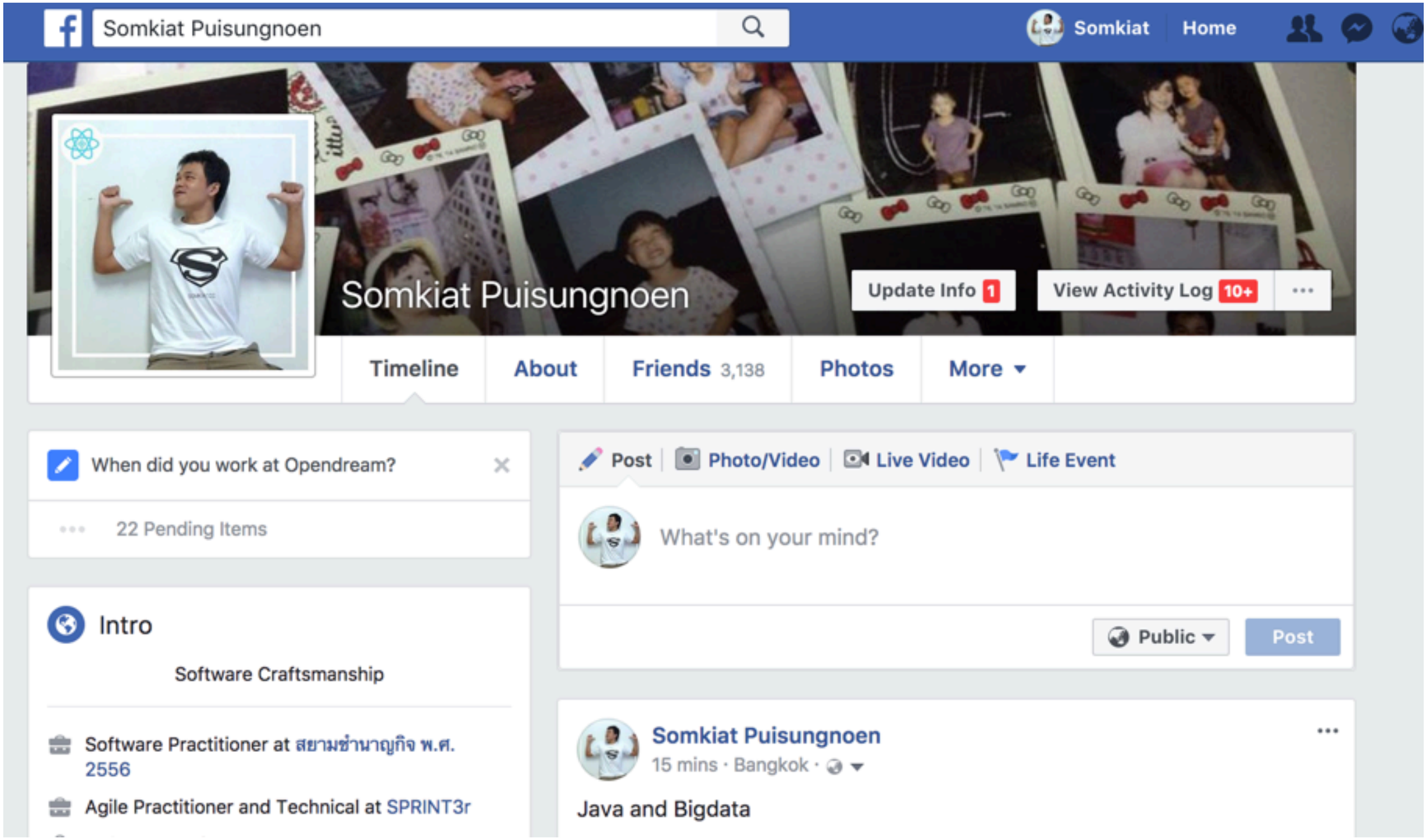
Learning React

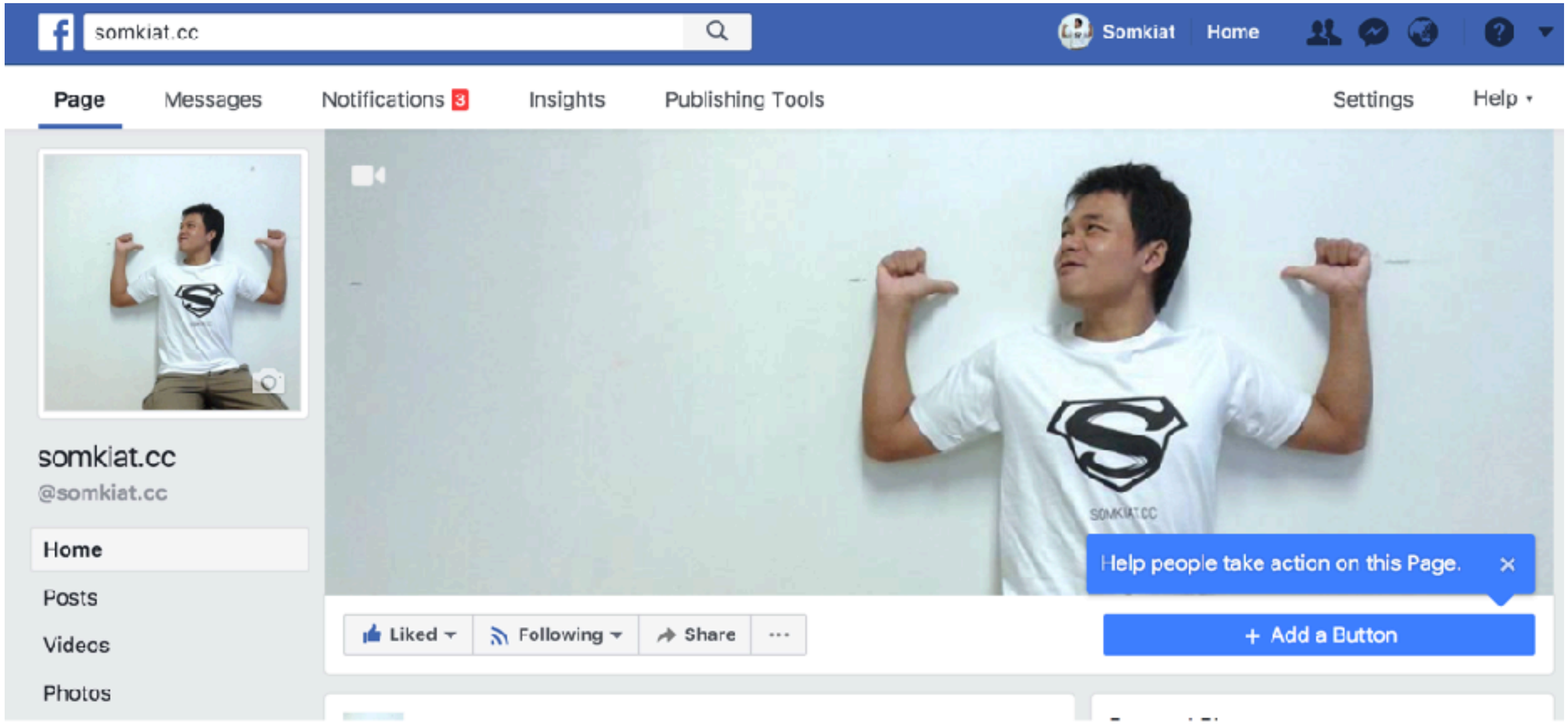
Basic of React

สยามชำนาญกิจ
SIAM CHAMNAN KIT

Shu Ha Ri

THE SCHOOL OF SOFTWARE DEVELOPMENT

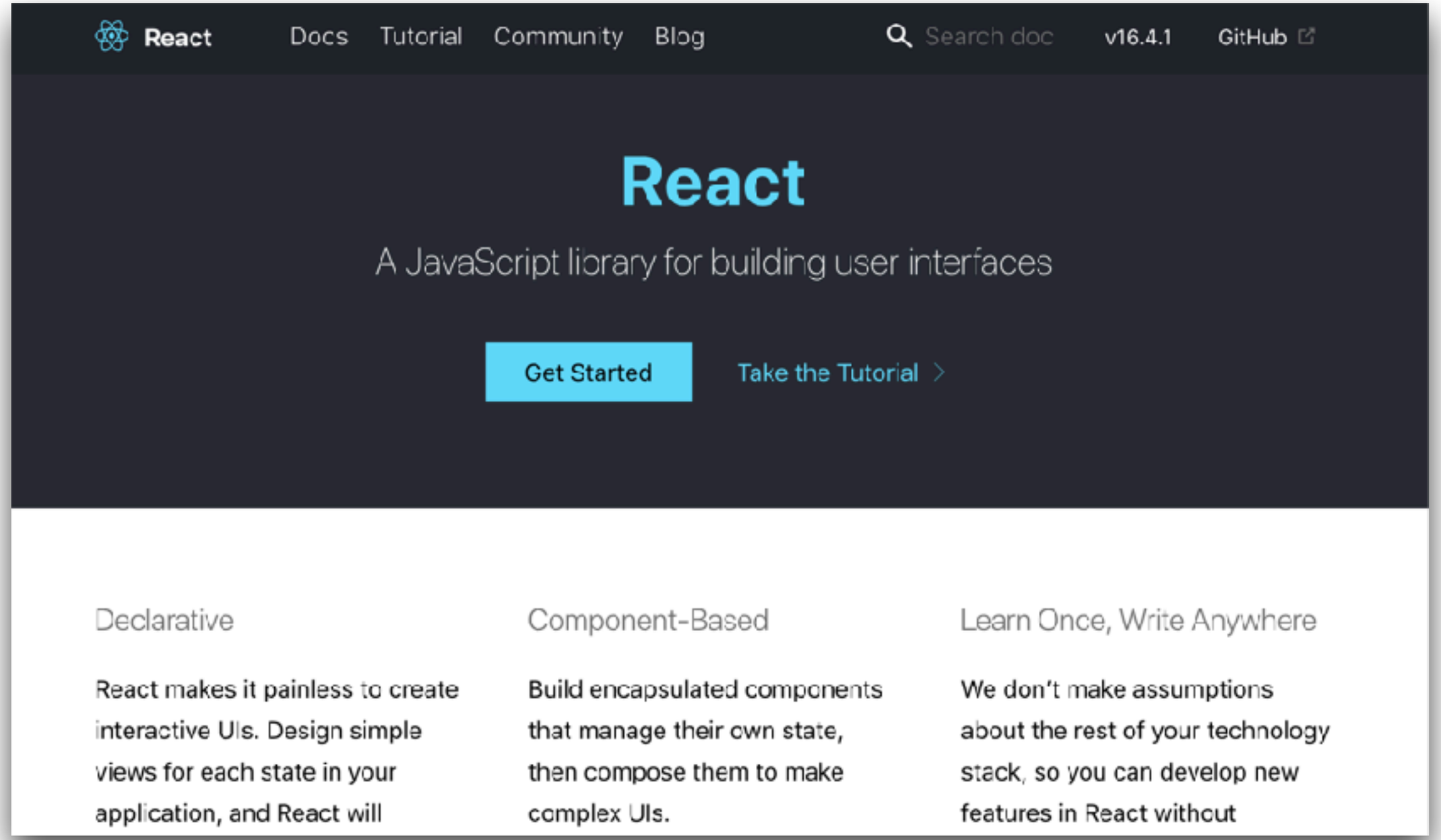




Basic of React

1. Install Yarn
2. Create a react application
3. Design and Develop application
4. Deploy application to Github Pages

React



https://reactjs.org/

What is React ?

Open source javascript library to develop UI
Introduce by Facebook on May 2013
Open source on May 2015

What is React ?

React is concerned with the **components**
Javascript + CSS + HTML

https://reactjs.org/docs/getting-started.html

Installation

Yarn or npm
Create-react-app

npm

VS

yarn

Install Yarn

$brew install yarn
$npm install -g yarn
$yarn --version

https://yarnpkg.com/en/docs/install

Create a react application

$**npx** create-react-app hello

$**yarn** create react-app hello

$**npm** init react-app hello

$npm install -g create-react-app
$create-react-app hello

https://github.com/facebook/create-react-app

Issue !!!

```
Aborting installation.
Unexpected error. Please report it as a bug:
{ Error: Cannot find module '/Users/somkiat/dat
-acdemy/my-app2/node_modules/react-scripts/pack
    at Function.Module._resolveFilename (intern
1:15)
    at Function.Module._load (internal/modules/
    at Module.require (internal/modules/cjs/loa
    at require (internal/modules/cjs/helpers.js
    at checkNodeVersion (/Users/somkiat/node_mo
teReactApp.js:514:23)
```

https://github.com/facebook/create-react-app/issues/4321

With NPM

$**npm** init react-app hello --use-npm

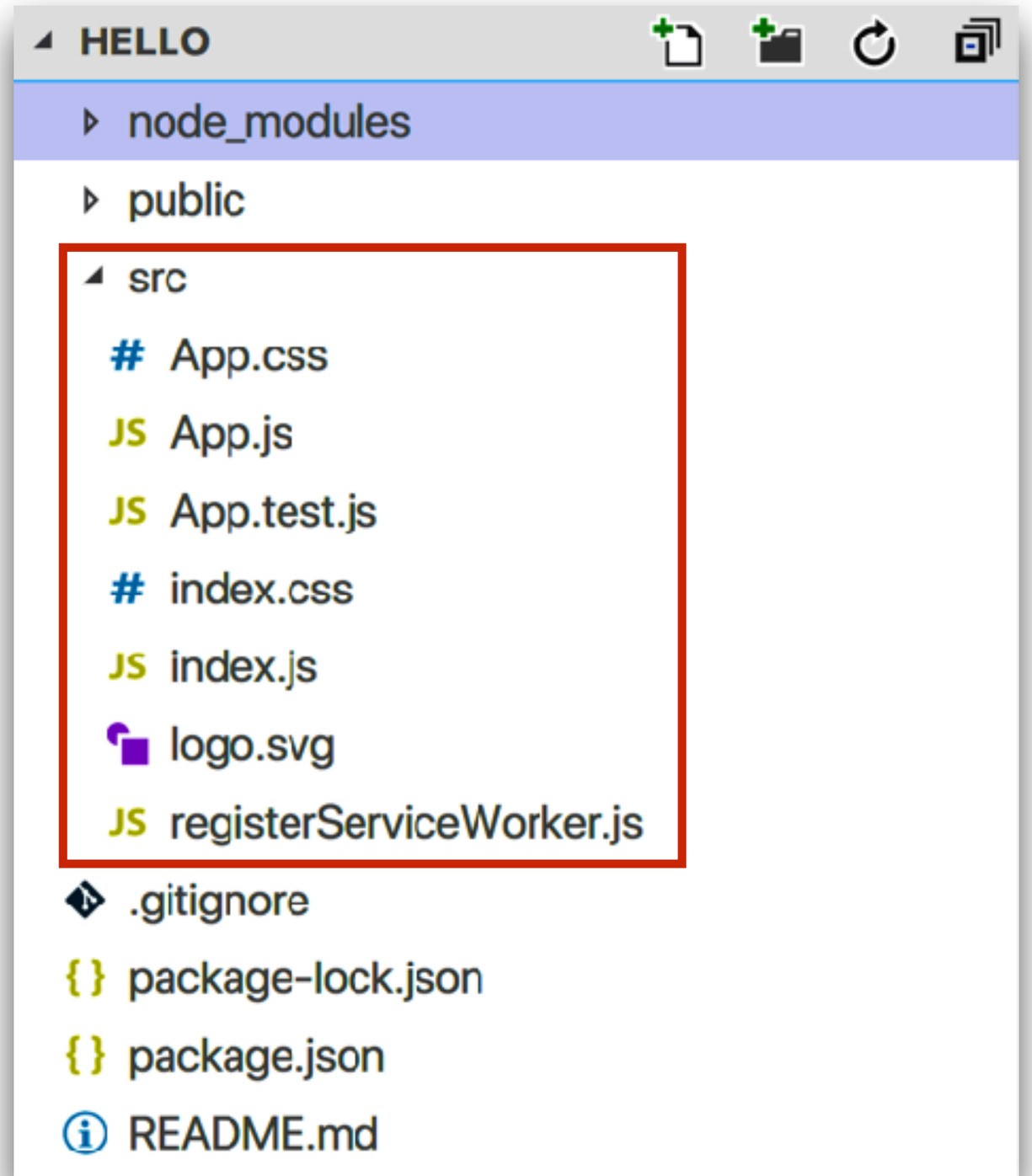
```
npm start
  Starts the development server.

npm run build
  Bundles the app into static files for production.

npm test
  Starts the test runner.

npm run eject
  Removes this tool and copies build dependencies, configuration files
  and scripts into the app directory. If you do this, you can't go back!

We suggest that you begin by typing:

  cd my-app
  npm start
```

With Yarn

$npm install -g yarn
$**yarn** create react-app hello

```
  yarn start
    Starts the development server.

  yarn build
    Bundles the app into static files for production.

  yarn test
    Starts the test runner.

  yarn eject
    Removes this tool and copies build dependencies, configuration files
    and scripts into the app directory. If you do this, you can't go back!

We suggest that you begin by typing:

  cd hello
  yarn start
```

Structure of application



package.json

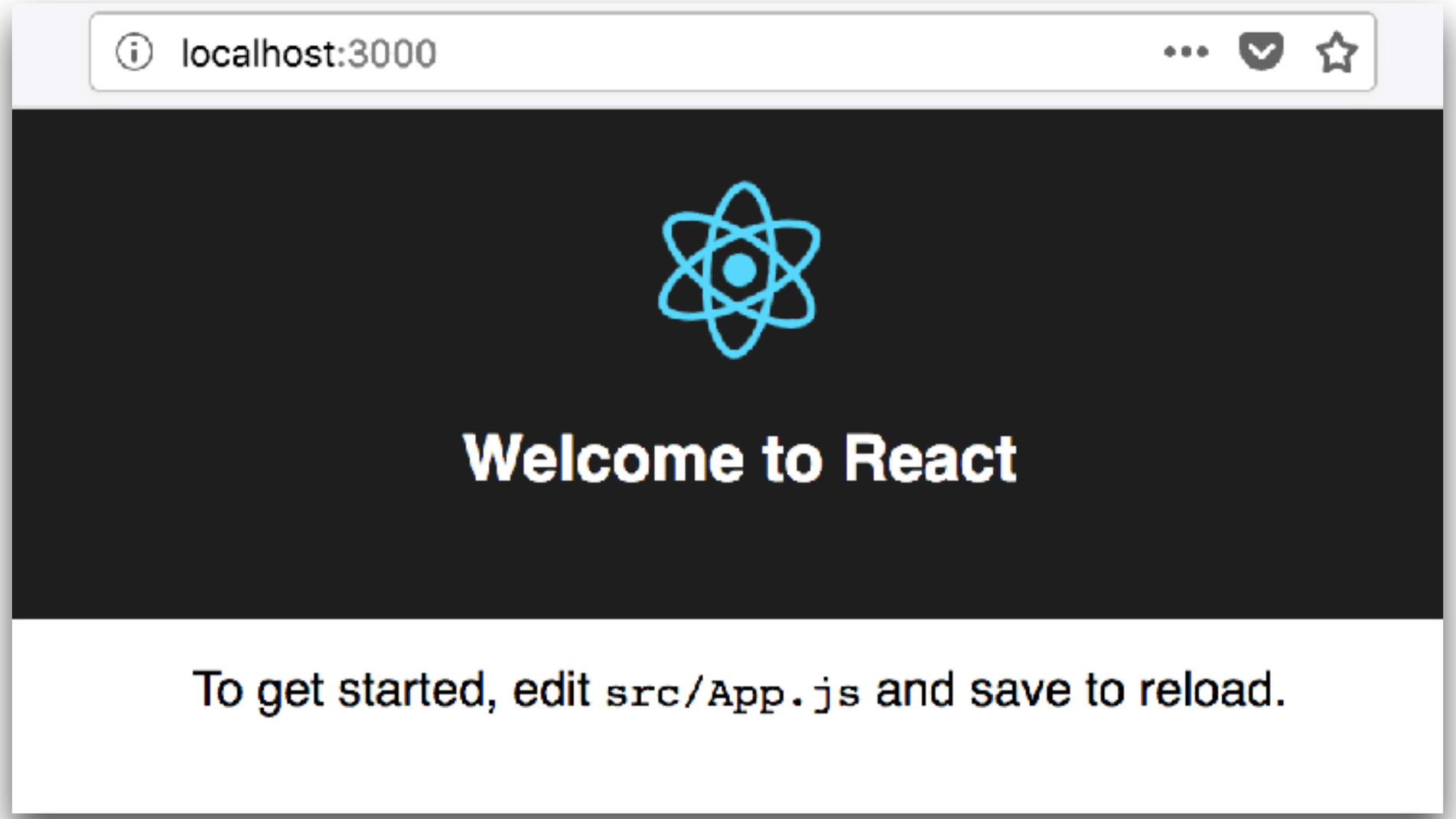
```
{
  "name": "hello",
  "version": "0.1.0",
  "private": true,
  "dependencies": {
    "react": "^16.4.1",
    "react-dom": "^16.4.1",
    "react-scripts": "1.1.4"
  },
  "scripts": {
    "start": "react-scripts start",
    "build": "react-scripts build",
    "test": "react-scripts test --env=jsdom",
    "eject": "react-scripts eject"
  }
}
```

Start your app

$yarn start
$npm start

```
Compiled successfully!

You can now view hello in the browser.

  Local:            http://localhost:3000/
  On Your Network:  http://192.168.20.69:3000/

Note that the development build is not optimized.
To create a production build, use yarn build.
```

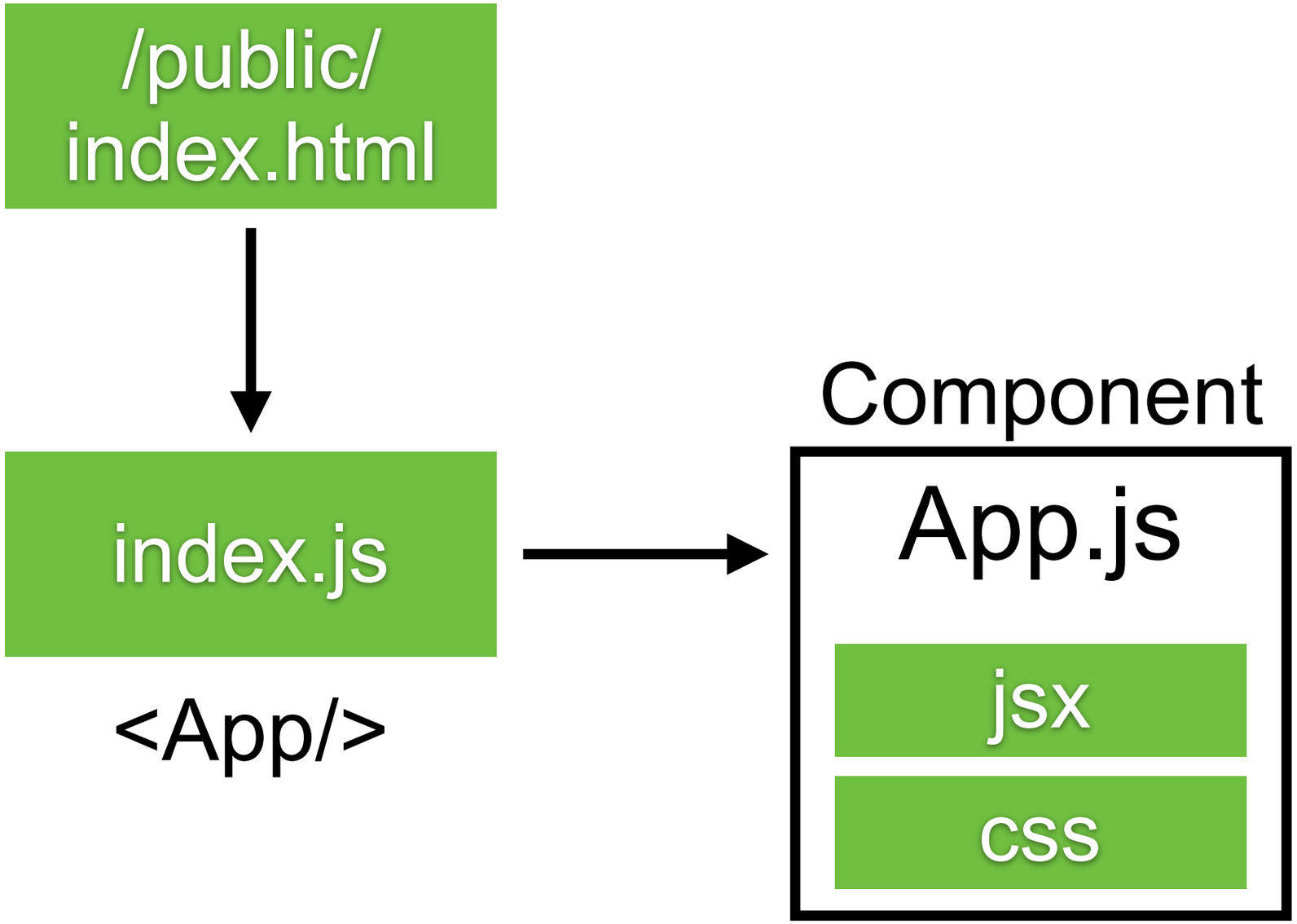
Play your app



View source !!

```
<html lang="en">
  <head>
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1, shrink-to-fit=no">
    <meta name="theme-color" content="#000000">
    <!--
      manifest.json provides metadata used when your web app is added to the
      homescreen on Android. See https://developers.google.com/web/fundamentals/engage-and-retain/web-app-manifest/
    -->
    <link rel="manifest" href="/manifest.json">
    <link rel="shortcut icon" href="/favicon.ico">
    <!--
      Notice the use of  in the tags above.
      It will be replaced with the URL of the `public` folder during the build.
      Only files inside the `public` folder can be referenced from the HTML.

      Unlike "/favicon.ico" or "favicon.ico", "/favicon.ico" will
      work correctly both with client-side routing and a non-root public URL.
      Learn how to configure a non-root public URL by running `npm run build`.
    -->
    <title>React App</title>
  </head>
  <body>
    <noscript>
      You need to enable JavaScript to run this app.
    </noscript>
    <div id="root"></div>
    <!--
      This HTML file is a template.
      If you open it directly in the browser, you will see an empty page.
```

Workflow



index.js

```
import React from 'react';
import ReactDOM from 'react-dom';
import './index.css';
import App from './App';
import registerServiceWorker from './registerServiceWorker';

ReactDOM.render(<App />, document.getElementById('root'));
registerServiceWorker();
```

*Rendered App component in *

App.js

JSX (JavaScript XML)

```
class App extends Component {
  render() {
    return (
      <div className="App">
        <header className="App-header">
          <img src={logo} className="App-logo" alt="logo" />
          <h1 className="App-title">Welcome to React</h1>
        </header>
        <p className="App-intro">
          To get started, edit <code>src/App.js</code> and sa
        </p>
      </div>
    );
  }
}
```

React Fundamentals

JSX (JavaScript XML-like)
Components
Props
States
Lifecycle
Event
Keys
Router

JSX

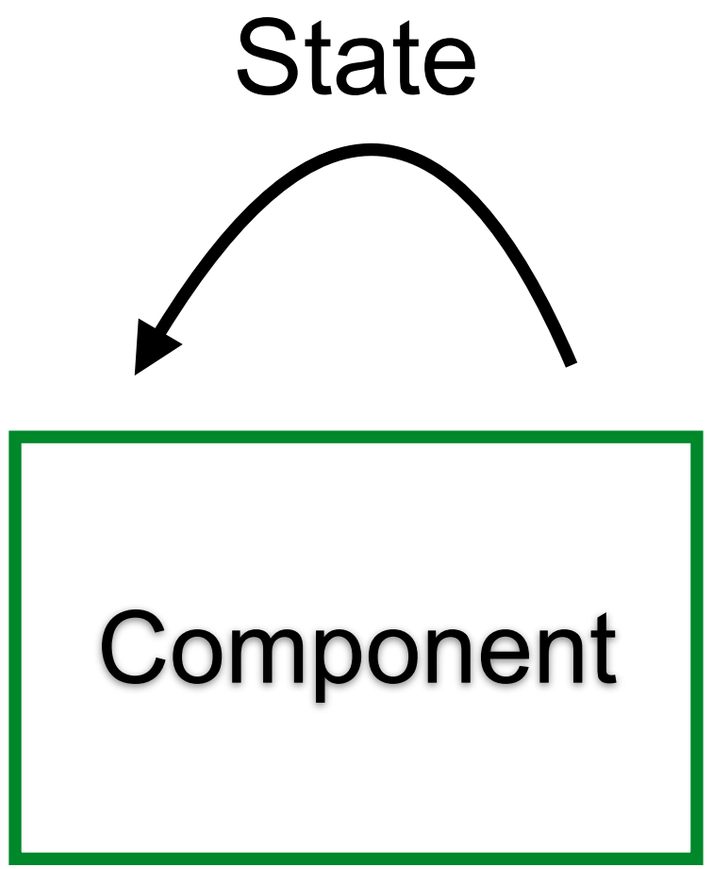
HTML + JavaScript
Make HTML easy to understand
Boost up performance of JavaScript

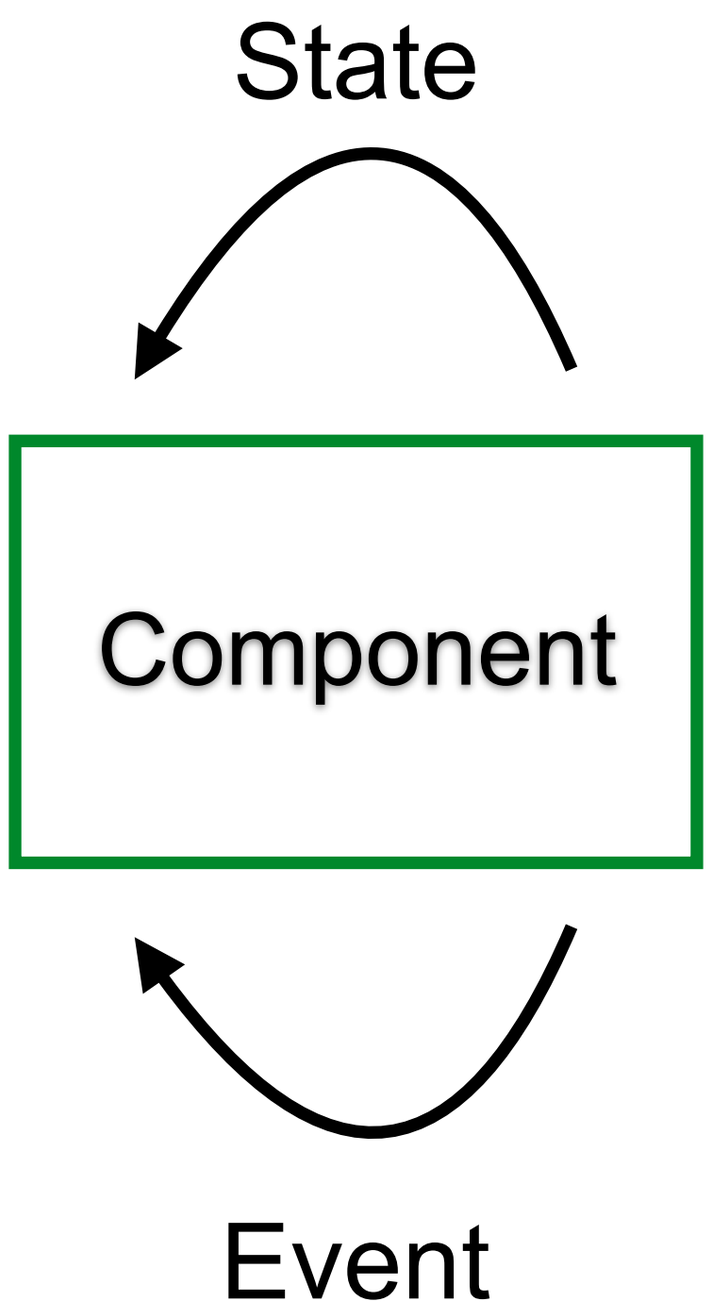
https://facebook.github.io/jsx/

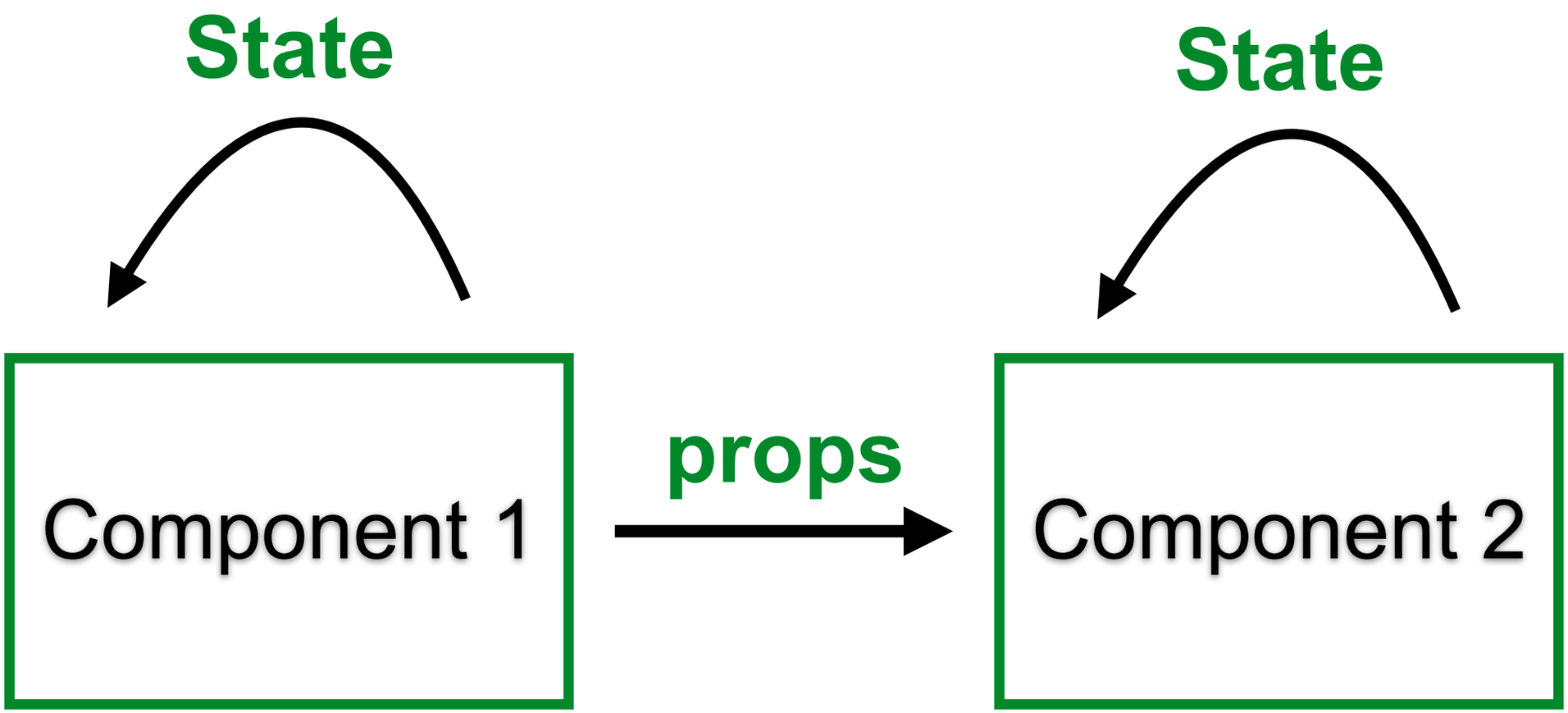
Components

Everything in React is a component
Each component return a DOM object
Split the UI into independent reusable pieces
Each independent pieces is processed separately

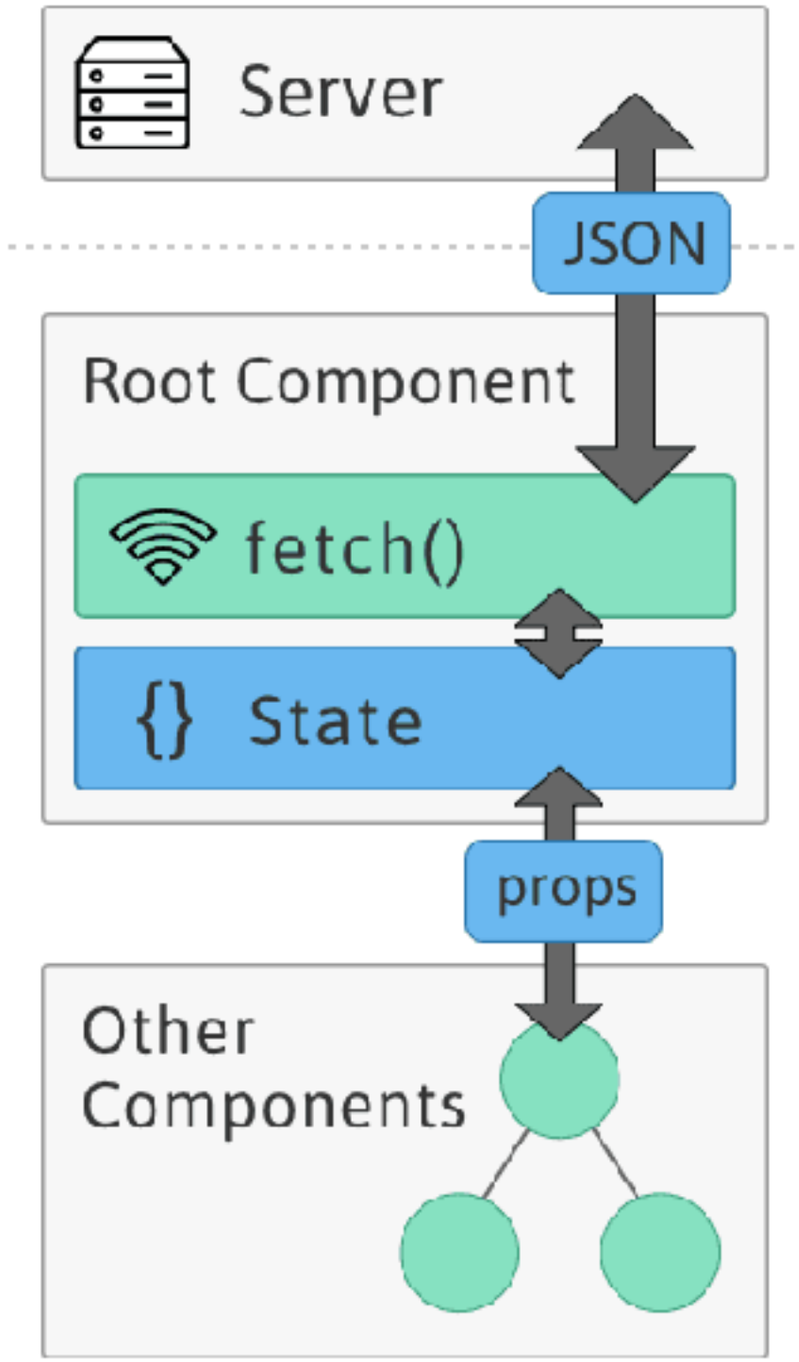
https://reactjs.org/docs/components-and-props.html



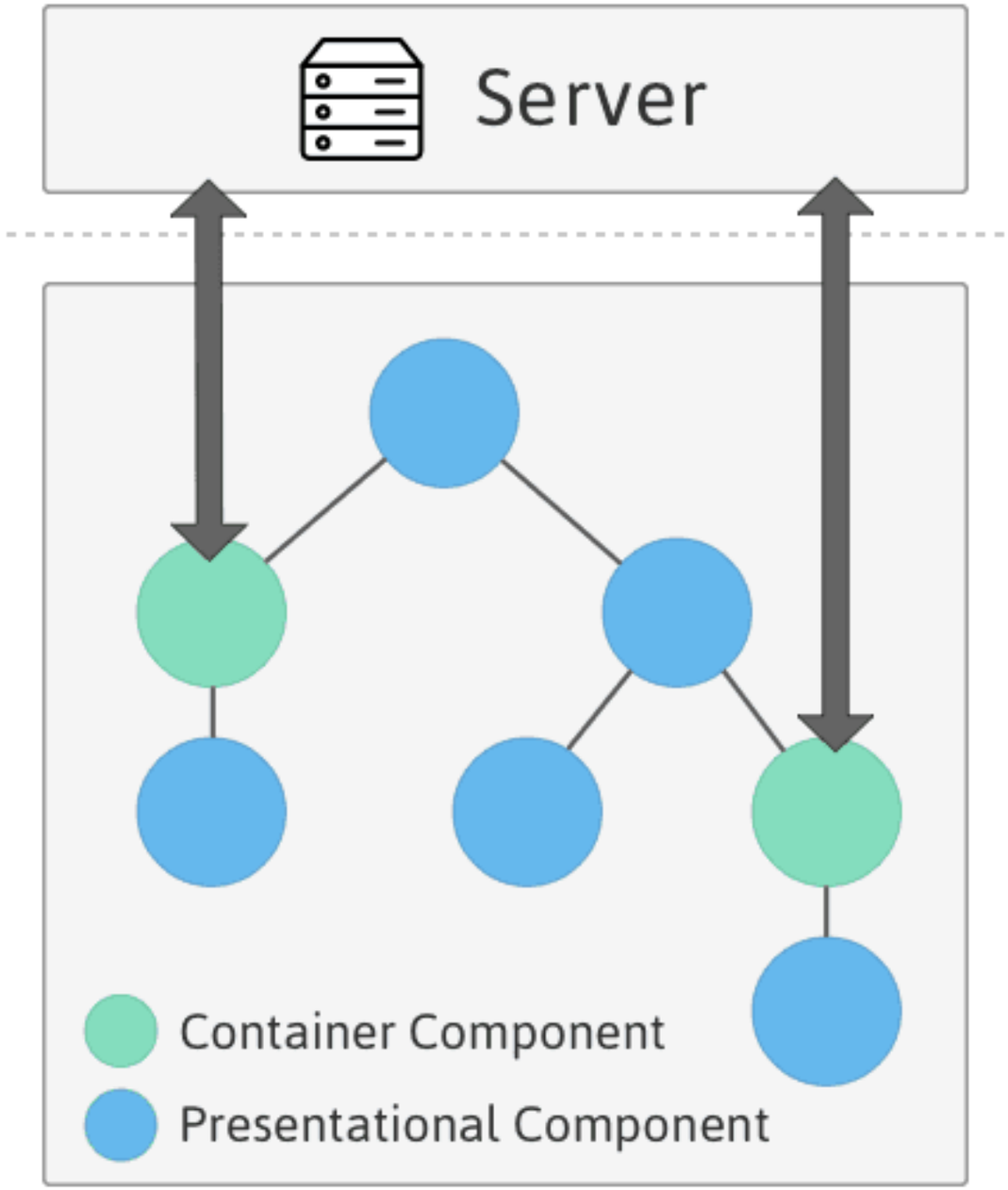




State and Props



Container component



Smart and Dumb component

Smart = C in MVC

Dumb = V in MVC

Smart component

How things work

No DOM markup, no style

Provide data

Call action

Dumb component

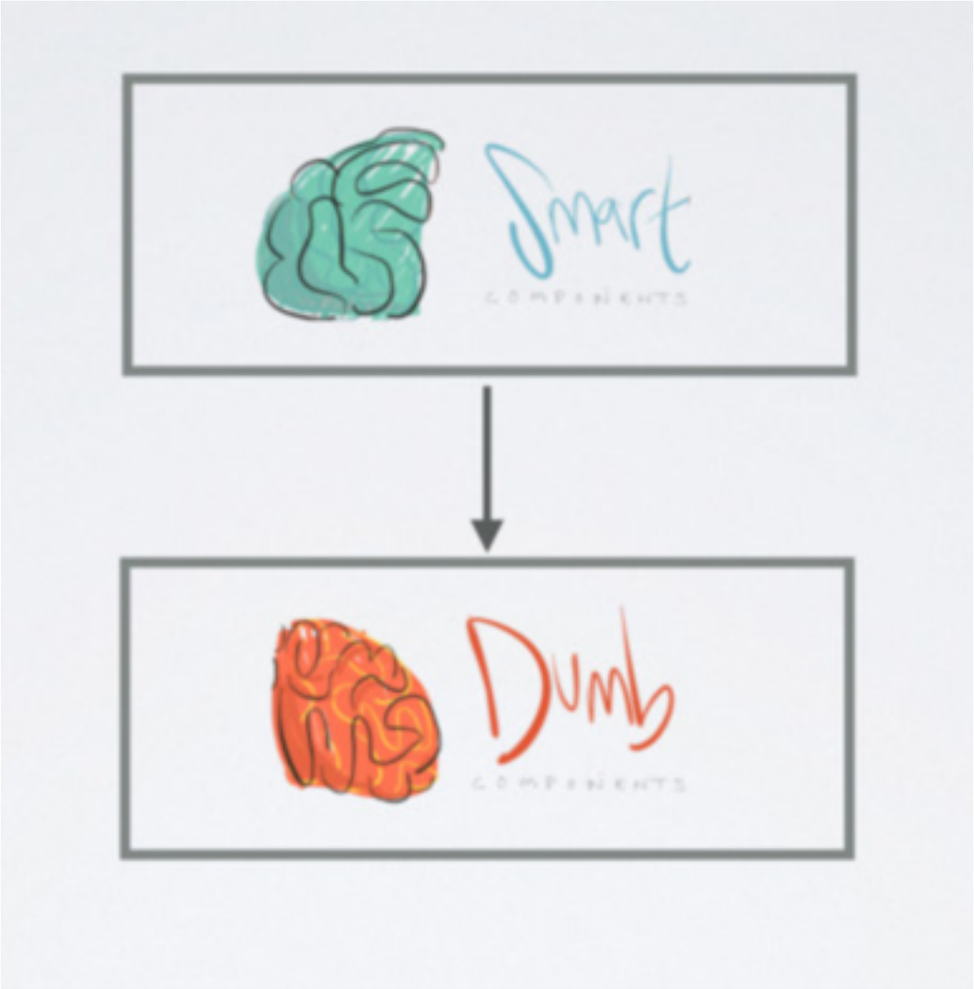
How things look

No app dependencies

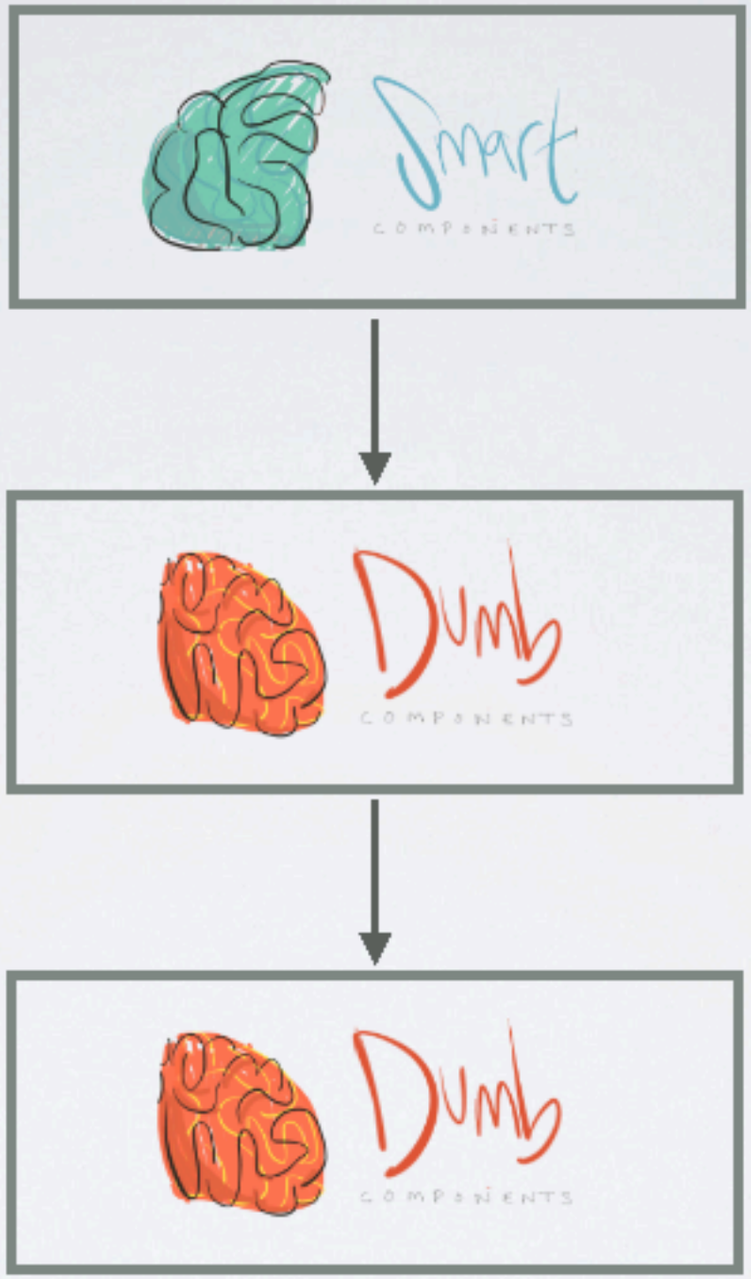
Just props, for data and callbacks

Rerely have own state, only UI state

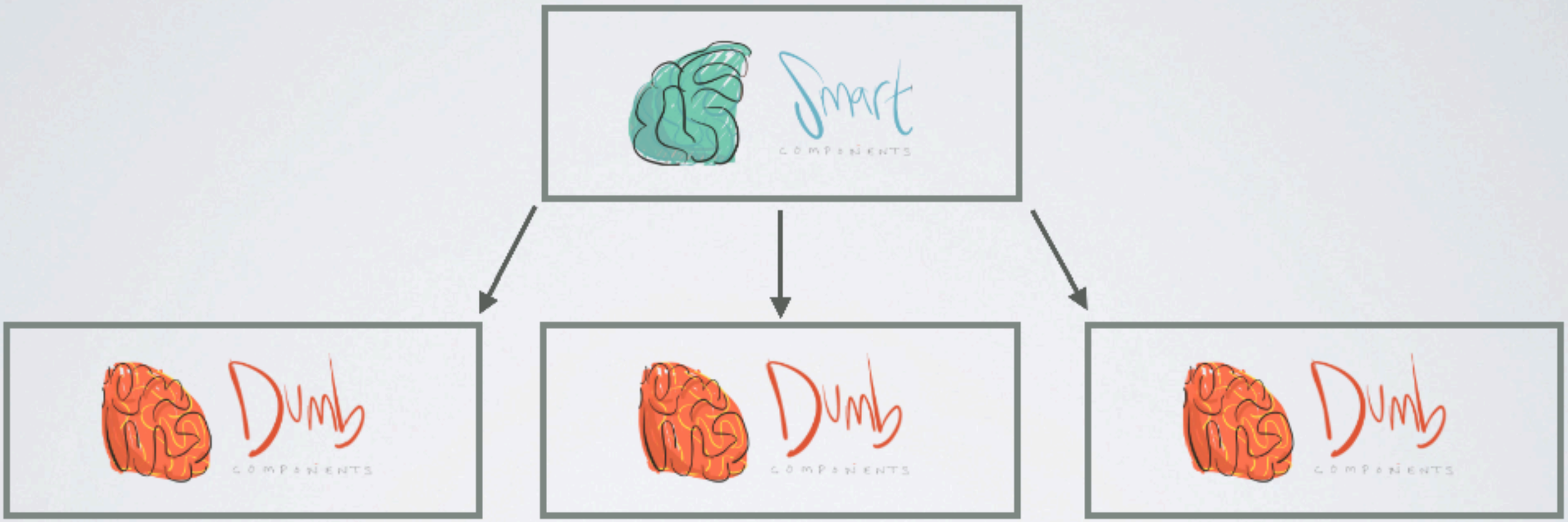
Smart and Dumb component



Smart and Dumb component



Smart and Dumb component



Create Welcome component

Create folder **components** in **src**
Create folder **welcome** in components
Create file **index.js** in welcome

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

class Welcome extends Component {
    render() {
        return <h1>Welcome to React</h1>
    }
}

export default Welcome
```

Use Welcome component

Edit file **App.js** in src

```
import Welcome from './components/welcome'

class App extends Component {
  render() {
    return (
      <Welcome/>
    )
  }
}
```

Props

Read-only components
called “pure function”

Use to send data/state and action/event between component

https://reactjs.org/docs/components-and-props.html

Send name to Welcome component

Edit file **App.js** in src

```
class App extends Component {
  render() {
    return (
      <Welcome name="somkiat"/>
    )
  }
}
```

Edit Welcome component

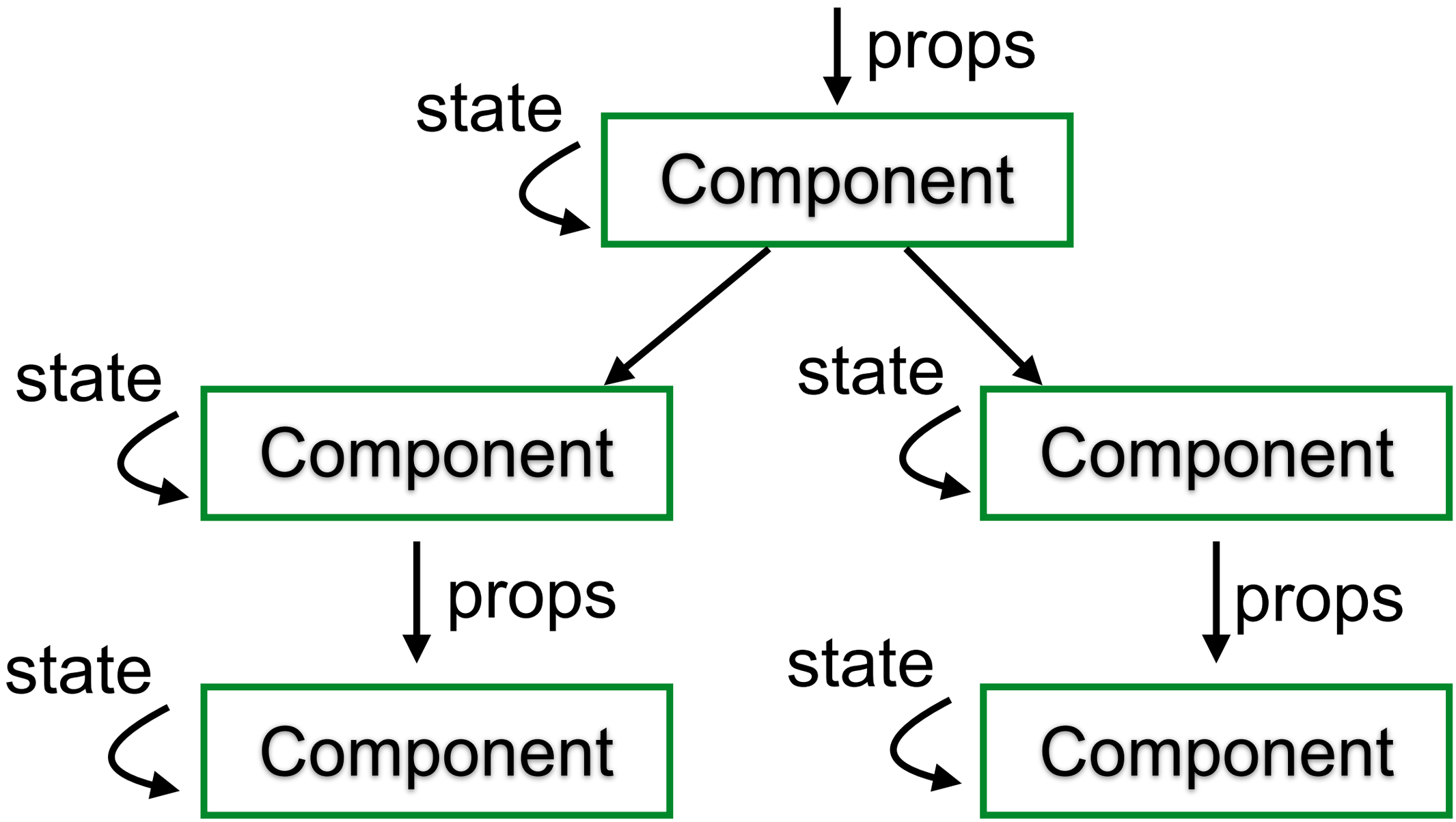
```
class Welcome extends Component {
    render() {
        return(
            <h1>Welcome {this.props.name}</h1>
        )
    }
}
```

States

Heart of react components
Use to determine component rendering and behavior
Create dynamic and interactive components

https://reactjs.org/docs/state-and-lifecycle.html

Props and States



Initial state(s) of component

```
constructor(props) {
    super(props)
    this.state = {
        name: 'N/A'
    }
    this.change1 = this.change.bind(this)
}
```

Update state(s) of component

Use setState() method

```
change(e) {
  console.log('this is:', e.target.value);
  this.setState({
      name: e.target.value
  })
}
```

Events

Events are the triggered reactions to specific actions link mouse click, key press etc.

Events pass as props of element

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

Events

onClick()
onSubmit()
onChange()
onKeyUp()

Example of onChange()

```
render() {
  return (
      <div>
          <input type="text"
                 value={this.state.name}
                 onChange={this.change2}
          /><br/>
          {this.state.name}
      </div>
  )
}
```

How to handling event ?

Solution 1 :: Use Arrow function

```
change2 = (e) => {
  console.log('this is:', e.target.value);
  this.setState({
      name: e.target.value
  })
}
```

How to handling event ?

Solution 2 :: Use binding to component

```
constructor(props) {
    super(props)
    this.state = {
        name: 'N/A'
    }
    this.change1 = this.change.bind(this)
}

change(e) {
    console.log('this is:', e.target.value);
    this.setState({
        name: e.target.value
    })
}
```

Develop your application

Start with React !!

Design your app ?

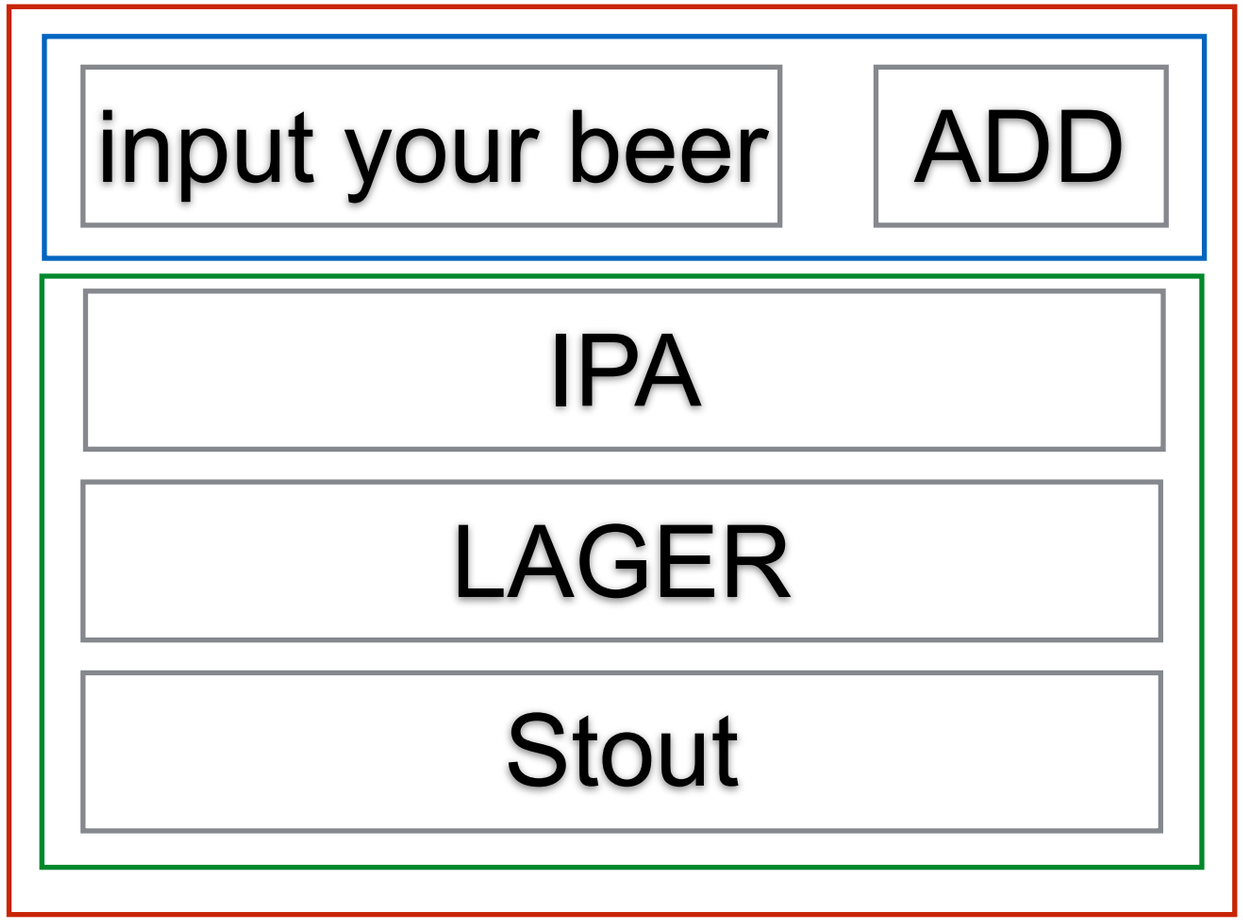
Let’s design your component

Component for react ?

1 component ?

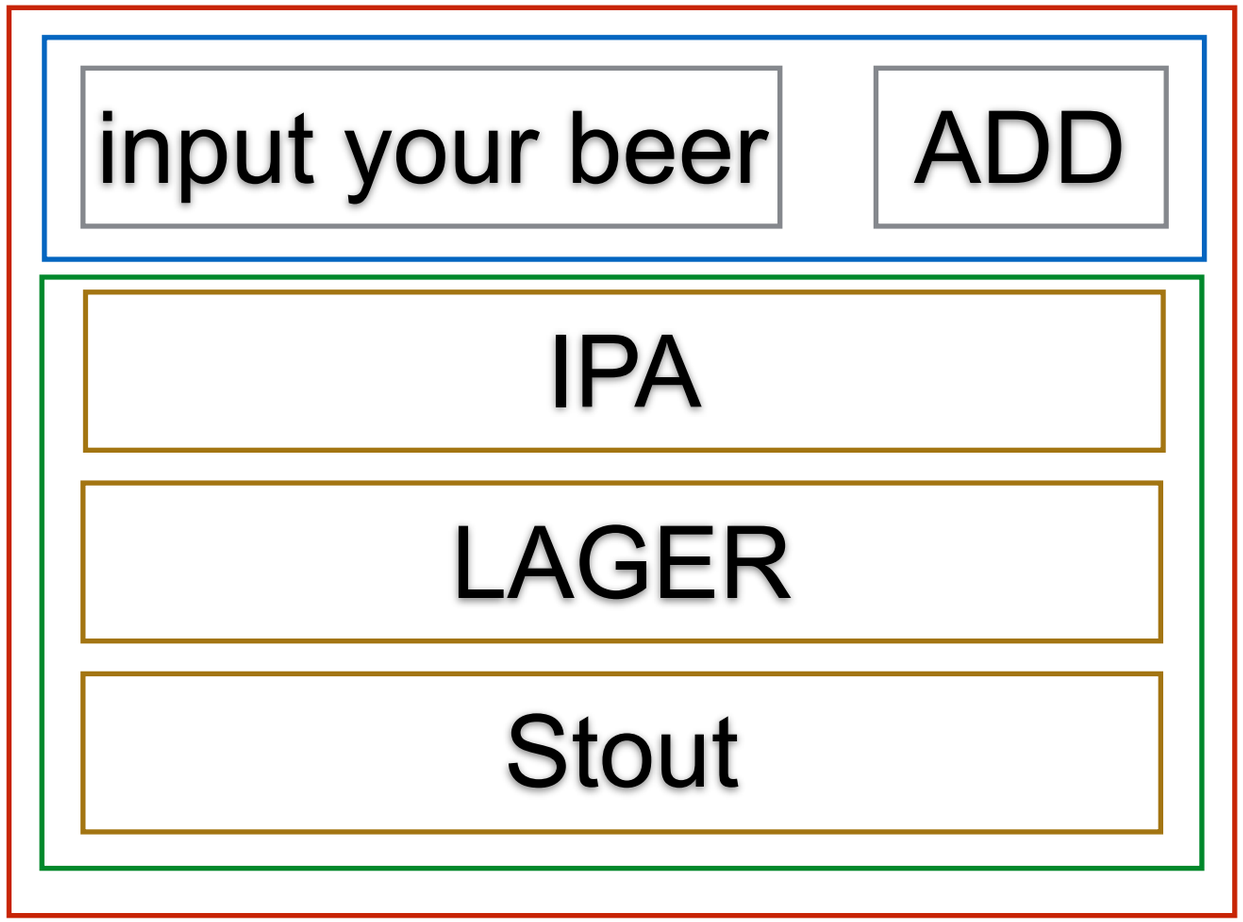
Component for react ?

3 component ?



Component for react ?

4 component ?



Components

BeerListContainer

- AddBeerComponent
  - Input text
  - Button
- BeerListContainer
  - BeerItemComponent

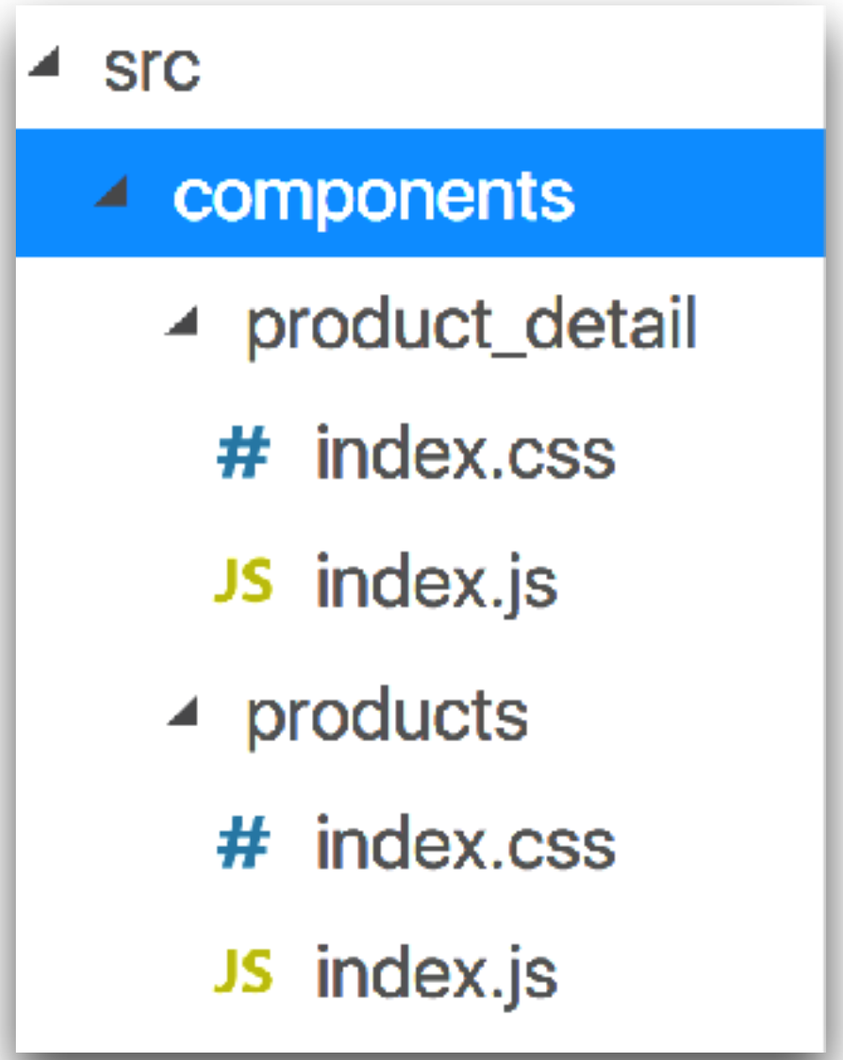
Components

BeerContainer/App

- **AddBeer**
  - Input text
  - Button
- **BeerList**
  - BeerItem

Step 1
Create react component

Component structure



AddBeer component

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

class AddBear extends Component {
  render() {
    return (
      <div>
        <input type="text" id="name"/>
        <button>ADD</button>
      </div>
    );
  }
}

export default AddBear;
```

BeerList component

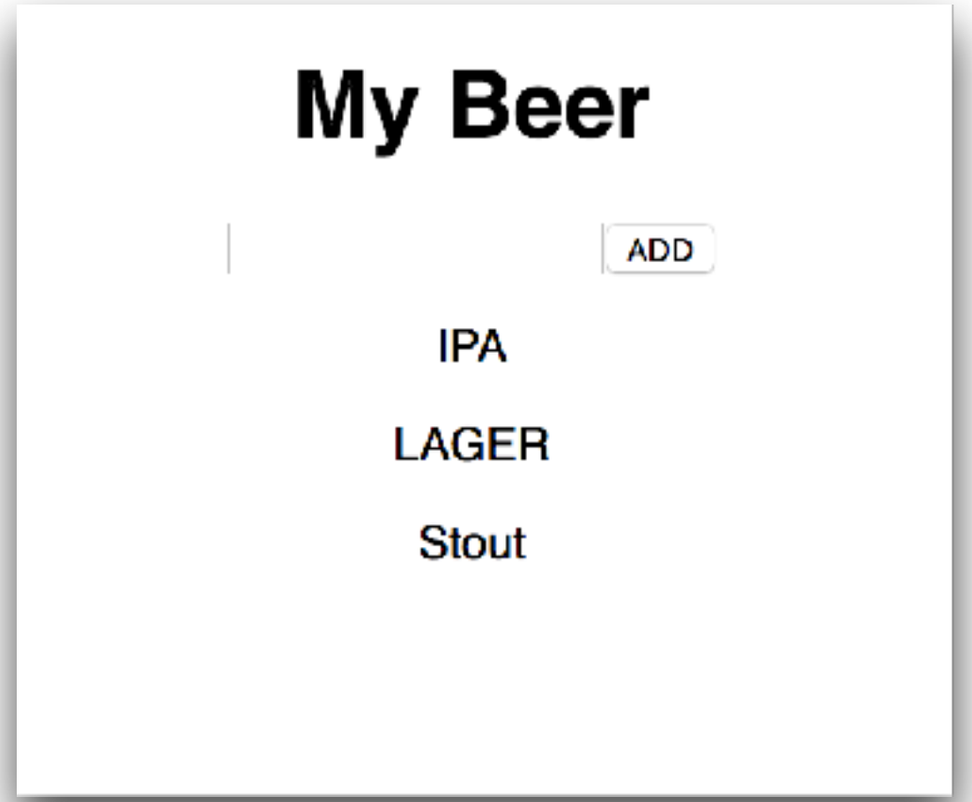
```
import React, { Component } from 'react';

class BeerList extends Component {
  render() {
    return (
      <div>
        <p>IPA</p>
        <p>LAGER</p>
        <p>Stout</p>
      </div>
    );
  }
}

export default BeerList;
```

App component

```
import React, { Component } from 'react';
import BeerList from './components/BeerList';
import AddBeer from './components/AddBeer';

class App extends Component {
  render() {
    return (
      <div align="center">
        <h1>My Beer</h1>
        <AddBeer/>
        <BeerList/>
      </div>
    );
  }
}

export default App;
```

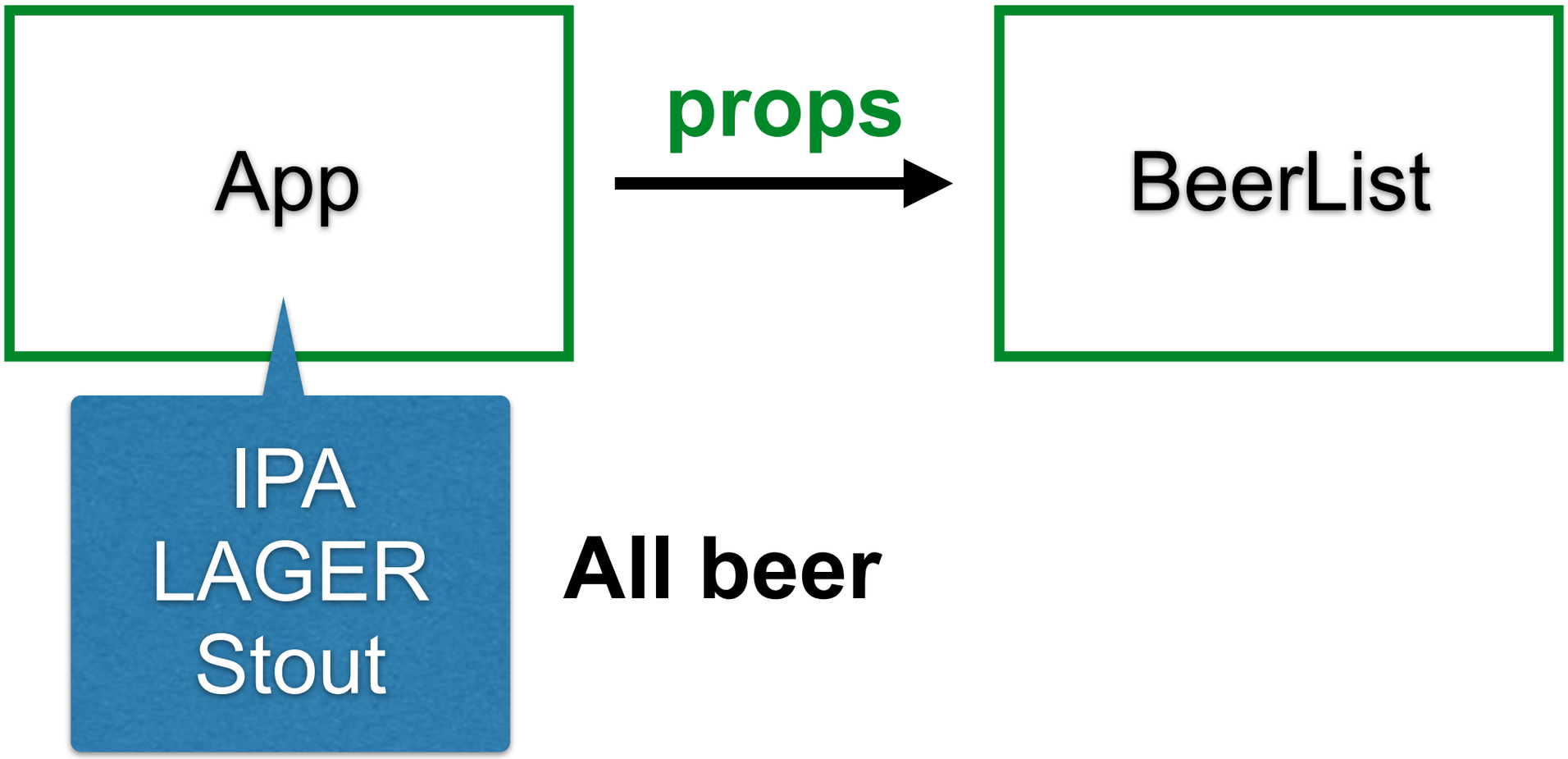
Composition over Inheritance

See result



Smart component

Dumb component



All beer

App component

Provide data

```
class App extends Component {

  constructor(props) {
    super(props)
    this.state = {
      beers: [
        {id: 1, name: 'IPA'},
        {id: 2, name: 'LAGER'},
        {id: 3, name: 'Stout'},
      ]
    }
  }

}
```

App component

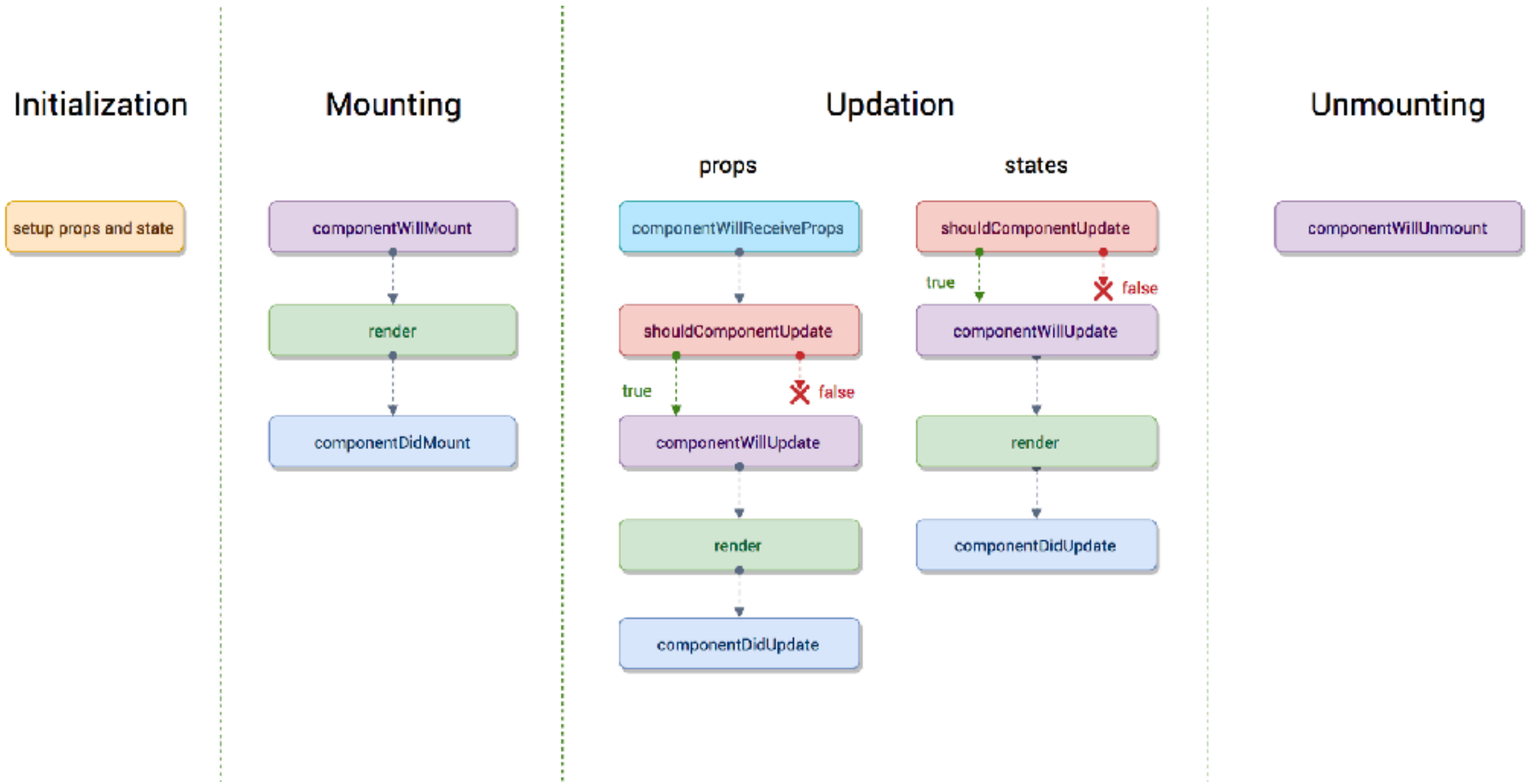
Send data via props to BeerList component

```
class App extends Component {

  render() {
    return (
      <div align="center">
        <h1>My Beer</h1>
        <AddBeer/>
        <BeerList beers={this.state.beers} />
      </div>
    );
  }
}
```

Lifecycle

React provide various methods which notifies when certain stage of the lifecycle occurs called **“Lifecycle methods”**

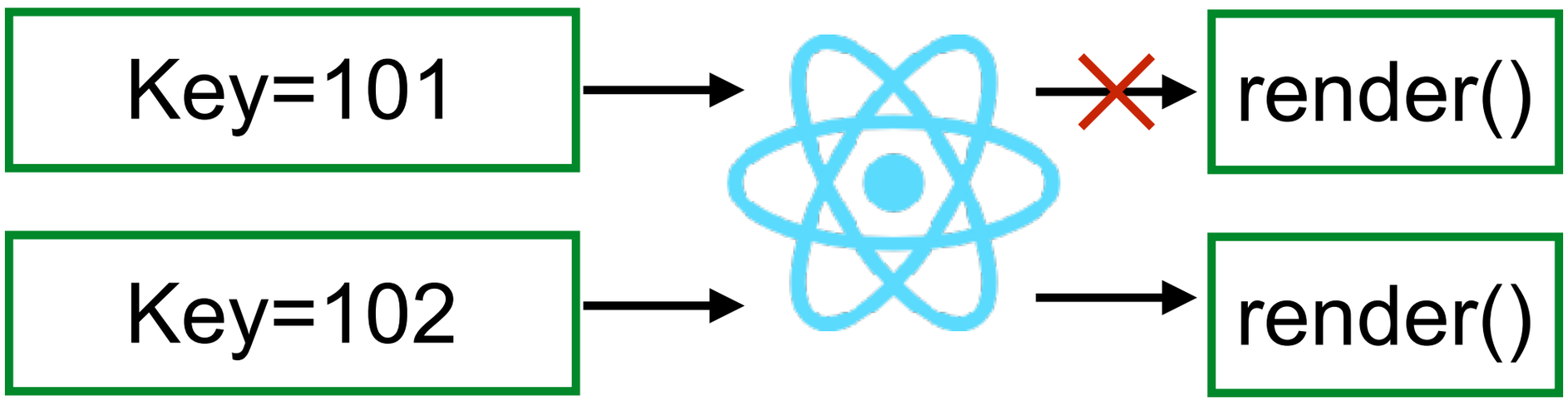
Lifecycle



https://hackernoon.com/reactjs-component-lifecycle-methods-a-deep-dive-38275d9d13c0

Keys

Keys are the elements which helps React to identify components uniquely



https://reactjs.org/docs/lists-and-keys.html

Router

Use React Router
Help to add new screen and flow to application
It’s keeps the URL in sync with data that display on page

https://github.com/ReactTraining/react-router

Advantage of Router

Easy to understand the application flows/views
It can restored any state and view with simple URL
It handled nested views
It maintains a standard structure and behaviour

https://github.com/ReactTraining/react-router

React Router

$npm install --save react-router
$npm install --save react-router-dom

Add router to component

```
import { BrowserRouter, Switch, Route, Link } from 'react-router-dom';

<BrowserRouter>
<div>
  <h2>Main</h2>
  <ul>
    <li>
      <Link to="/beers">List of beers</Link>
    </li>
    <li>
      <Link to="/item/1">Item 1</Link>
    </li>
  </ul>
  <Switch>
    <Route path="/beers" component={Products} />
    <Route exact path="/item/:id" component={ProductDetail} />
  </Switch>
</div>
</BrowserRouter>
```

Add router to component

```
import { BrowserRouter, Switch, Route, Link } from 'react-router-dom';

<BrowserRouter>
<div>
  <h2>Main</h2>
  <ul>
    <li>
      <Link to="/beers">List of beers</Link>
    </li>
    <li>
      <Link to="/item/1">Item 1</Link>
    </li>
  </ul>
  <Switch>
    <Route path="/beers" component={Products} />
    <Route exact path="/item/:id" component={ProductDetail} />
  </Switch>
</div>
</BrowserRouter>
```

Link with parameter

```
<div className="item" key={i}>
  <Link to={`/item/${product.id}`}>
  <div className="product-img">
    <img alt={product.name} src={product.image
  </div>
```

```
this.props.match.params.id
```

Working with API

PUNK API V2

V2 Documentation

https://api.punkapi.com/v2/beers?per_page=10

https://punkapi.com/documentation/v2

Deploy React app to Github Pages

1. Install library gh-pages

$npm install --save gh-pages

2. Create new repos in Github

$git init

$git remote add origin https://github.com/<user>/demo-react.git

3. Edit file package.json (1)

Add homepage to your Github Pages

```
"name": "hello",
"version": "0.1.0",
"private": true,
"homepage": "https://up1.github.io/demo-react/",
"dependencies": {
```

3. Edit file package.json (2)

Add new script to deploy

```
"scripts": {
  "start": "react-scripts start",
  "build": "react-scripts build",
  "test": "react-scripts test --env=jsdom",
  "eject": "react-scripts eject",
  "predeploy": "npm run build",
  "deploy": "gh-pages -d build"
}
```

4. Deploy

$npm run deploy