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Feb 20, 2019 @ DeveloperWeek

# React Native in a native world

Neil Kimmnett

classpass

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Feb 20, 2019 @ DeveloperWeek

# React Native in a native world

Neil Kimmnett

classpass



# @neilkimmett

👋 hello

🇬🇧 from London

📱 mobile dev for 10 years



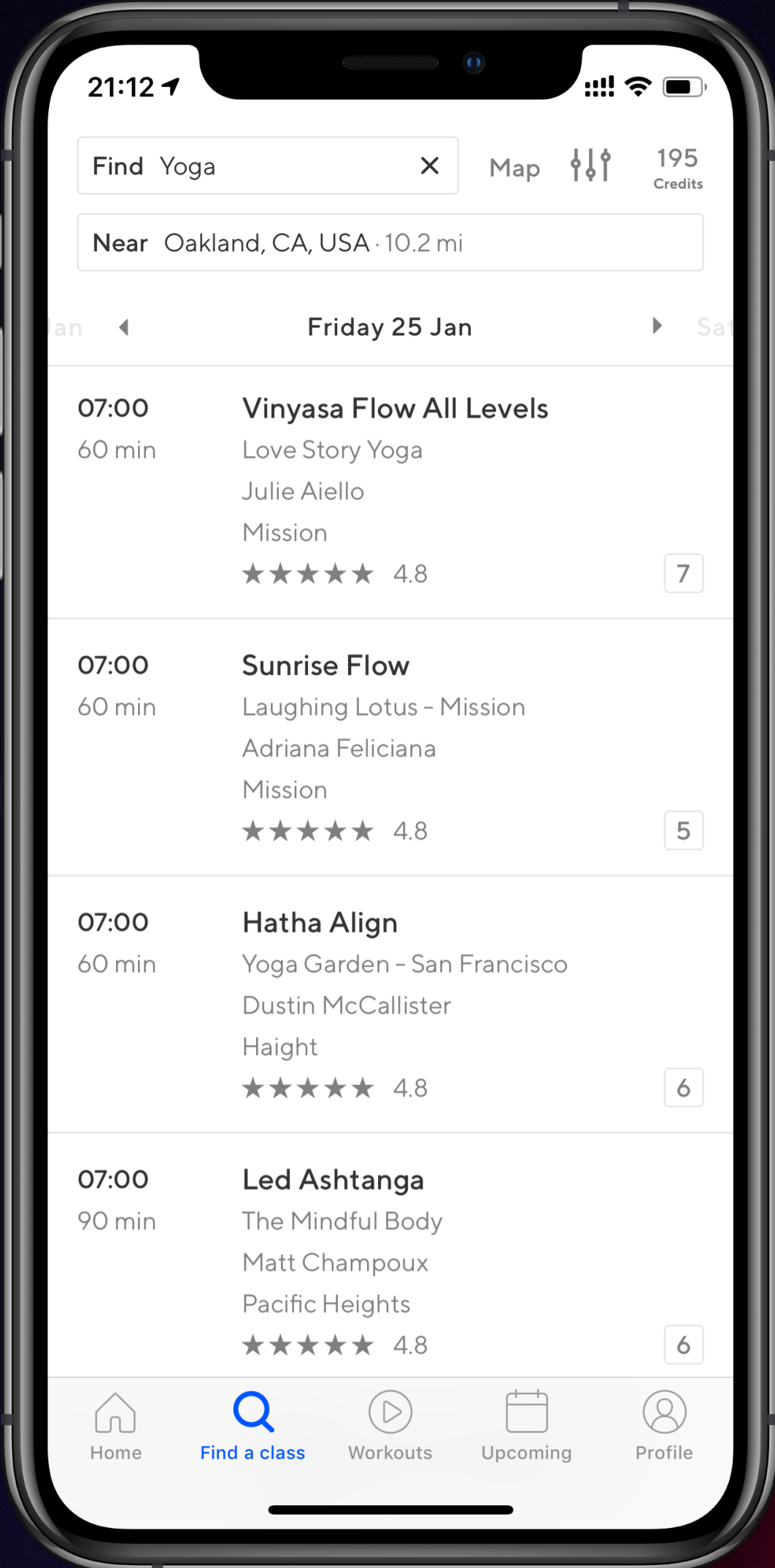


**ClassPass is the world's leading marketplace for studio fitness, gym and wellness**



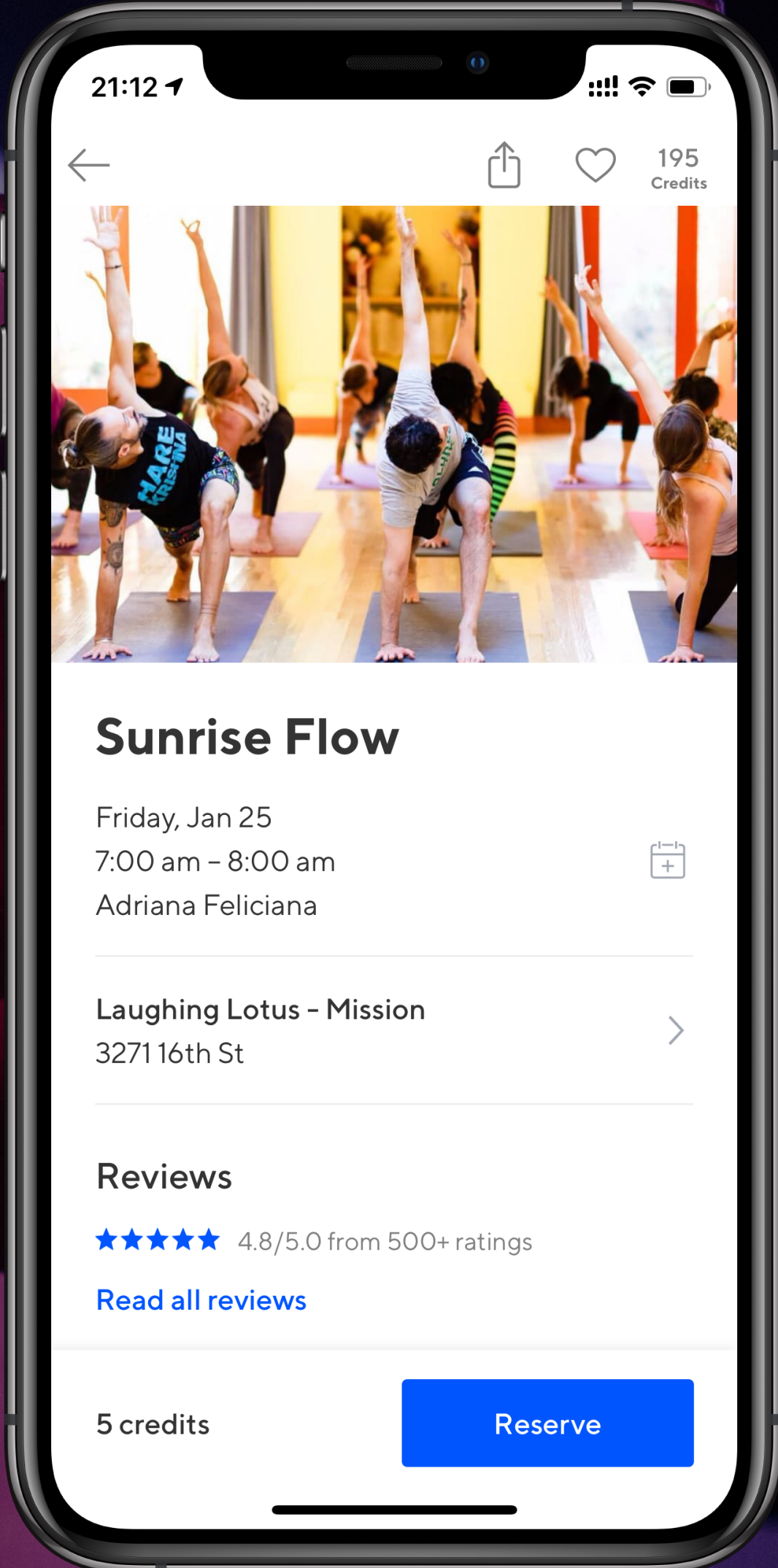
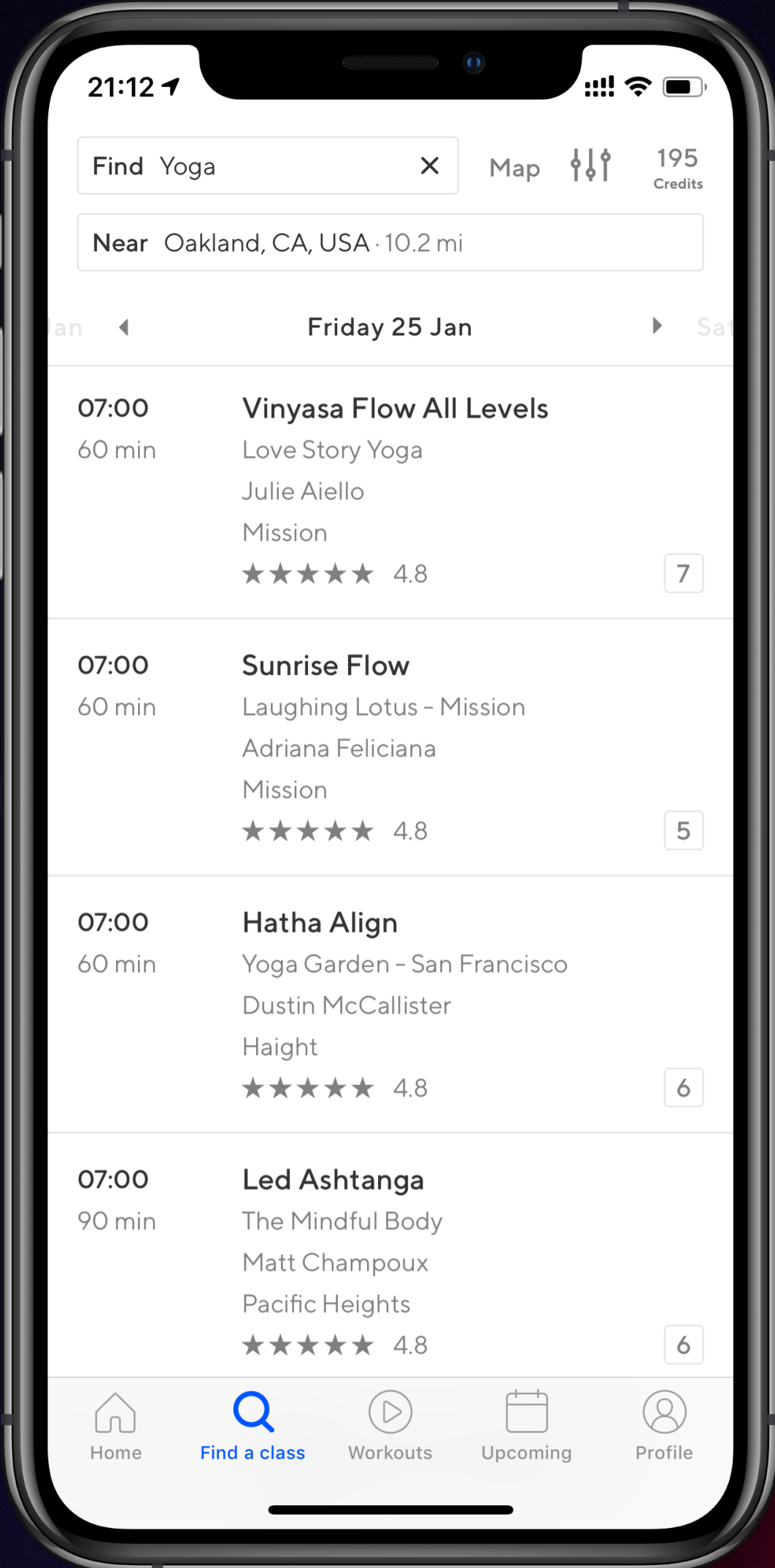


# ClassPass is the world's leading marketplace for studio fitness, gym and wellness



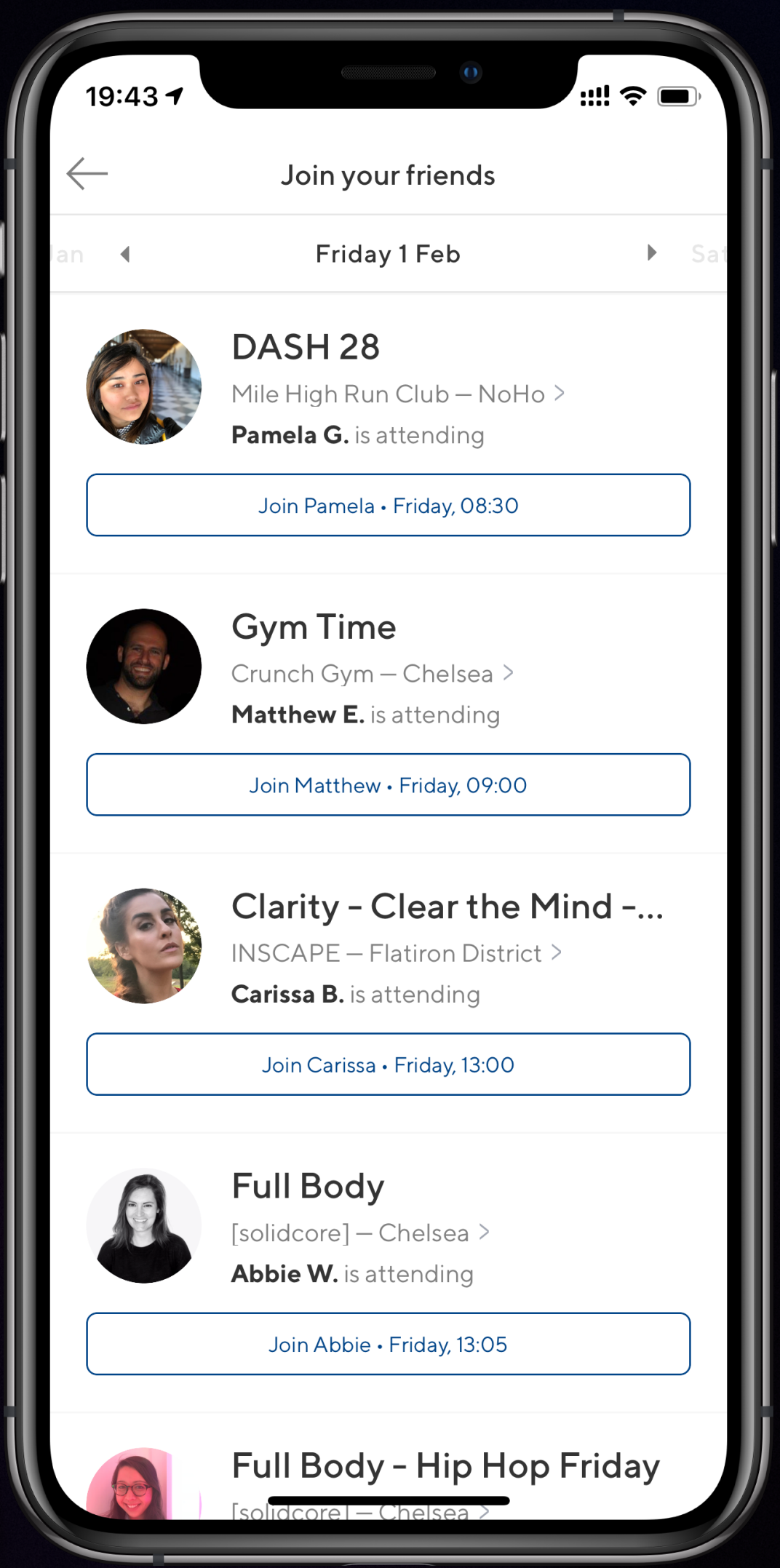
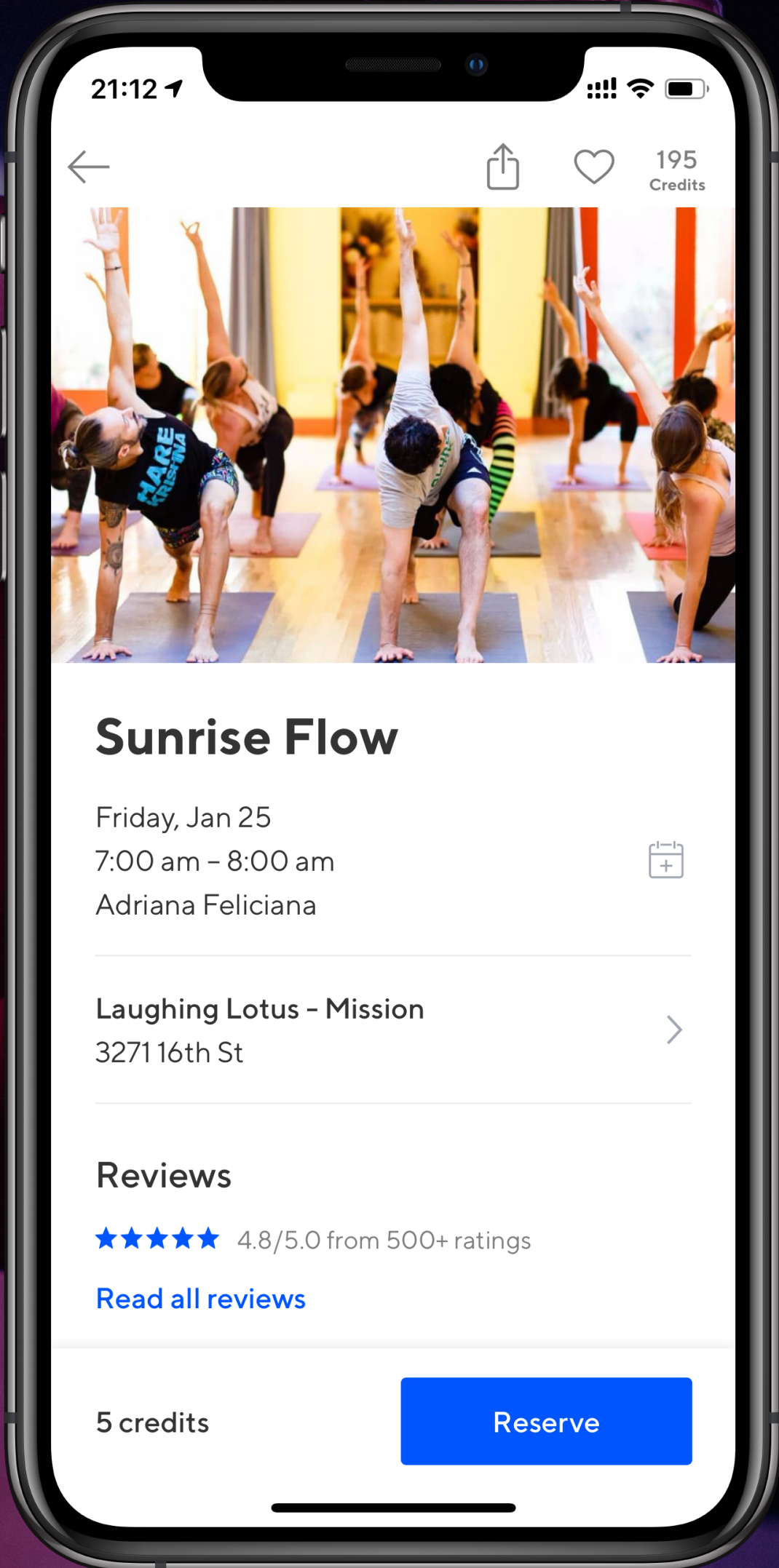
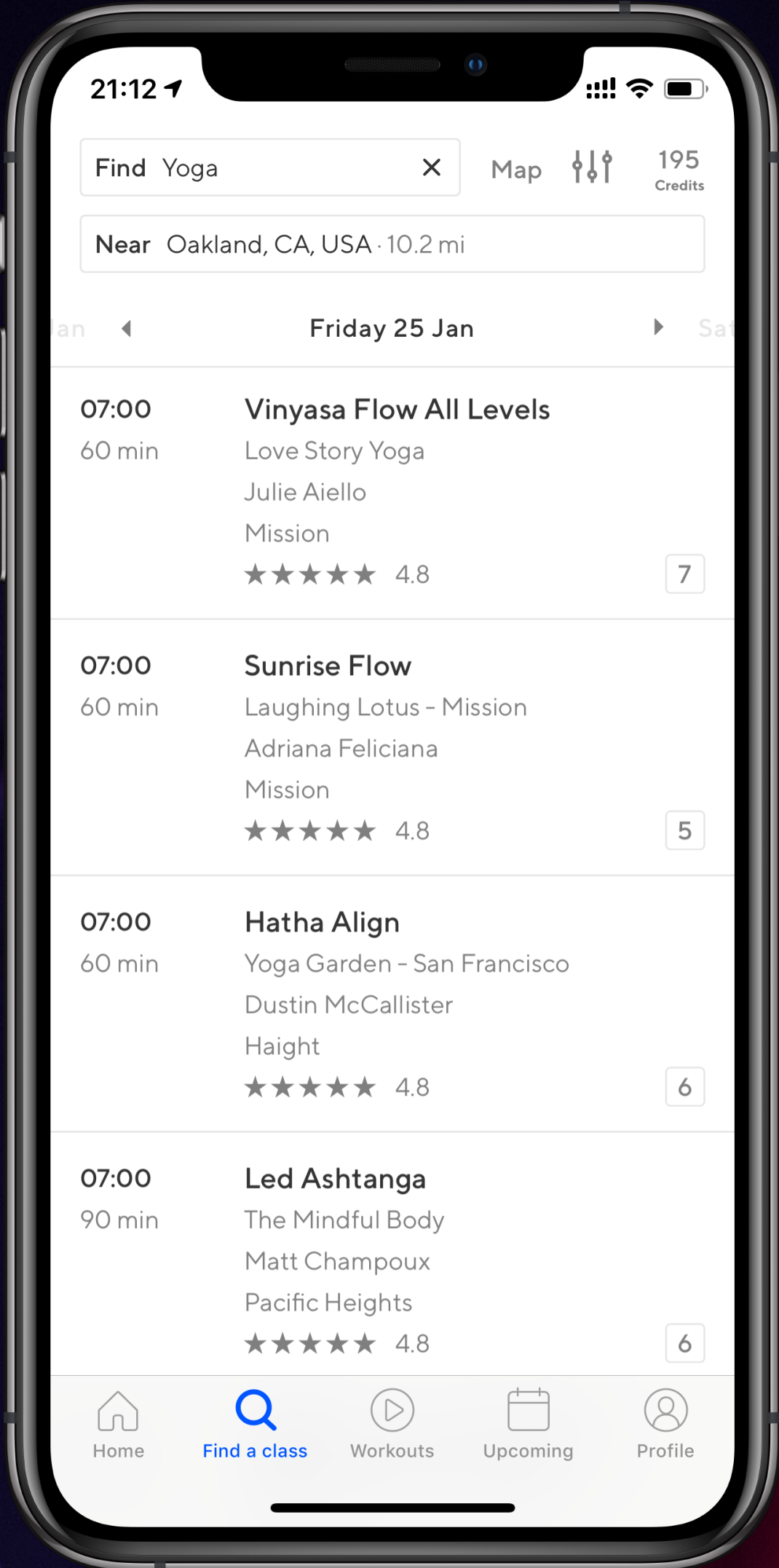


# ClassPass is the world's leading marketplace for studio fitness, gym and wellness



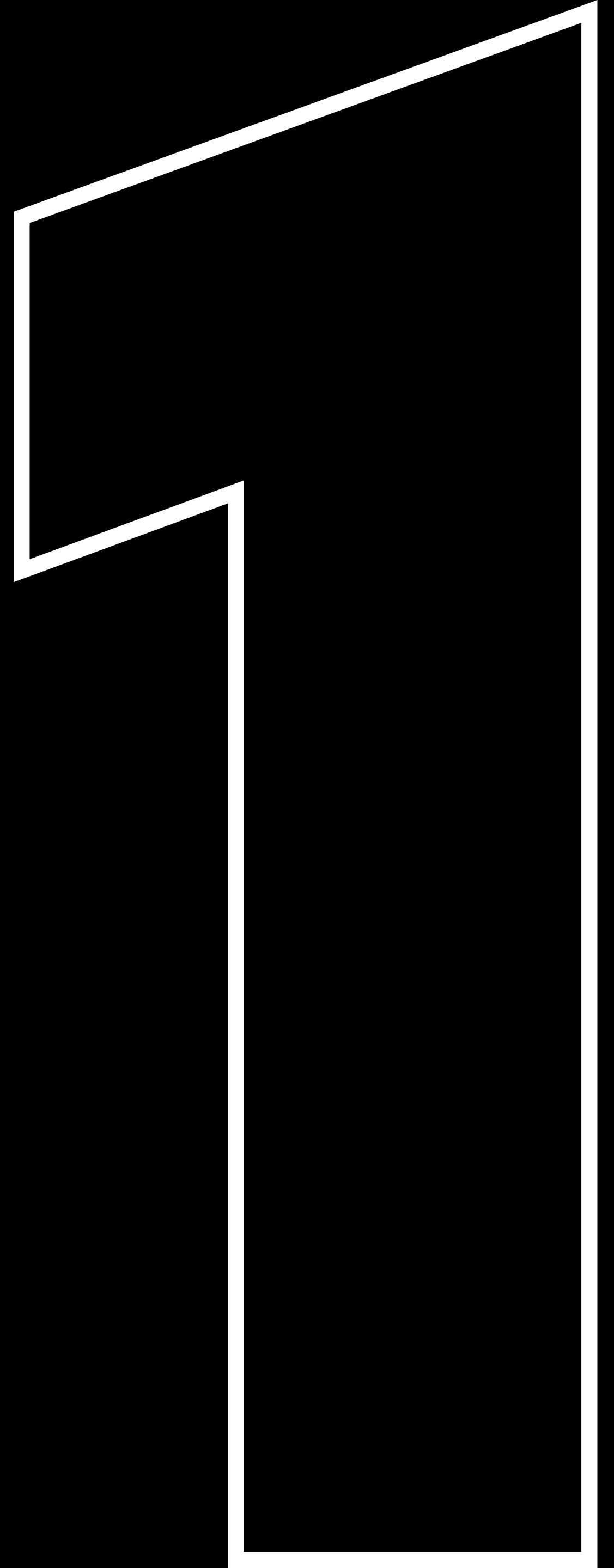


# ClassPass is the world's leading marketplace for studio fitness, gym and wellness





# What is React Native?



**How do we use  
React Native at ClassPass?**



**Should you use React Native  
in your app?**

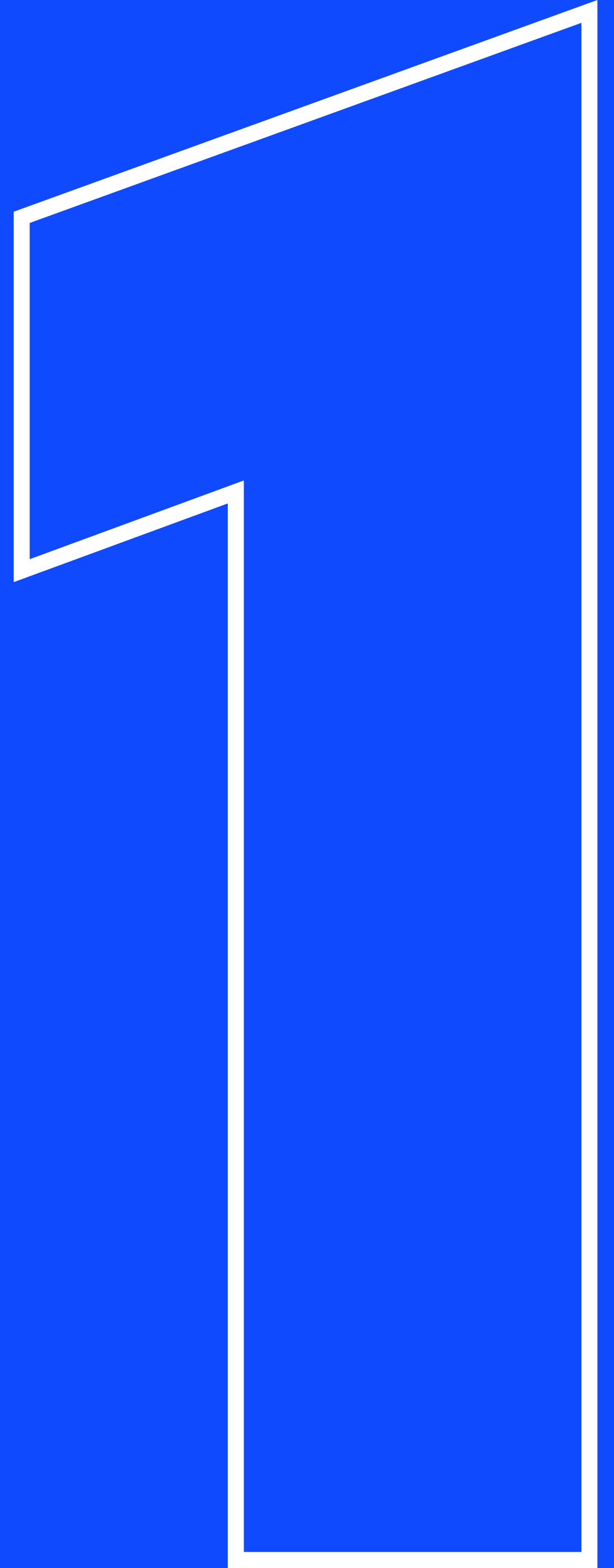




# What is React Native?



What is **React** Native?



**React**

is a

**declarative  
component-based  
UI library**

# React is declarative

**React is declarative**

Describe **what** you want,  
not **how** to create it

# React is declarative

**React is declarative**

$$\text{View} = f(\text{State})$$

**React is declarative**

# State



**“name”**

**[1, 2, 3]**



React is declarative

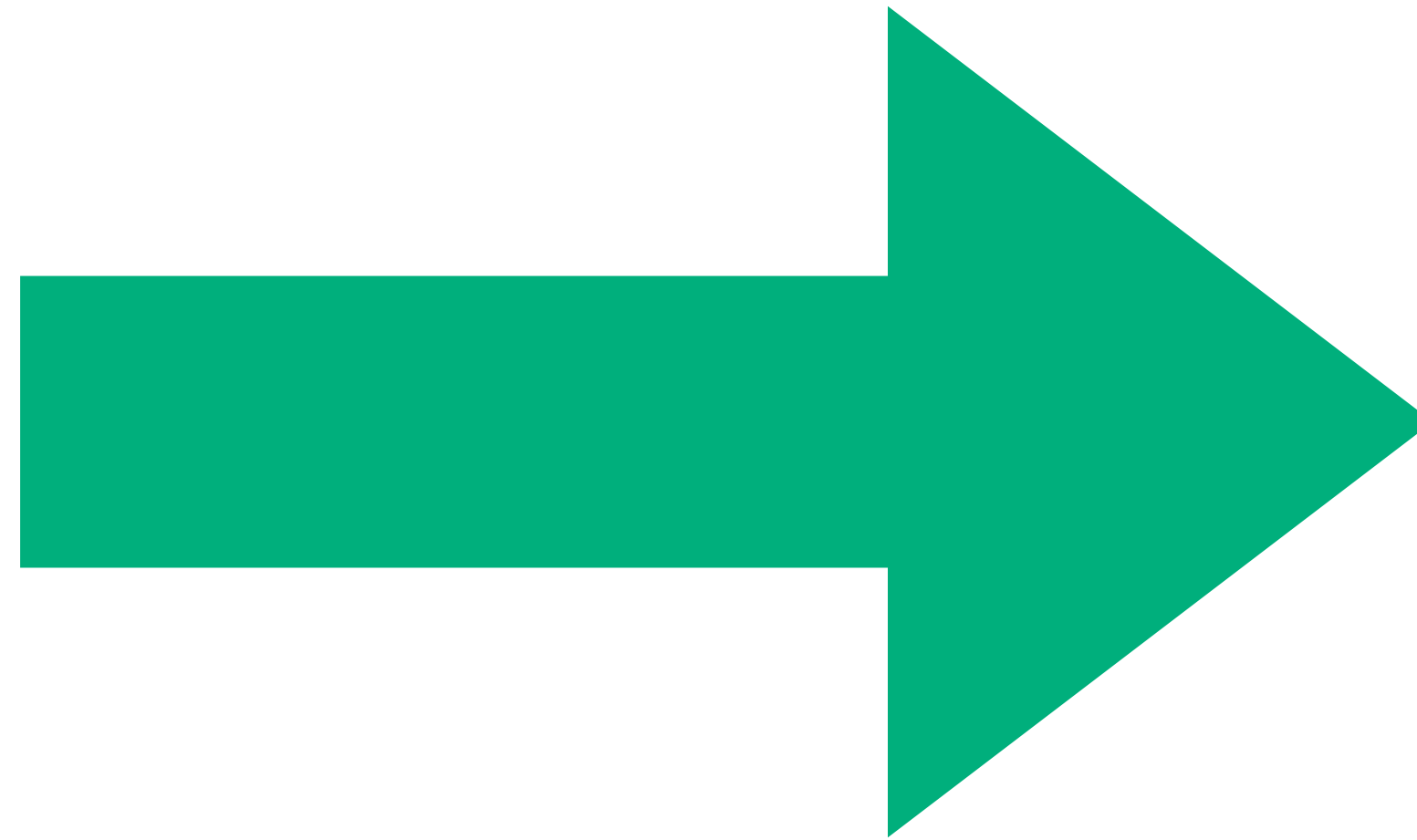
State



“name”

[1, 2, 3]

*f*



React is declarative

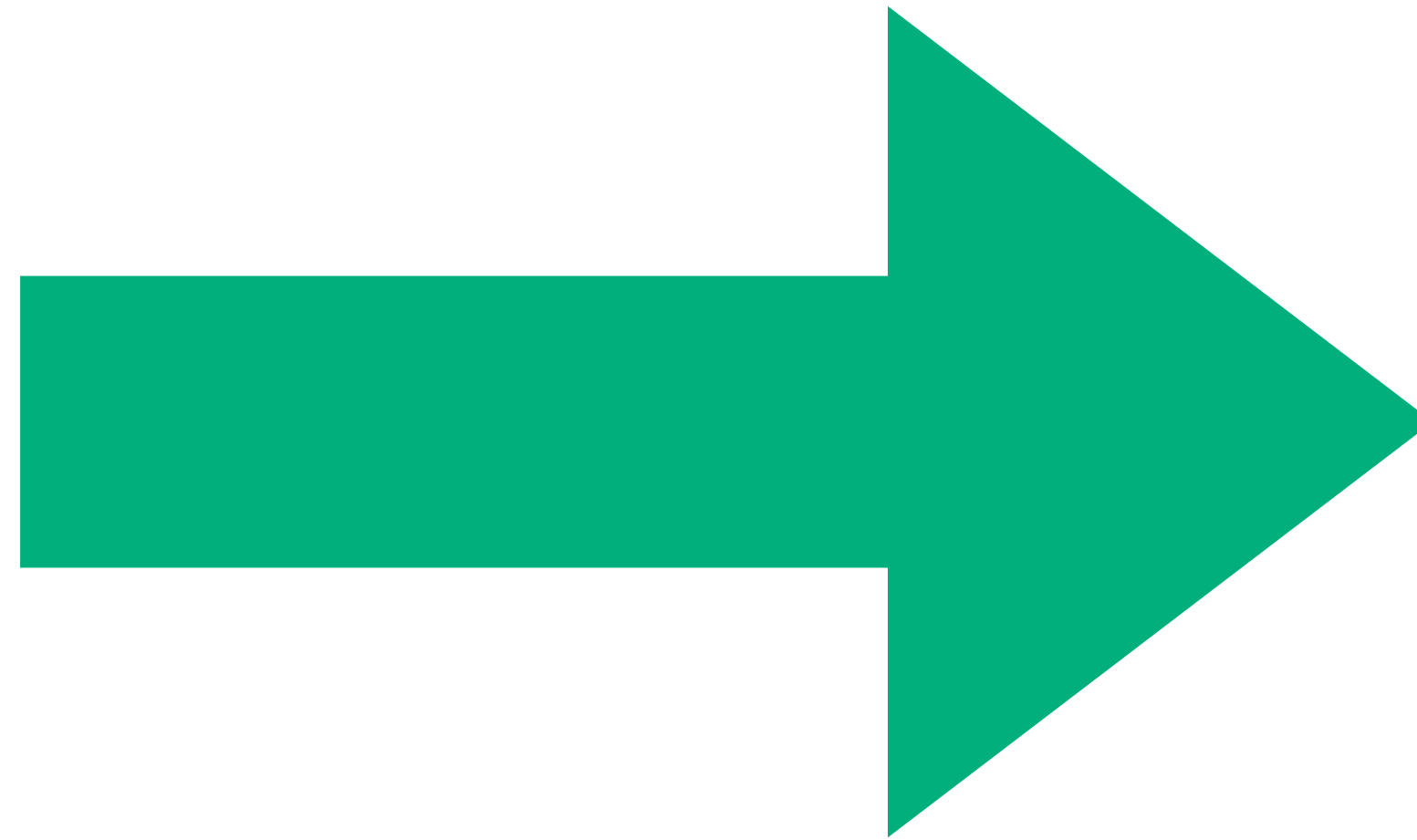
State



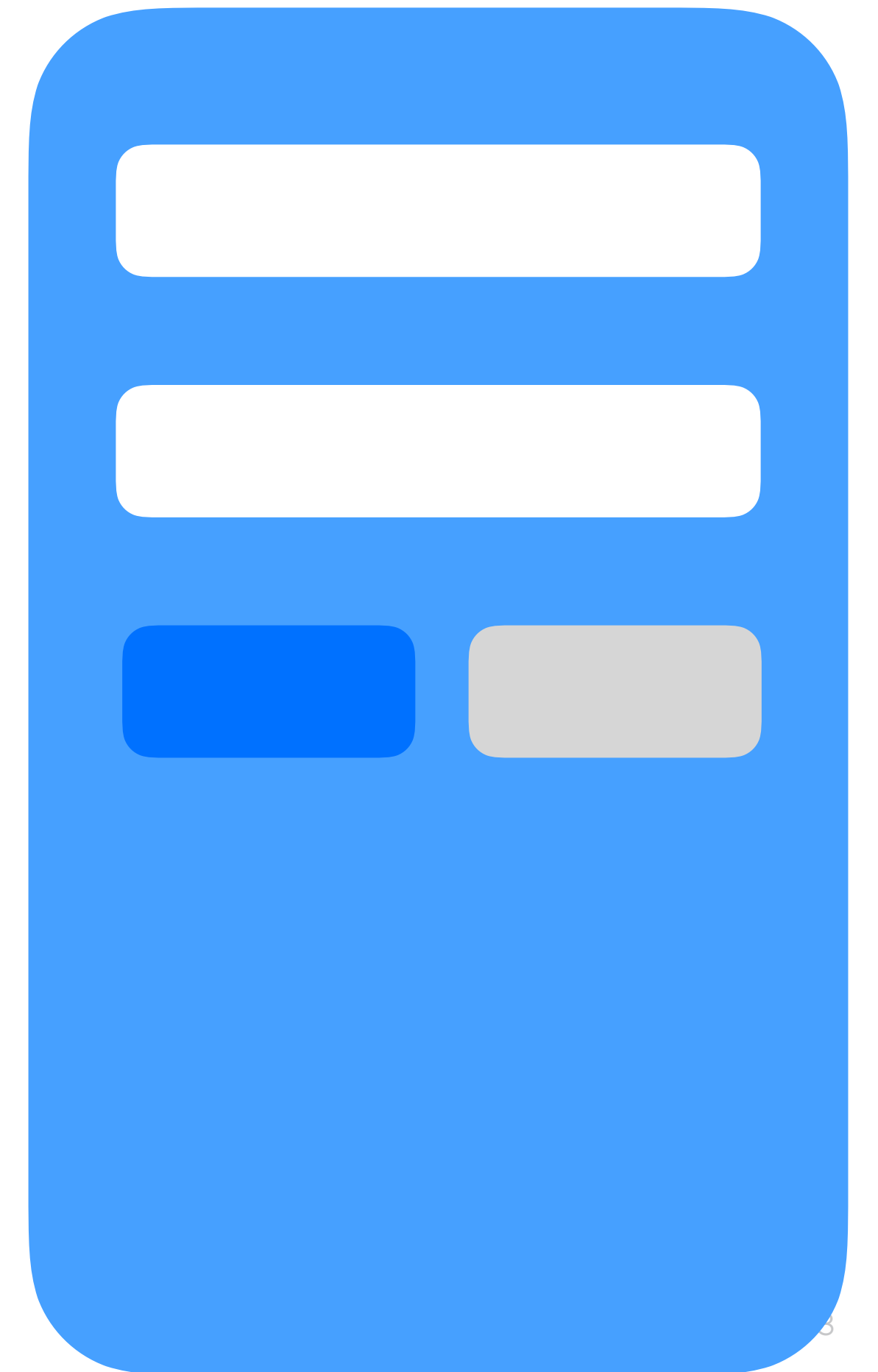
“name”

[1, 2, 3]

$f$



View



# React is not imperative

# React is not imperative

View



# React is not imperative

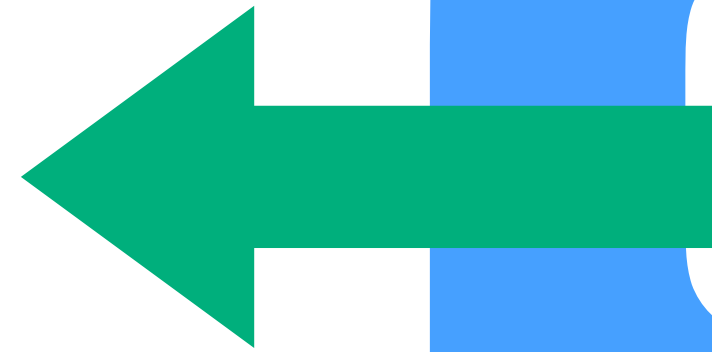
View

[1, 2, 3]

# React is not imperative

View

$f$



[1, 2, 3]

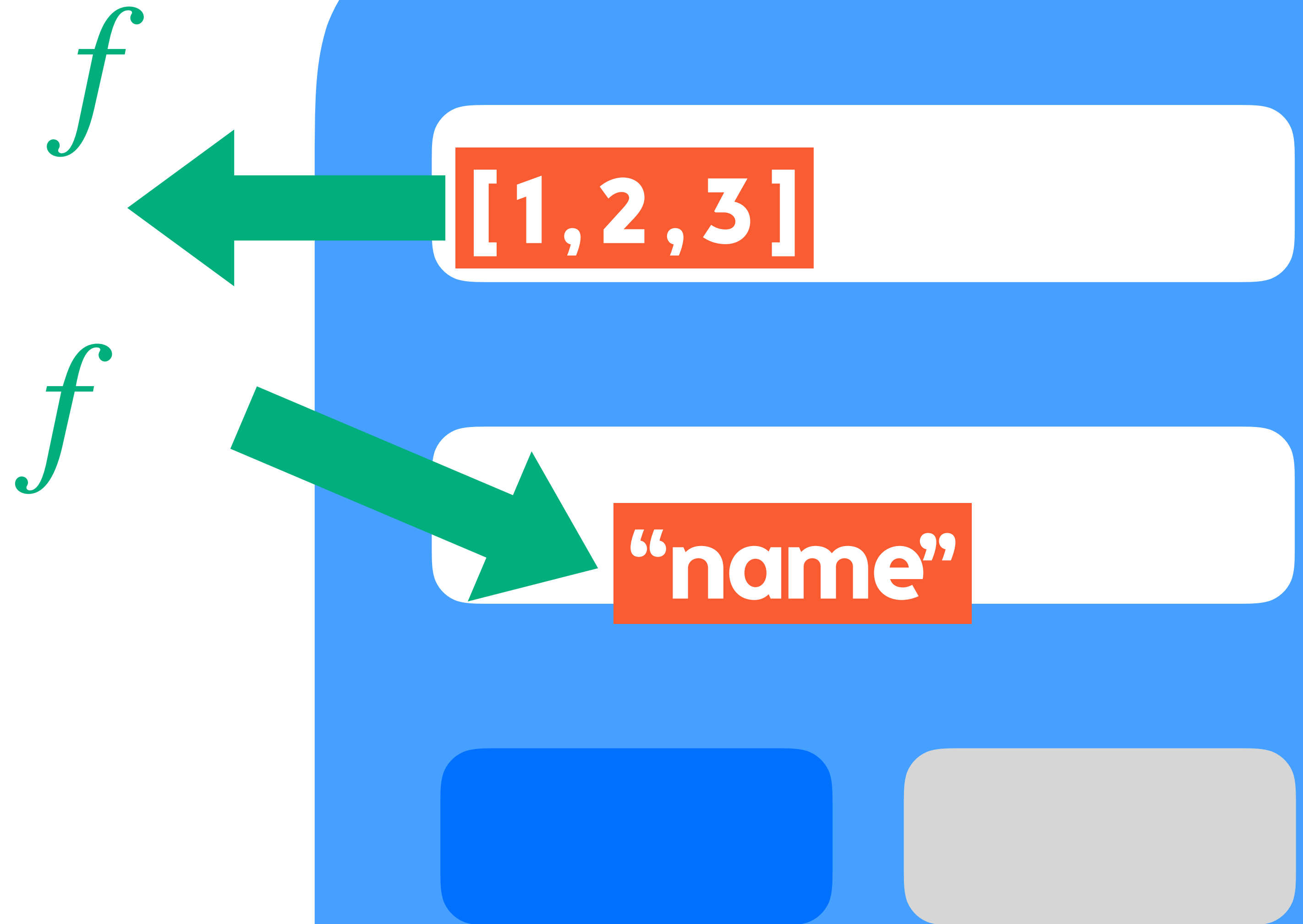
# React is not imperative

View



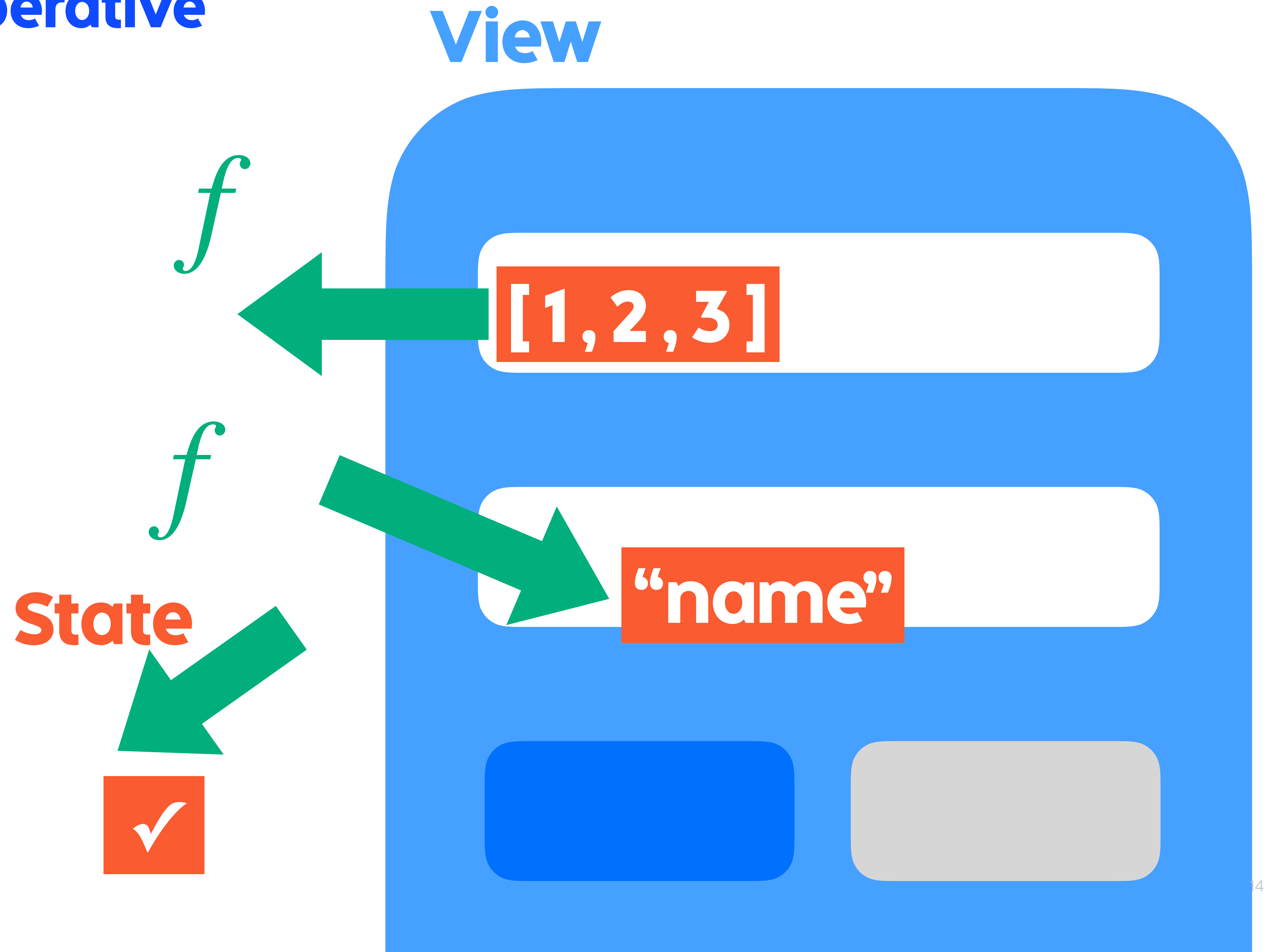
# React is not imperative

View

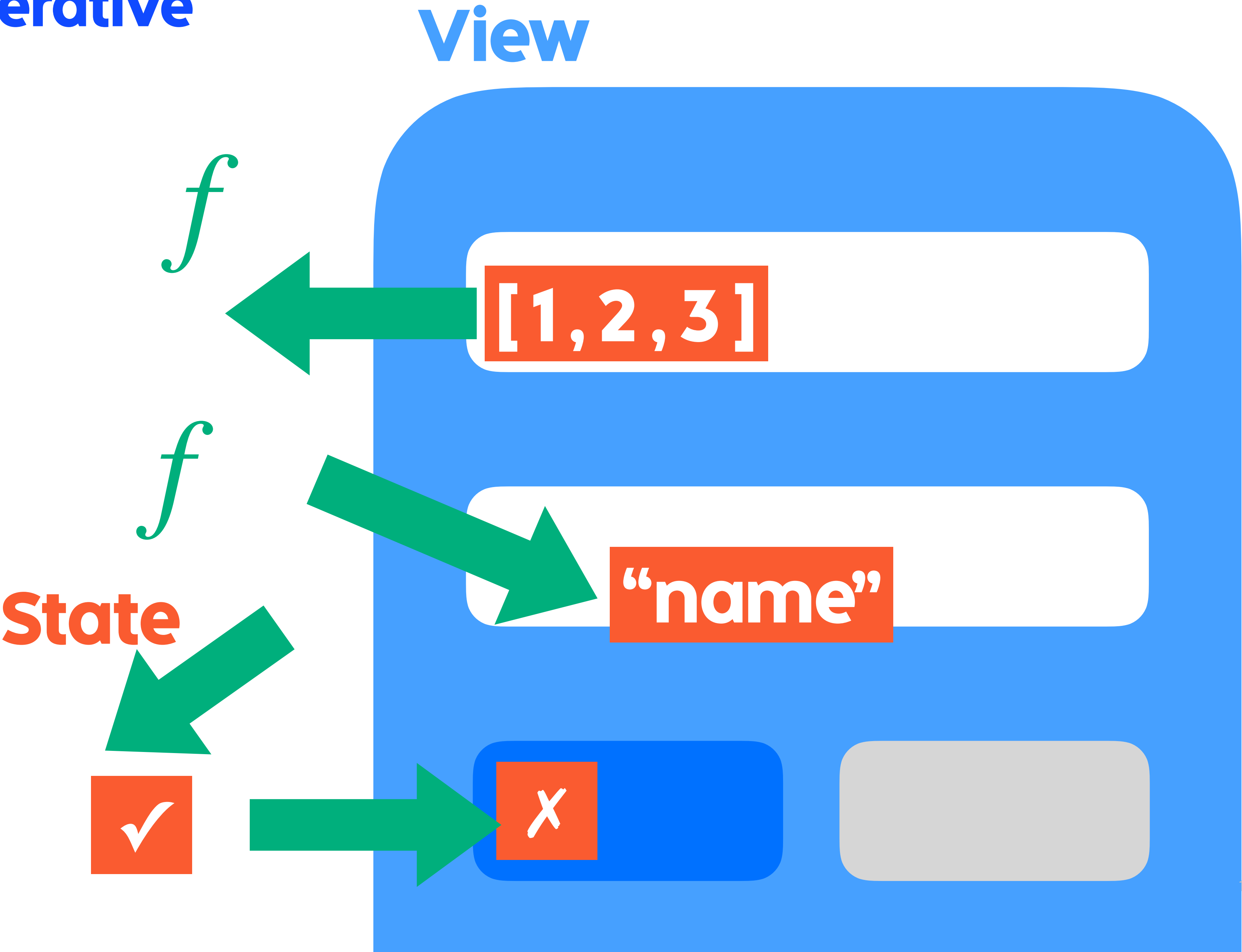




# React is not imperative



# React is not imperative



React is declarative

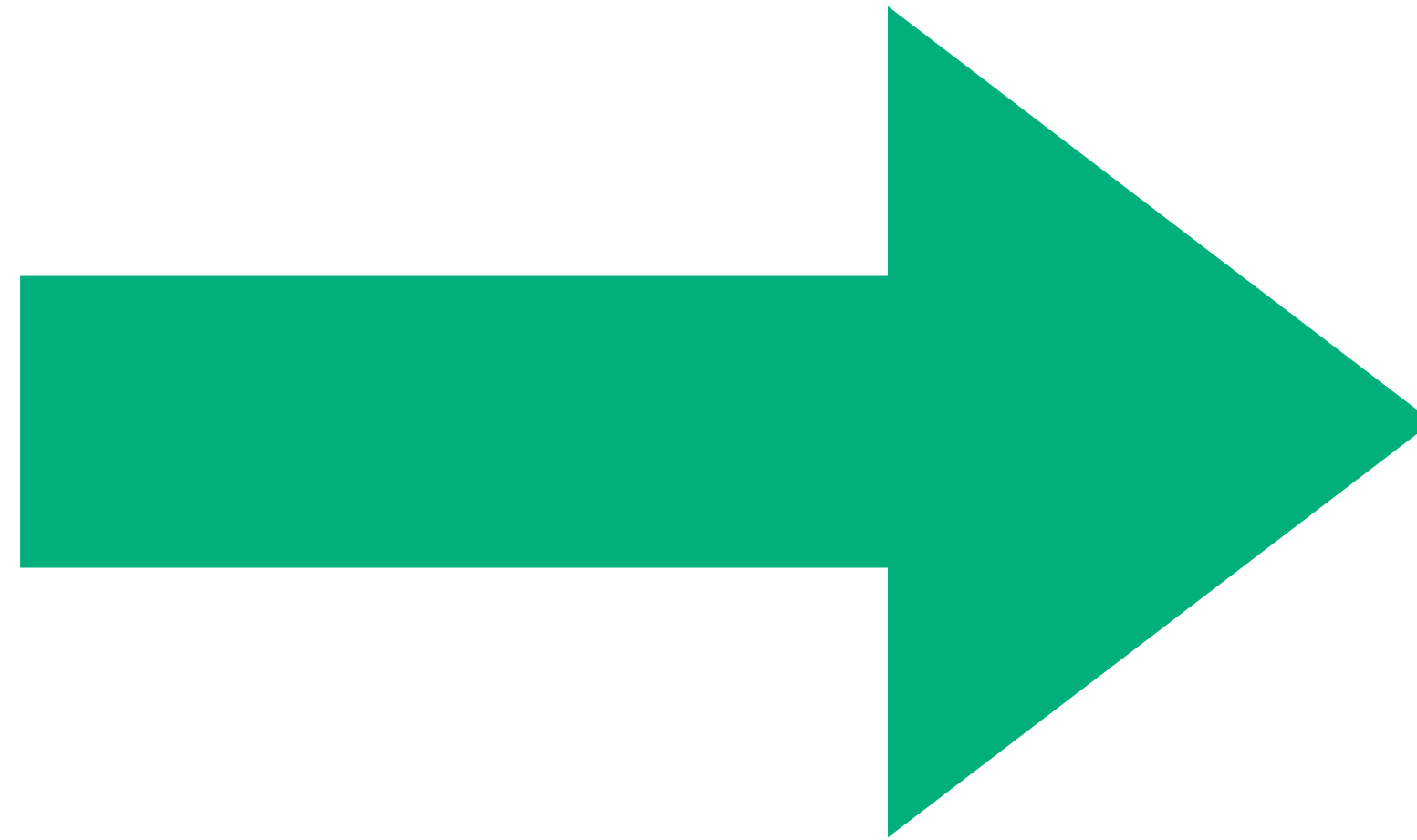
State



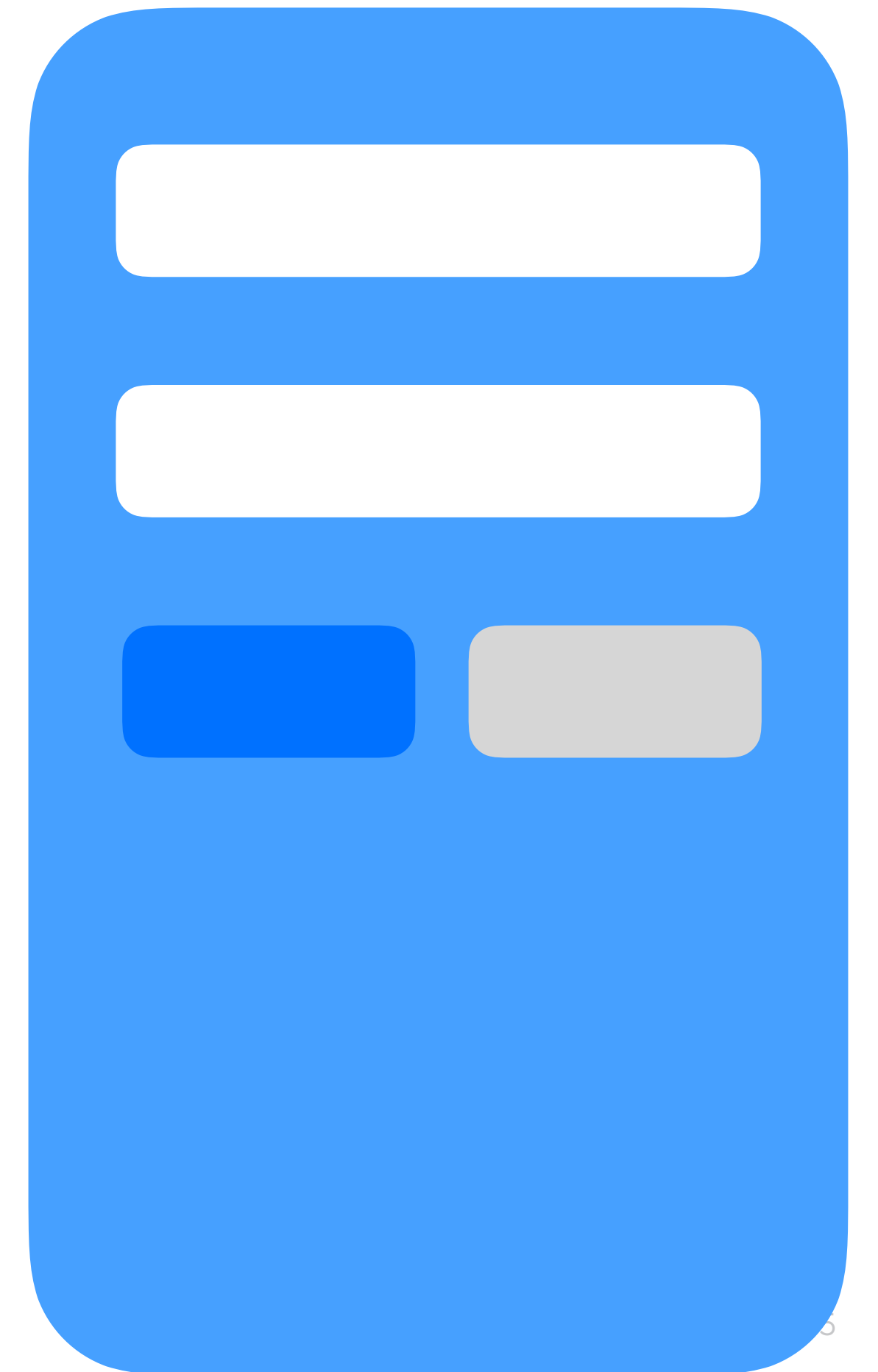
“name”

[1, 2, 3]

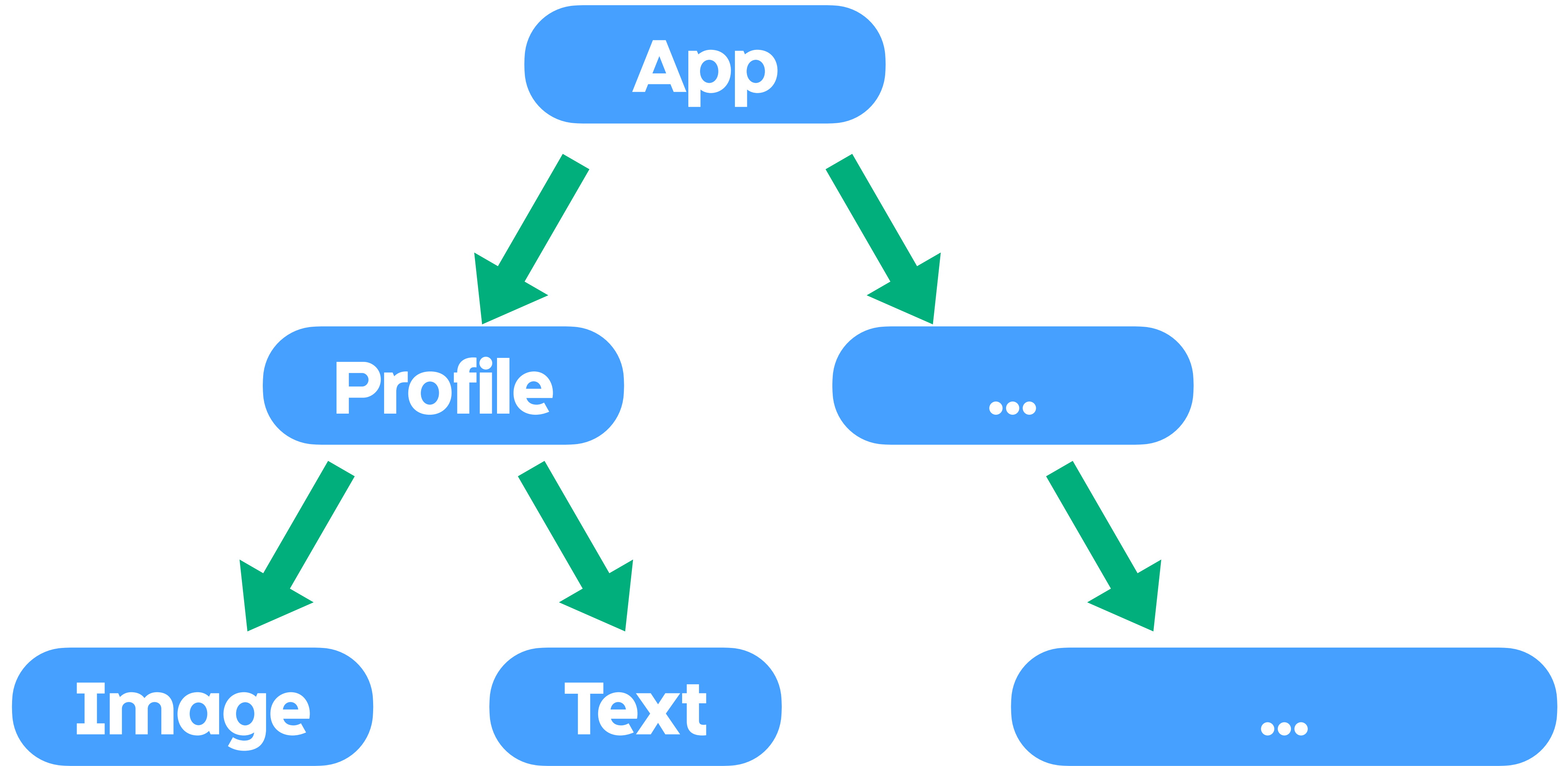
$f$



View



# React is component based



# React is component based

# React is component based

```
<Image  
  uri={this.state.image}  
/>  
<Text>  
  {this.state.name}  
</Text>
```

# React is component based

```
render() {  
  return (  
    <Image  
      uri={this.state.image}  
    />  
    <Text>  
      {this.state.name}  
    </Text>  
  )  
}
```

## React is component based

```
class Profile extends Component {  
  render() {  
    return (  
      <Image  
        uri={this.state.image}  
      />  
      <Text>  
        {this.state.name}  
      </Text>  
    )  
  }  
}
```



**React**

is a

**declarative  
component-based  
UI library**

What is React **Native**?



**React Native**

is a

**JavaScript framework for  
writing native mobile  
apps using React**





# Why **React Native?**



# Why React Native?

## Cross-platform

Create two mobile apps from one codebase.

## Better developer experience

Hot reloading reduces length of iteration cycles because you don't have to wait for compilation.

## JavaScript

You probably have web developers on your team, writing your native app in JavaScript means they can contribute.





A React Native app  
**is a real mobile app**



# React Native rendering

**Profile**

**Image**

**Text**

# React Native rendering

**Profile**

**Image**

**Text**

**ios**

**UIImageView**

**UILabel**



# React Native rendering

**Profile**

**Image**

**Text**

**ios**

**UIImageView**

**UILabel**

**Android**

**ImageView**


**TextView**

# React Native rendering

Carrier 8:51 PM

←

## Log in

 Log in with Facebook

or

Email address


Password

Log in

Forgot your password?

8:43

← Login

 Log in with Facebook

or

Email address

Password

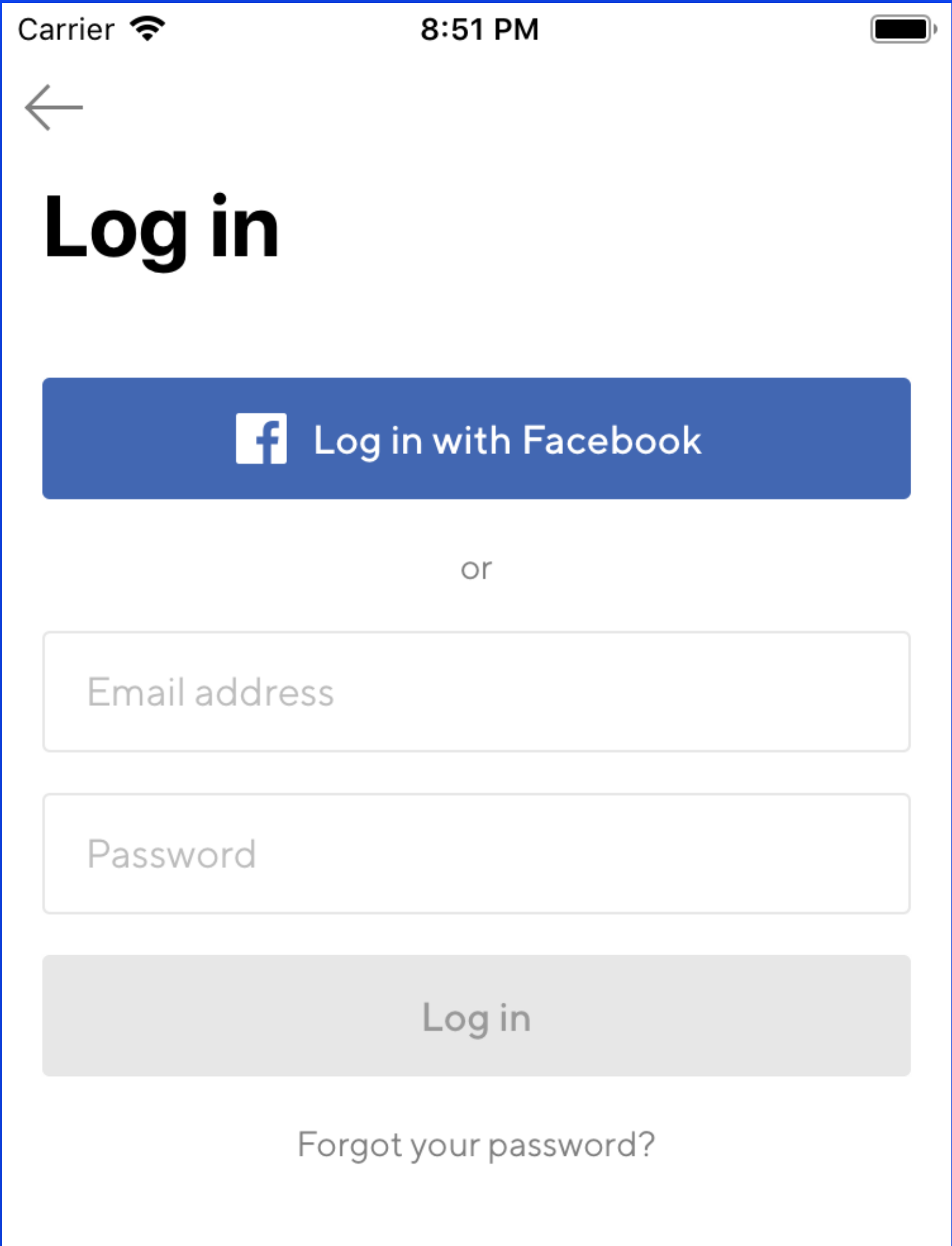
Log in

Forgot your password?

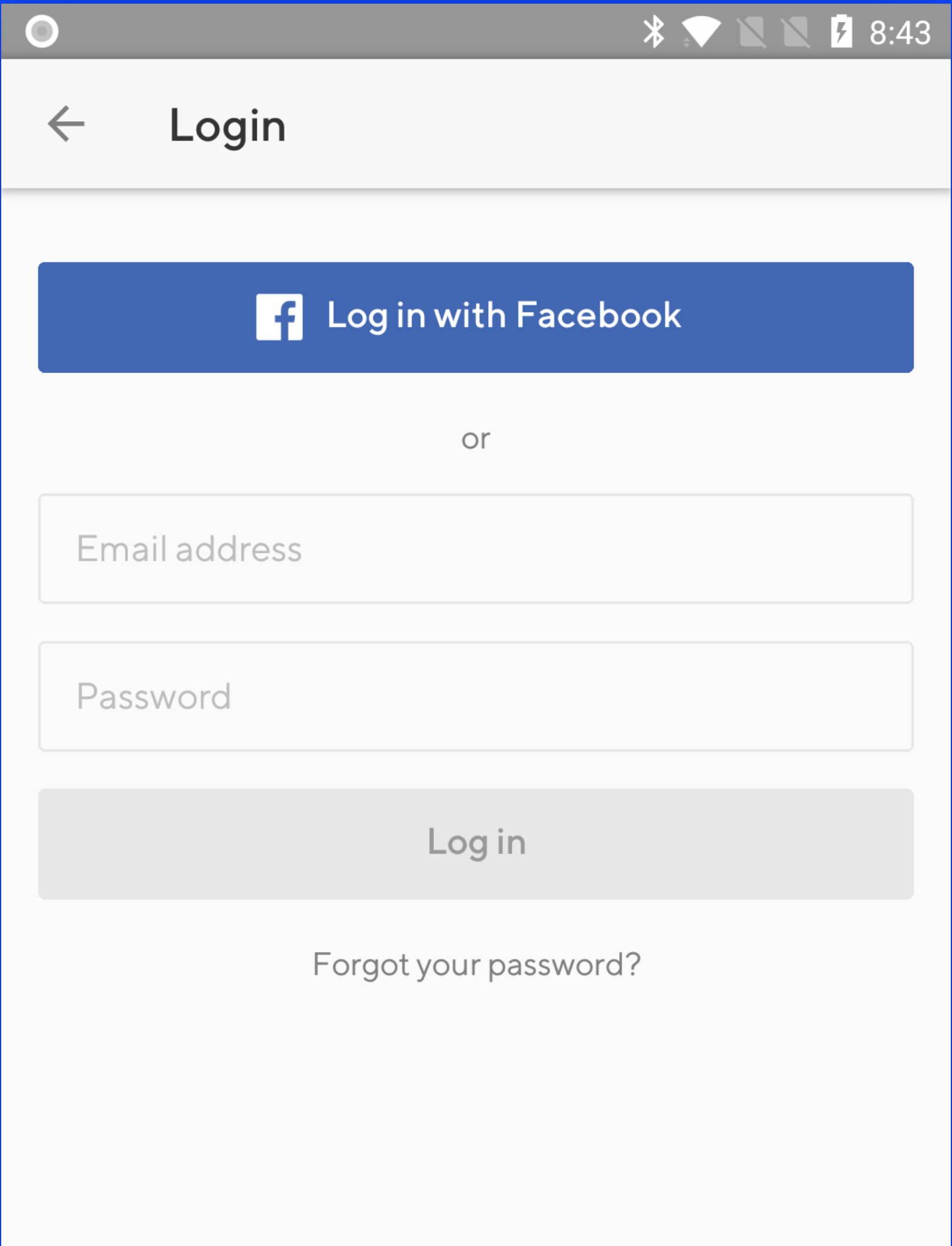
classpass

# React Native rendering

ios



Android



classpass

**How do we use  
React Native at ClassPass?**



# Mobile at ClassPass

# Mobile at ClassPass

- iOS app started in 2014

# Mobile at ClassPass

- iOS app started in 2014
- Android app started in 2015

# Mobile at ClassPass

- iOS app started in 2014
- Android app started in 2015
- React Native introduced in 2017



# Mobile at ClassPass

- iOS app started in 2014
- Android app started in 2015
- React Native introduced in 2017
- around 15 mobile developers

# monorepo



**classpass-mobile**



**android**

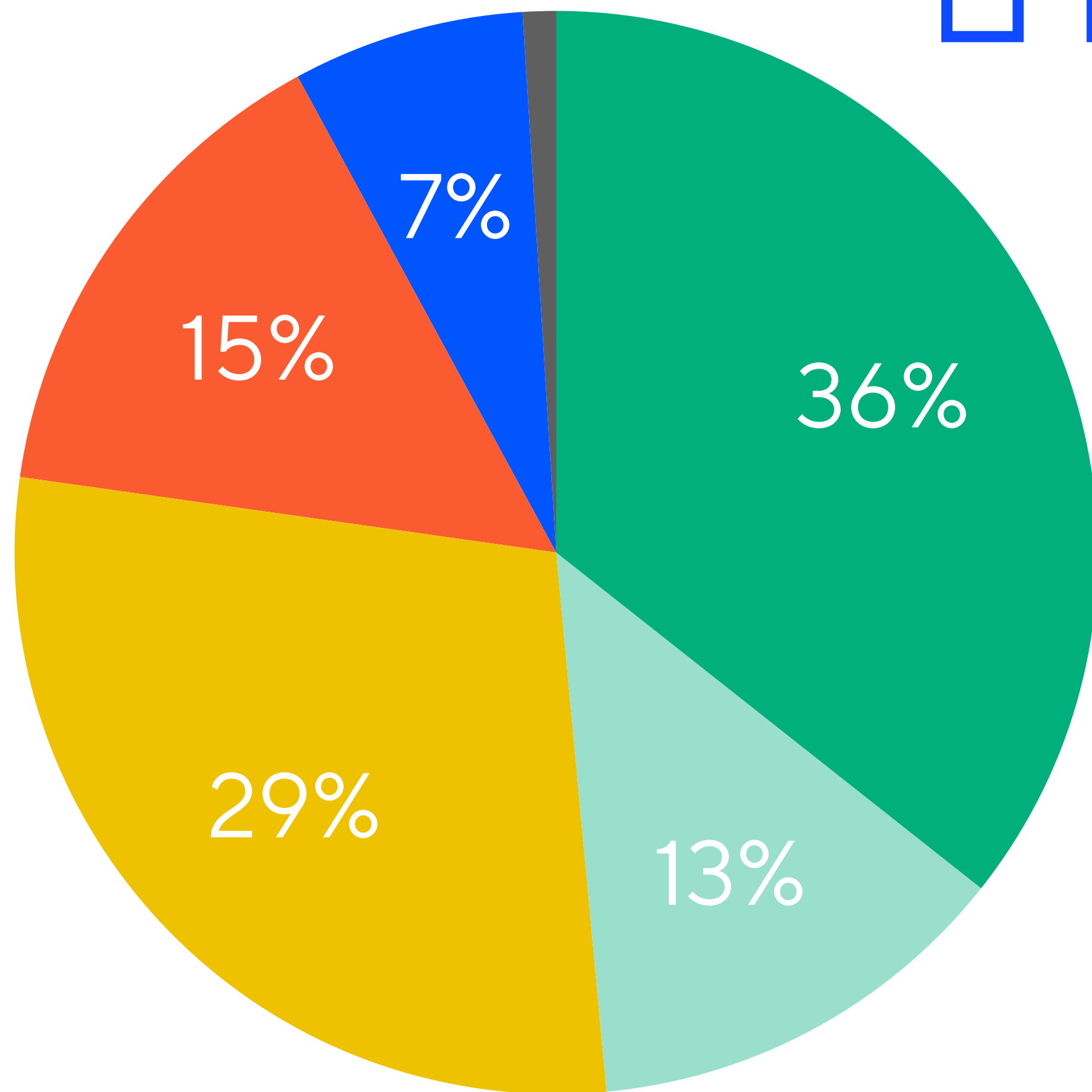


**ios**



**react-native**

# monorepo



● Java ● Kotlin ● Swift ● Objective-C ● JavaScript ● Scripts

# React Native at ClassPass

1

Venue detail

2

Sign up flow

3

Schedule list

# React Native at ClassPass

1

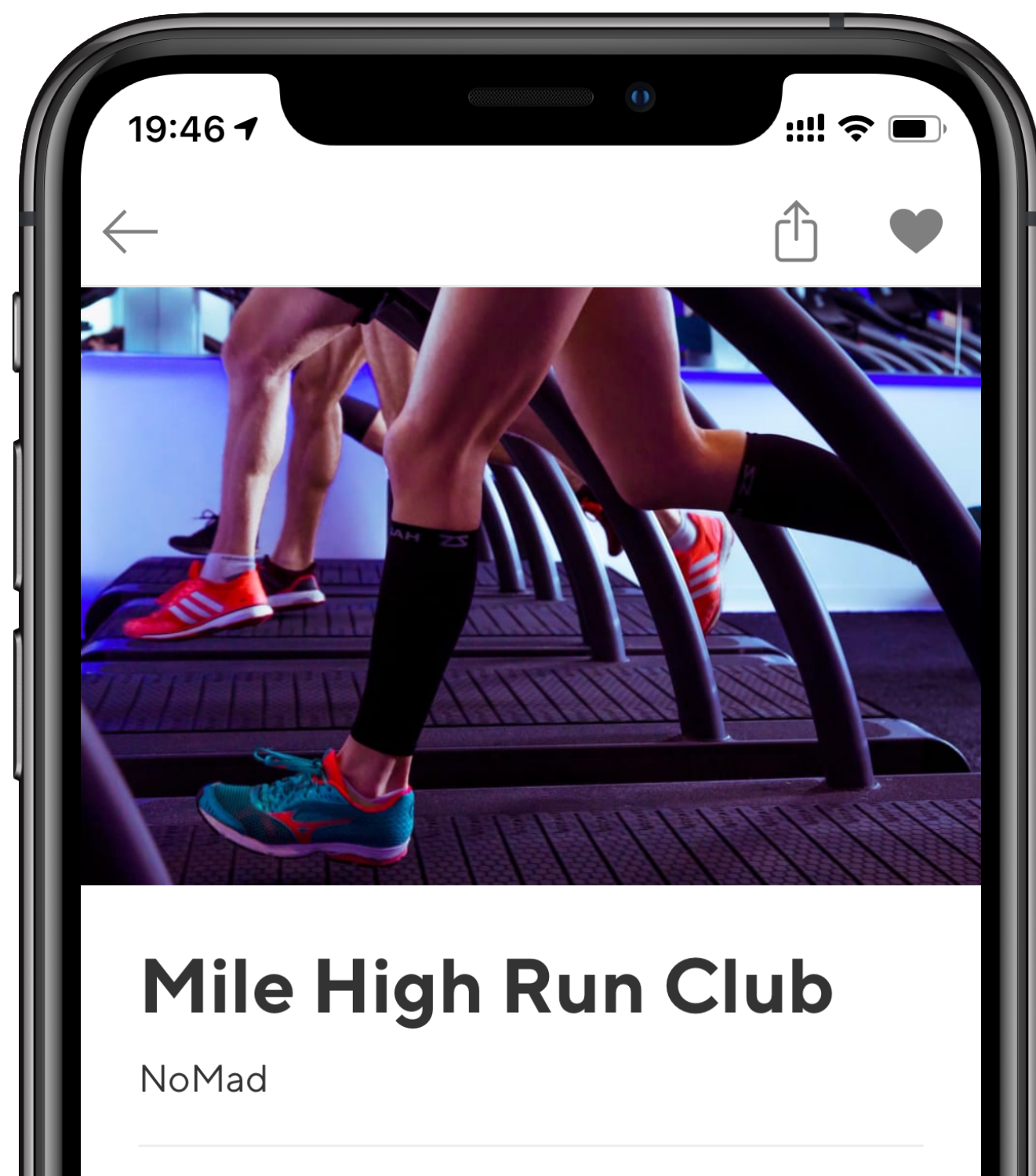
Venue detail

2

Sign up flow

3

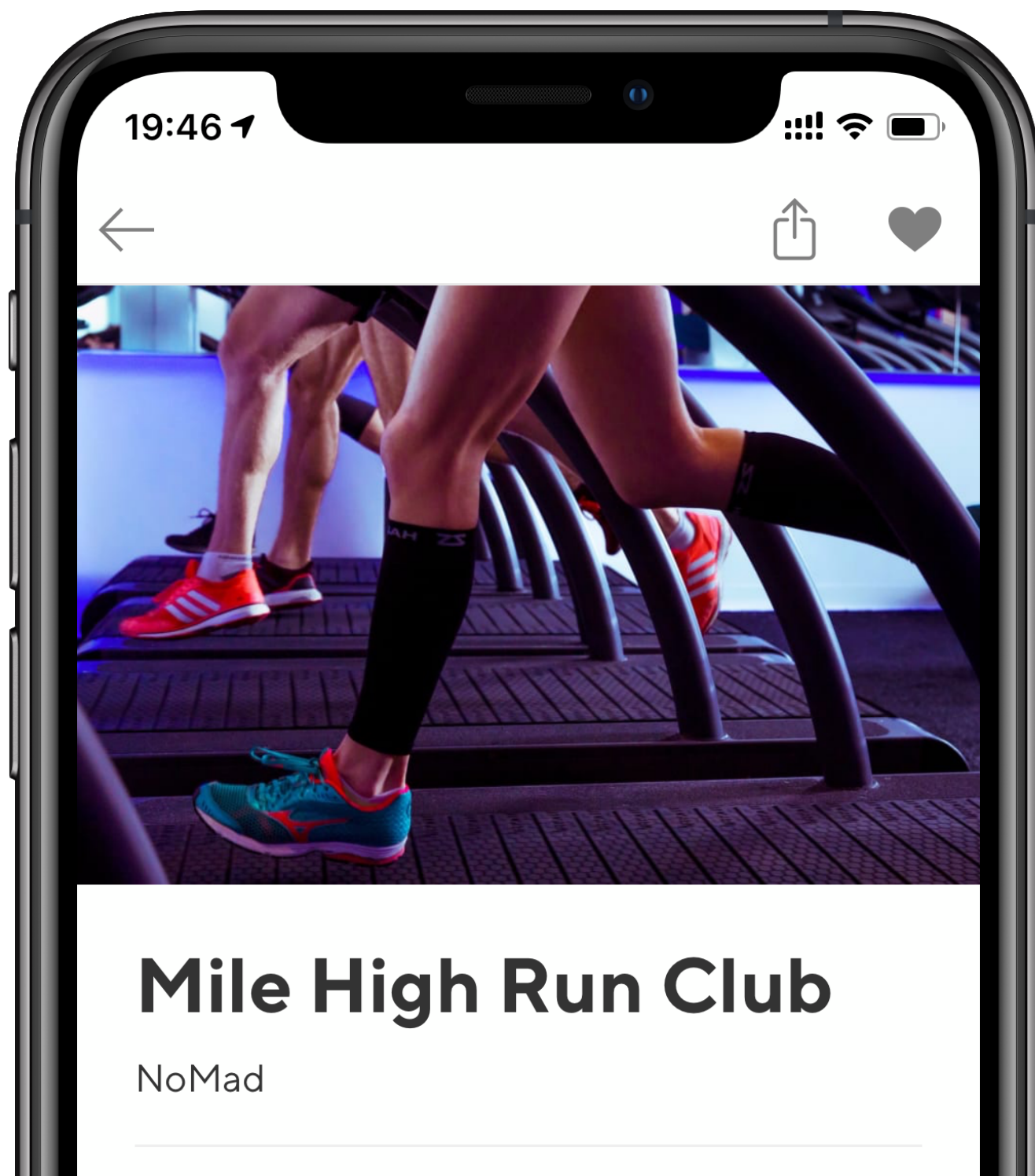
Schedule list



# React Native at ClassPass

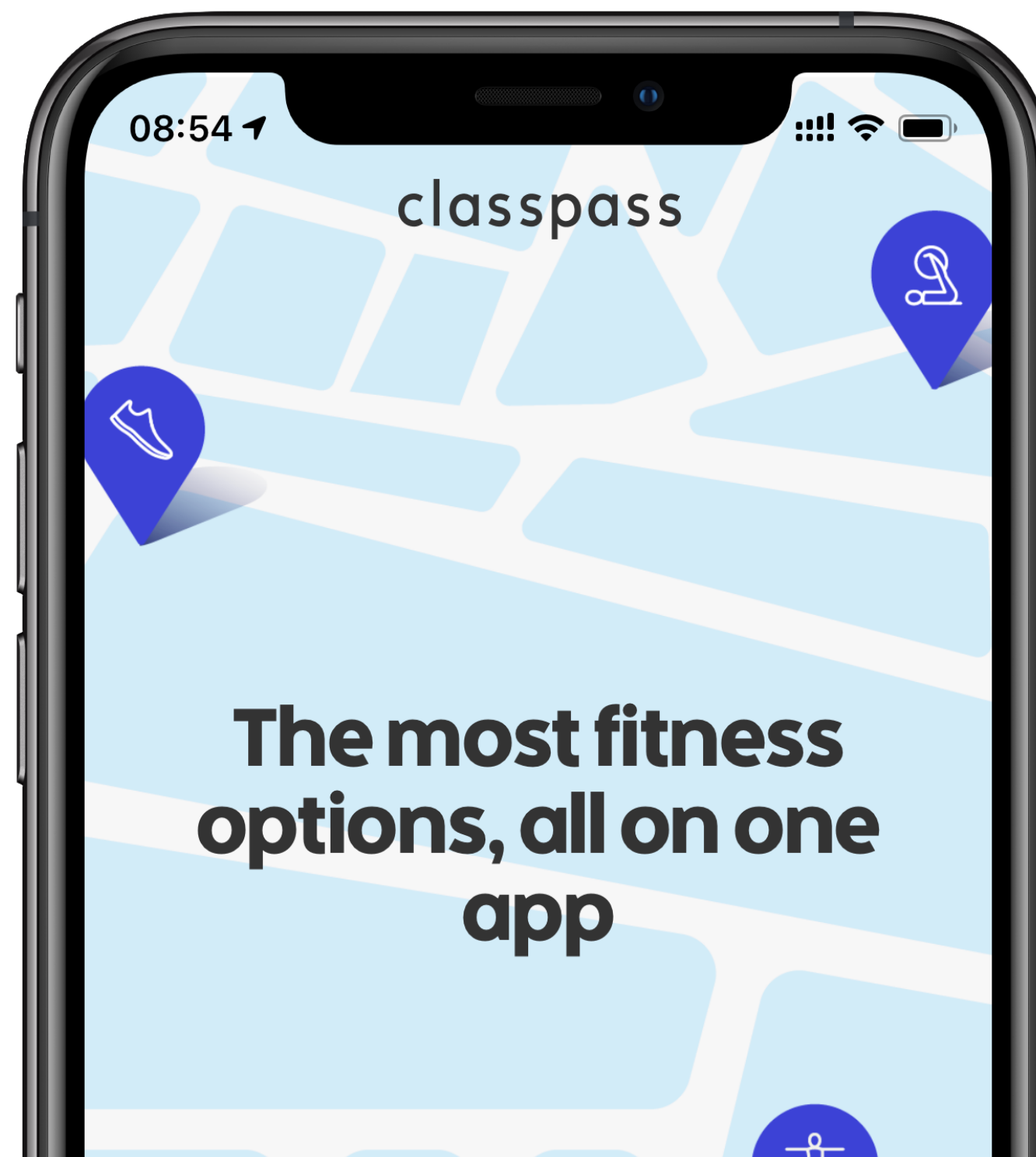
1

Venue detail



2

Sign up flow



3

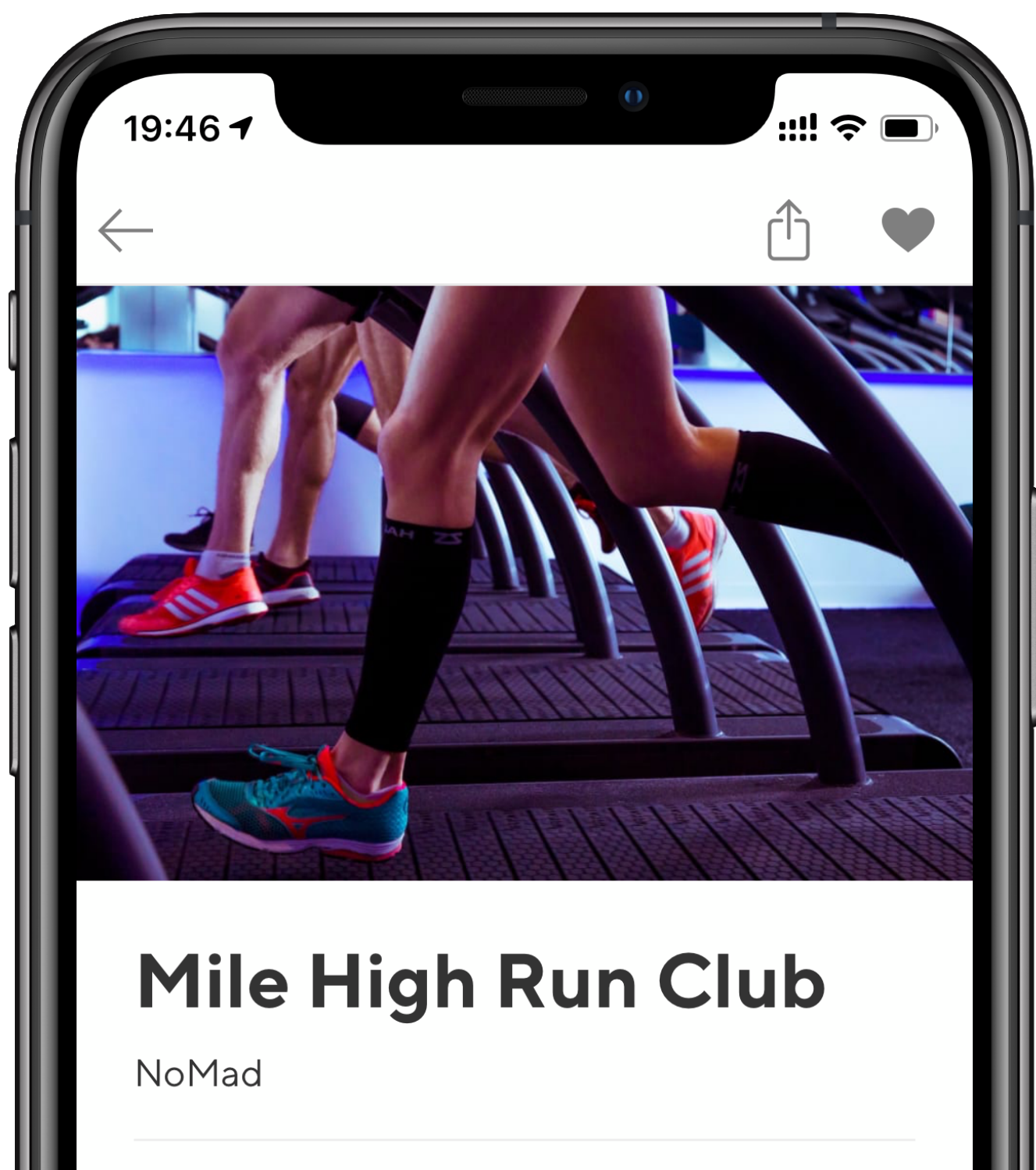
Schedule list



# React Native at ClassPass

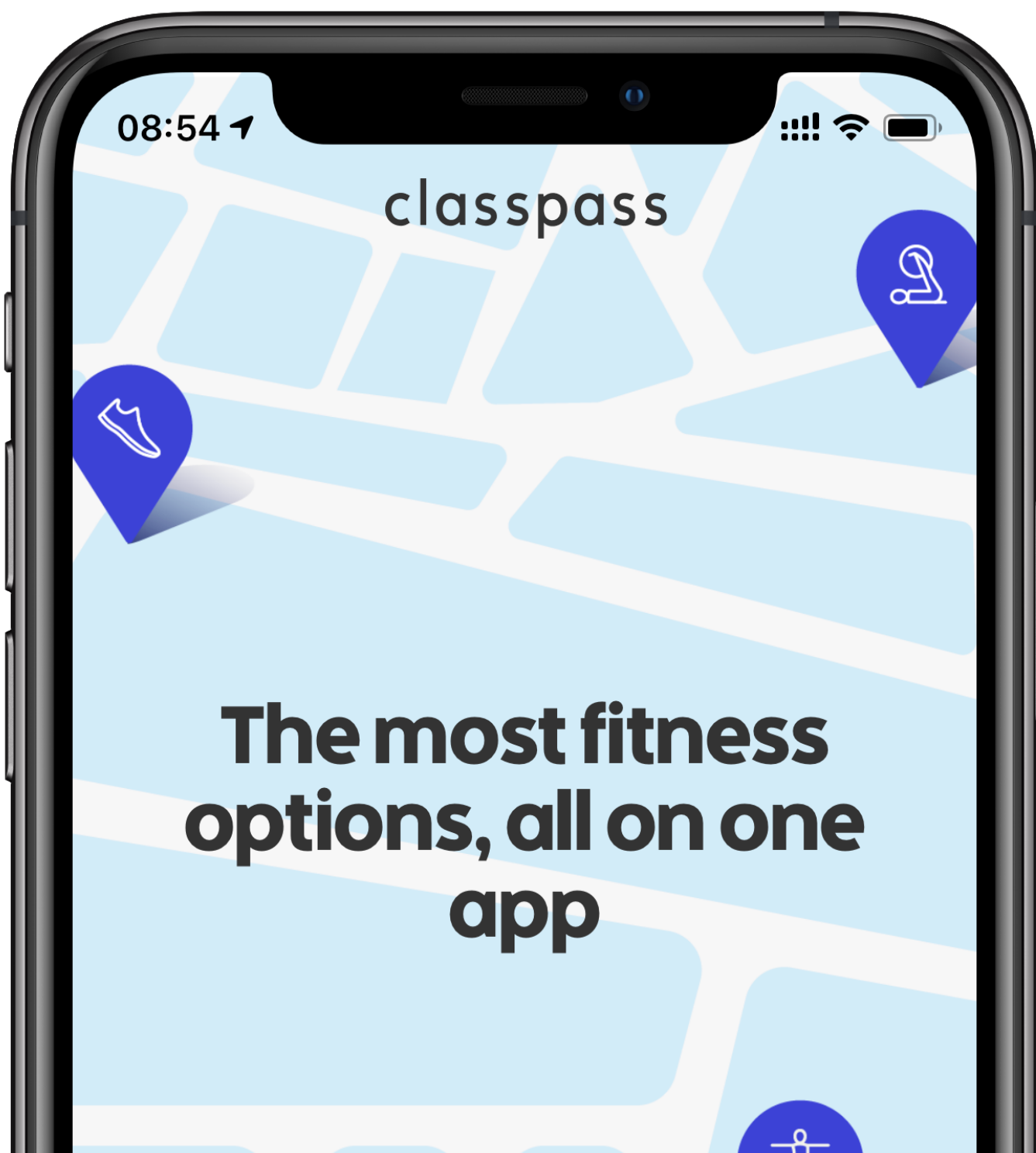
1

Venue detail



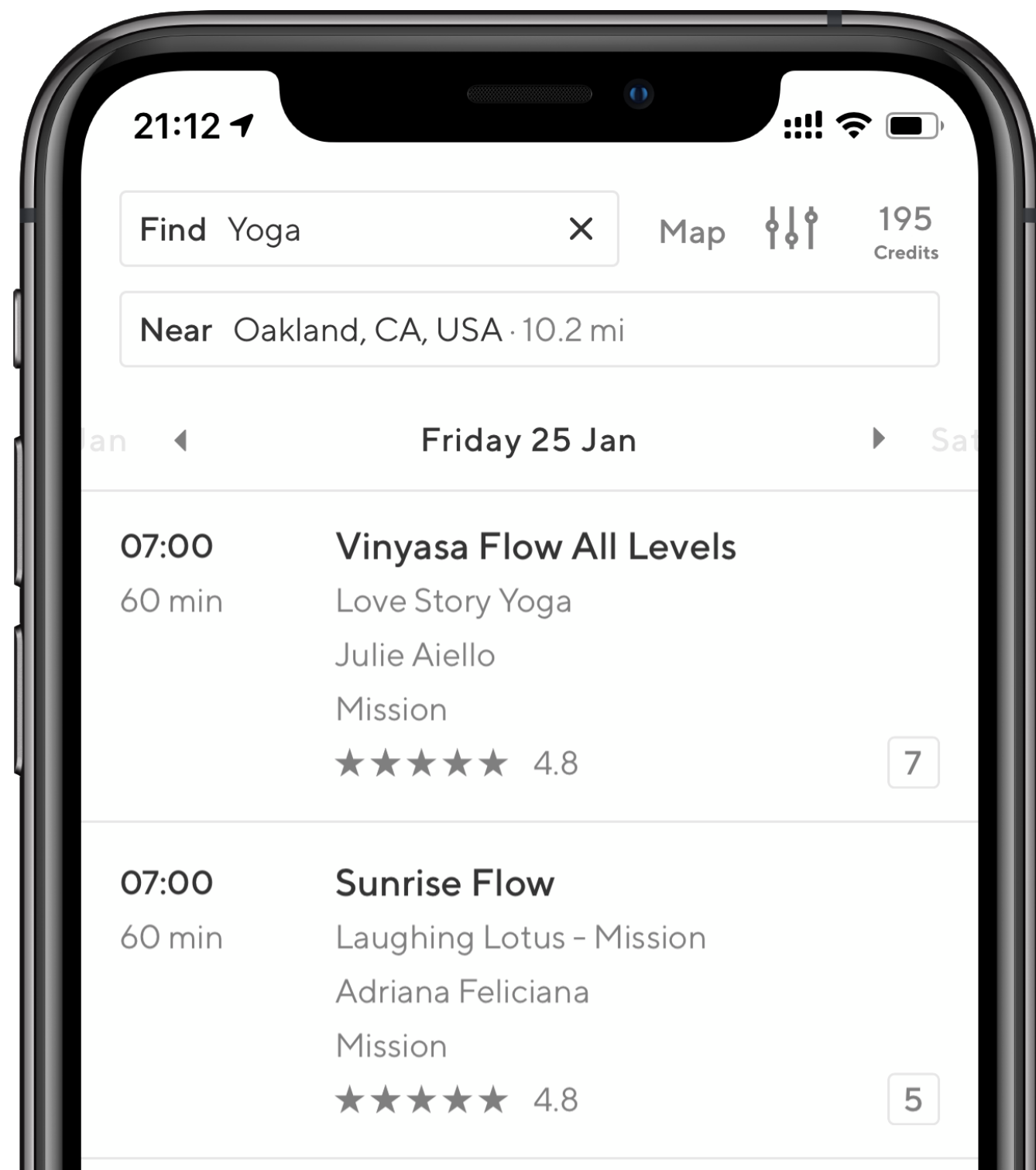
2

Sign up flow



3

Schedule list



# Venue detail

classpass

20:01



## Mile High Run Club

NoMad

### Reviews

★★★★★ 4.9/5.0 from 500+ ratings

[Read all reviews](#)

### About the studio

**Activity:** Strength Training, Outdoors, Running, Sports


**Amenities:** Showers, Towels, Lockers

Mile High Run Club is a premier fitness studio dedicated to the sport of running. All classes include a variety of speed, tempo, or hills and are designed for all fitness levels.

DASH 28, intervals with strength + power training



# Venue detail



24 W 25th St, New York, NY 10010

## How to get there

We currently have two locations in nyc -

- 28 E4th St. (NOHO)
- 24 W25th St. (NOMAD)

Please pay attention to the location when booking your class.

## Similar studios



"What's True Now?"  
Flatiron District



BodyShock  
NoMad

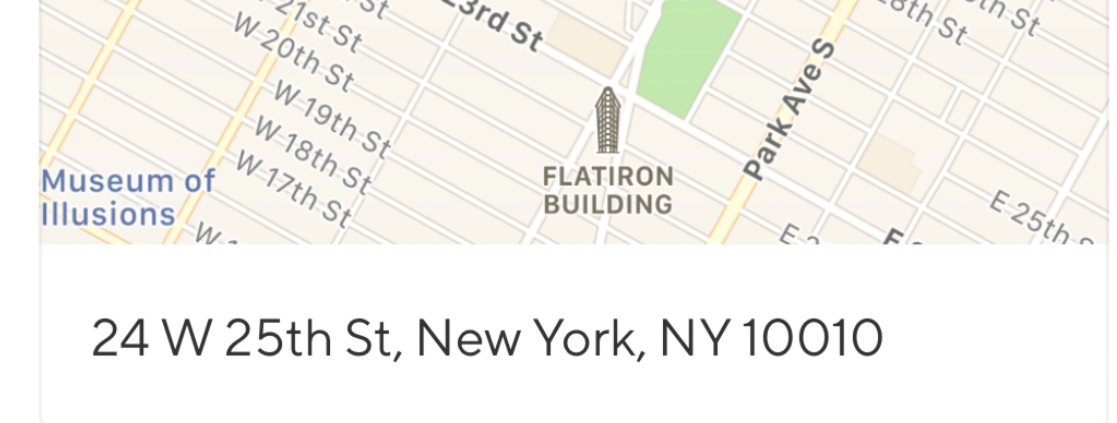
Powered by  
**MINDBODY.**

[View schedule](#)

# Venue detail

- long, heterogenous content
- limited interactivity
- existing Objective-C implementation

classpass



## How to get there

We currently have two locations in nyc -

28 E4th St. (NOHO)

24 W25th St. (NOMAD)

Please pay attention to the location when booking your class.

## Similar studios



"What's True Now?"

Flatiron District



BodyShock

NoMad

Powered by  
**MINDBODY.**

[View schedule](#)

# Venue detail



**existing iOS container**

# Venue detail



**existing iOS container**

**existing iOS view**

# Venue detail

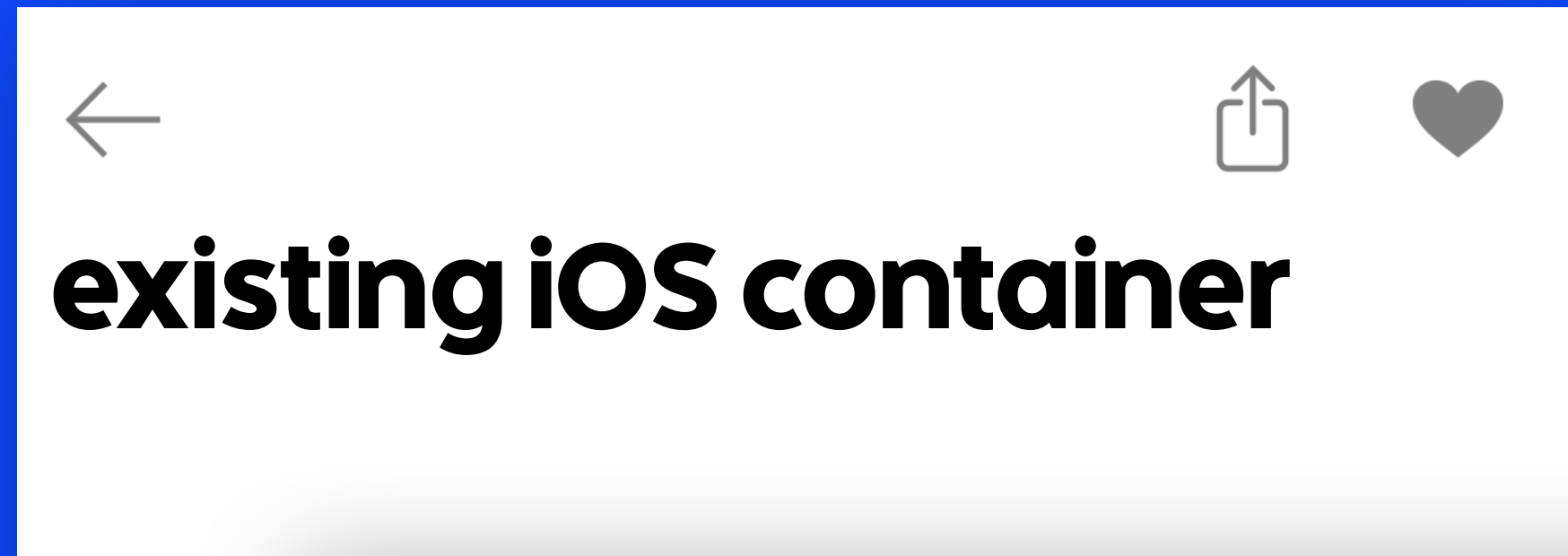


**existing iOS container**

**existing iOS view**

**new React Native view**

# Venue detail

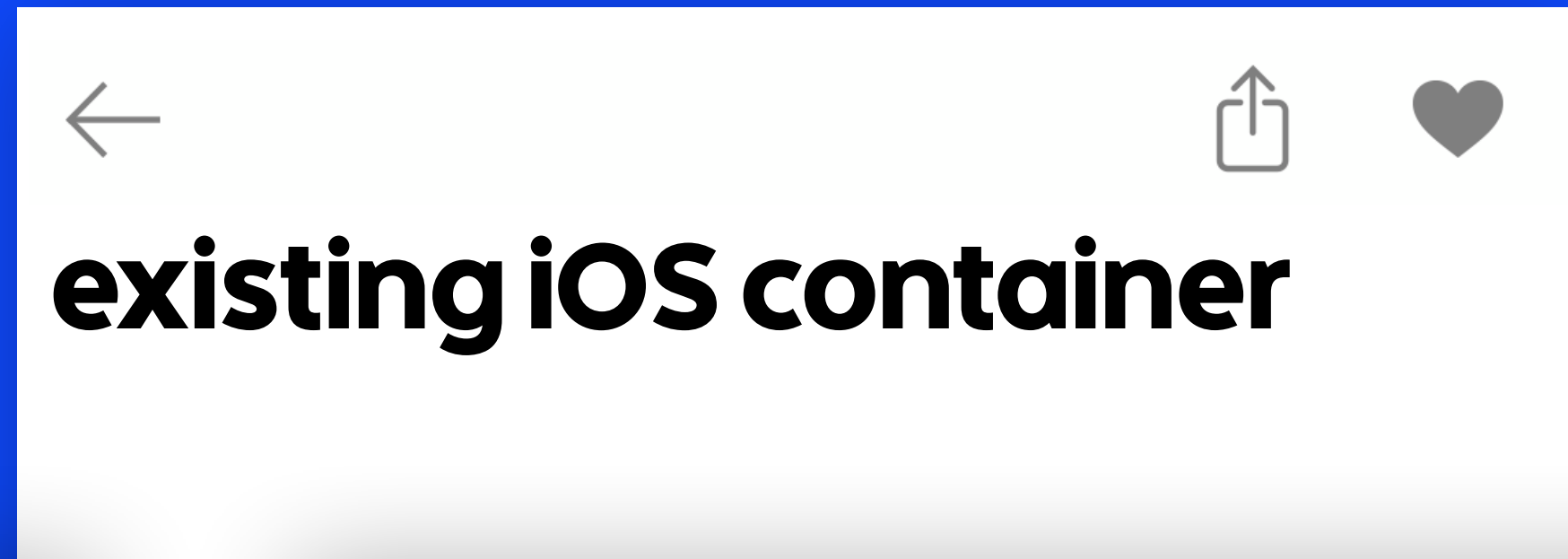


**existing iOS view**

**switched using server  
side feature flag**

**new React Native view**

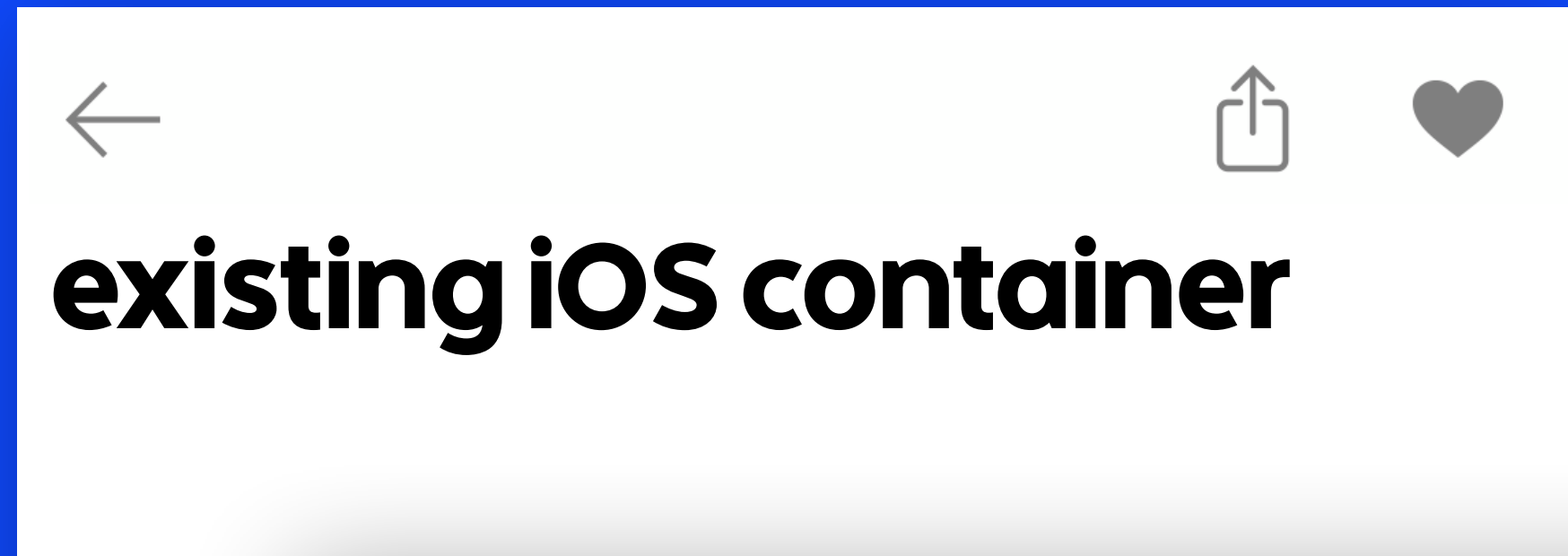
# Venue detail



**new React Native view**

**switched using server  
side feature flag**

# Venue detail



**existing iOS view**

**switched using server  
side feature flag**

**new React Native view**



```
class VenueDetailViewController {
```

```
    init(venue: Venue)
```

```
    var view: UIView {
```

```
        if featureFlags.reactNativeVenueDetail {
```

```
            return reactNativeView
```

```
        } else {
```

```
            return legacyView
```

```
        }
```

```
    }
```

```
classpass
```

# Venue detail

Reviews

★★★★★

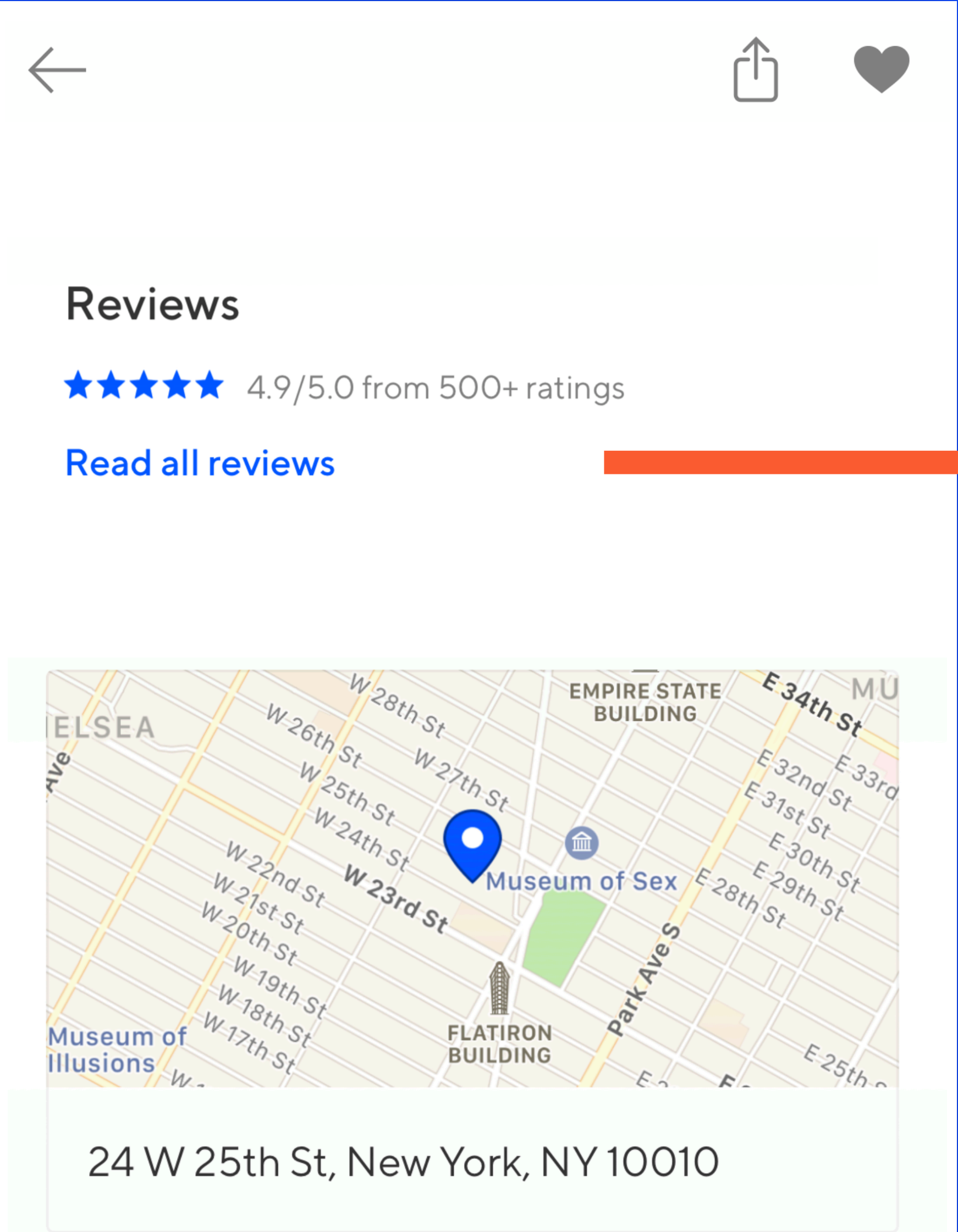
4.9/5.0 from 500+ ratings

Read all reviews

24 W 25th St, New York, NY 10010

# Venue detail

VenueDetailViewController

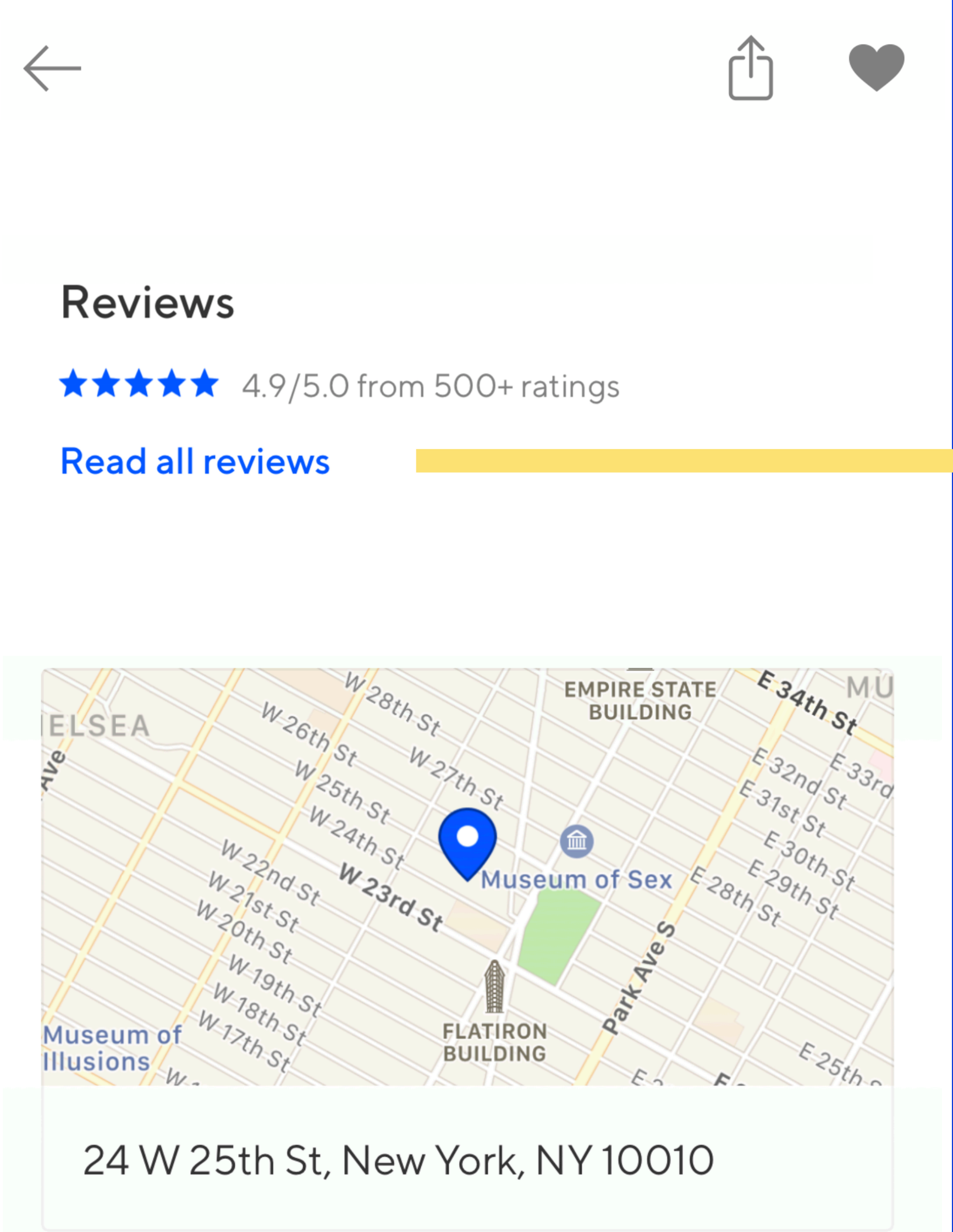


reviewsTapped

# Venue detail

RNVenueBridgeModule

VenueDetailViewController



reviewsTapped

reviewsTapped



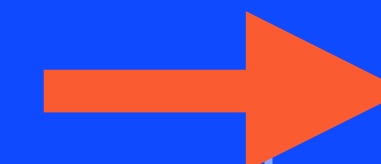
`<VenueDetail />`

`RNVenueBridgeModule`

`VenueDetailViewController`

`onPressIn`

`reviewsTapped`



`reviewsTapped`

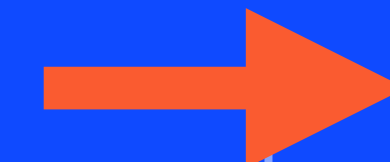
`<VenueDetail />`

```
{  
  'fn': ...  
}
```

`onPressIn`

`RNVenueBridgeModule`

`reviewsTapped`



`VenueDetailViewController`

`reviewsTapped`

`<VenueDetail />`

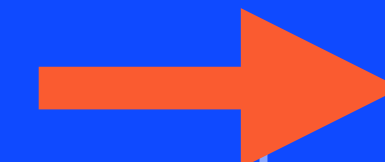
`RNVenueBridgeModule`

`VenueDetailViewController`

```
{  
  'fn': ...  
}
```

`onPressIn`

`reviewsTapped`



`reviewsTapped`

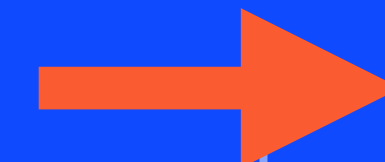
`<VenueDetail />`

`onPressIn`

`RNVenueBridgeModule`

```
{  
  'fn': ...  
}
```

`reviewsTapped`



`VenueDetailViewController`

`reviewsTapped`



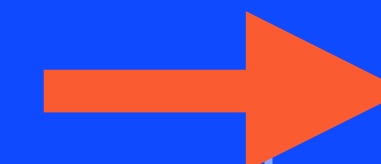
`<VenueDetail />`

`RNVenueBridgeModule`

`VenueDetailViewController`

`onPressIn`

`reviewsTapped`



`reviewsTapped`



# Encapsulated and isolated

```
let vc = VenueDetailViewController(venue: ...)
present(vc)
```

classpass



# React Native at ClassPass

1

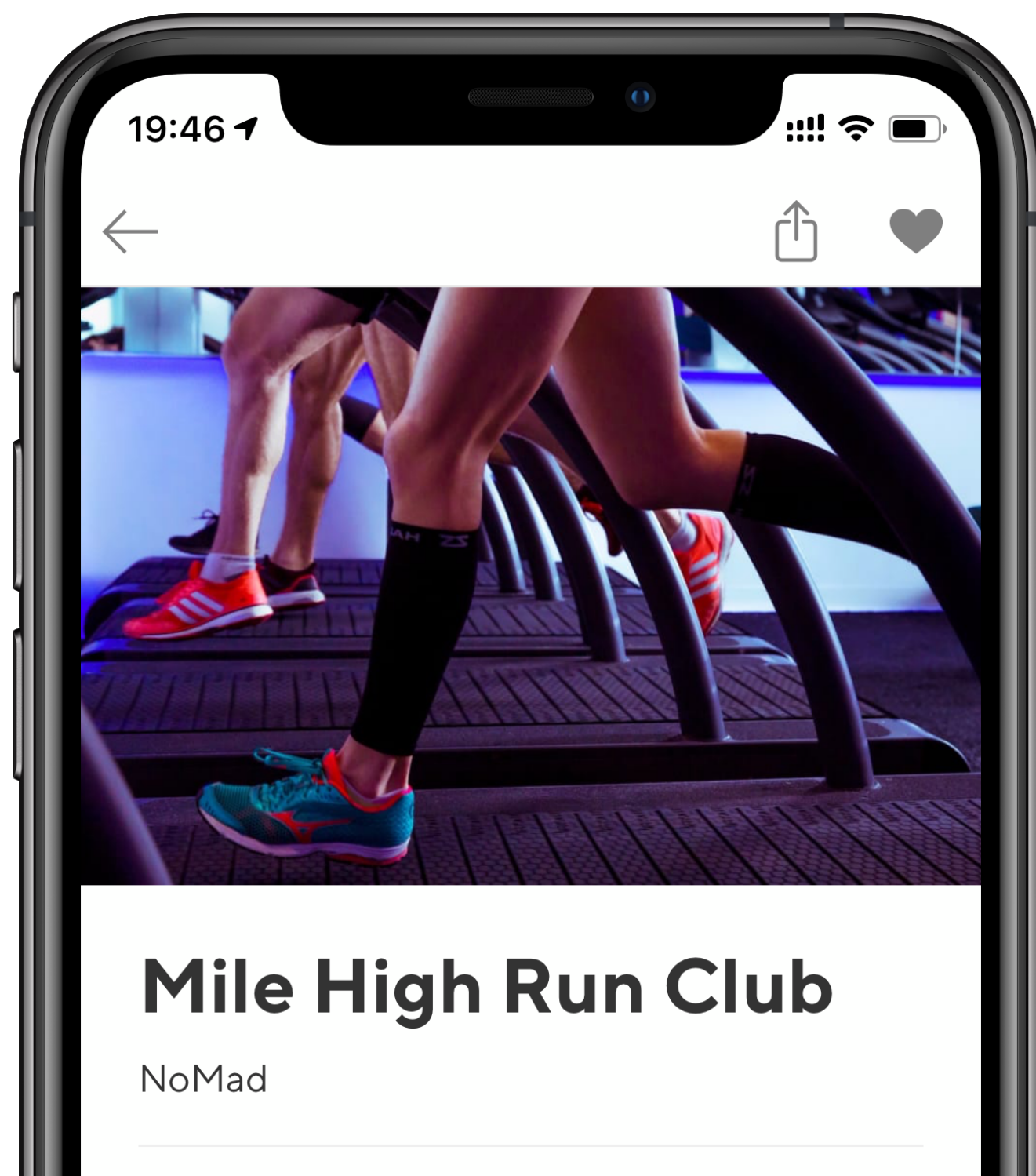
Venue detail

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Sign up flow

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Schedule list

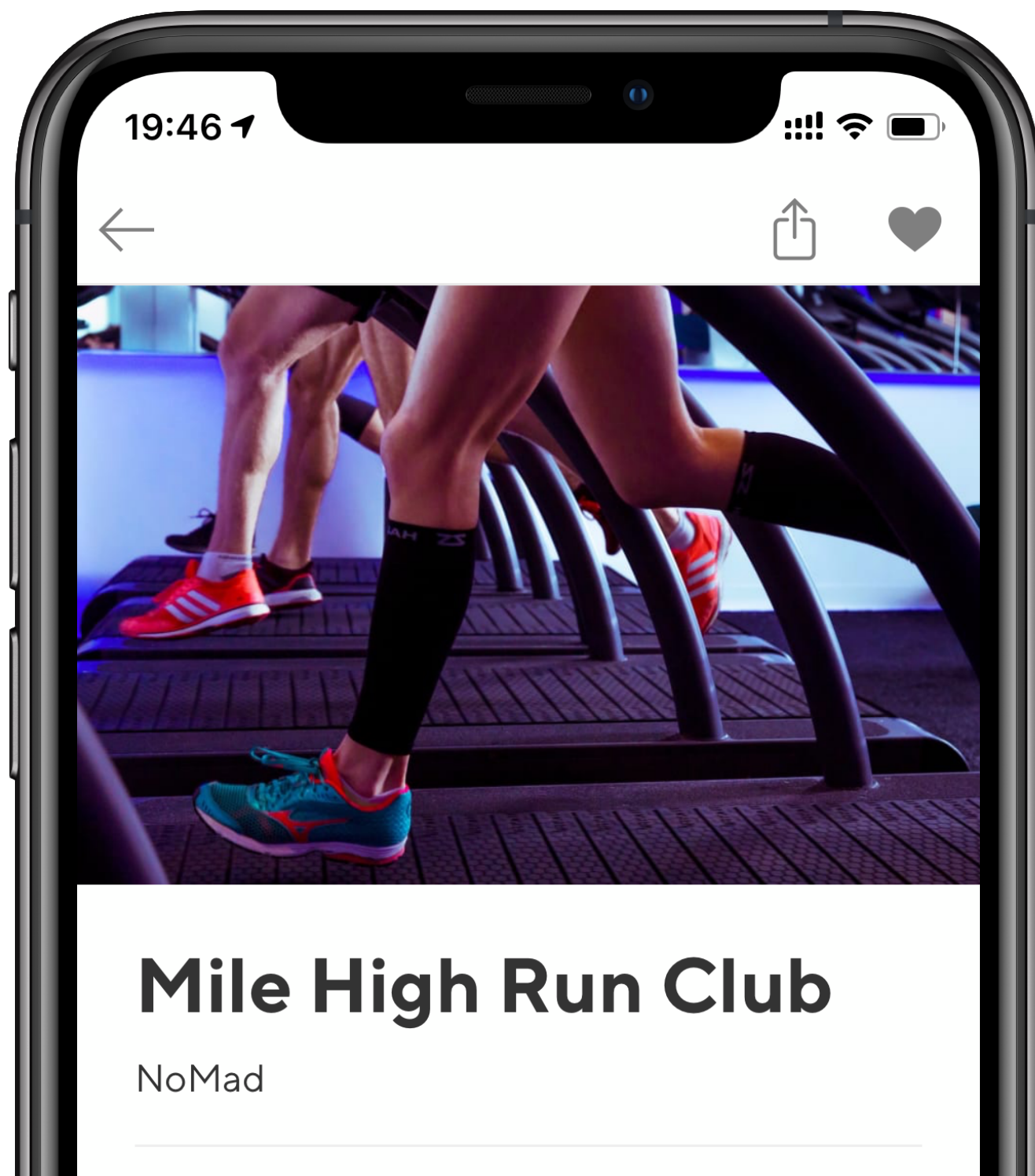




# React Native at ClassPass

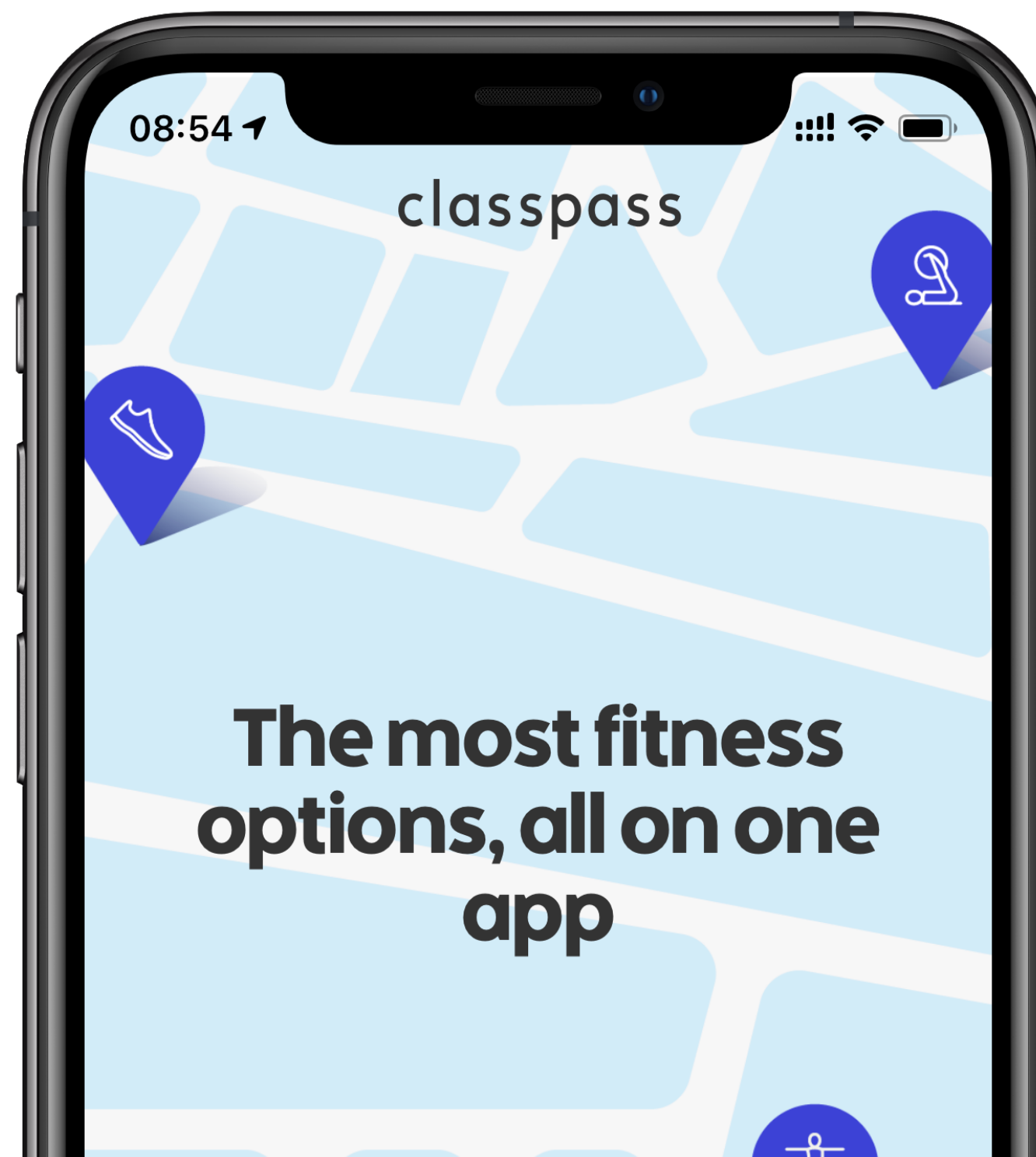
1

Venue detail



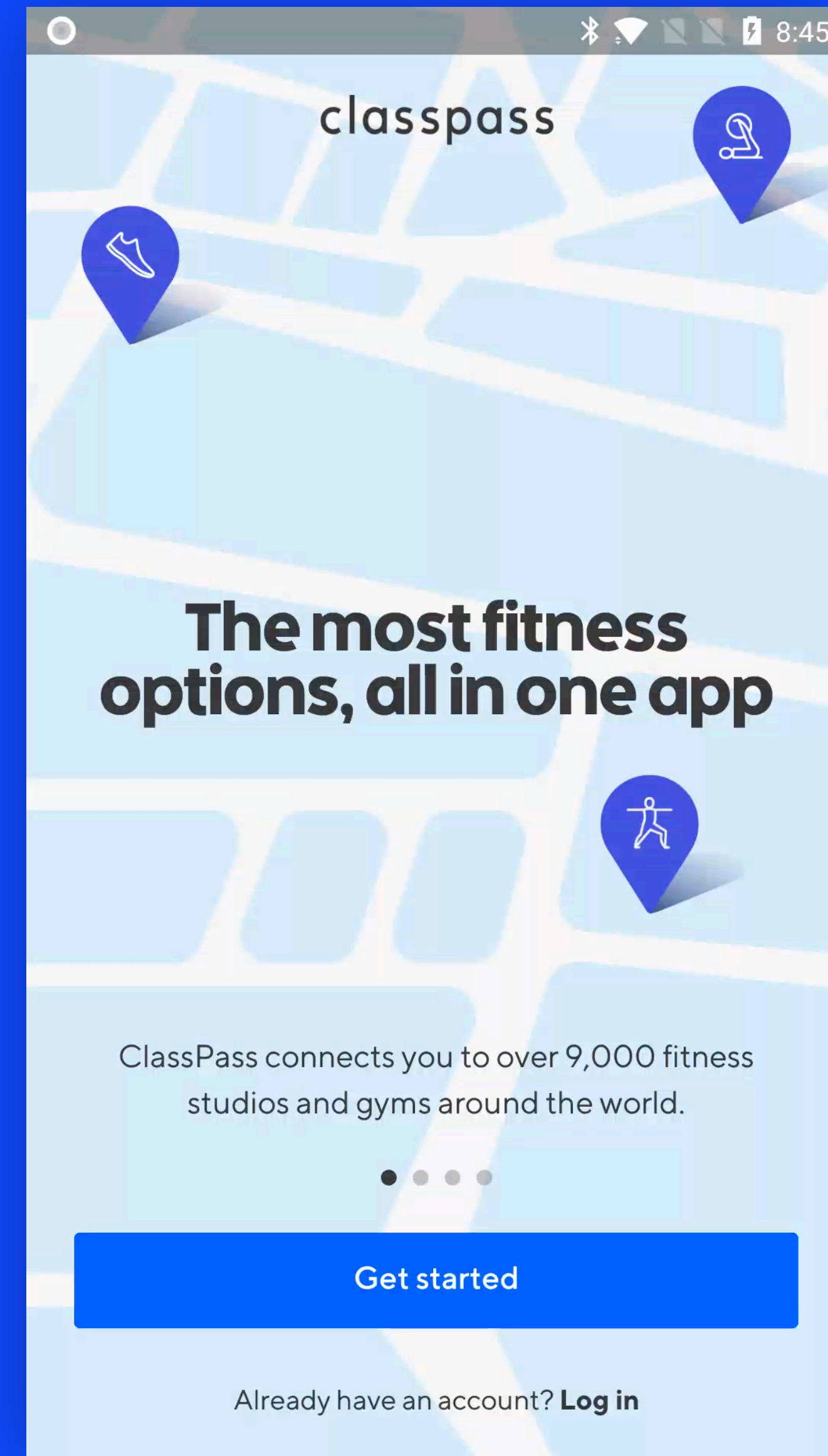
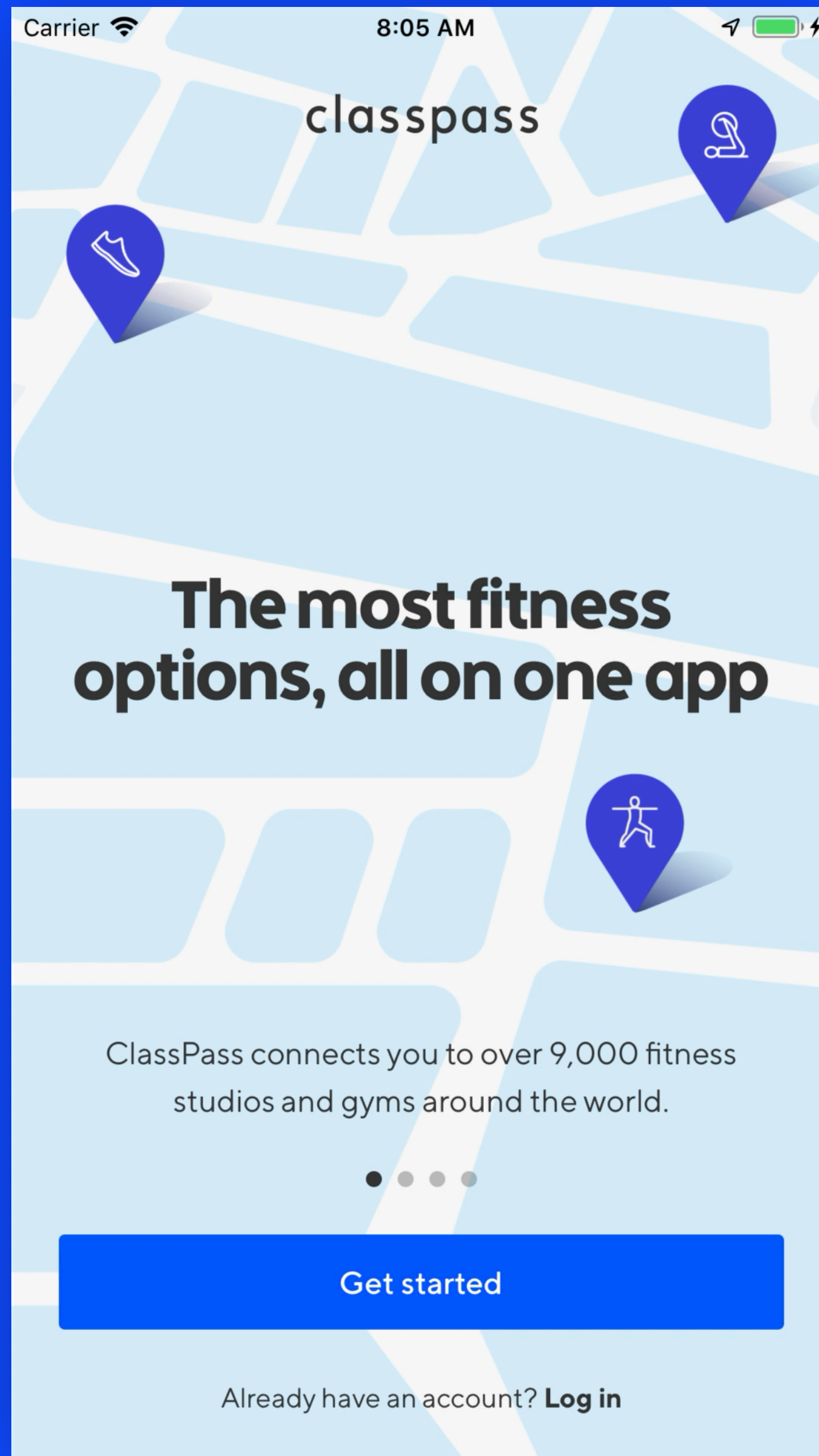
2

Sign up flow



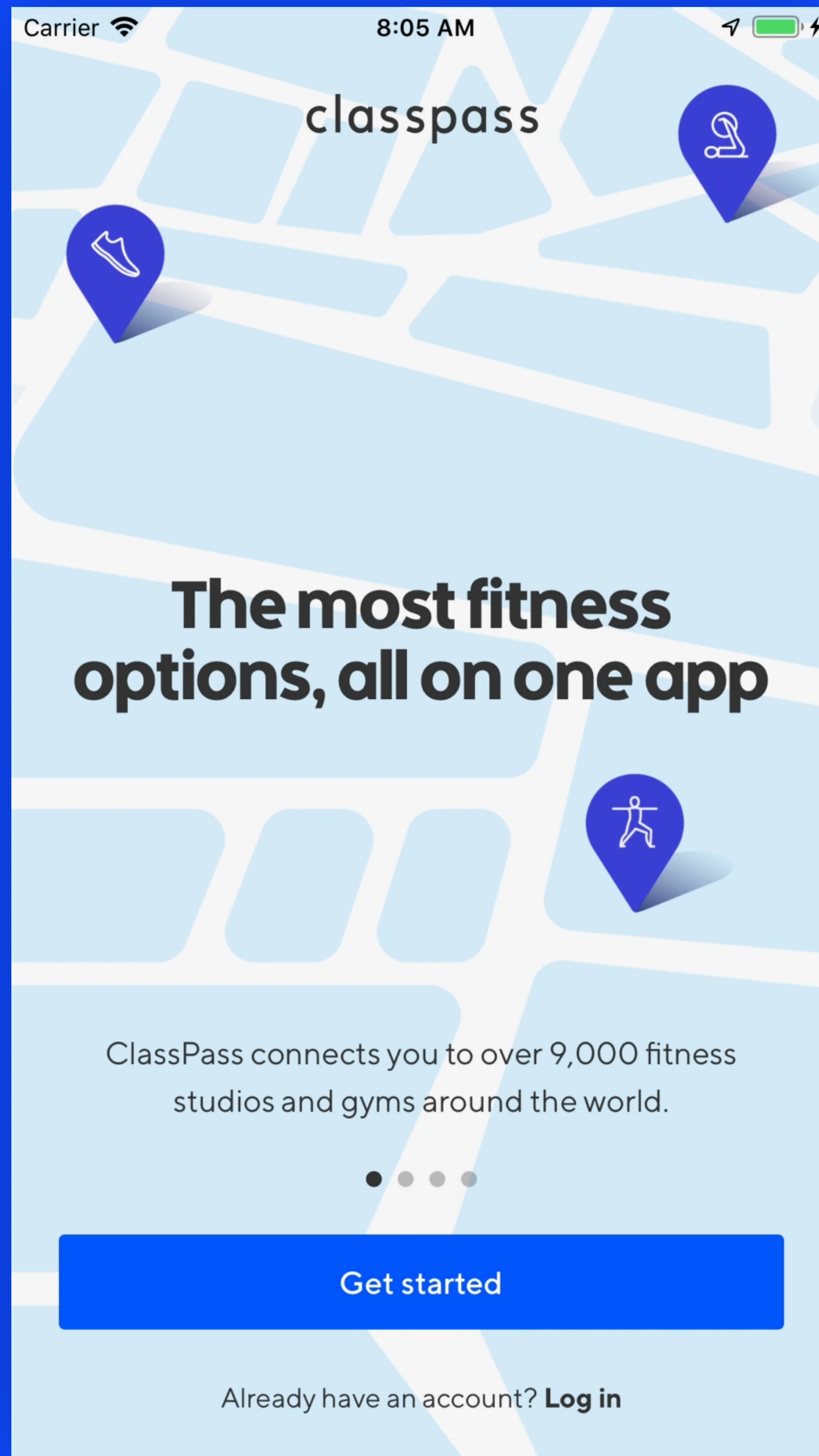
3

Schedule list

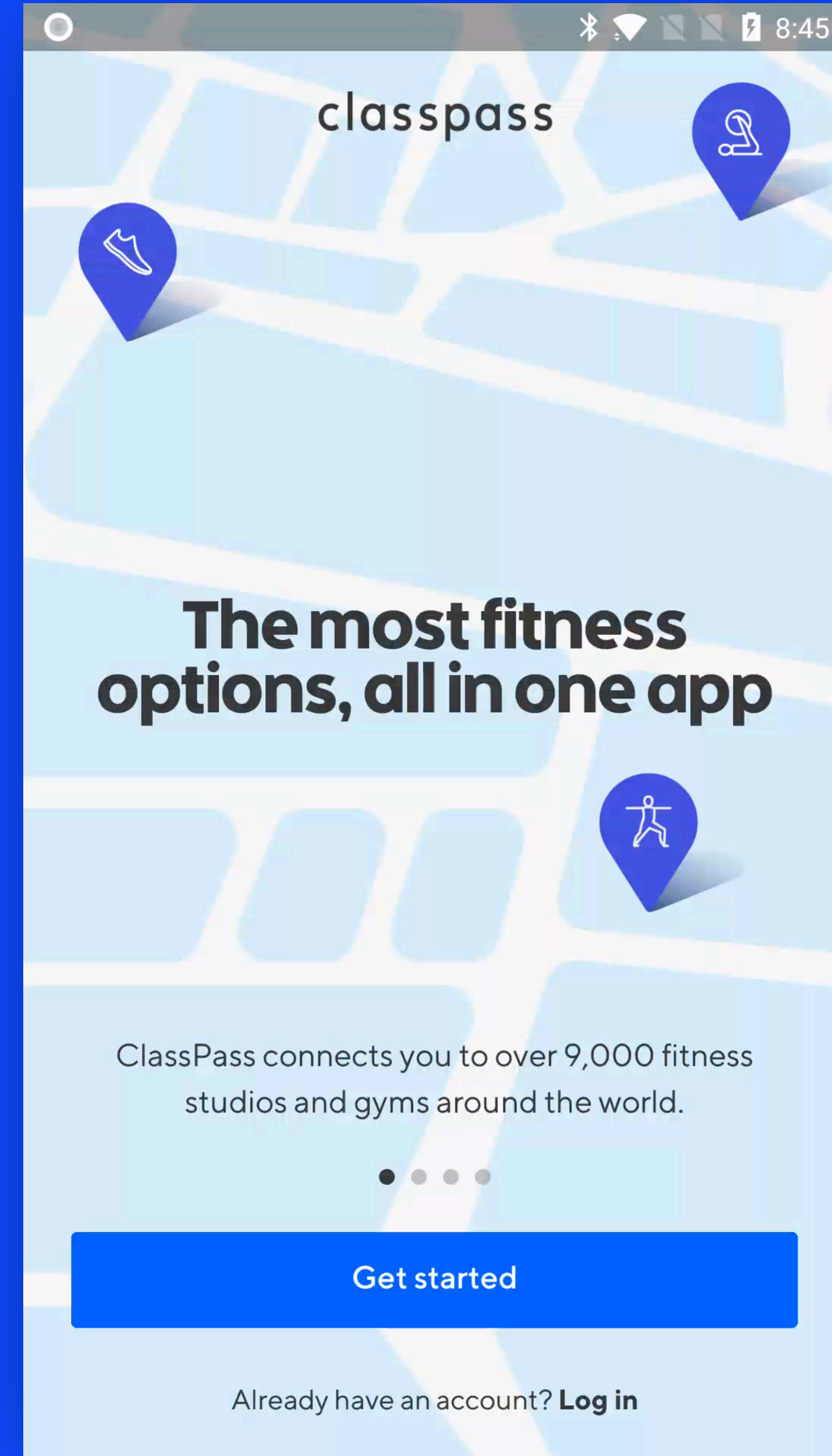




# ios



# Android







# Navigation in React Native



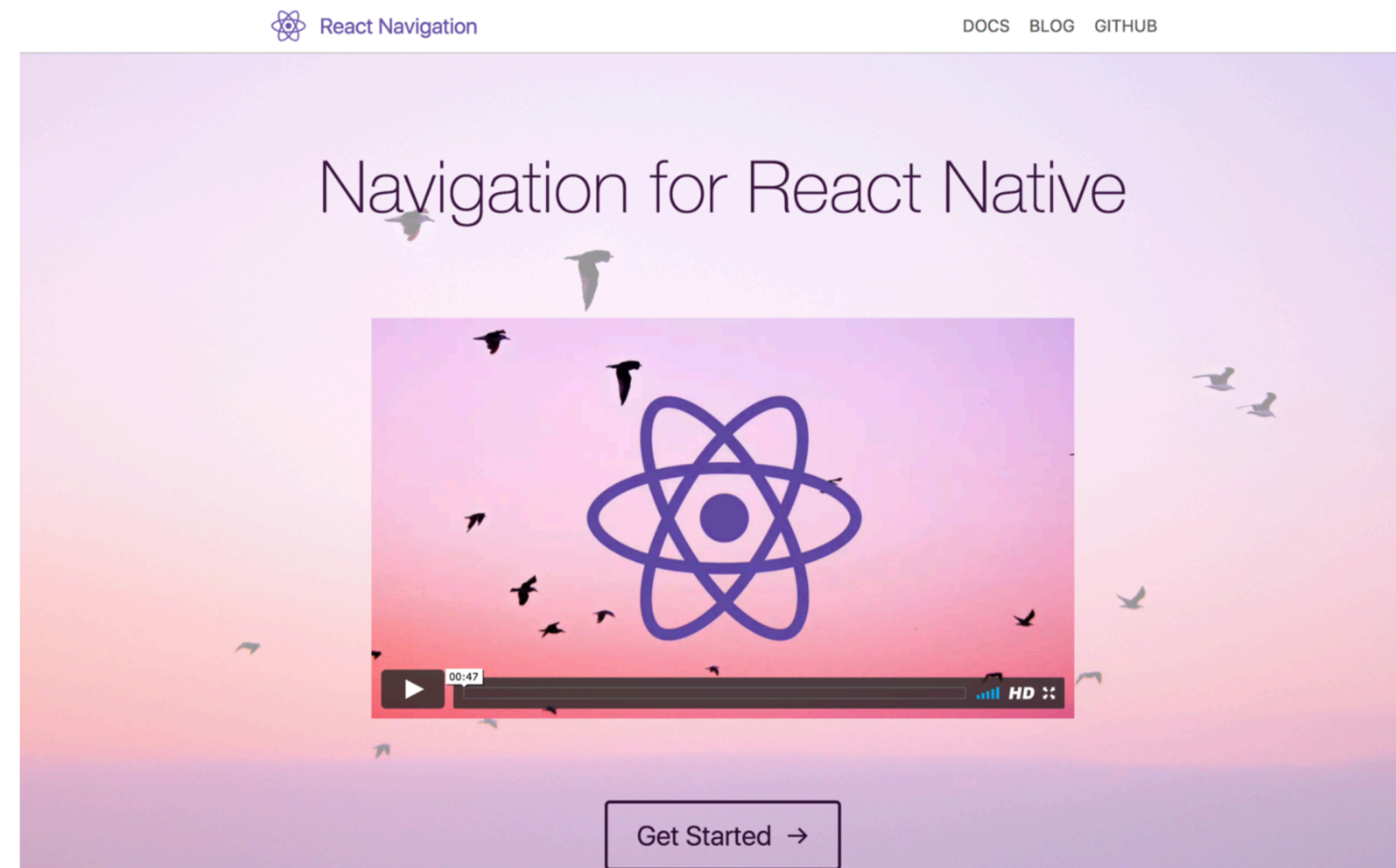


# What's Happening with Navigation in React Native?



Pav Sidhu [Follow](#)

Feb 19, 2017 · 3 min read



There's something nice about the background image...

<https://medium.com/@pavsidhu/whats-happening-with-navigation-in-react-native-c193535888c3>

# JavaScript Navigation

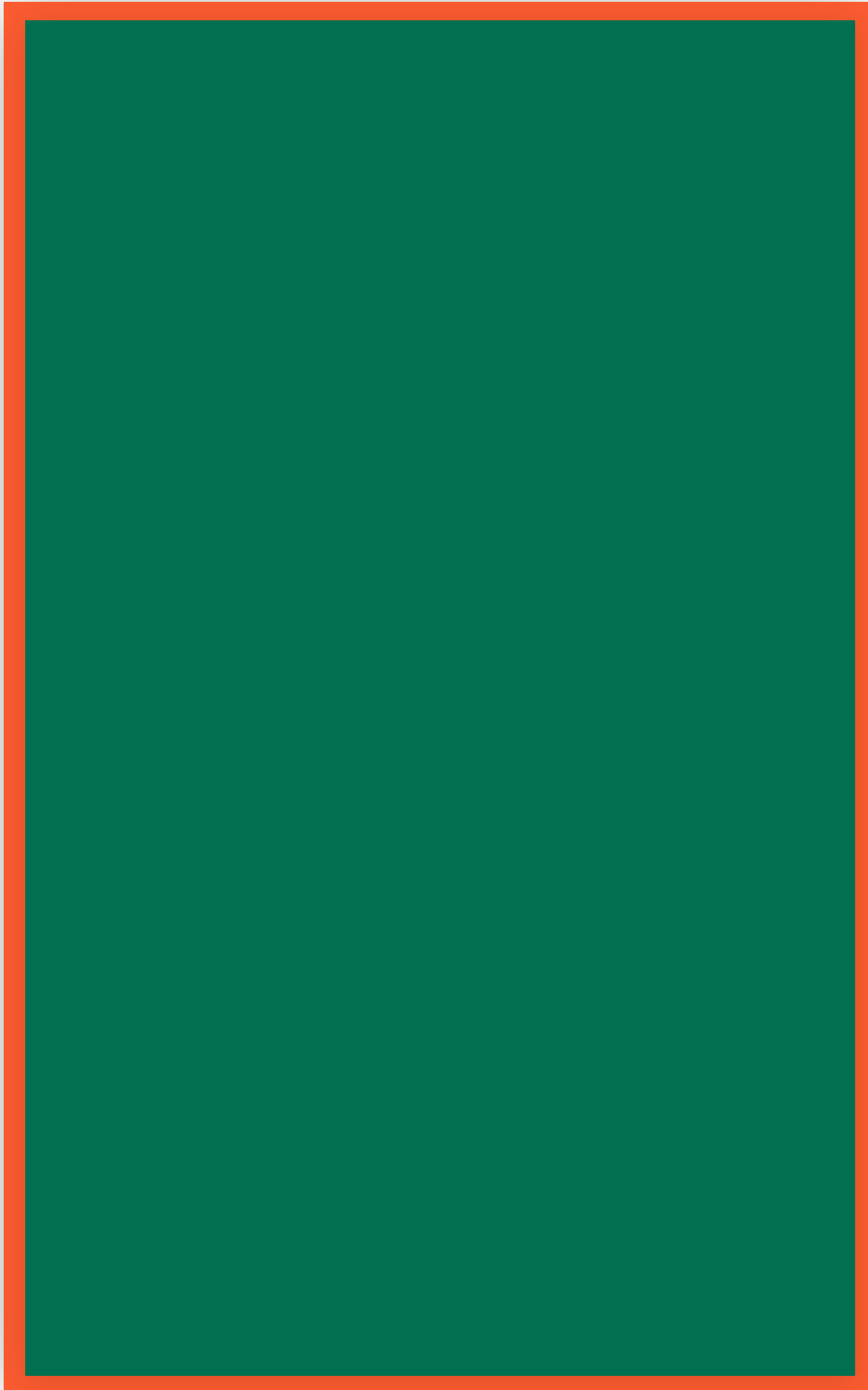
## JavaScript



# JavaScript Navigation

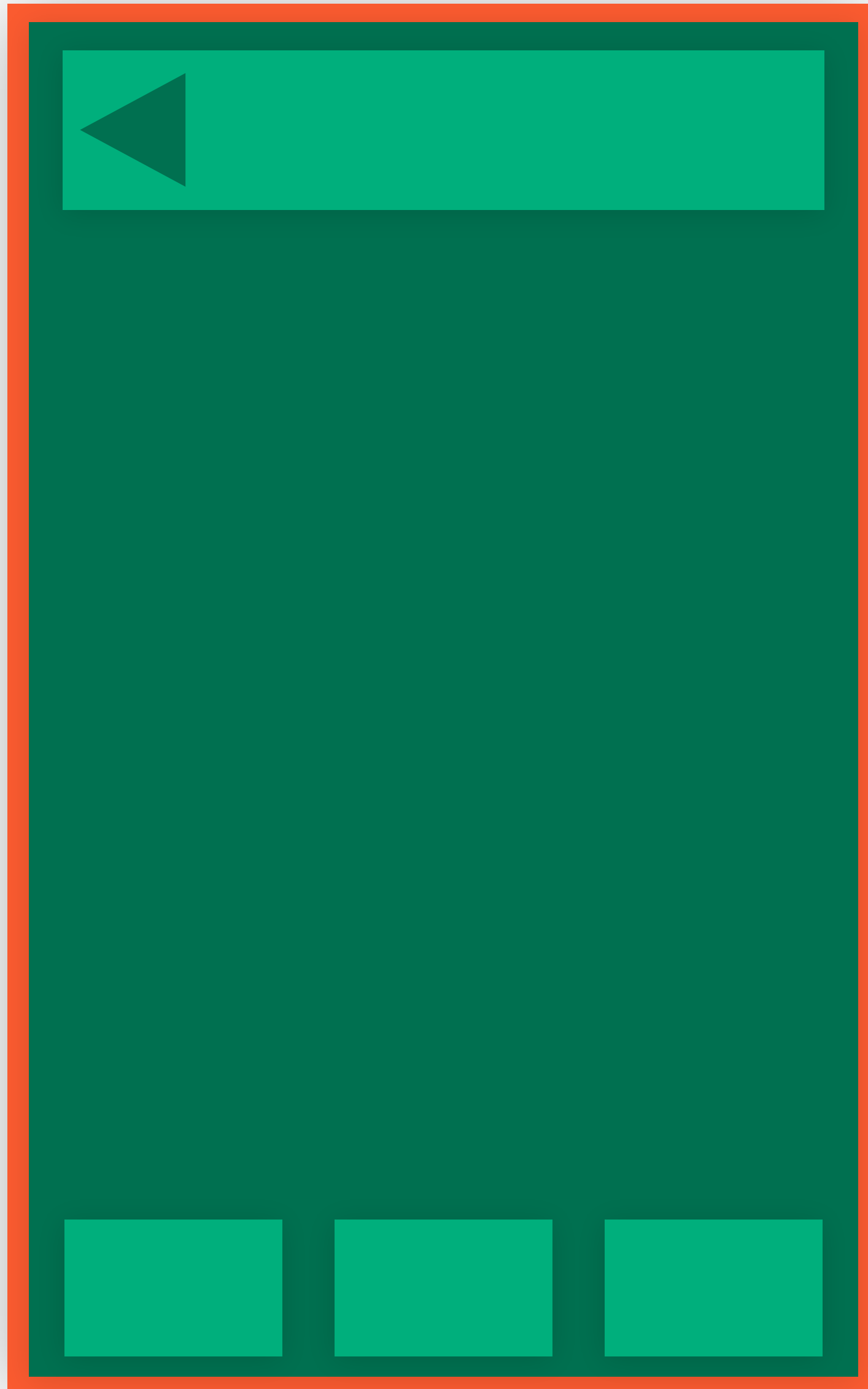


# JavaScript Navigation

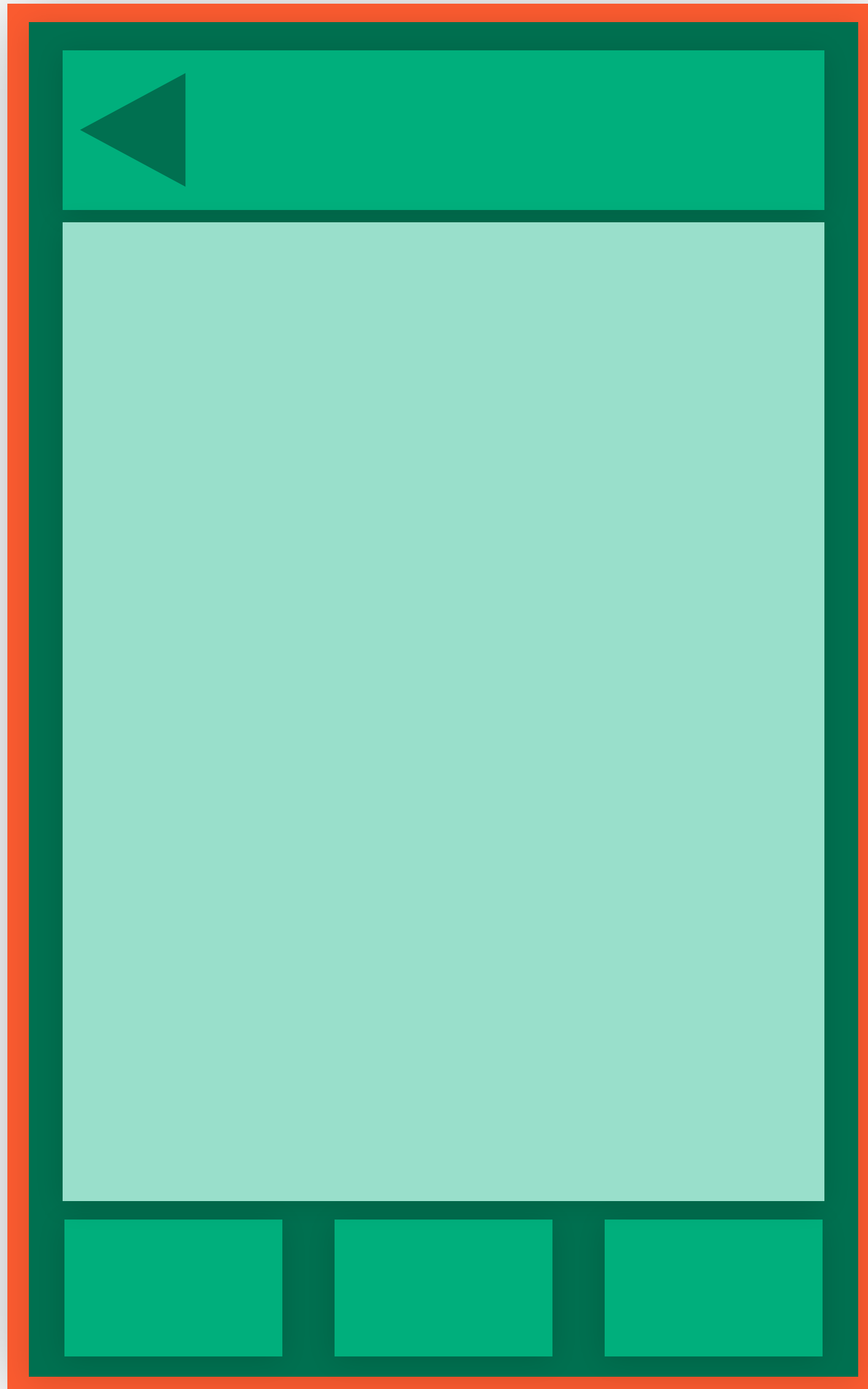




# JavaScript Navigation

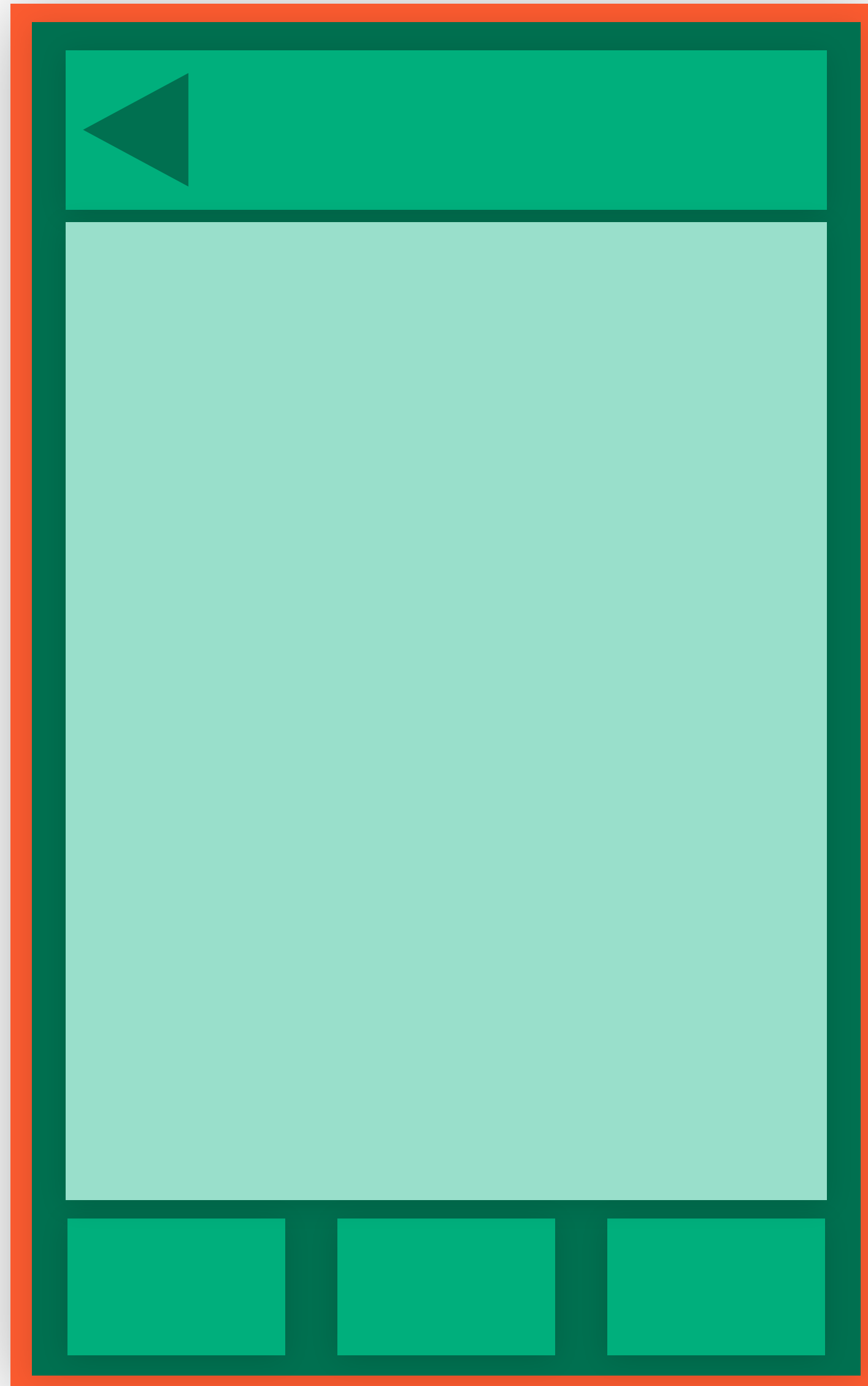


# JavaScript Navigation



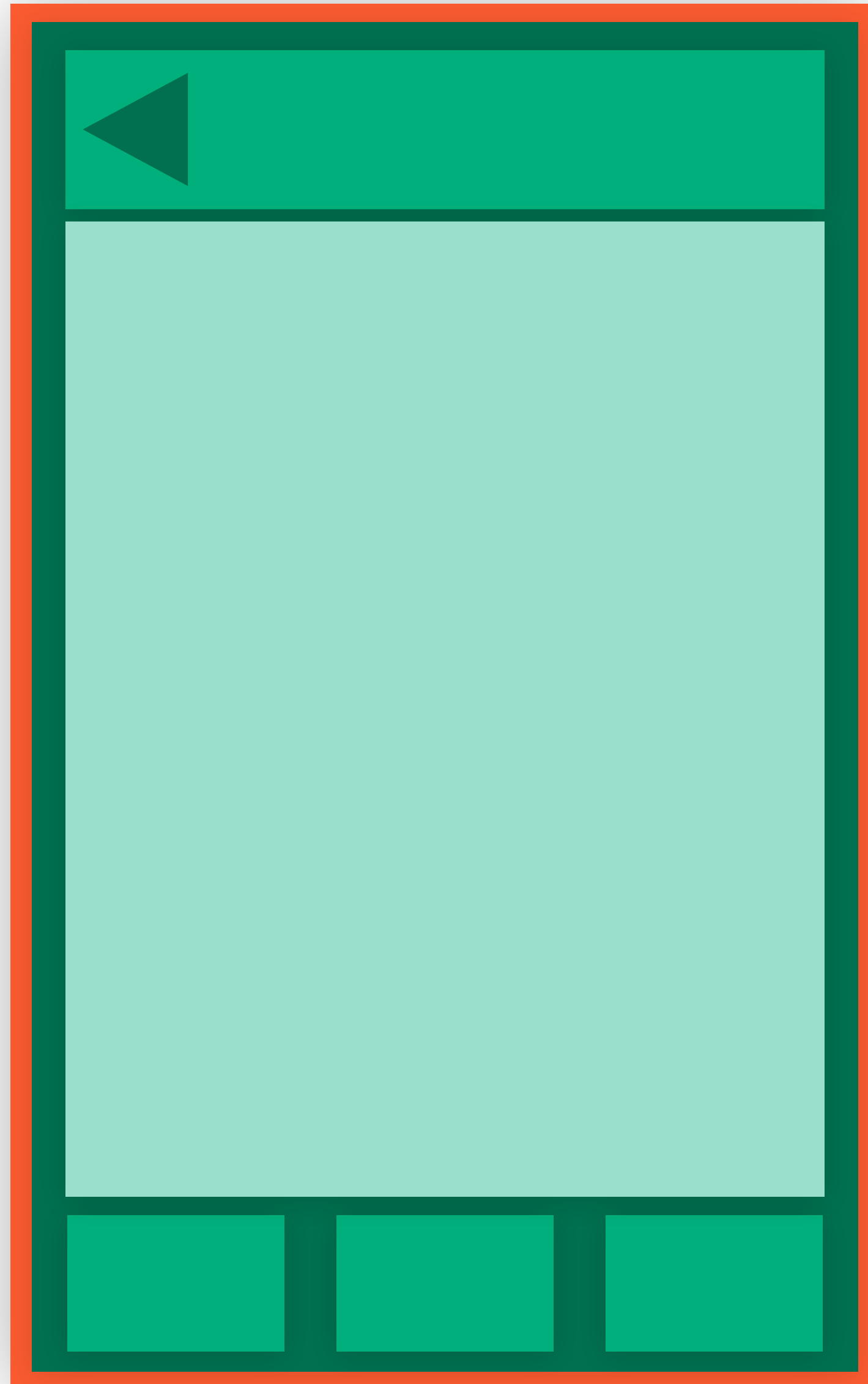


# JavaScript Navigation



**thin** native shell  
**navigation** in JS

# JavaScript Navigation

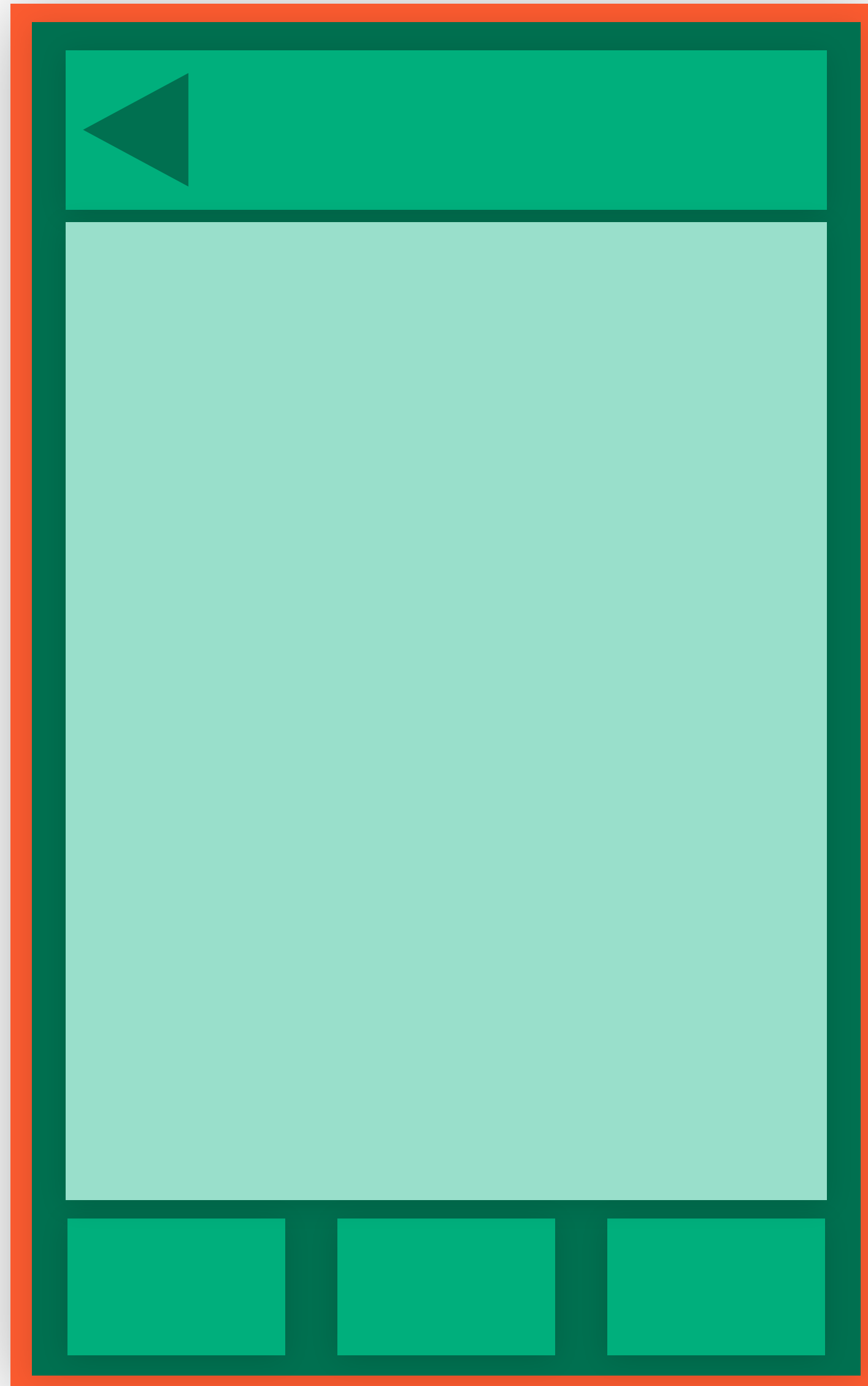


**thin** native shell  
**navigation** in JS

# Native Navigation



# JavaScript Navigation

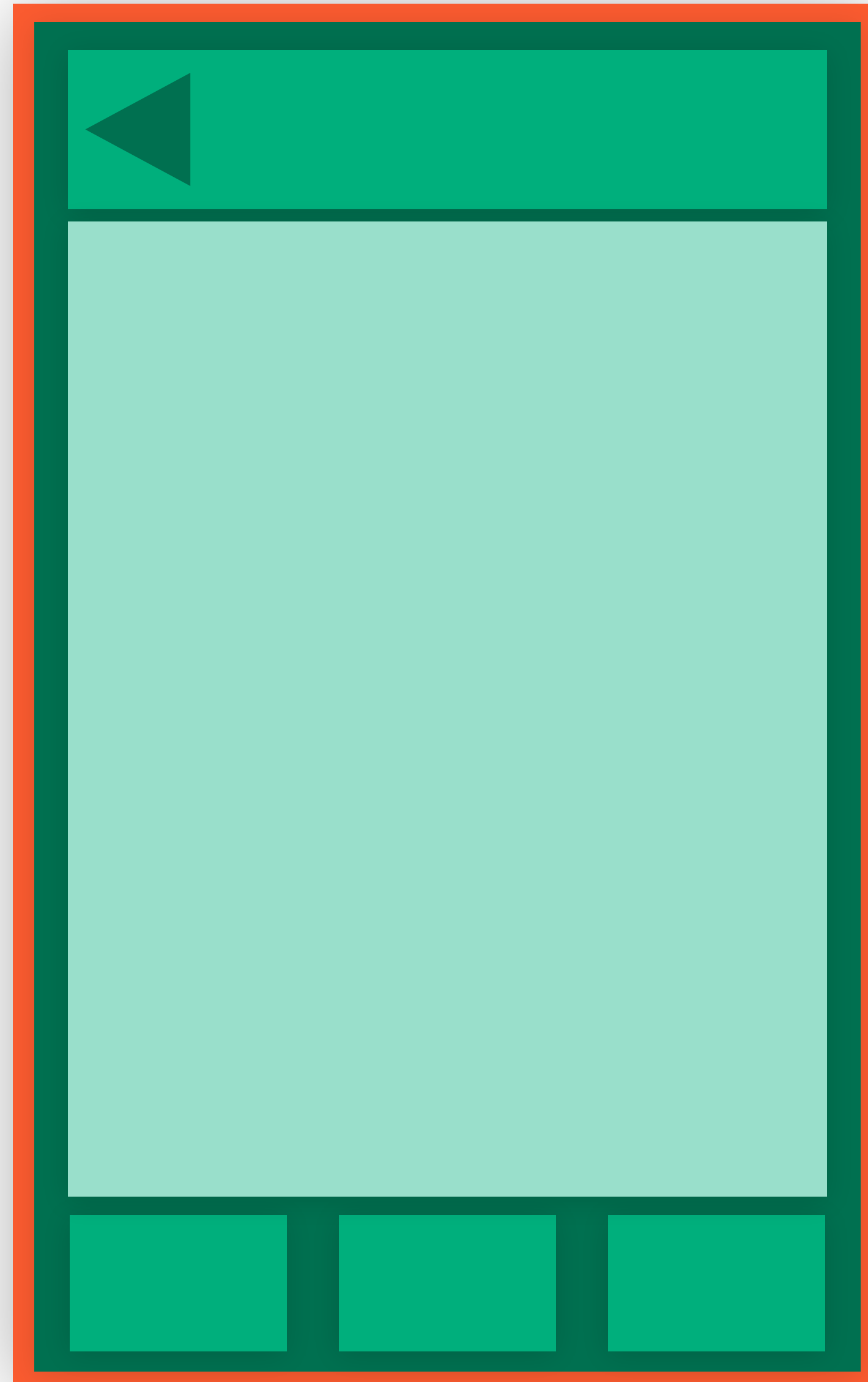


**thin** native shell  
**navigation** in JS

# Native Navigation



# JavaScript Navigation



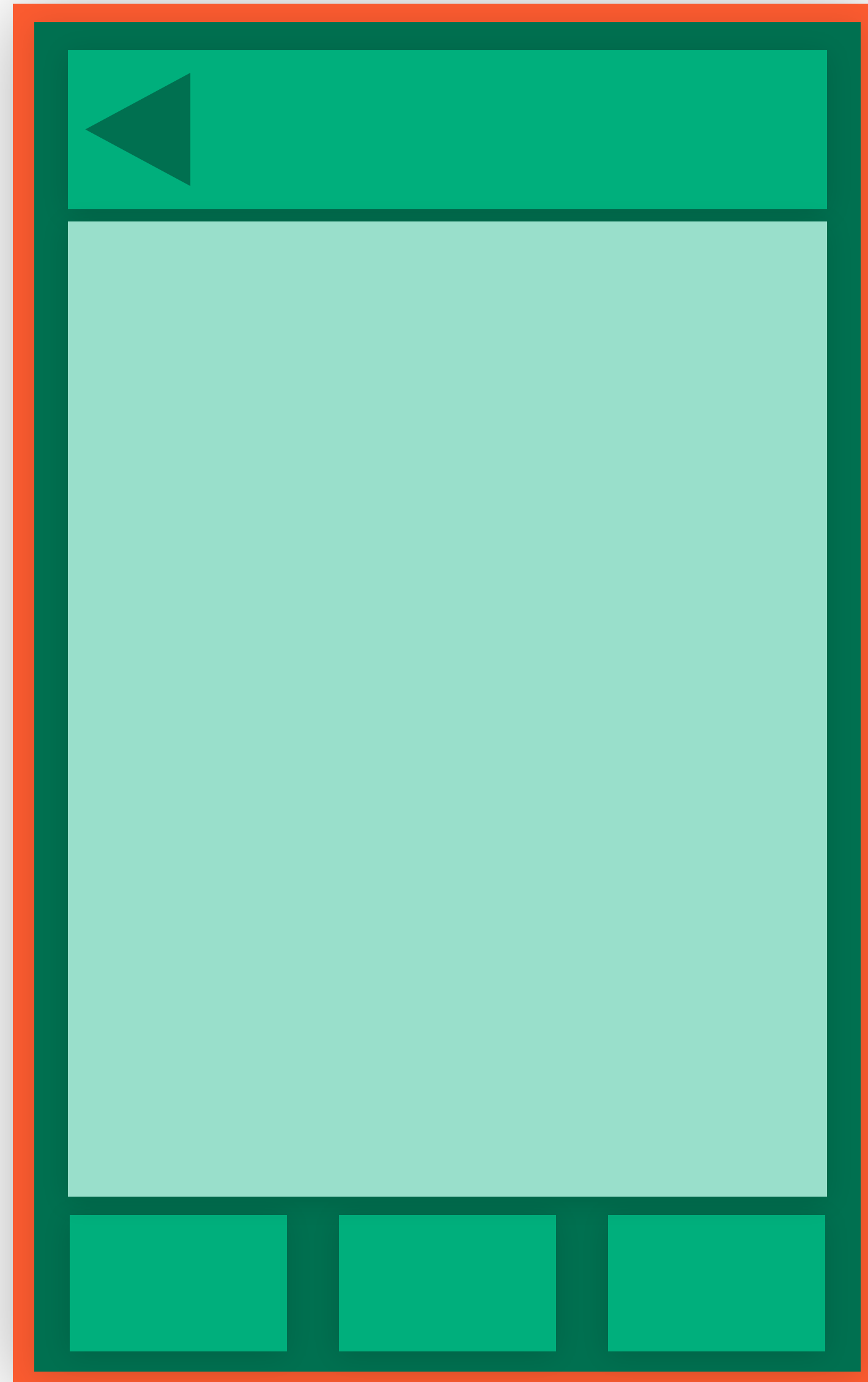
**thin** native shell  
**navigation** in JS

# Native Navigation



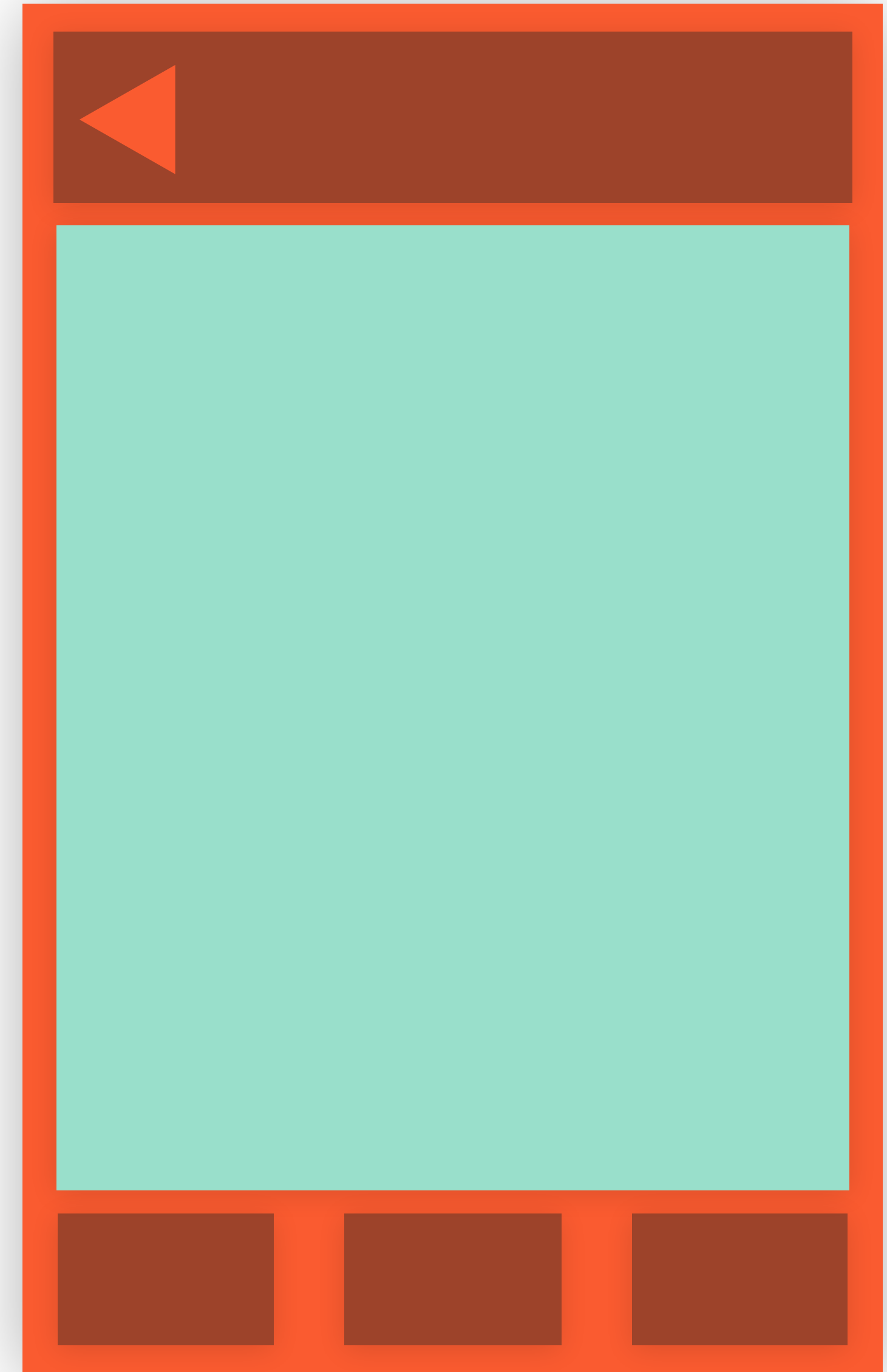


# JavaScript Navigation

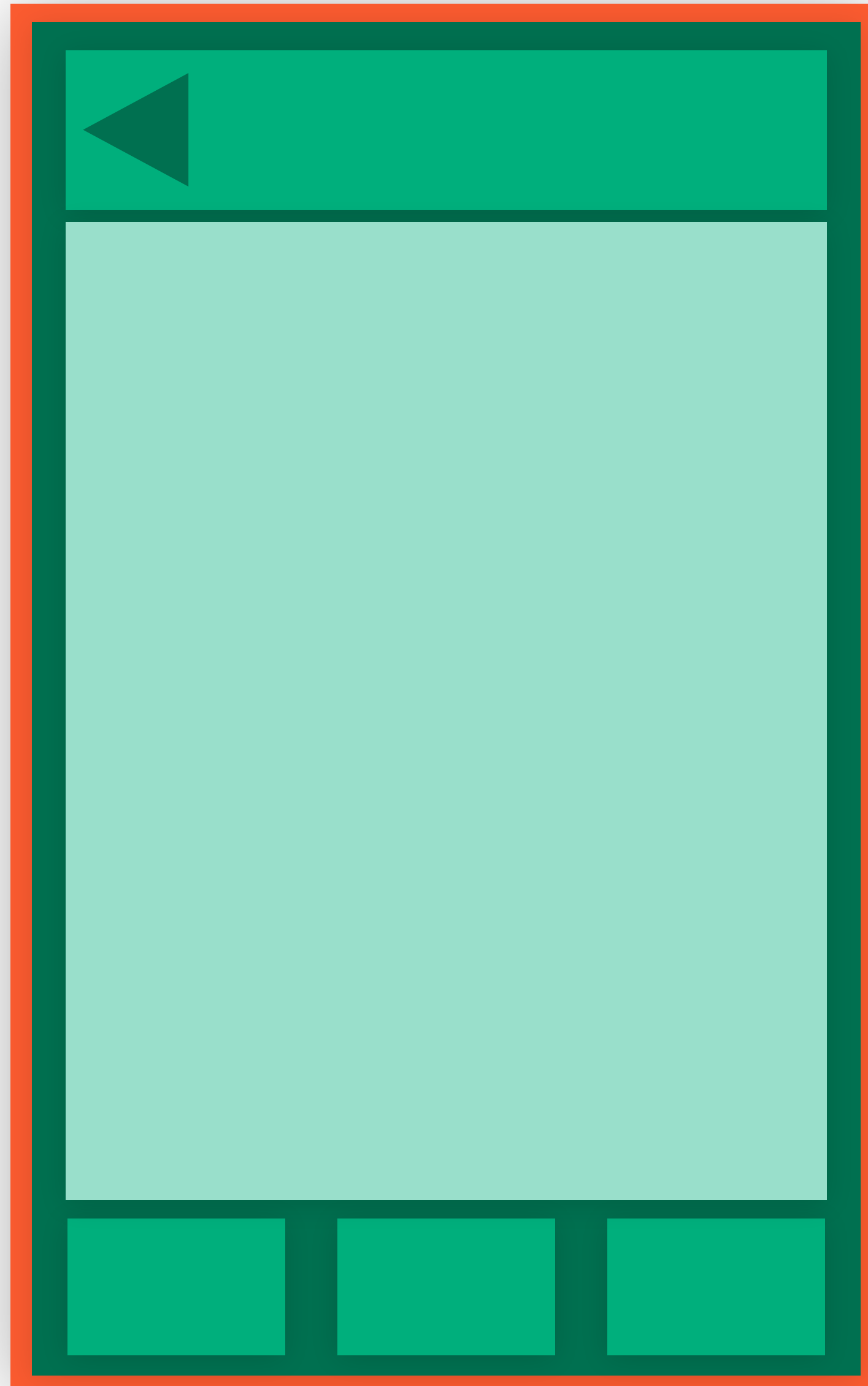


**thin** native shell  
**navigation** in JS

# Native Navigation



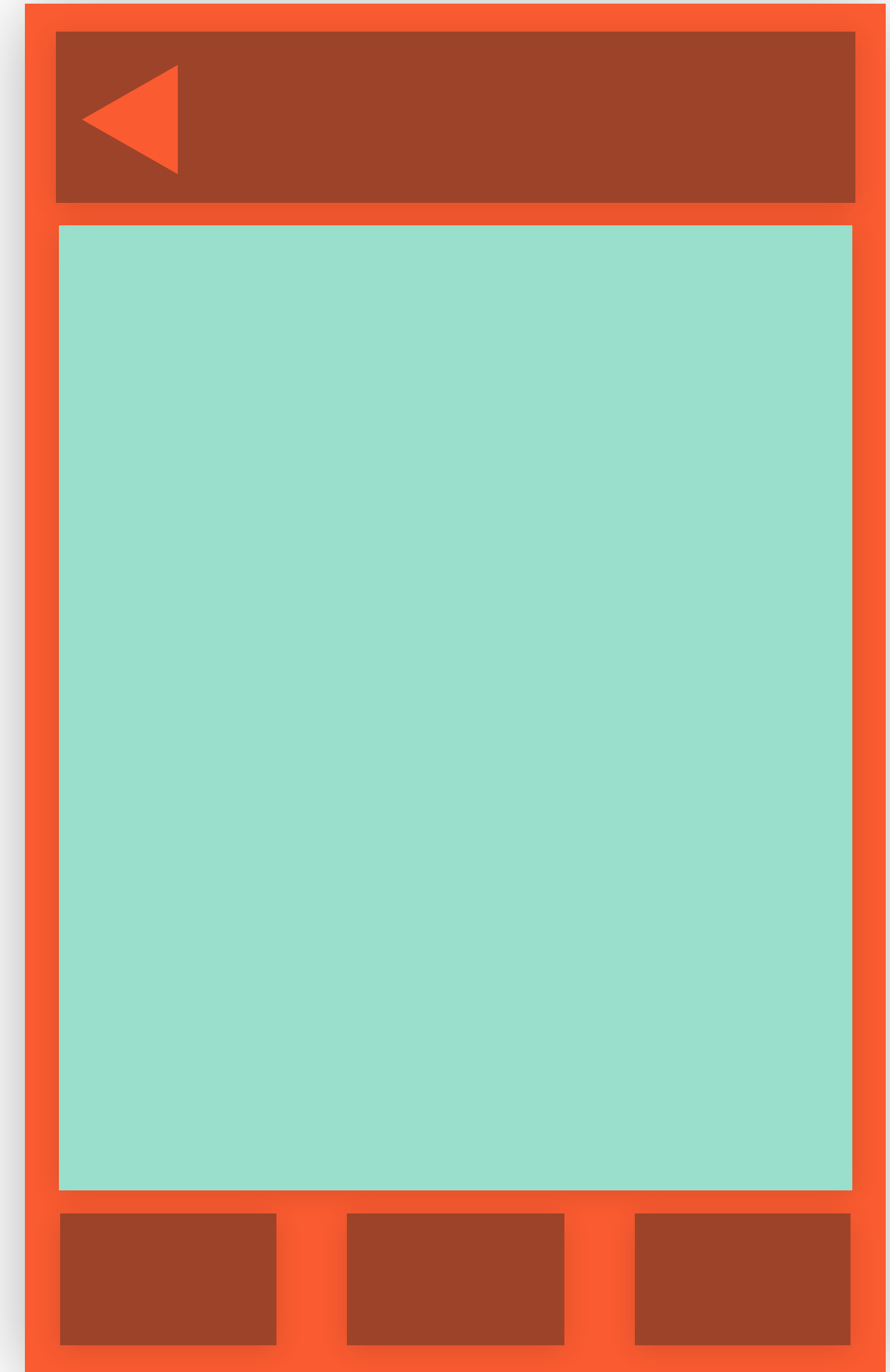
# JavaScript Navigation



**thin** native shell  
**navigation** in JS

**thick** native shell  
only **content** in JS

# Native Navigation





# JavaScript Navigation

classpass

# JavaScript Navigation

React Navigation

<https://reactnavigation.org/>



# JavaScript Navigation

## React Navigation

<https://reactnavigation.org/>

- reimplements iOS/Android behavior in pure JavaScript
- 3rd party library but officially recommended by RN team

# Native Navigation



# Native Navigation

Wix React Native Navigation

<https://github.com/wix/react-native-navigation>

# Native Navigation

Wix React Native Navigation




<https://github.com/wix/react-native-navigation>


Airbnb Native Navigation (Beta)

<https://github.com/airbnb/native-navigation>




# ClassPass Native Navigation

Carrier  8:05 AM  



## Find your city




Our studios and classes vary by city. What neighborhood will you be working out in?


 Use my current location

or

Next


# ClassPass Native Navigation

Carrier  8:05 AM  



## Find your city

Our studios and classes vary by city. What neighborhood will you be working out in?

 Use my current location

or

Next



# ClassPass Native Navigation

```
enum ReactRoute: String {  
    case findCity  
    case signUp  
}  
  
class ReactViewController {  
    init(route: Route, props: [String: Any])  
}
```

Carrier 8:05 AM

←

## Find your city

Our studios and classes vary by city. What neighborhood will you be working out in?

📍 Use my current location

or

Address or city

Next

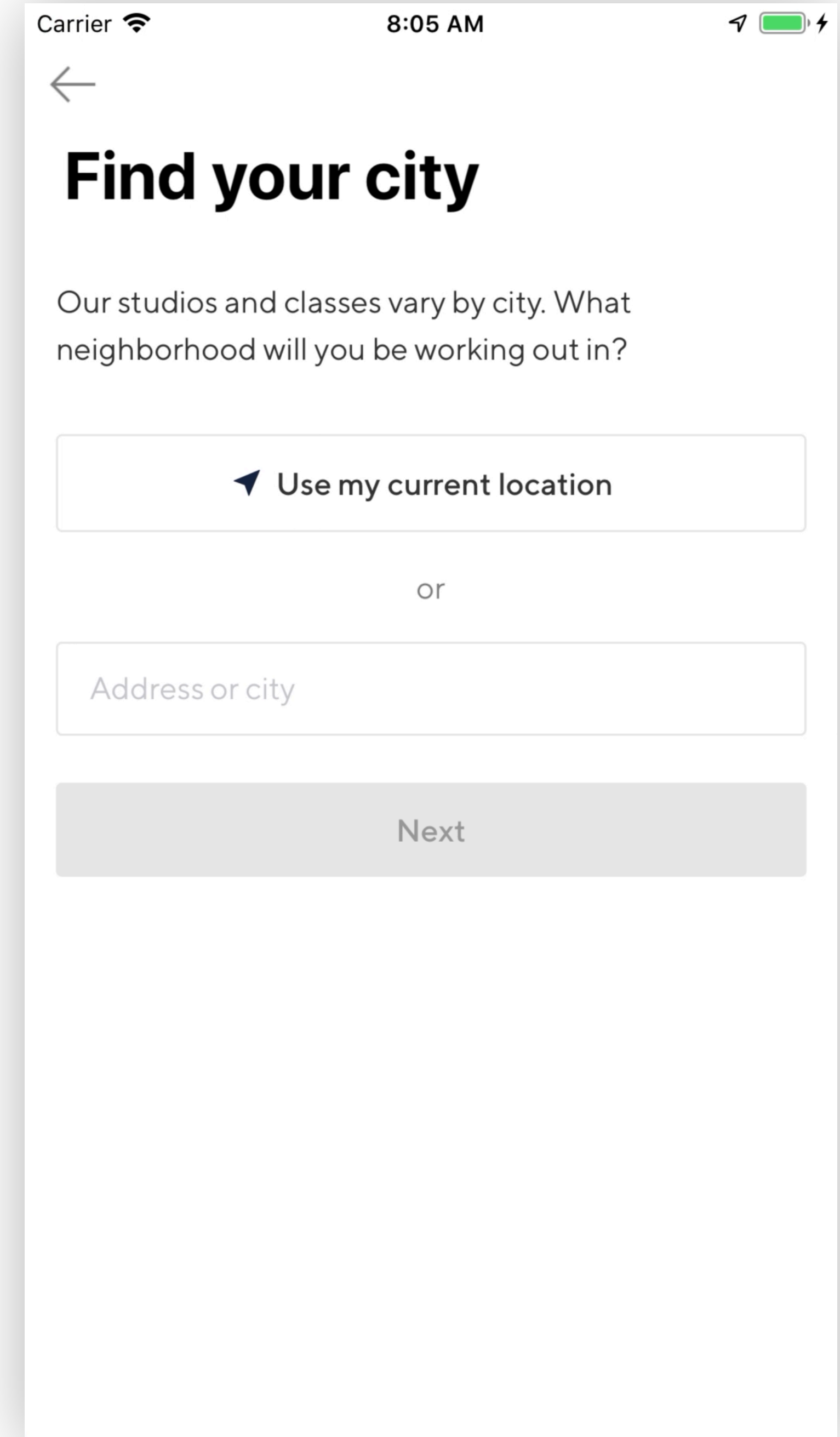
# ClassPass Native Navigation

```
enum ReactRoute: String {
    case findCity
    case signUp
}

class ReactViewController {
    init(route: Route, props: [String: Any])
}

class FindCityViewController: ReactViewController {
    init() { return super.init(route: .findCity) }
}

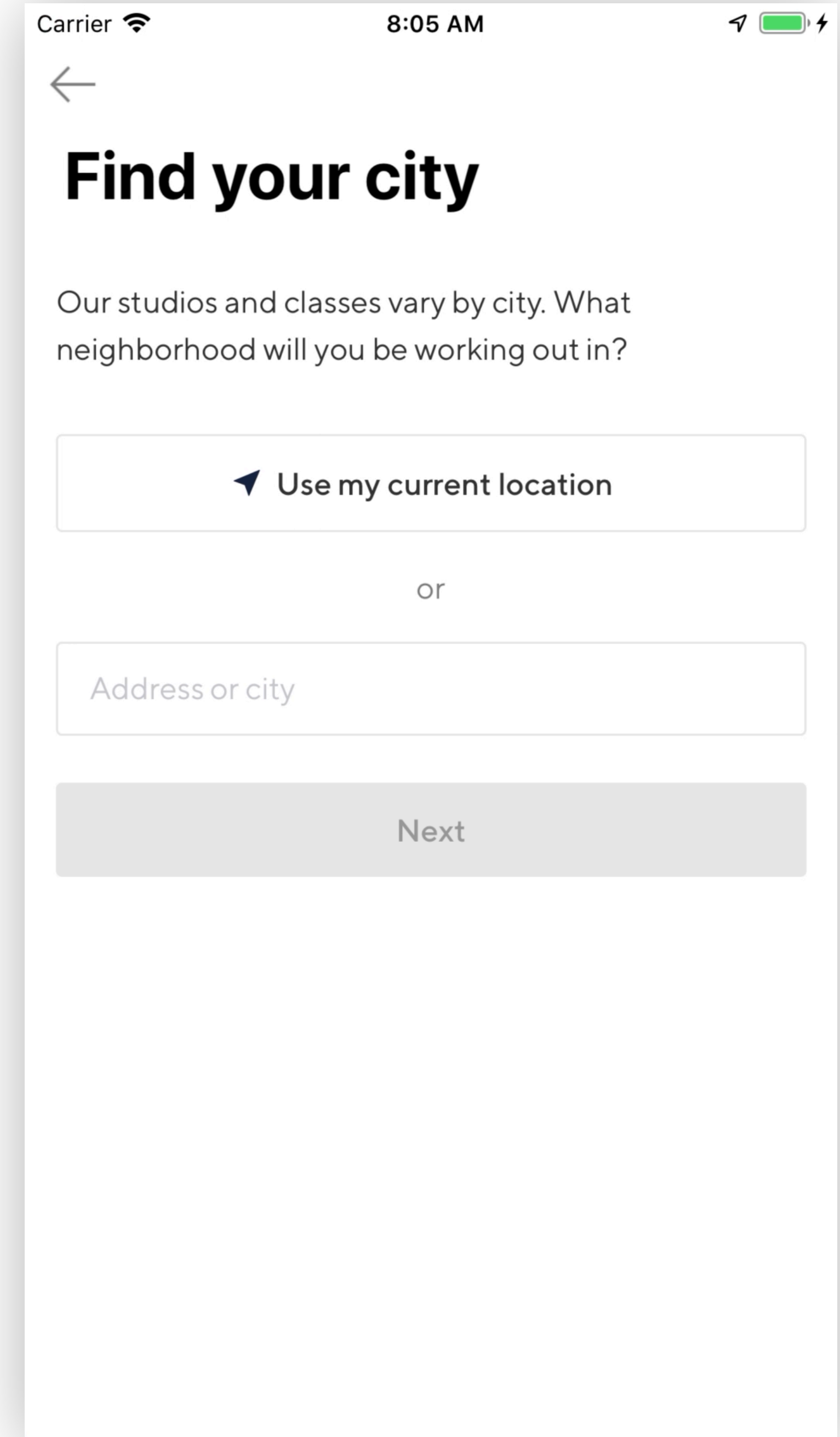
class SignUpViewController: ReactViewController {
    init(city: City) {
        return super.init(route: .signUp, props: [
            "city_id": city.id,
        ])
    }
}
```





# ClassPass Native Navigation

```
render() {  
  
  const routes = {  
    'findCity': FindCity,  
    'signUp': SignUp,  
  }  
  
  const Component = routes[props.route]  
  
  return (  
    <Component {...props} />  
  )  
  
}
```



# ClassPass Native Navigation

```
render() {  
  
  const routes = {  
    'findCity': FindCity,  
    'signUp': SignUp,  
  }  
  
  const Component = routes[props.route]  
  
  return (  
    <Component {...props} />  
  )  
  
}
```

Carrier 8:05 AM

←

## Find your city

Our studios and classes vary by city. What neighborhood will you be working out in?

📍 Use my current location

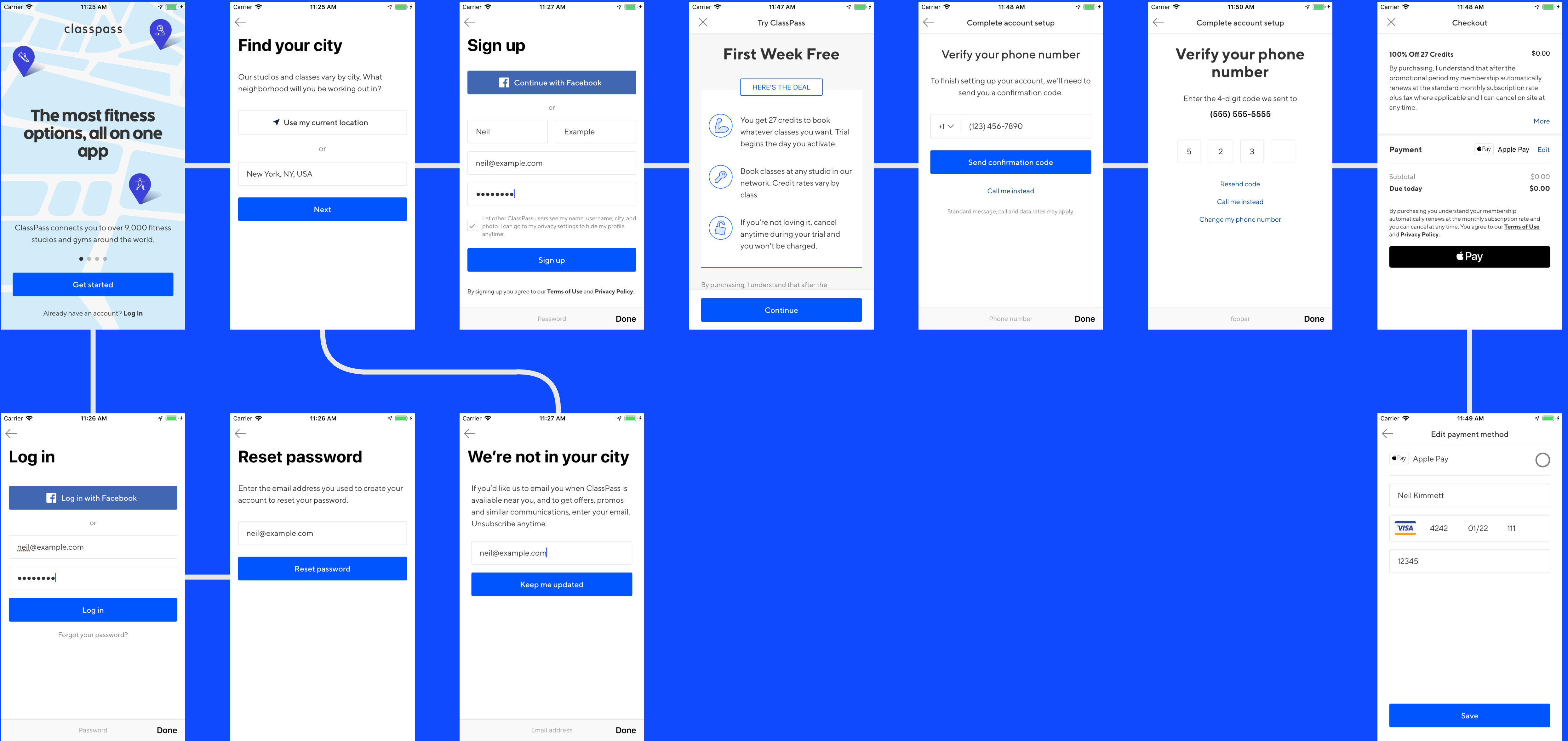
or

Address or city

Next



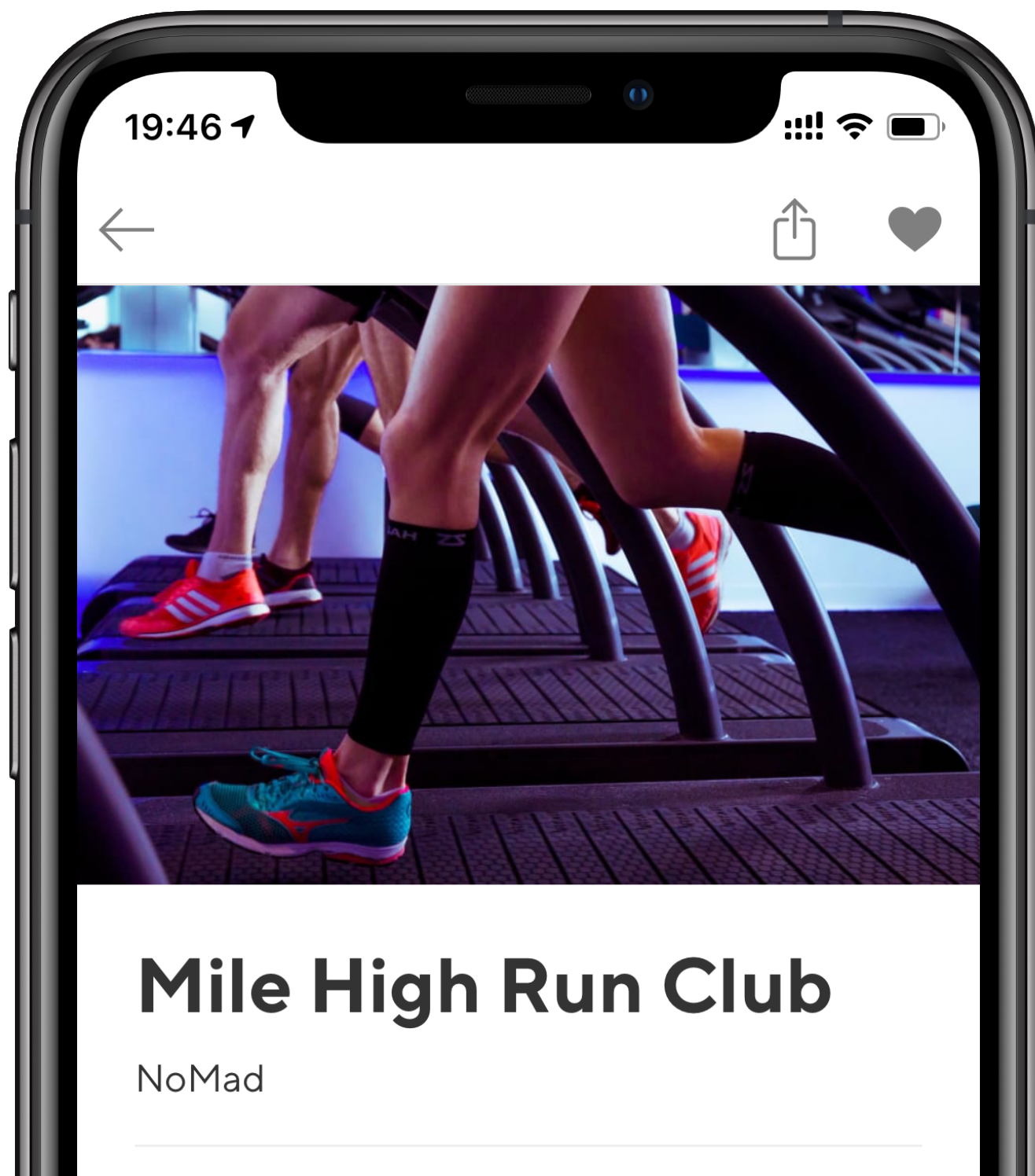
# Sign up flow



# React Native at ClassPass

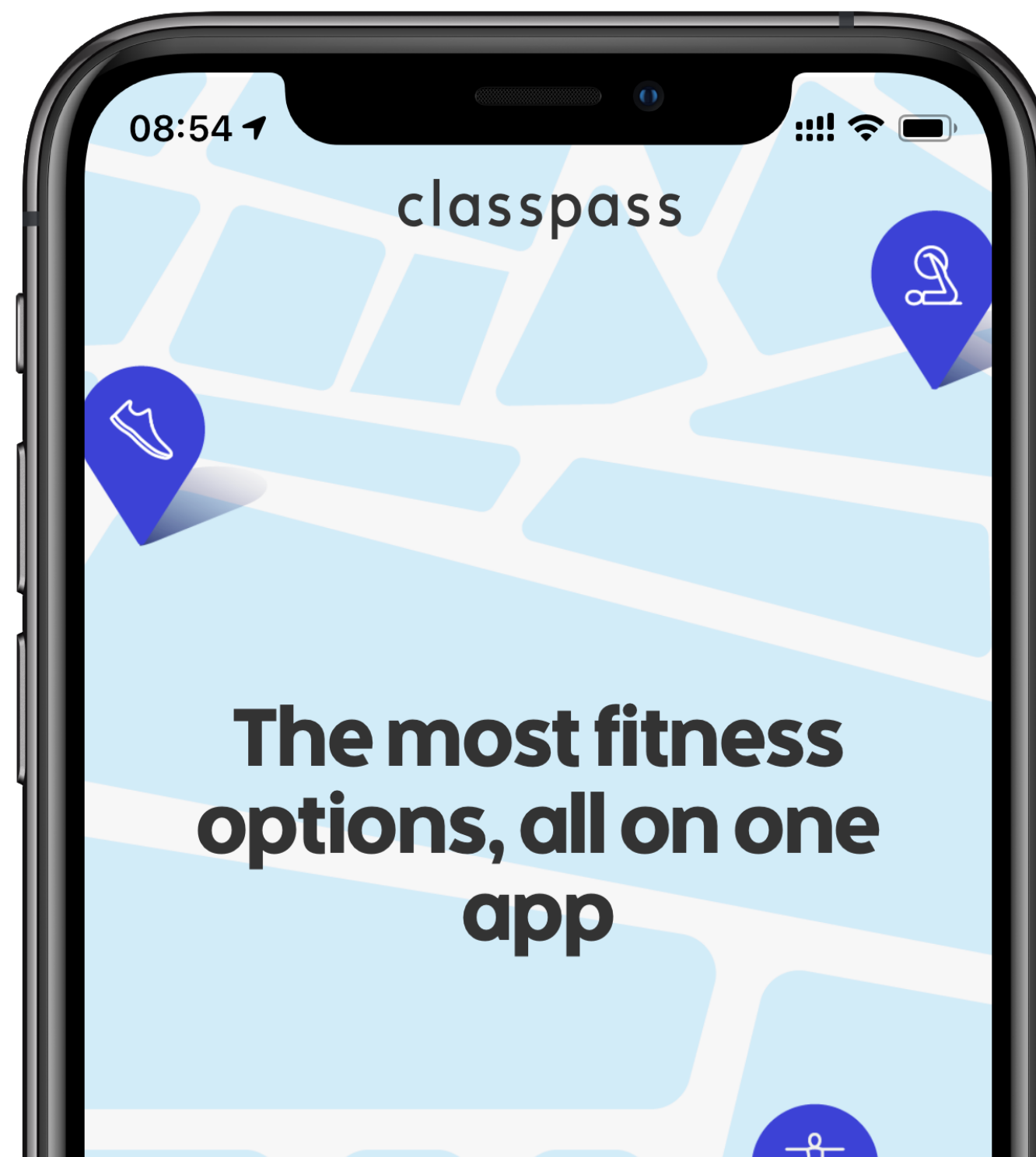
1

Venue detail



2

Sign up flow



3

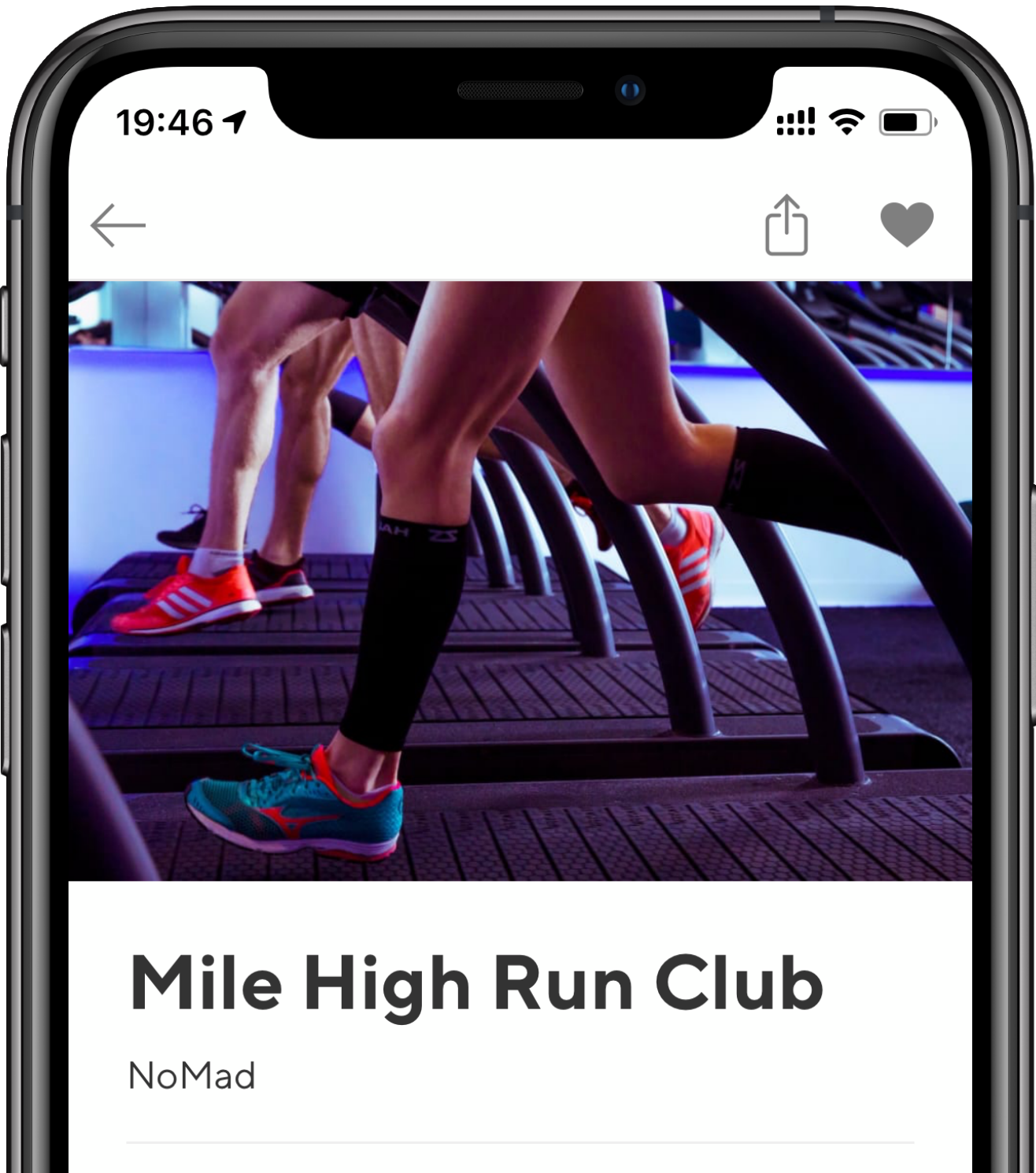
Schedule list



# React Native at ClassPass

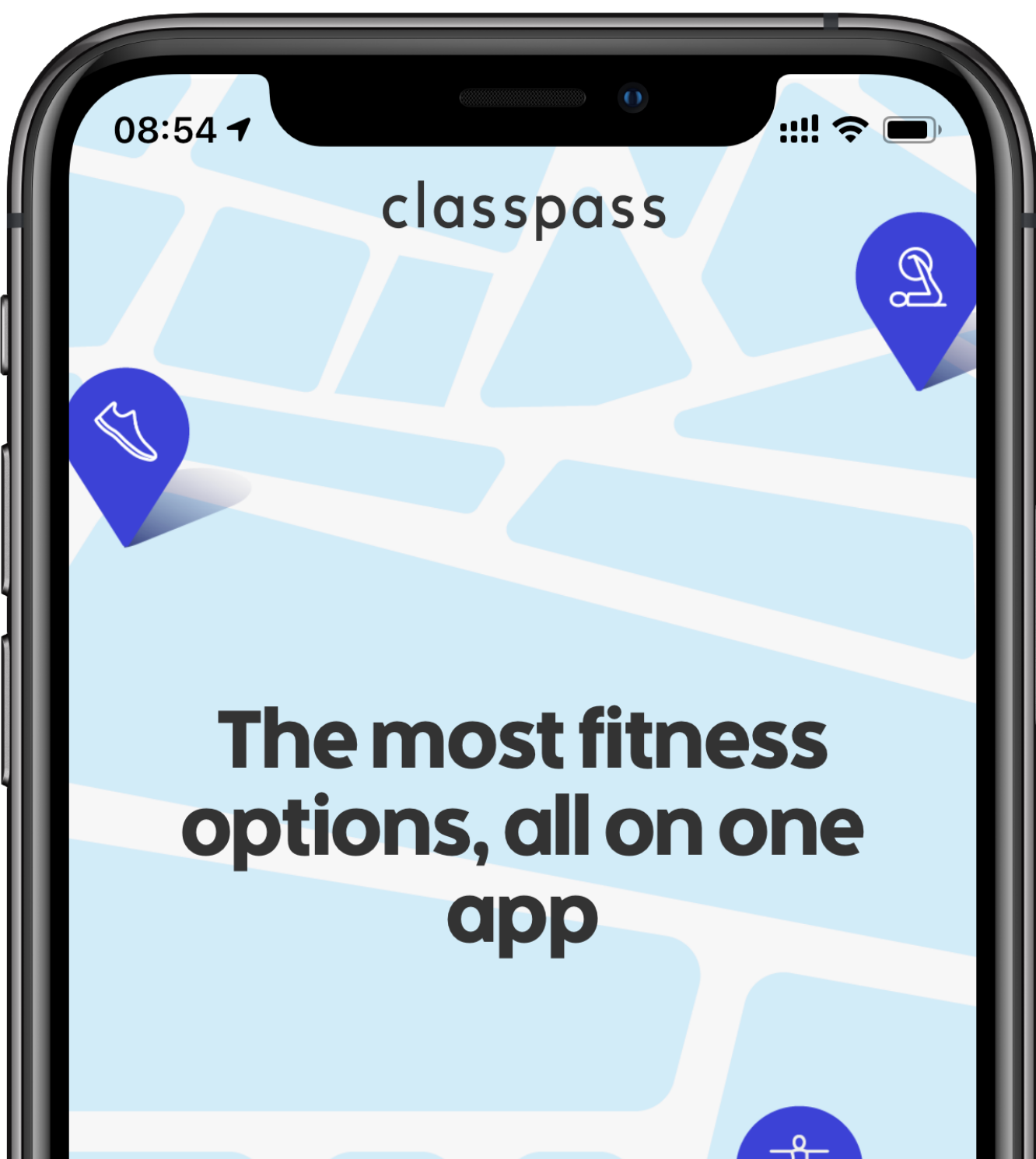
1

Venue detail



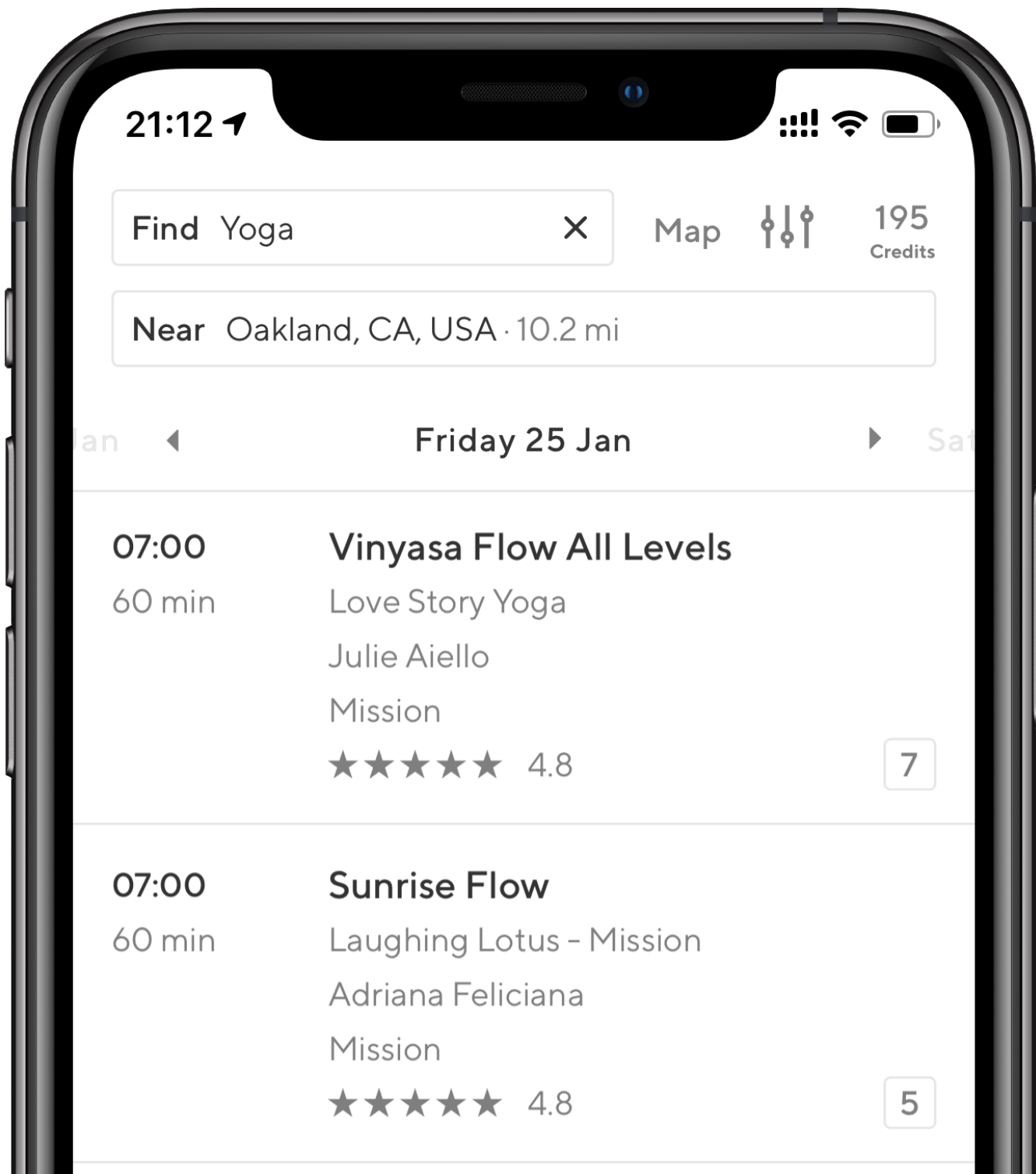
2

Sign up flow



3


Schedule list



# Schedule list



# Schedule list

b 7 ◀ Friday, Feb 8 ▶ Sat		
	<div>Peloton Tread Studio</div> <div>West Village</div> <div>★★★★☆ 4.7</div> <div>FEATURED STUDIO</div>	
12:00 am 120 min	<div>Gym Time</div> <div>24 Hour Fitness - Madison Squar...</div> <div>NoMad</div> <div>★★★★☆ 4.6</div>	7
1:00 am 120 min	<div>Gym Time</div> <div>24 Hour Fitness - Madison Squar...</div> <div>NoMad</div> <div>★★★★☆ 4.6</div>	5
2:00 am 120 min	<div>Gym Time</div> <div>24 Hour Fitness - Madison Squar...</div> <div>NoMad</div> <div>★★★★☆ 4.6</div>	5
3:00 am 120 min	<div>Gym Time</div> <div>24 Hour Fitness - Madison Squar...</div> <div>NoMad</div>	

# Schedule list

11:02

Find an activity or venue

Map

126 Credits


Near

Current location · 3.1 mi

◀

Friday, Feb 8

▶



Peloton Tread Studio

West Village

★★★★☆ 4.7

FEATURED STUDIO

12:00 am

120 min

Gym Time

24 Hour Fitness - Madison Squar...

NoMad

★★★★☆ 4.6

7

1:00 am

120 min

Gym Time

24 Hour Fitness - Madison Squar...

NoMad

★★★★☆ 4.6

5

2:00 am

120 min

Gym Time

24 Hour Fitness - Madison Squar...

NoMad

★★★★☆ 4.6

5

3:00 am

120 min

Gym Time

24 Hour Fitness - Madison Squar...

NoMad

Home

Find a class

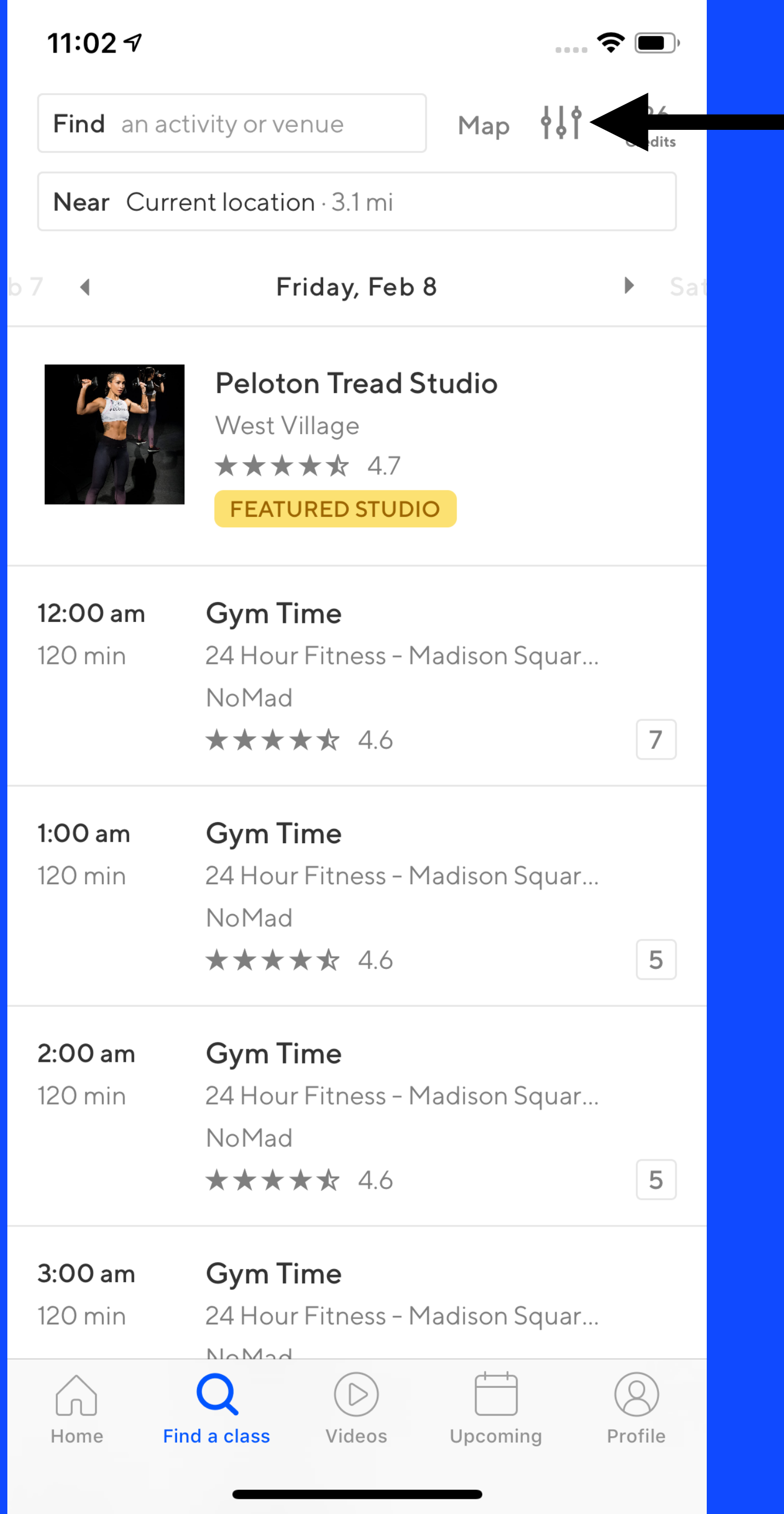
Videos

Upcoming

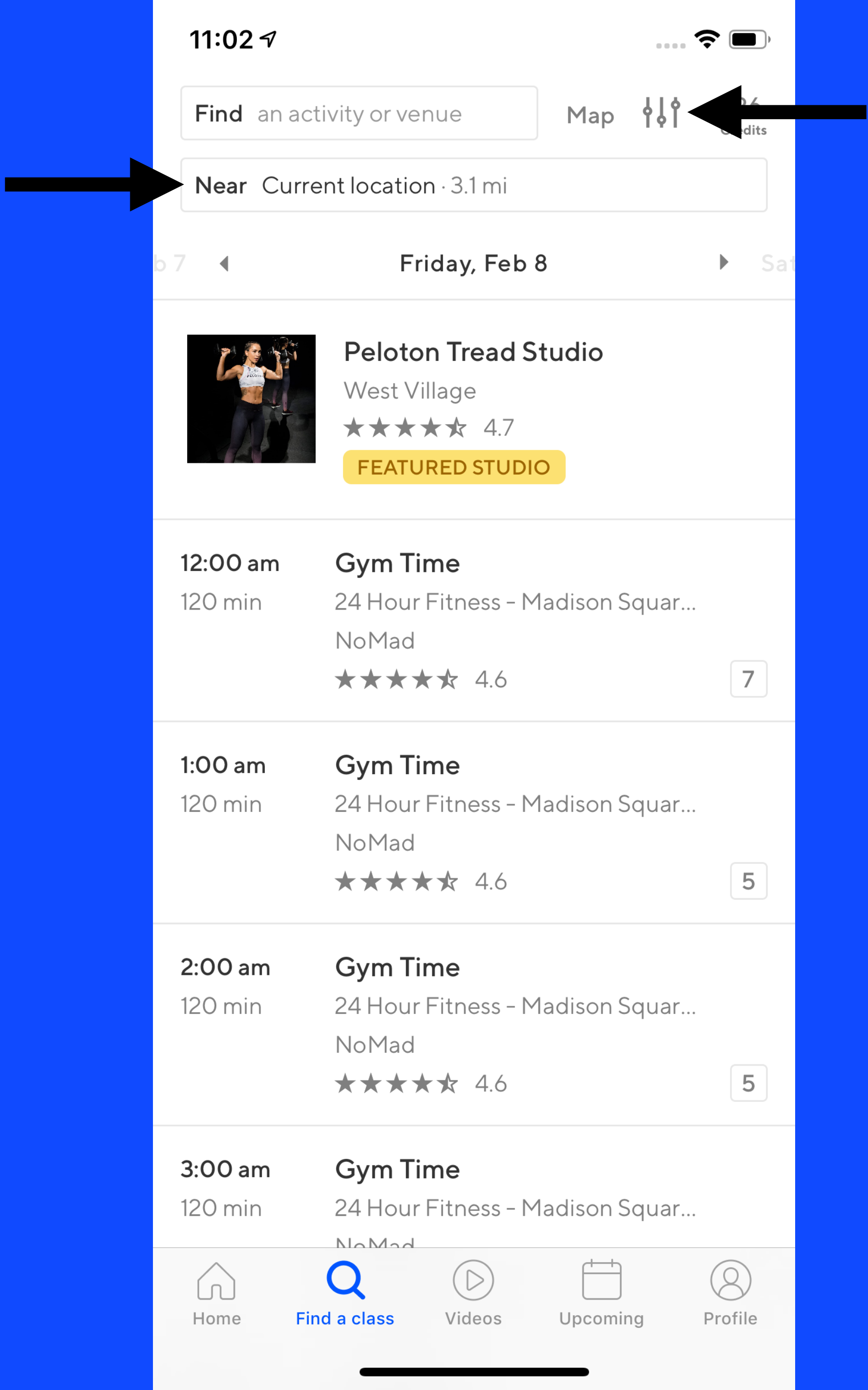
Profile



# Schedule list

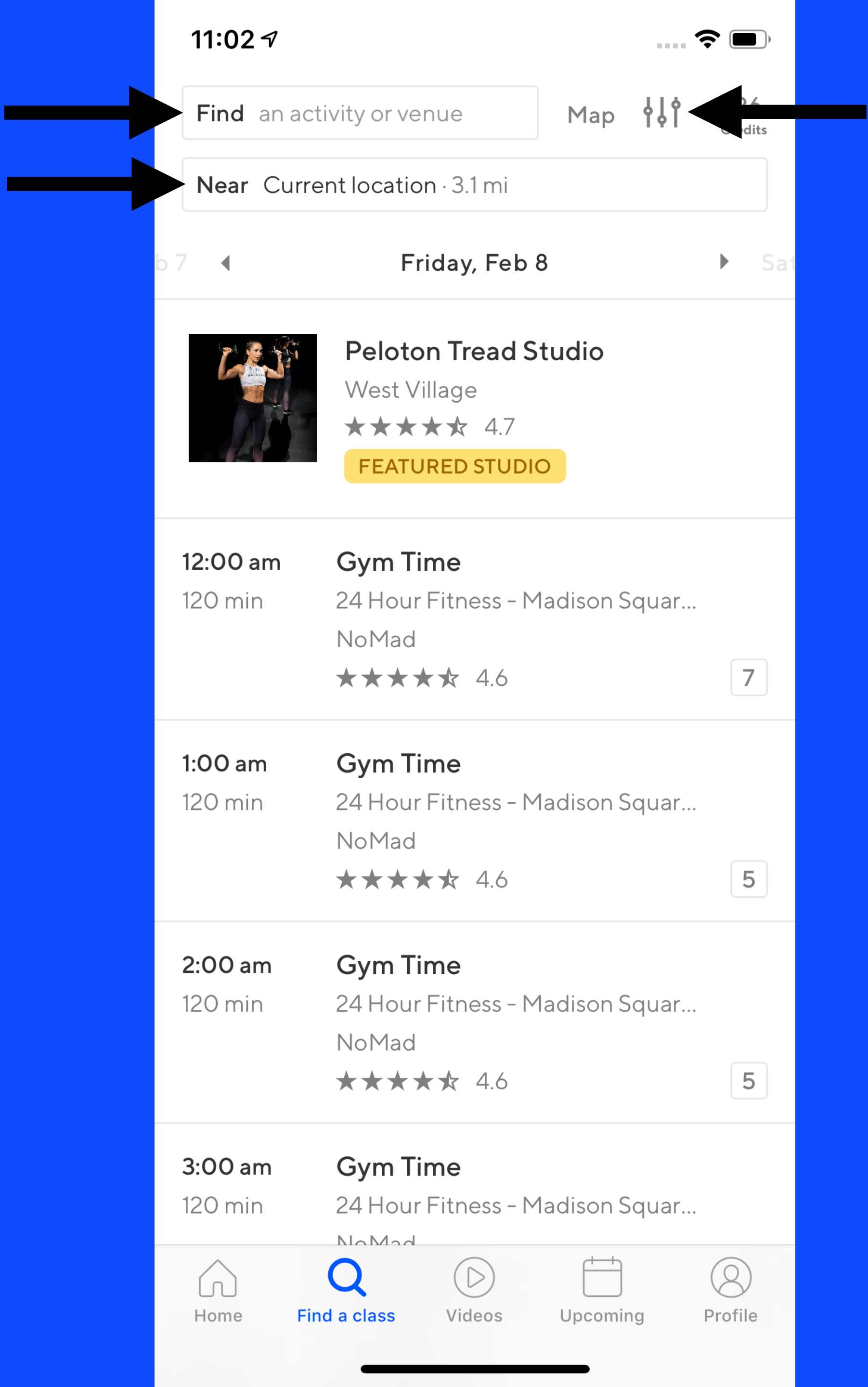


# Schedule list





# Schedule list



# Schedule list

11:02

Find an activity or venue


Map

Near Current location · 3.1 mi

Today Thursday, Feb 7

Fri 7

Friday, Feb 8




Sal Anthony's Movement Salon

Gramercy Park

★★★★☆ 4.7

FEATURED STUDIO



Peloton Tread Studio

West Village

★★★★☆ 4.7

FEATURED STUDIO

10:40 am

10 min

Whole Body Cryotherapy

Advanced Cryo NYC

SoHo

★★★★☆ 4.8

Wellness

19

12:00 am

120 min

Gym Time

24 Hour Fitness - Madison Squar...

NoMad

★★★★☆ 4.6

7

10:45 am

60 min

Signature II

Physique 57 - Spring Street

Adam Dickerson

SoHo

★★★★☆ 4.8

12

1:00 am

120 min

Gym Time

24 Hour Fitness - Madison Squar...

NoMad

★★★★☆ 4.6

5

11:00 am

55 min

Lymph

Shape House - Dumbo

DUMBO

★★★★☆ 4.8

Wellness

18

2:00 am

120 min

Gym Time

24 Hour Fitness - Madison Squar...

NoMad

★★★★☆ 4.6

5

11:00 am

55 min

Sweat

Shape House - Dumbo

3:00 am

120 min

Gym Time

24 Hour Fitness - Madison Squar...

NoMad

Home

Find a class

Videos

Upcoming

Profile



# Schedule list

11:02

Find an activity or venue

Map

Near Current location · 3.1 mi


Today Thursday, Feb 7

Fri 7

Friday, Feb 8

Sat 8

Saturday, Feb 9




Sal Anthony's Movement Salon

Gramercy Park

★★★★☆ 4.7

FEATURED STUDIO



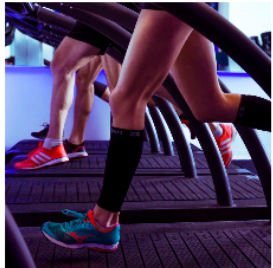
Peloton Tread Studio

West Village

★★★★☆ 4.7

FEATURED STUDIO

You are viewing classes in your next cycle



Mile High Run Club

NoHo

★★★★☆ 4.9

FEATURED STUDIO

10:40 am

Whole Body Cryotherapy

Advanced Cryo NYC

SoHo

★★★★☆ 4.8

Wellness

19

12:00 am

Gym Time

24 Hour Fitness - Madison Squar...

NoMad

★★★★☆ 4.6

7

10:45 am

Signature II

Physique 57 - Spring Street

Adam Dickerson

SoHo

★★★★☆ 4.8

12

1:00 am

Gym Time

24 Hour Fitness - Madison Squar...

NoMad

★★★★☆ 4.6

5

11:00 am

Lymph

Shape House - Dumbo

DUMBO

★★★★☆ 4.8

Wellness

18

2:00 am

Gym Time

24 Hour Fitness - Madison Squar...

NoMad

★★★★☆ 4.6

5

11:00 am

Sweat

Shape House - Dumbo

DUMBO

★★★★☆ 4.8

Wellness

18

3:00 am

Gym Time

24 Hour Fitness - Madison Squar...

NoMad

★★★★☆ 4.6

5

12:00 am

Gym Time

24 Hour Fitness - Madison Squar...

NoMad

★★★★☆ 4.6

6

12:15 am

Hair Therapy

Hair Repair Bar by Giojè

West Village

★★★★☆ 4.9

Wellness

27

1:00 am

Gym Time

24 Hour Fitness - Madison Squar...

NoMad

★★★★☆ 4.6

5

Home

Find a class

Videos

Upcoming

Profile

**Should you use React Native  
in your app?**





# React Native at Airbnb

# React Native at Airbnb

## Sunsetting React Native

Due to a variety of technical and organizational issues, we will be sunseting React Native and putting all of our efforts into making native amazing.



Gabriel Peal 

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# React Native at Airbnb

## React Native at Airbnb

In 2016, we took a big bet on React Native. Two years later, we’re ready to share our experience with the world and show what’s next.




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## React Native at Airbnb: The Technology

The technical details



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## Building a Cross-Platform Mobile Team

Adapting mobile for a world with React Native



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# React Native, 2 years later

By Orta Therox





# Supporting React Native at Pinterest



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Vivian Qu | Pinterest engineer, Growth

[https://medium.com/@Pinterest\\_Engineering/](https://medium.com/@Pinterest_Engineering/)

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[artsy.net](#)

## React Native, 2 years later

By Orta Therox

classpass

<http://artsy.github.io/blog/2018/03/17/two-years-of-react-native/>

## Sunsetting React Native at Airbnb

“there were a number of **technical** and **organizational** challenges that we were unable to overcome that would have made continuing to invest in React Native a challenge”

<https://medium.com/airbnb-engineering/sunsetting-react-native-1868ba28e30a>



# Technical challenges

# Technical challenges

- investing in **infrastructure**



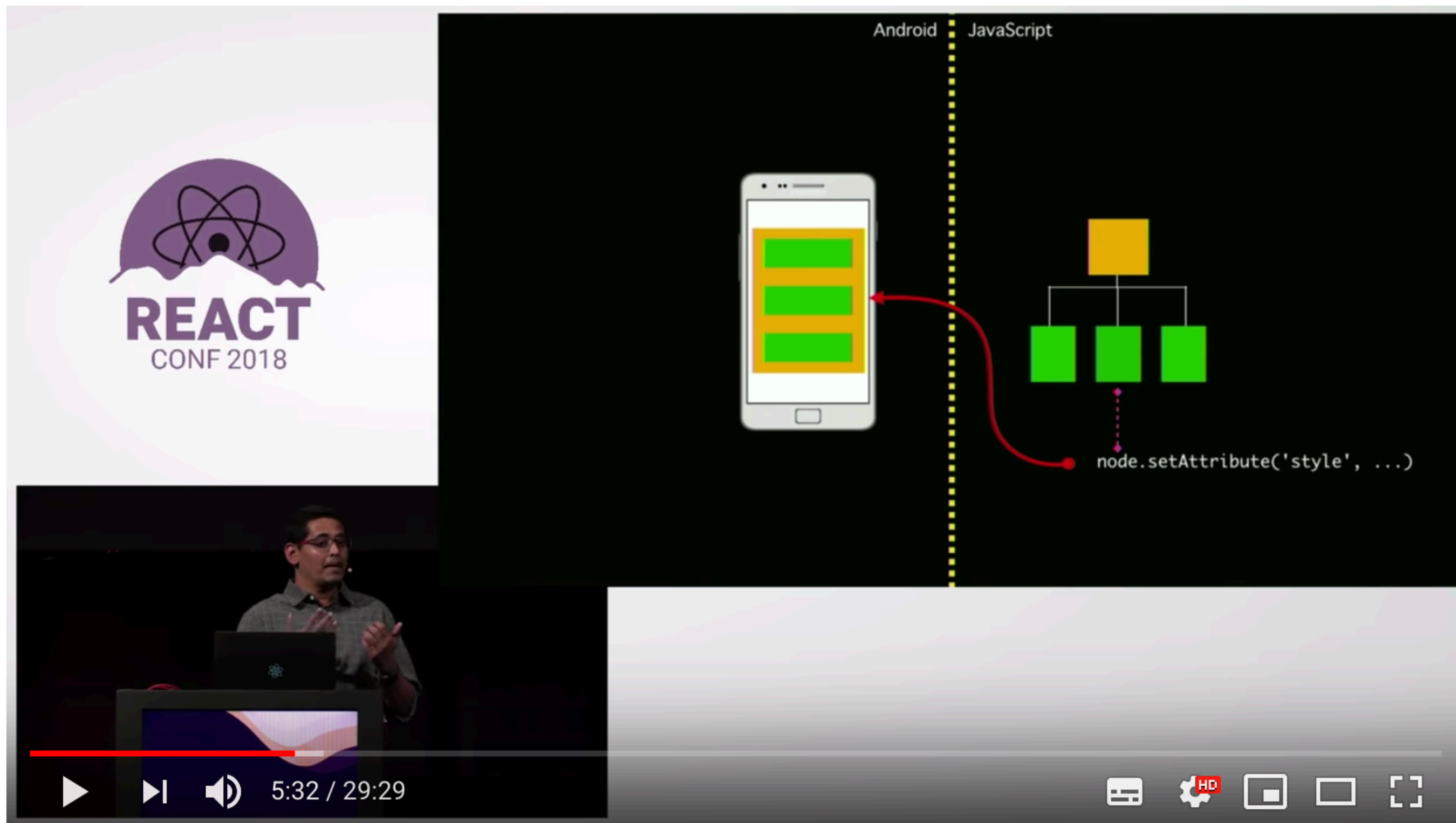
# Technical challenges

- investing in **infrastructure**
- initial **render time**

# Technical challenges

- investing in **infrastructure**
- initial **render time**
- **asynchronous** native bridge





## React Native's New Architecture - Parashuram N - React Conf 2018

22,533 views

👍 518    💬 7    ➦ SHARE    ≡+ SAVE    ...

<https://www.youtube.com/watch?v=UcqRXTriUVI>

# React Native's new architecture

classpass



# React Native's new architecture

- new architecture called **Fabric**

# React Native's new architecture

- new architecture called **Fabric**
- opt-in **synchronous execution** to help performance



# React Native's new architecture

- new architecture called **Fabric**
- opt-in **synchronous execution** to help performance
- JSI: **shared memory** between JS and native objects

# React Native's new architecture

- new architecture called **Fabric**
- opt-in **synchronous execution** to help performance
- JSI: **shared memory** between JS and native objects

<https://github.com/react-native-community/discussions-and-proposals/issues/40>



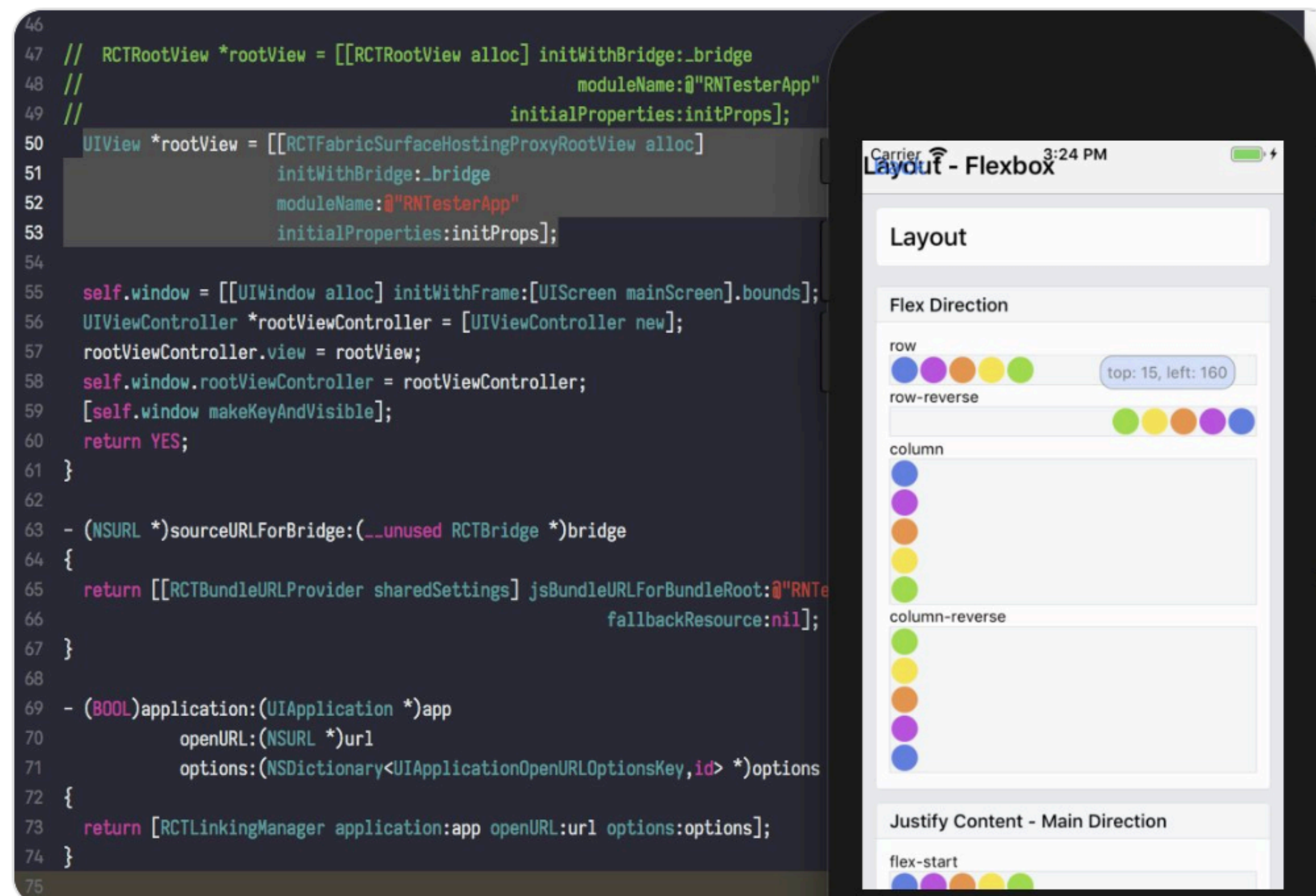
Krzysztof Magiera

@kzzzf

Following



So it appears that React Native github repo has all the code to run Fabric. With a little bit of hacking I finally got it to work with RNTester app on iOS, AMA



9:42 AM - 20 Nov 2018

# Organizational challenges

# Organizational challenges

- React Native is **polarising**



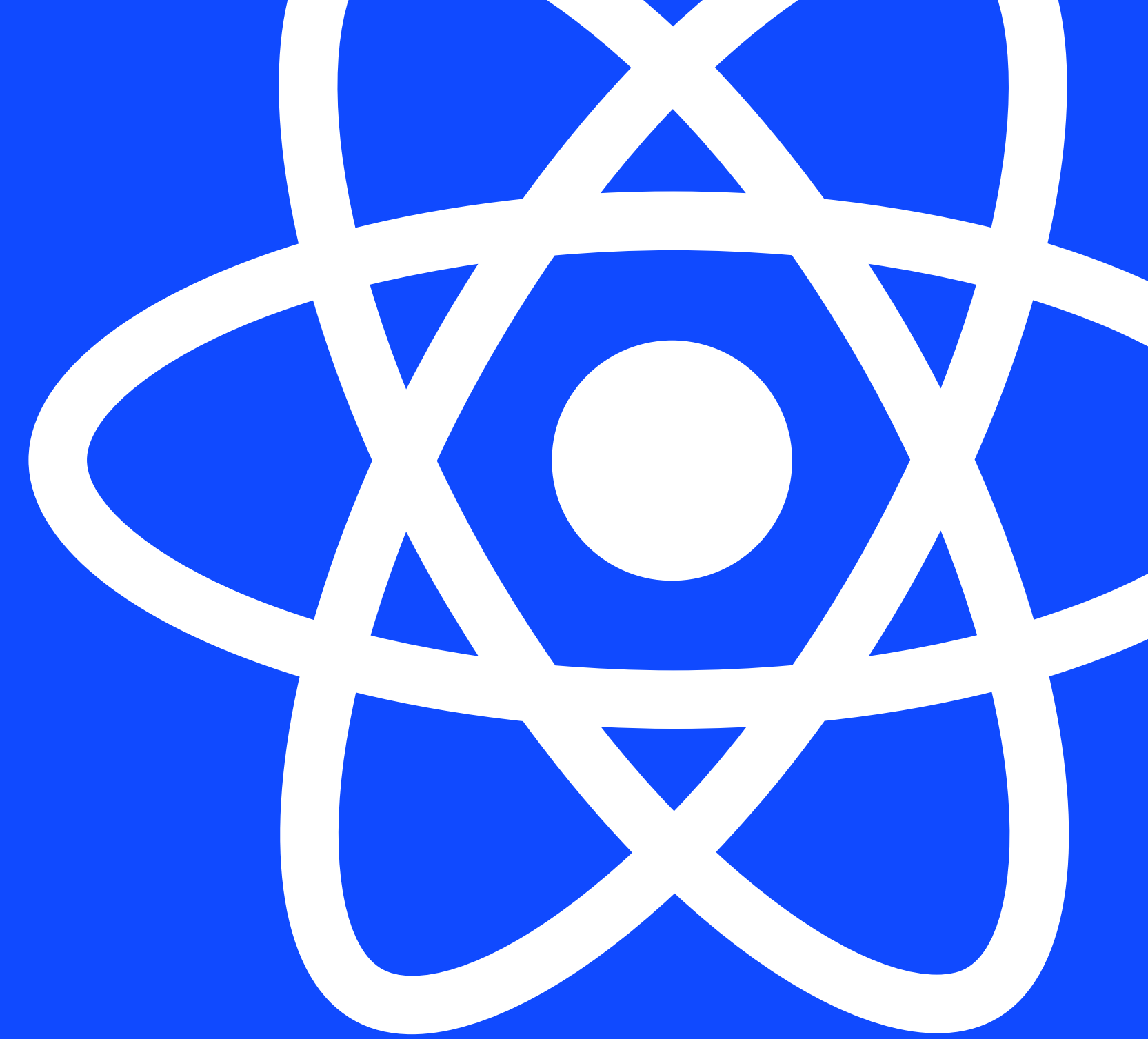
# Organizational challenges

- React Native is **polarising**
- React Native is still **native**

# Organizational challenges

- React Native is **polarising**
- React Native is still **native**
- **hiring** can be a challenge

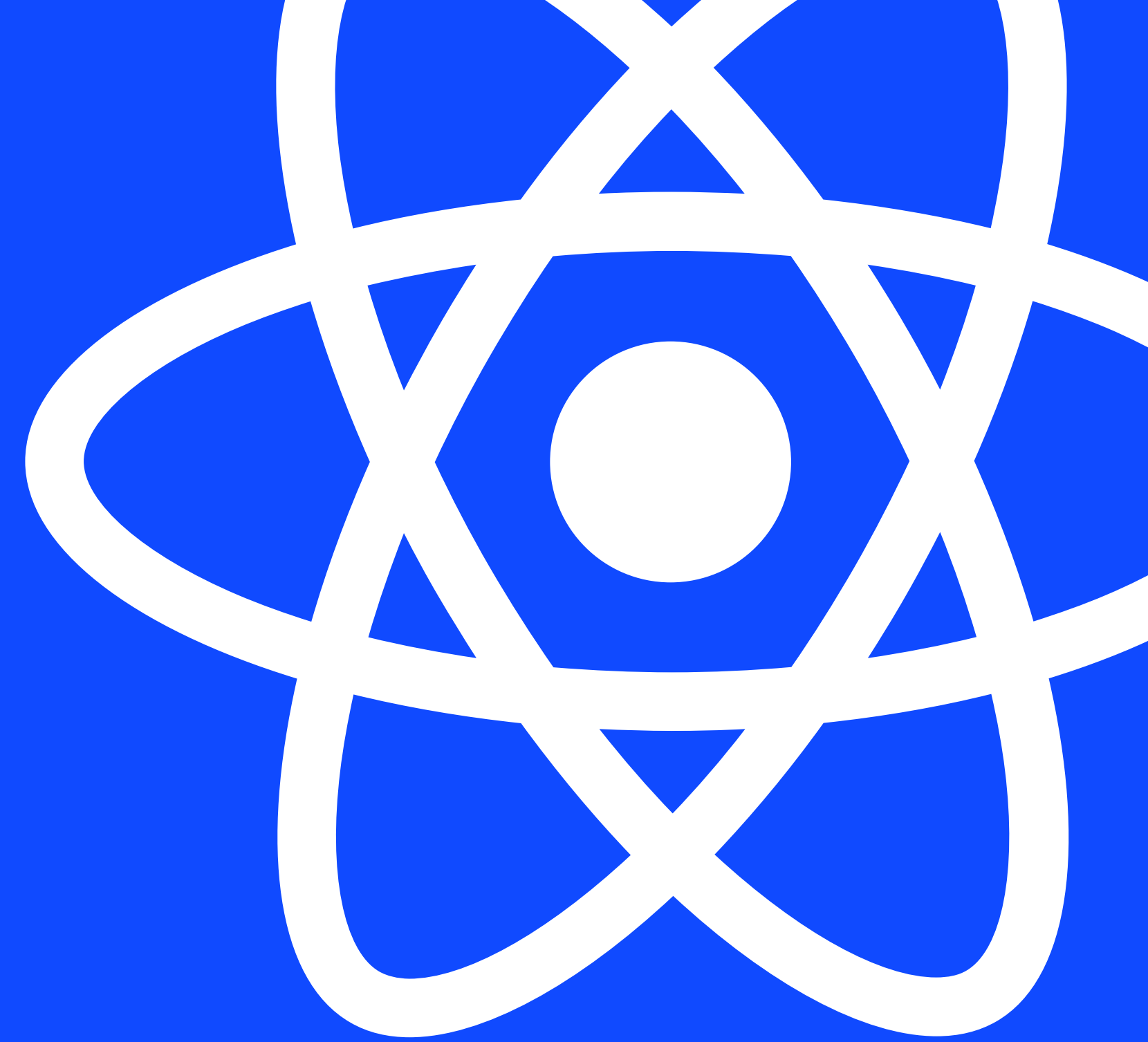
# Should you use React Native in your app?





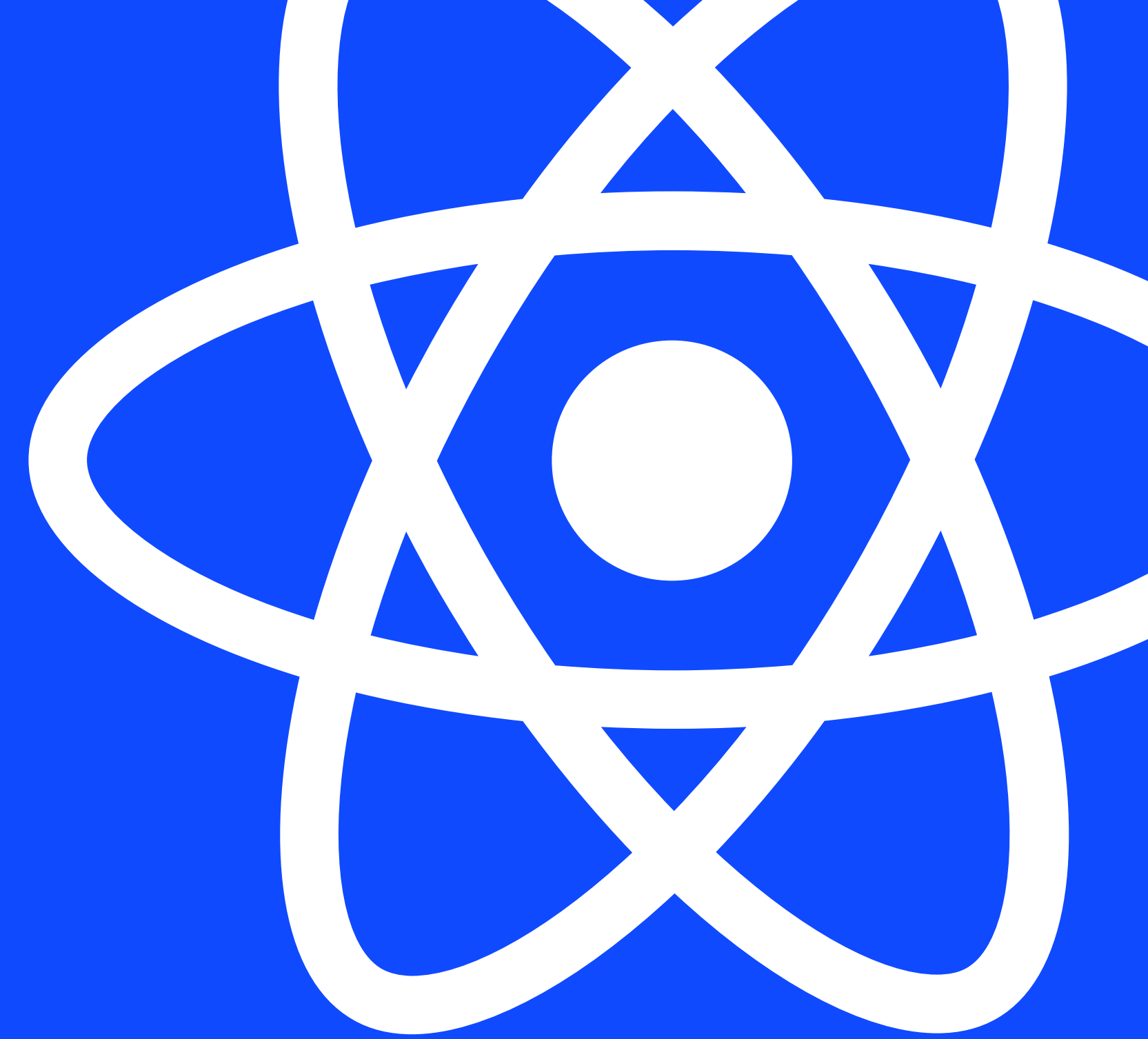
# Should you use React Native in your app?

- think about your **inputs** and **outputs**



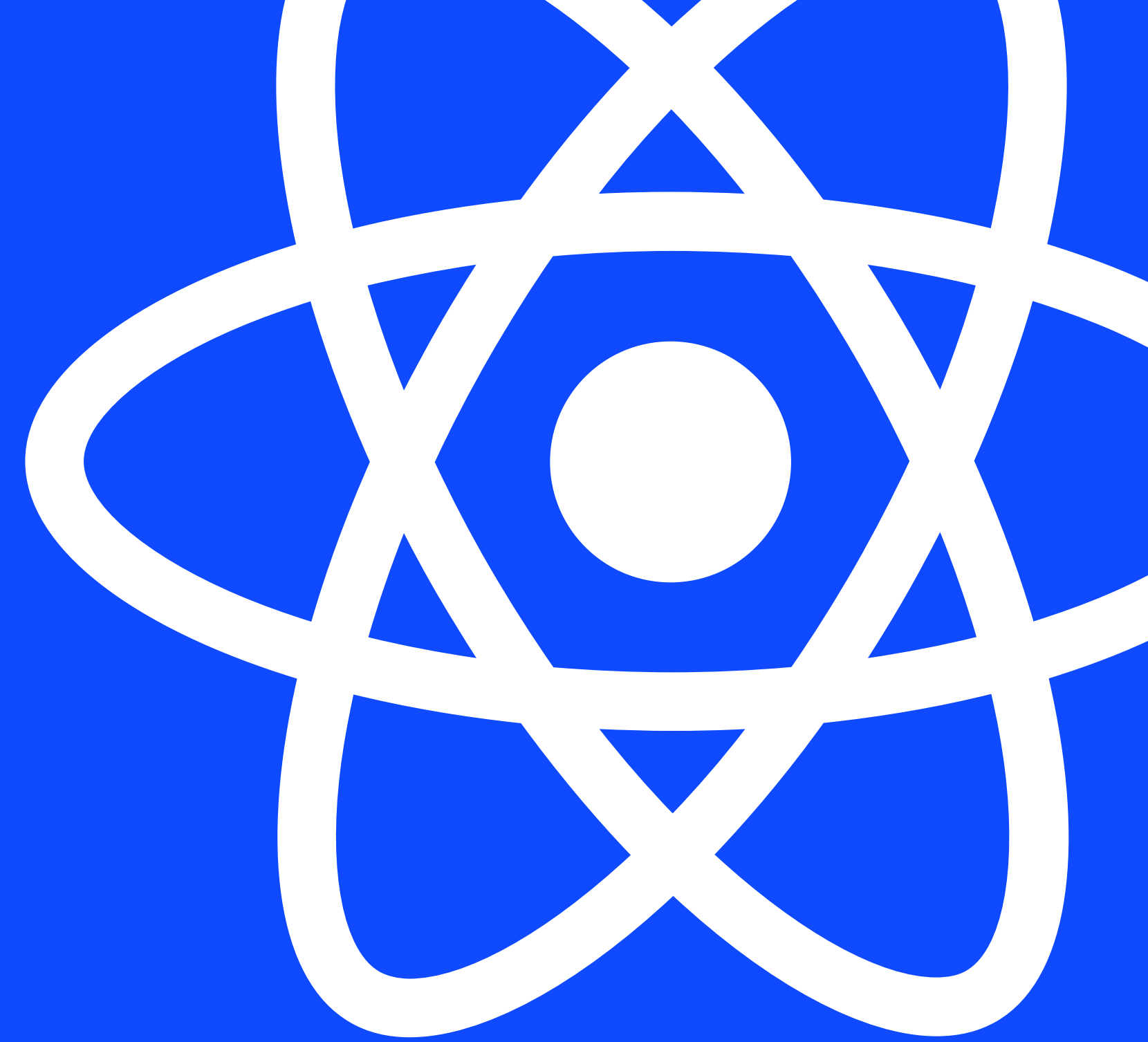
# Should you use React Native in your app?

- think about your **inputs** and **outputs**
- think about your **team** and their **skills**



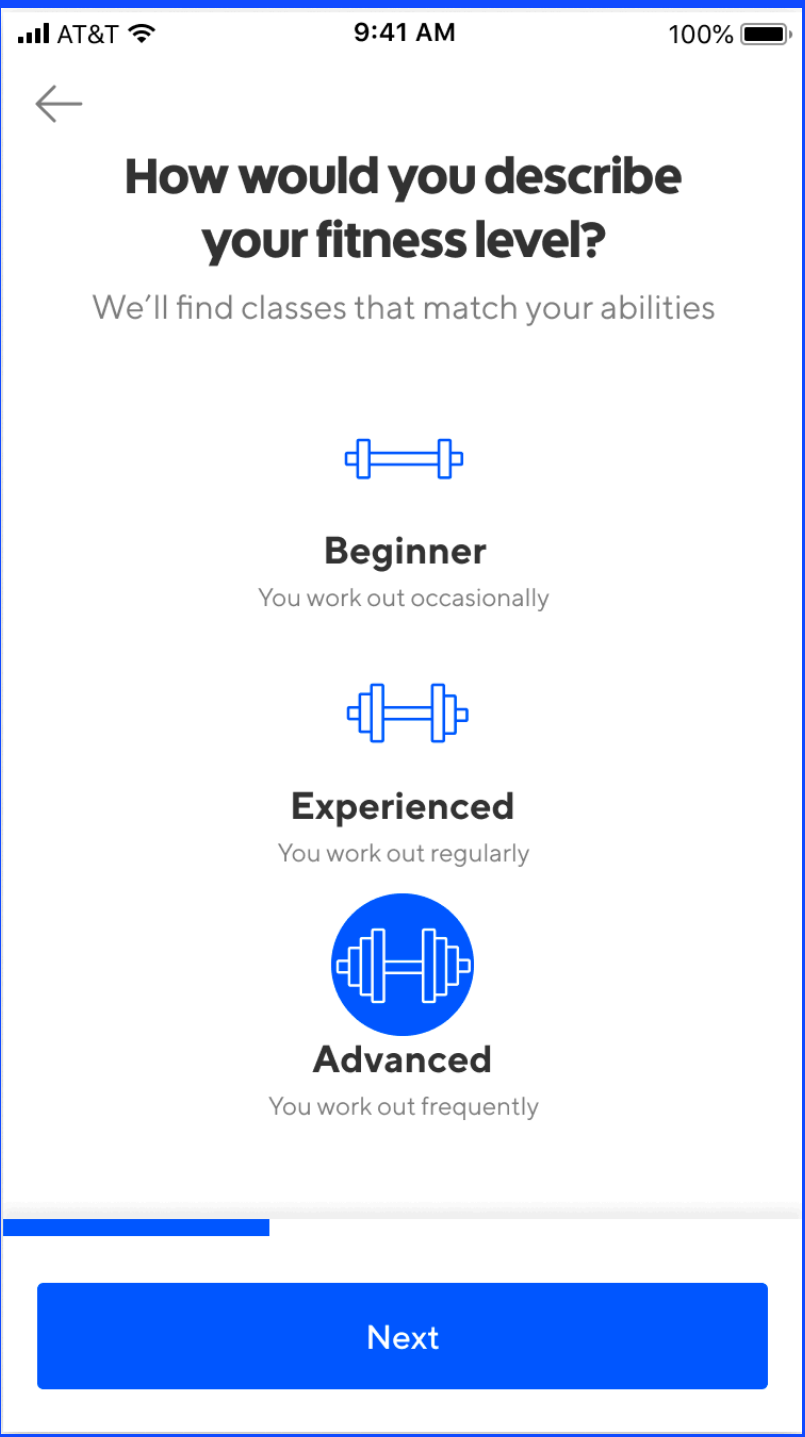
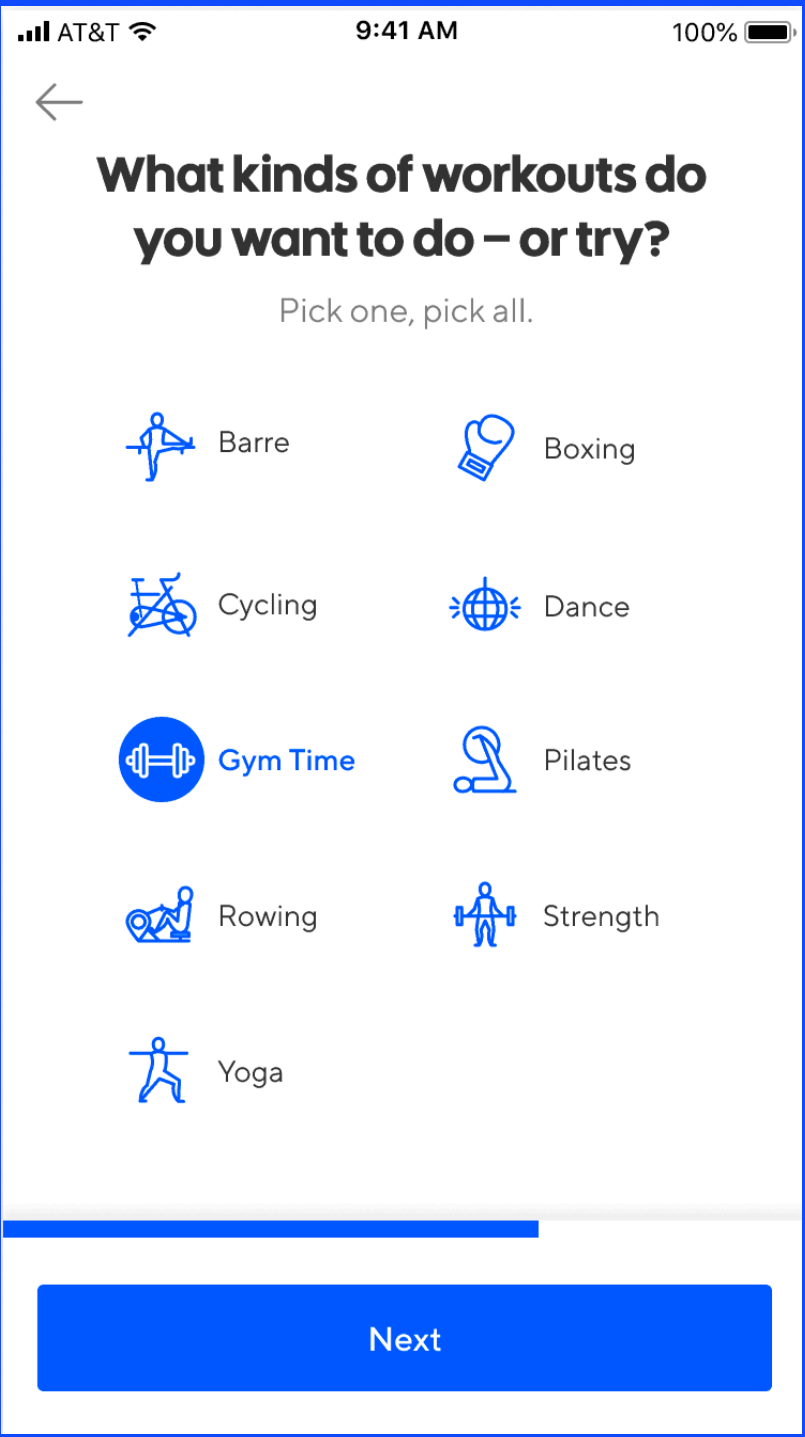
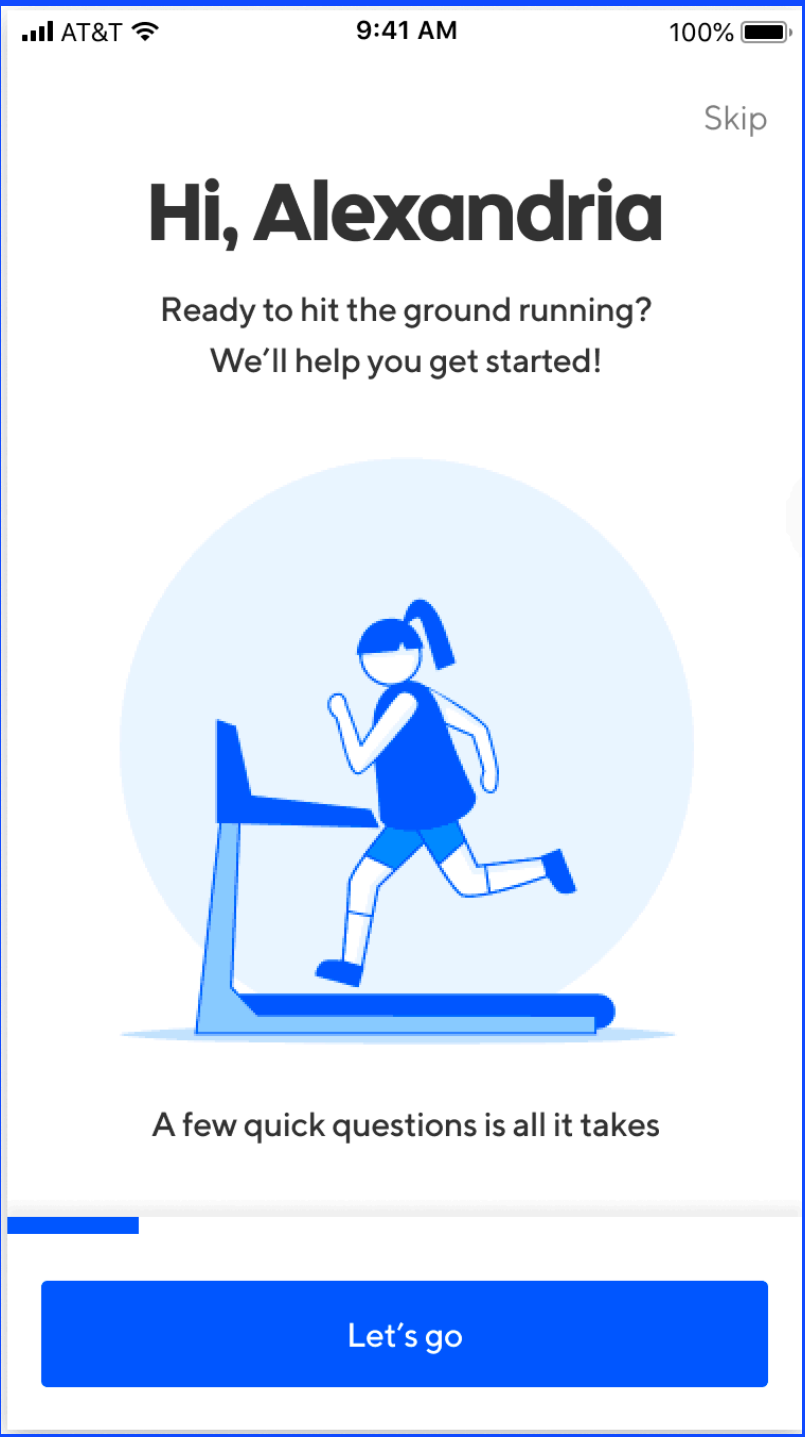
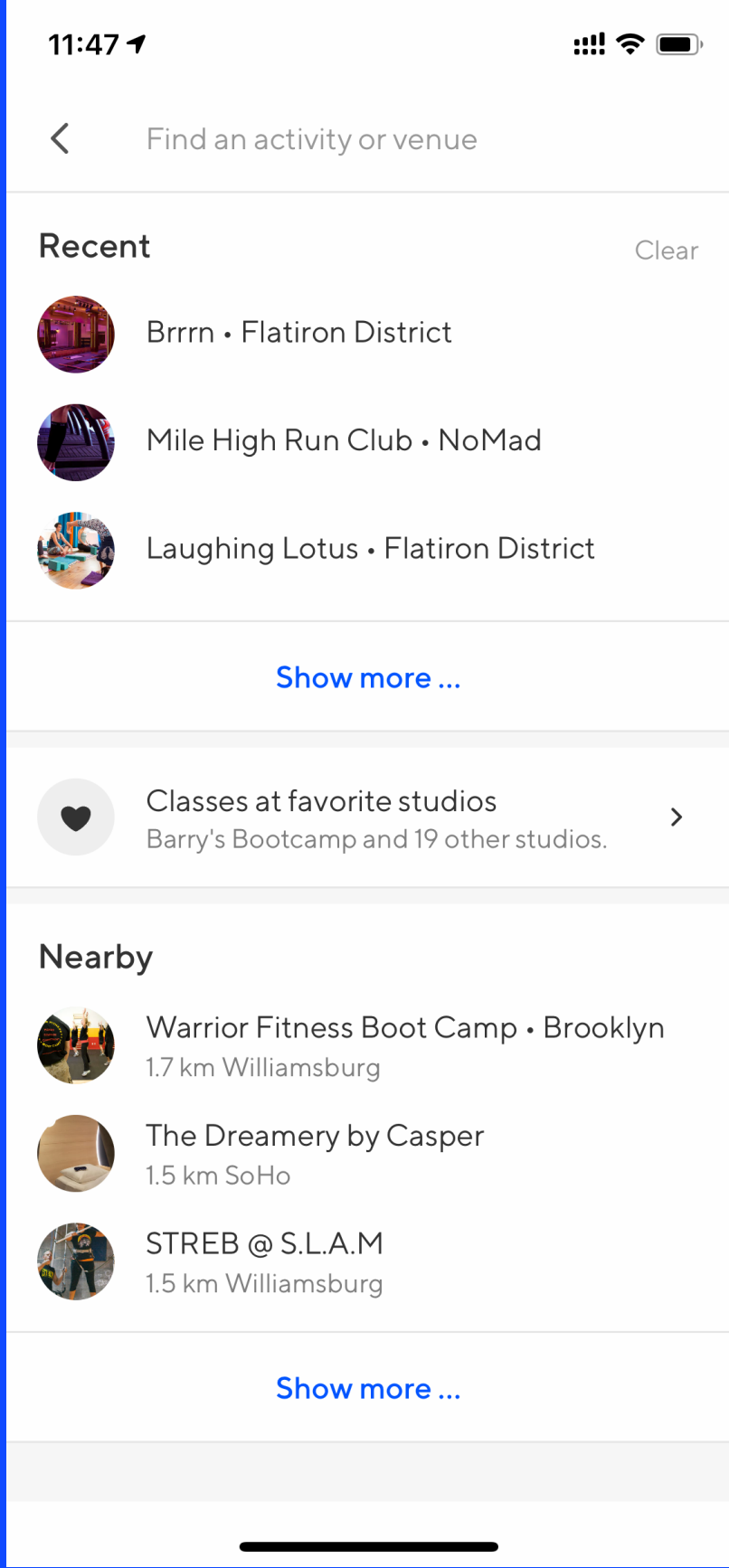
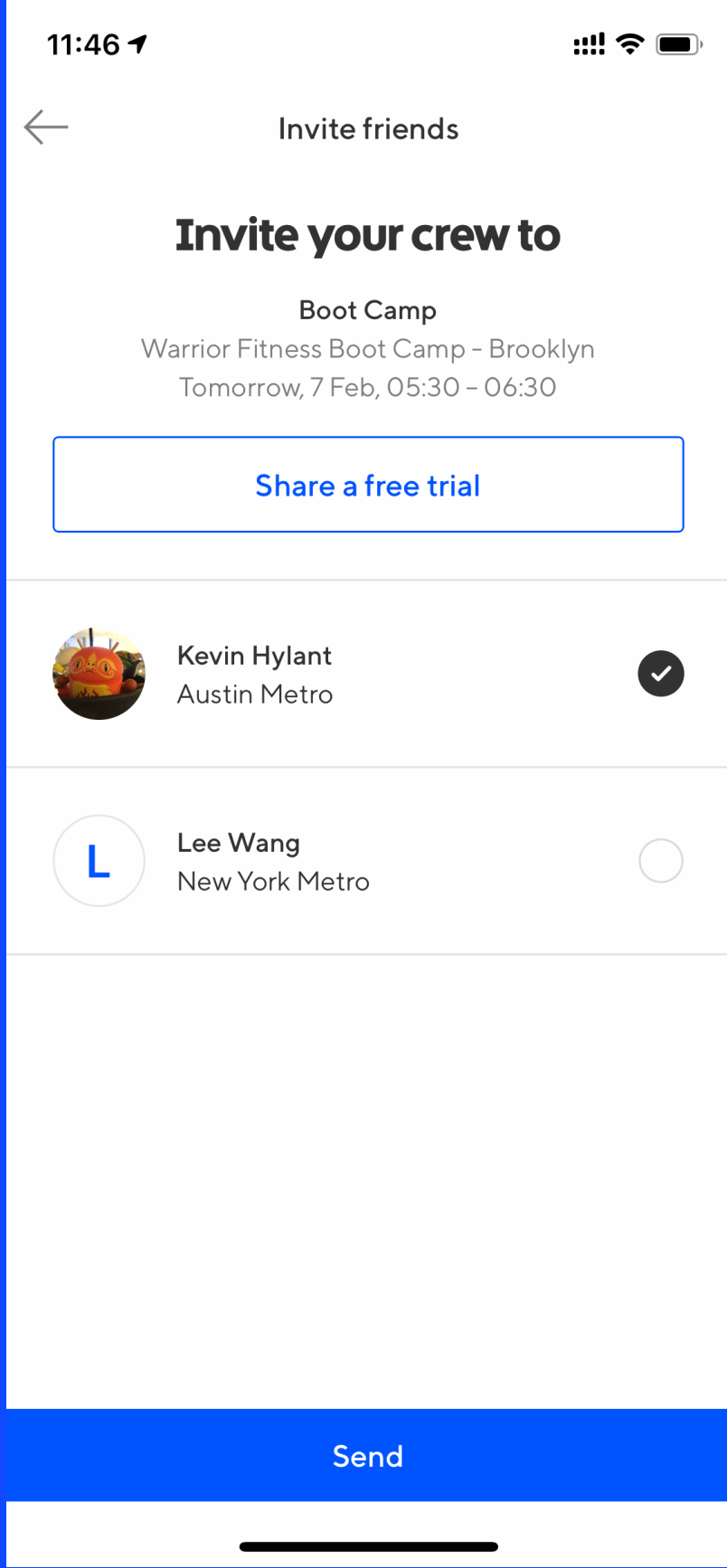
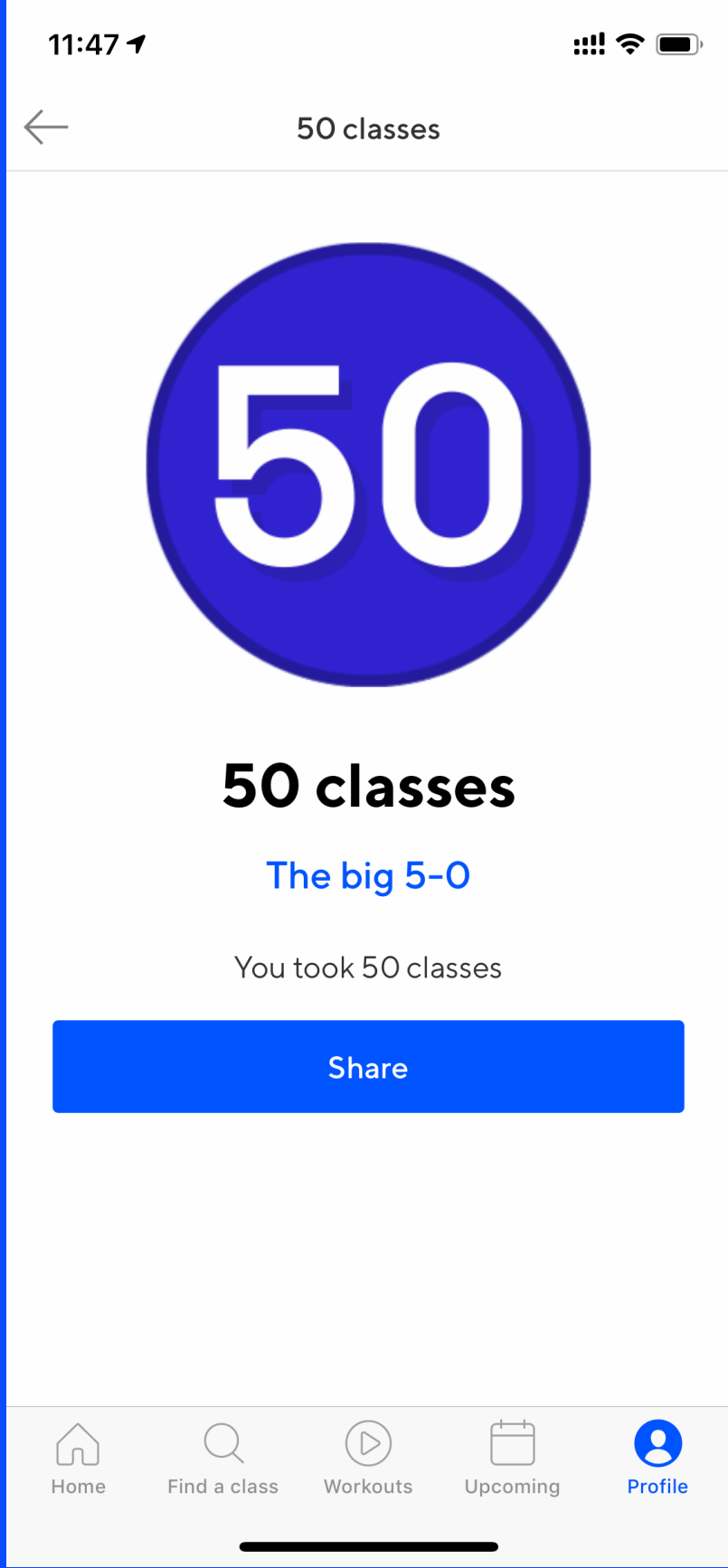
# Should you use React Native in your app?

- think about your **inputs** and **outputs**
- think about your **team** and their **skills**
- regularly **re-evaluate**





# Whats next?





# Thanks!

@neilkimmett

Speaker Hours:  
Thursday @ 11am  
Room 210

