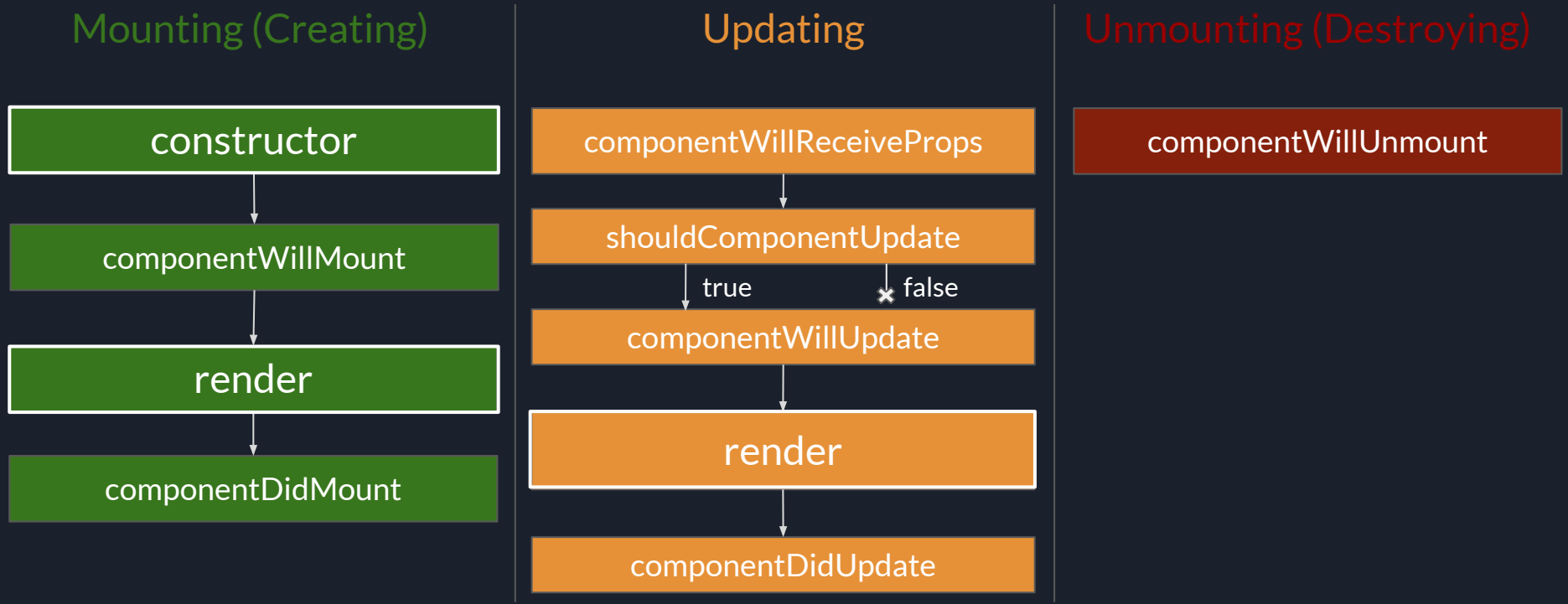
Please click here or go to ap.pn/2oYN4Nx to share feedback

Next Step: Add a cancel button that just closes the editor

Start coding on Expo from here

Additional Concepts

Detailed React Component Lifecycle



Docs for the lifecycle methods

Adding Components

Let's build an "on-off" button

We will put together our requirements, and find ways to achieve them.

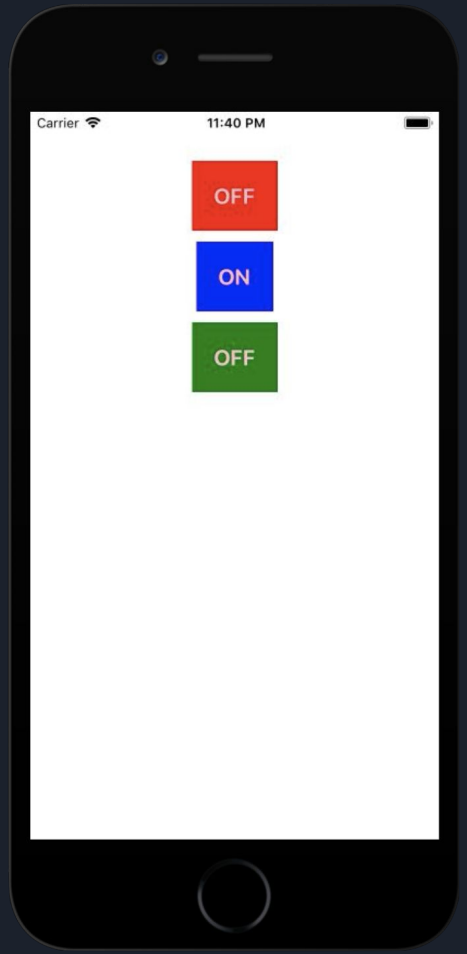
Requirements

- We want a reusable button
- Button color can be configured
- You can turn the button on and off
- Text switches when you press

Technical Approach

- Make a component
- Pass color in as a prop
- Have a state variable
- An onPress listener is needed

Try to think about your components this way!



Adding Components: Building onOffSwitch

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

export default class OnOffSwitch extends Component {

  constructor(props) {
    super(props);
    this.state = { isOn: false };
  }

  toggle = () => {
    this.setState({ isOn: !this.state.isOn });
  }

  render = () => {
    const buttonText = this.state.isOn ? "ON" : "OFF";
    const buttonColor = {backgroundColor: this.props.color};
    return (
      <TouchableOpacity style={[styles.button, buttonColor]}
        onPress={this.toggle} >
        <Text style={styles.buttonText}>{buttonText}</Text>
      </TouchableOpacity>
    );
  }
}
```

Imports

Class Creation + export (making it visible to other files)

Initial state

Callbacks + Changing State

Props

Render + other lifecycle methods

Styling: Basics

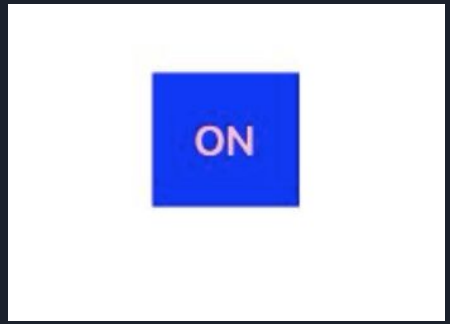
Create Your Styles

```
const styles = StyleSheet.create({
 button: {
  padding: 20,
  Margin: 5,
  backgroundColor: 'blue'
 },
 buttonText: {
  fontSize: 20,
  fontWeight: 'bold',
  color: 'pink'
 }
});
```

Component with style applied

```
<TouchableOpacity style={styles.button}>
 <Text style={styles.buttonText}>
  {'On'}
 </Text>
</TouchableOpacity>
```

Rendered view



2 approaches to finding styles:

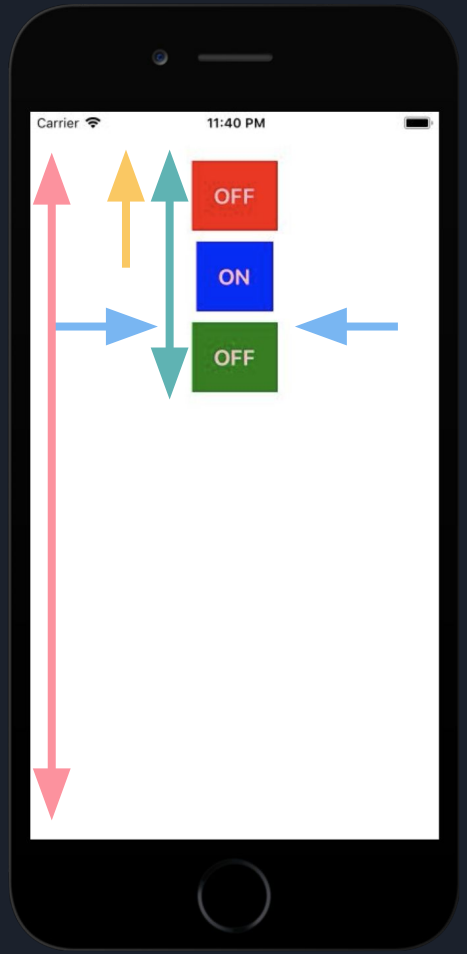
- Look through the style docs for Text and View (do this at least once)
- Google “how to do <this particular style> in React Native”

Styling: Laying out views

Flex is a set of styles for laying out views in React Native

- flexDirection: row vs column
- justifyContent: alignment in flexDirection
- alignItems: alignment in cross-Direction
- flex: how big the view should be (relative to its neighbors)
    - Here, the container has no neighbors So it takes up the full height

```
container: {
 flexDirection: 'column',
 justifyContent: ‘start’,
 alignItems: 'center',
 flex: 1
}
```



These are the basics, if you want to know more check this flex game out.

Sharing Code across files in JS

We split our js code into different files for cleanliness, these are called modules. To share code with other files we need to “export” it. Then, other files can “import” what they need.

ModuleOne.js

```
export const number1 = 1;
export const number2 = 2;
default export function add(x, y) {
  return x + y;
}
```

ModuleTwo.js

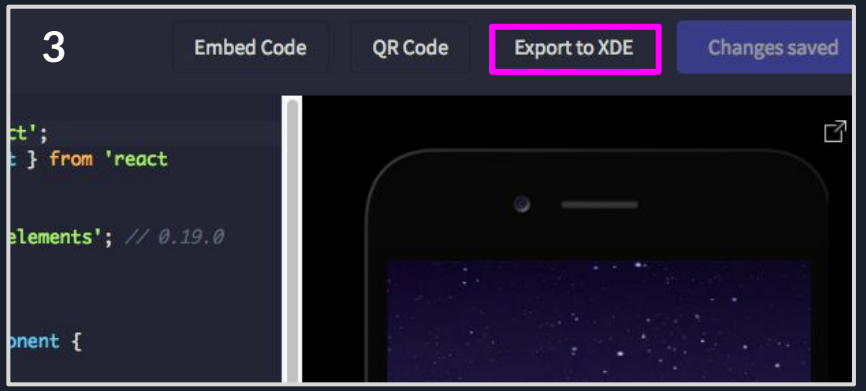
```
import add, {number1, number2} from
  ‘./ModuleOne.js’;

function solve() {
  return add(number1, number2);
}
```

You can export multiple things from a file. But only one labeled “default”. The non “default” exports are listed in curly brackets. The “default” one is not.

Variable Declarations: Const, Let, Var

`const`	Variable is instantiated once and cannot be changed
`let`	Variable can be changed and is scoped to the nearest enclosing block
`var`	Variable can be changed and scoped to the nearest function block

Setup Local Development



1. Install node.js + yarn
2. Install Expo XDE (App) or the Expo Command Line Tool
3. “Export” your project from snack
4. Unzip the download
5. Open the folder in a code editor
6. In the Command Line, go to the root of the project and run “yarn install”
7. If using the command line tool:
    a. Run “exp start” and scan the barcode shown
8. If using the Expo XDE:
    a. Open the project in Expo XDE and “Share” it to your device.
    b. Scan the displayed barcode with the expo app on your phone.