React Native 3

CS571: Building User Interfaces

Cole Nelson

Announcements

See @325 | Snack Solution

Announcements

Scholarships available for continuing CS students until Thursday, April 13th!

- David Dewitt Undergraduate Scholarship
- Hina and Faisal Mushtaq Scholarship
- Paul D Salmon Memorial Scholarship
- Wai Ying Yick and Dr. Chiu Wai Yuen Endowment

scholarships.wisc.edu

What will we learn today?

- A review of animations and modals
- Making a custom component
- Using simple gestures
- Using switches
- Using React Navigation

Animations using Animated

Provides visual aesthetics and feedback.

```
import { Animated } from 'react-native'
```

May also consider using a third-party-library like reactnative-reanimated or lottie.

Animated Docs

Animated

Animated provides animations for...

- View
- Text
- Image
- ScrollView
- FlatList
- SectionList

... e.g. <Animated.View>{/* ... */}</Animated.View>

Demos

In class, we built/went through several demos...

- Simple Animated Demo
- Complex Animated Demo
- Find My Badgers Animated Demo
- Find My Badgers Animated Demo w/ Modal

Modal

A secondary window.

import { Modal } from 'react-native'

Alternative: reactnative-modal

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Find My Badgers



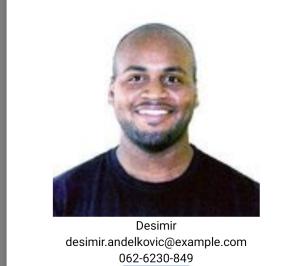




ADD BADGER

CLEAR BADGER

Desimir



CONTACT

CLOSE MODAL



ADD BADGER

CLEAR BADGER

Modal

What you need...

- 1. Something to open the modal
- 2. Some content inside the modal
- 3. Something to close the modal

We often manage whether the modal is open or closed using a state variable, e.g.

```
const [modalVisible, setModalVisible] = useState(false);
```

Modal Properties

- animationType : 'slide', 'fade', 'none'
- onShow: callback func
- onRequestClose : callback func
- transparent : true/false
- visible: true/false often handled by a state variable

Modal Docs | Modal Snack

FindMyBadgers Demo

As a React Native app with animations and modals.

Snack Solution

React Native does not have the concept of a "card"...

- 1. Use a third-party library like react-native-paper.
- 2. Create our own component!

Some Card

Some Card

Some Card

Some Card

Pressable | React Native Paper Card

Adding in the styles.card ...

```
const styles = StyleSheet.create({
    card: {
        padding: 16,
        elevation: 5,
        borderRadius: 10,
        backgroundColor: 'slategray',
    }
})
```

Using the BadgerCard...

Adding Gestures

Snack Solution

Your turn!

Create an app that contains a card with only a few words, such as lorem ipsum.

When pressed, this card should open a modal that contains even more words such as lorem ipsum dolor sit... Allow the user to then close this modal.

Bonus: Can you animate the text?

Snack Solution

Switch

Oops! We forgot to cover an input component Switch.

- value boolean value of on/off
- onValueChange callback function

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Switch

```
<Switch
  trackColor={{true: 'darksalmon', false: 'lightgrey'}}
  thumbColor={isOn ? 'crimson' : 'grey'}
  onValueChange={toggle} // callback function
  value={isOn} // boolean state variable
/>
```

Snack Solution

React Native

Things that differentiate mobile from the web...

- Animations
- **Gestures** < More Next Week!
- Navigation < Today!
- Sensing < Next Week!

Navigation in React Native

A more mobile-centric library.

React Navigation Alternatives

React Native is a framework* but still lacks support for things like navigation.

- React Router previously!
- React Navigation new!
- return isHome ? <HomeScreen> : <SettingsScreen>
- Other outdated libraries...

React Navigation Installation

Just a few dependencies...

```
npm install @react-navigation/native react-native-screens react-native-paper
react-native-safe-area-context react-native-gesture-handler
react-native-reanimated @react-navigation/native-stack
@react-navigation/drawer @react-navigation/bottom-tabs
```

This is done for you on the homeworks.

Beware of your auto-imports!

React Navigation

We will use...

- Tab Navigation: @react-navigation/bottom-tabs
- Drawer Navigation: @react-navigation/drawer
- Stack Navigation: @react-navigation/native-stack

...others exist!

Navigation Basics

- Must be nested inside of a NavigationContainer
- Create navigators via a function createNAVIGATOR()
 e.g. createBottomTabNavigator()
- Navigators consist of a *navigator* and a set of *screens*

```
<NavigationContainer>
  <SomeNav.Navigator>
    <SomeNav.Screen name="Bookstore" component={BookstoreScreen}/>
    <SomeNav.Screen name="Book" component={BookScreen}/>
    </SomeNav.Navigator>
  </NavigationContainer>
```

Navigation Basics

- useNavigation is a custom React hook that can be used to help us navigate
 - Supports navigate, reset, goBack among others
- Information can be passed from screen to screen via route params (see Native Stack Navigator example)
- Navigators can be styled
- Navigators can be nested

Tab Navigation

Drawer Navigation

Stack Navigation

Stack Navigation

Can push a screen onto the history stack via navigation.push(screenName, params)

- screenName is the name of the screen to navigate to, e.g. Book
- params is an optional object of parameters to pass to the receiving screen.
- params is recieved as props.route.params

Nested Navigation

- Navigators can be nested.
 - Stack in Tabs
 - Stack in Drawer
 - Stack in Tabs in Drawer (e.g. Example Below)
 - Stack in Stack in Tabs
 - Stack in Stack in Stack in Stack
- Make use of the headerShown option!

A Note on Expo

Expo is a library for quickly getting started with React Native projects. No need to...

- cocoa pods install X
- maven/gradle building X
- react native linking X

You may need to use specific expo libraries, such as

@expo/vector-icons

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Questions?