

REACT NEW FEATURES AND INTRO TO HOOKS

Nir Hadassi

Software Engineer @ Soluto



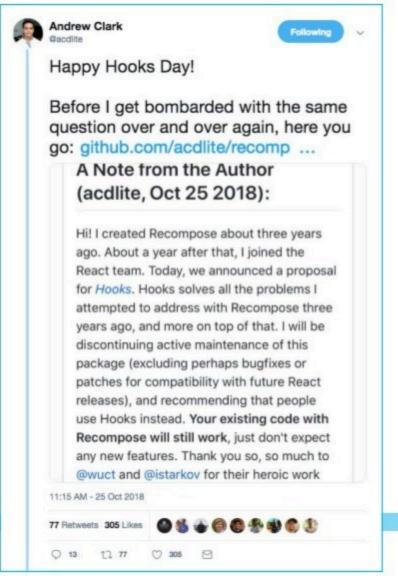
This talk was supposed to be about...

High-Order-Components and Recompose

But then...



And then...



About Myself Nir Hadassi

4 years

working at

Soluto

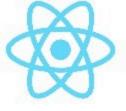


3 years

working with

React







What are React Hooks?

"Hooks lets you use state and other React features without writing a class."

Introduced on React v16.7.0-alpha

Why?

CLASSES ARE

BAD

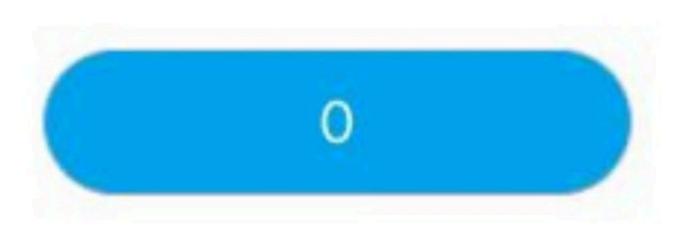
Why classes are bad?

- Complex components become hard to understand
- Classes confuse people (notorious this..)
- Classes confuse machines (don't minify well)
- It's hard to reuse stateful logic between classes

Agenda

- 1. Hooks Intro
 - a. useState
 - b. useRef
 - c. useContext
 - d. useEffect
- 2. Memo
- 3. Lazy

useState



Class with state

```
class CounterButton extends Component {
    constructor() {
       super();
       this.state = {
   render() {
       return <button onClick=(() => this.setState(prevState => ({ count: prevState.count + 1
})))}>
           { this.state.count }
       </button>
```

```
import React, { useState } from 'react';
const Counter = props => {
    const [count, setCount] = useState(0);
    return <button onClick={() => setCount(count + 1)}>
              count }
    </button>
```

```
import React, { useState } from 'react';
const Counter = props => {
    const [count, setCount] = useState(0);
    return <button onClick={() => setCount(count + 1)}>
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import React, { useState } from 'react';
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              count }
    </button>
```

```
import React, { useState } from 'react';
const Counter = props => {
    const [count, setCount] = useState(0);
    return <button onClick={() => setCount(count + 1)}>
              count }
    </button>
```

Multiple State Variables

```
const Player = props => {
    const [volume, setVolume] = useState(0);
   const [position, setPosition] = useState(0);
   const [paused, setPaused] = useState(true);
    const onClick = () => {
        setPosition(0);
        setPaused (false);
```

Multiple State Variables

```
const Player = props => {
    const [state, setState] = useState({
        volume: 0,
        position: 0,
        paused: true
    });
    const onClick = () => {
        setState({
            ...state,
            position: 0,
            paused: false
```

useContext

Using context without hooks

```
import { ThemeContext } from './context';
const Counter = props => {
  const [count, setCount] = useState(0);
   return (
       <ThemeContext.Consumer>
           \{theme => (
               <Button theme={theme} onClick={...}>
                   {count}
               </Button>
       </ThemeContext.Consumer>
```

useContext hook

```
import React, { useContext } from 'react';
import { ThemeContext } from './context';
const Counter = props => {
  const [count, setCount] = useState(0);
   const theme = useContext (ThemeContext)
   return
       <Button theme={theme} onClick={...}>
           {count}
       </Button>
```

useContext hook

```
import React, { useContext } from 'react';
import { ThemeContext } from './context';
const Counter = props => {
  const [count, setCount] = useState(0);
   const theme = useContext (ThemeContext)
   return (
       <Button theme={theme} onClick={...}>
```

Focus on input

```
const TextInputWithFocusButton = (props) => {
    const inputRef = useRef();
    return (
     <>
        <input ref={inputRef} type="text" />
        <button onClick={() => inputRef.current.focus()}>
            Focus the input
        </button>
     </>
```

```
const TextInputWithFocusButton = (props) => {
    const inputRef = useRef();
    return (
        <input ref={inputRef} type="text" />
        <button onClick={() => inputRef.current.focus()}>
        </button>
```

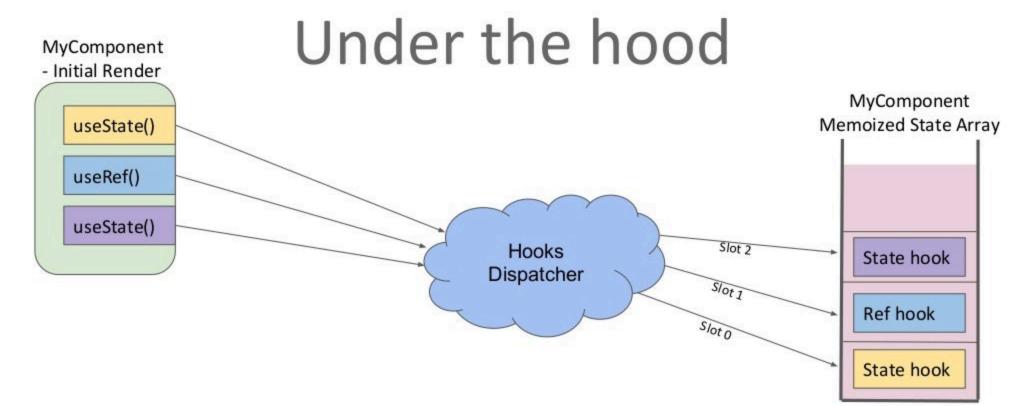
```
const TextInputWithFocusButton = (props) => {
   const inputRef = useRef();
    return
        <input ref={inputRef} type="text" />
        <button onClick={() => inputRef.current.focus()}>
       </button>
```

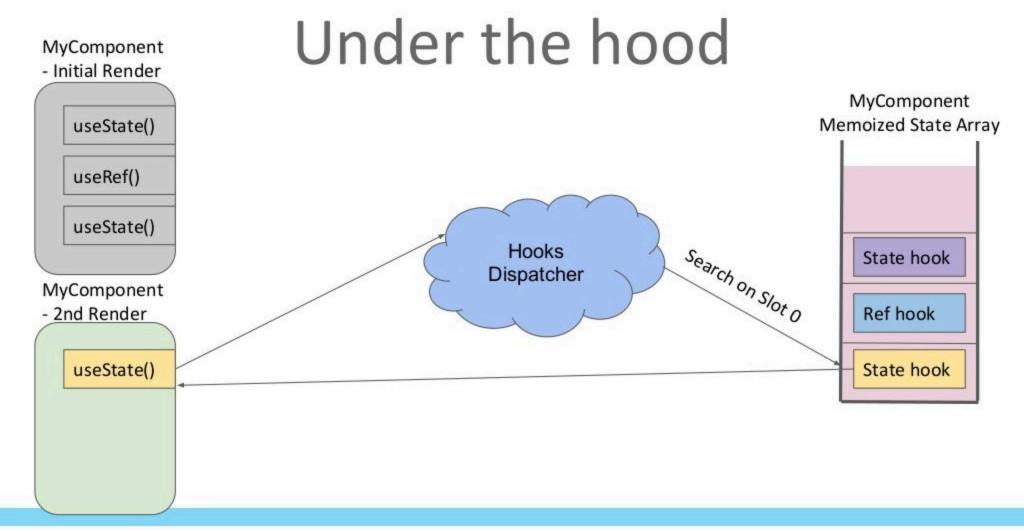
```
const TextInputWithFocusButton = (props) => {
    const inputRef = useRef();
    return (
        <input ref={inputRef} type="text" />
        <button onClick={() => inputRef.current.focus()}>
```

Rules of Hooks

- Only Call Hooks at the Top Level!
 - Don't call Hooks inside loops, conditions, or nested functions
 - Order Matters!
- Only Call Hooks from React Functions
 - Or from custom hooks







Under the hood MyComponent - Initial Render MyComponent Memoized State Array useState() useRef() useState() Hooks Search on Slot 1 State hook Dispatcher MyComponent - 2nd Render Ref hook useState() State hook useRef()

useState()

useEffect

Executing something on every render using lifecycle

```
class CounterButton extends Component {
    constructor() {
        super();
        this.state = {count: 0}
    componentDidMount() {
        console.log( The count is now ${this.state.count} )
    componentDidUpdate() {
        console.log( The count is now ${this.state.count} )
    render() {
        return <button onClick={() => this.setState(prevState => ({ count: prevState.count + 1 }))}>
            { this.state.count }
       </button>
```

Executing something on every render using useEffect

```
const Counter = props => {
   const [count, setCount] = useState(0);
   useEffect(() => {
        console.log('The count is now ${count}')
    });
    return <button onClick={() => setCount(count + 1)}>
              count }
   </button>
```

Executing something on every render using useEffect

```
const Counter = props => {
    const [count, setCount] = useState(0);
   useEffect(() => {
        console.log(`The count is now ${count}`)
   });
    return <button onClick={() => setCount(count + 1)}>
```

Effects with Cleanup

```
useEffect(() => {
     console.log(`The count is now ${count}`);
     return function cleanup() {
           console.log('cleaning up');
                                                          The count is now 0
                                                          --- Button onClick ---
                                                          cleaning up
                                                          The count is now 1
                                                          --- Button onClick ---
                                                          cleaning up
                                                          The count is now 2
                                                          --- Button onClick ---
                                                          cleaning up
                                                          The count is now 3
```

Effects with Cleanup

```
useEffect(() => {
     console.log(`The count is now ${count}`);
     return function cleanup() {
           console.log('cleaning up');
                                                          The count is now 0
                                                          --- Button onClick ---
                                                          cleaning up
                                                          The count is now 1
                                                          --- Button onClick ---
                                                          cleaning up
                                                          The count is now 2
                                                          --- Button onClick ---
                                                          cleaning up
                                                          The count is now 3
```

Should my effect run on every render?

Consider the next scenario...

```
//timer changes every 100ms
const Counter = ({timer}) => {
   const [count, setCount] = useState(0);
   useEffect(() => {
       console.log(`The count is now ${count}`)
   });
   return <MyComponent onClick={() => setCount(count + 1)} timer={timer}
   </MyComponent>
```





useEffect 2nd parameter

```
useEffect(() => {
    console.log(`The count is now ${count}`)
}, [count]);
```

componentWillReceiveProps

```
componentWillReceiveProps(nextProps) {
   if (this.props.timer !== nextProps.timer) {
      console.log(`The timer is now ${nextProps.timer}`)
   }
}
```

componentWillReceiveProps - hooks version

```
useEffect(() => {
    console.log(`Timer is now ${props.timer}`);
}, [props.timer]);
```

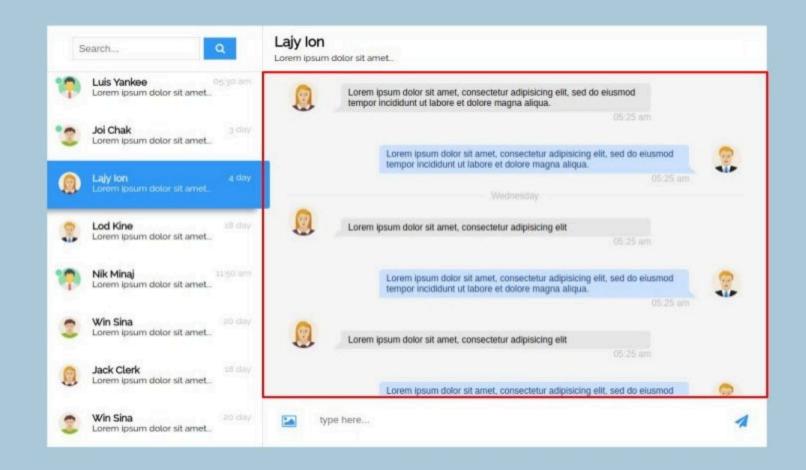
componentDidMount - hooks version

```
useEffect(() => {
    console.log(`I just mounted!`)
}, []);
```

componentWillUnmount - hooks version

```
useEffect(() => {
    return function cleanup() {
        console.log(`I'm unmounting!`)
}, []);
```

Let's combine what we learned so far



```
class ChatPage extends Component {
   constructor() {
        super();
        this.state = {
        this.onNewMessage = this.onNewMessage.bind(this);
        SocketClient.subscribeForNewMessages (this.props.roomId, this.onNewMessage);
        SocketClient.unsubscribe (this.props.roomId);
        if (nextProps.roomId !== this.props.roomId) {
            SocketClient. unsubscribe (this.props.roomId);
            SocketClient. subscribeForNewMessages (nextProps.roomId, this.onNewMessage);
   onNewMessage (message) (
        this.setState({ messages: [...this.state.messages, message] })
   render() {
        return this.state.messages.map((text, i) => <div key={i}>{text}</div>)
```

```
class ChatPage extends Component {
   constructor() {
       super();
                                                                              constructor() {
       this.state = {
                                                                                    super();
                                                                                    this.state = {
       this.onNewMessage = this.onNewMessage.bind(this);
       SocketClient.subscribeForNewMessages (this.props.roomId, this.onNewMessages)
                                                                                     this.onNewMessage =
       SocketClient.unsubscribe (this.props.roomId);
                                                                                         this.onNewMessage.bind(this);
       if (nextProps.roomId !== this.props.roomId) {
           this.setState ({ messages: [] });
           SocketClient. unsubscribe (this.props.roomId);
           SocketClient. subscribeForNewMessages (nextProps.roomId, this.onNewMessage);
   onNewMessage (message) (
       this.setState({ messages: [...this.state.messages, message] })
   render() {
       return this.state.messages.map((text, i) => <div key={i}>{text}</div>)
```

```
class ChatPage extends Component {
   constructor() {
                                                         onNewMessage (message) {
       super();
                                                               this.setState({
       this.state = {
                                                                   messages: [...this.state.messages, message]
       this.onNewMessage = this.onNewMessage.bind(this);
       SocketClient.subscribeForNewMessages (this.props.roomru, thrs.omp
       SocketClient.unsubscribe (this.props.roomId);
           SocketClient. unsubscribe (this.
           SocketClient. subscribeForNe
                                         ages (nextProps.roomId, this.onNewMessage);
   onNewMessage (message)
       this.setState({ messages: [...this.state.messages, message] })
   render() {
       return this.state.messages.map((text, i) => <div key={i}>{text}</div>)
```

```
class ChatPage extends Component {
   constructor() {
       super();
       this.state = {
                                                               componentDidMount() {
                                                                    SocketClient.subscribeForNewMessages (
       this.onNewMessage = this.onNewMessage
                                                                         this.props.roomId,
       SocketClient.subscribeForNewMessages (this.props.roomId, thi
                                                                         this.onNewMessage
       SocketClient.unsubscribe (this.props.roomId);
       if (nextProps.roomId !== this.props.roomId) {
          SocketClient. unsubscribe (this.props.roomId);
          SocketClient.subscribeForNewMessages (nextProps.roomId, this.onNewMessage);
   onNewMessage (message) (
       this.setState({ messages: [...this.state.messages, message] })
   render() {
       return this.state.messages.map((text, i) => <div key={i}>{text}</div>)
```

```
class ChatPage extends Component {
   constructor() {
       super();
       this.state = {
                                                                            componentWillUnmount() {
       this.onNewMessage = this.onNewMessage.bind(this);
                                                                                   SocketClient.unsubscribe (
                                                                                        this.props.roomId
       SocketClient.subscribeForNewMessages (this.props.roomId, this.onNewMessages)
                                                                                   );
       SocketClient.unsubscribe (this.props.roomId); <
       if (nextProps.roomId !== this.props.roomId) {
           SocketClient. unsubscribe (this.props.roomId);
           SocketClient.subscribeForNewMessages (nextProps.roomId, this.onNewMessage);
   onNewMessage (message) (
       this.setState({ messages: [...this.state.messages, message] })
   render() {
       return this.state.messages.map((text, i) => <div key={i}>{text}</div>)
```

```
class ChatPage extends Component {
   constructor() {
                                                      componentWillReceiveProps(nextProps) {
       super();
                                                          if (nextProps.roomId !== this.props.roomId) {
       this.state = {
                                                                 this.setState({ messages: [] });
                                                                 SocketClient.unsubscribe (this.props.roomId);
       this.onNewMessage = this.onNewMessage.bind(this);
                                                                 SocketClient.subscribeForNewMessages(
                                                                      nextProps.roomId,
       SocketClient.subscribeForNewMessages (this.props.ro
                                                                      this.onNewMessage
                                                                 );
       SocketClient.unsubscribe (this.props.roomId
       if (nextProps.roomId !== this.props.roomId) {
          this.setState ({ messages: [] });
          SocketClient. unsubscribe (this.props.roomId);
          SocketClient.subscribeForNewMessages (nextProps.roomId, this.onNewMessage);
   onNewMessage (message) (
       this.setState({ messages: [...this.state.messages, message] })
   render() {
       return this.state.messages.map((text, i) => <div key={i}>{text}</div>)
```

```
class ChatPage extends Component {
   constructor() {
                                                         render() {
       super();
                                                              return this.state.messages
       this.state = {
                                                                .map((text, i) =>
       this.onNewMessage = this.onNewMessage.bind(this);
                                                                       <div key={i}>{text}</div>
       SocketClient.subscribeForNewMessages (this.props.rod
       SocketClient.unsubscribe (this.props.roomId);
       if (nextProps.roomId !== this.props.roomId) {
           SocketClient. unsubscribe (this.props
           SocketClient. subscribeForNewMess
                                                    ops.roomId, this.onNewMessage);
   onNewMessage (message) (
       this.setState ({ mess
   render() {
       return this.state.messages.map((text, i) => <div key={i}>{text}</div>)
```

```
const ChatPage = ({ roomId }) => {
    const [messages, setMessages] = useState([]);
    useEffect(() => {
        setMessages ([]);
        const onNewMessage = (message) => setMessages([...messages, message]);
        SocketClient.subscribeForNewMessages (roomId, onNewMessage);
        return () => SocketClient.unsubscribe (roomId);
    }, [roomId]);
    return messages.map((text, i) => <div key={i}>{text}</div>)
```

```
const ChatPage = ({ roomId }) => {
   const [messages, setMessages] = useState([]);
   useEffect(() => {
        const onNewMessage = (message) => setMessages([...messages, message]);
        return () => SocketClient.unsubscribe(roomId);
    return messages.map((text, i) => <div key={i}>{text}</div>)
```

```
const ChatPage = ({ roomId }) => {
    const [messages, setMessages] = useState([]);
   useEffect(() => {
        const onNewMessage = (message) => setMessages([...messages, message]);
        return () => SocketClient.unsubscribe(roomId);
   }, [roomId]);
    return messages.map((text, i) => <div key={i}>{text}</div>)
```

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   useEffect(() => {
        setMessages ([]);
        const onNewMessage = (message) => setMessages([...messages, message]);
        return () => SocketClient.unsubscribe(roomId);
   }, [roomId]);
    return messages.map((text, i) => <div key={i}>{text}</div>)
```

```
const ChatPage = ({ roomId }) => {
    const [messages, setMessages] = useState([]);
   useEffect(() => {
        const onNewMessage = (message) => setMessages([...messages, message]);
        return () => SocketClient.unsubscribe(roomId);
   }, [roomId]);
    return messages.map((text, i) => <div key={i}>{text}</div>)
```

```
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    const [messages, setMessages] = useState([]);
   useEffect(() => {
        const onNewMessage = (message) => setMessages([...messages, message]);
        SocketClient.subscribeForNewMessages (roomId, onNewMessage);
        return () => SocketClient.unsubscribe(roomId);
   }, [roomId]);
    return messages.map((text, i) => <div key={i}>{text}</div>)
```

```
const ChatPage = ({ roomId }) => {
    const [messages, setMessages] = useState([]);
   useEffect(() => {
        const onNewMessage = (message) => setMessages([...messages, message]);
        return () => SocketClient.unsubscribe (roomId);
   }, [roomId]);
    return messages.map((text, i) => <div key={i}>{text}</div>)
```

Custom Hooks

What are Custom Hooks?

- Basically functions that run hooks
- Like any other function they can can take any args and return whatever you want
- By convention custom hook name start with "use"
- Like any other hook must be called on the top level of our components

This is the custom hook:

```
const useChatMessages = (roomId) => {
   const [messages, setMessages] = useState([]);
   useEffect(() => {
       setMessages([]);
       const onNewMessage = (message) => setMessages([...messages, message]);
       SocketClient.subscribeForNewMessages(roomId, onNewMessage);
       return () => SocketClient.unsubscribe (roomId);
    }, [roomId]);
   return messages;
```

This is the (very short) component:

```
const ChatPage = ({ roomId }) => {
   const messages = useChatMessages(roomId);
    return messages.map((text, i) =>
               < div key={i}>{text}</div>)
```

```
class ChatPage extends Component {
                                                 Remember how it used to look?
   constructor() {
       super();
                                                28 lines vs. 5 with custom hook
       this.state = {
       this.onNewMessage = this.onNewMessage.bind(this);
       SocketClient.subscribeForNewMessages (this.props.roomId, this.onNewMessage);
   componentWillUnmount () {
       SocketClient.unsubscribe (this.props.roomId);
   componentWillReceiveProps (nextProps) {
       if (nextProps.roomId !== this.props.roomId) {
          this.setState({ messages: [] });
          SocketClient.unsubscribe (this.props.roomId);
          SocketClient.subscribeForNewMessages (nextProps.roomId, this.onNewMessage);
   onNewMessage (message) {
       this.setState({ messages: [...this.state.messages, message] })
   render() {
       return this.state.messages.map((text, i) => <div key={i}>{text}</div>)
```

Custom Hooks allow us to..

- Easily share code
- Keep our components clean and readable
- Use Hooks from npm packages

useHook



https://ikaraf.aithub.io/react-hod

- react-il8next/hooks Internationalization for react done right.
- react-immer-hooks useState and useReducer using Immer to update state. react-intersection-visible-hook React hook to fack the visibility of a functional component.
- react-pirate React lifecycle and utilities hooks.
- react-powerhooks Hr oks api for react-powernhow
- react-selector-hoof Collection of hook-bass
- · react-use Collect.
- esential hooks.
- · react-useFormless seas took to handle form state.
- ed selector factories for d clarations outside of render react-use-fore-state React hook for managing form and inputs state.
- react-use-1db React hook for storing value in the browser using __dexDB .
- react-wait Complex Loader Management Hook for React Applications.
- react-window-communication hook React hook to communicate among browser co.
- react-with-hooks Ponyfill fo propos React Hooks API.
- reaktion useState like hook for
- · redux-react-hook React te management.
 - chooks-visibilit; -ensor It sing mapped state from Rep. x store. ther an element has scrolled into view so not.
- resynced Multiple state manage
- Fxjs-hooks An extraway to use nt using React Hooks API.
- the-platform Browser API's turn of into React Hooks and Suspense-friendly React elements for common situations. use-abortable-fetch React hook that does a fetch and aborts when the proponents is unloaded or a different

windows, iframes).

- use-eve A set of React Hooks to handle mouse events.
- use-inner A hook to use immer to manipulate state.
- use-redux A hook to bind redux.
- use-simple-undo Simple implementation of undo/redo functionality.
- acket to React hooks to use with https://socket.io/.
- eact hook for subscribing to your single app state (works with your current Redux app).
 - set position top left of an element.
 - tically update navigation based on scroll position.

Other hooks

- useReducer
- useCallback
- useMemo
- useImperativeMethods
- useLayoutEffect

Memo

React.memo

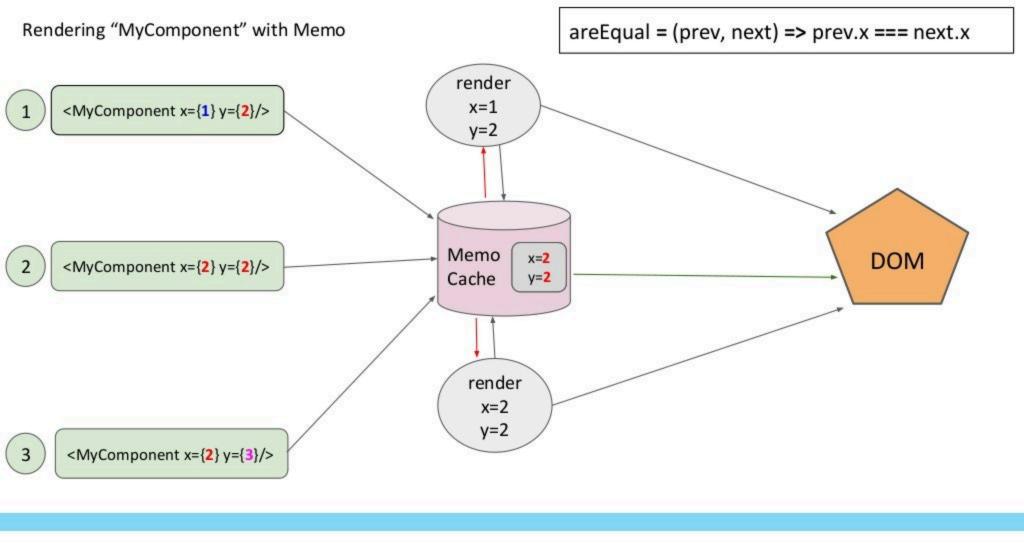
PureComponent for function components

```
import React, {memo} from 'react';
const MyComponent = props => { ... }
export default memo (MyComponent);
```

React.memo

PureComponent for function components

```
import React, {memo} from 'react';
const MyComponent = props => { ... }
const areEqual = (prevProps, nextProps) => { ... }
export default memo (MyComponent, areEqual);
```



Suspense + Lazy

```
import React, { lazy } from 'react';
const OtherComponent = React.lazy(() => import('./OtherComponent'));
const MyComponent = (props) =>
  <div>
      <OtherComponent/>
  </div>
```

```
import React, { lazy } from 'react';
const OtherComponent = React.lazy(() => import('./OtherComponent'));
const MyComponent = (props) =>
  <div>
```

```
import React, { lazy } from 'react';
const OtherComponent = React.lazy(() => import('./OtherComponent'));
const MyComponent = (props) =>
  <div>
```

```
import React, { lazy } from 'react';
const OtherComponent = React.lazy(() => import('./OtherComponent'));
const MyComponent = (props) =>
  <div>
      <OtherComponent/>
```

Lazy + Suspense

Code-Splitting

```
import React, { lazy, Suspense } from 'react';
const OtherComponent = React.lazy(() => import('./OtherComponent'));
const MyComponent = (props) =>
  <div>
       <Suspense fallback={<div>Loading..</div>}>
           <OtherComponent />
      </Suspense>
  </div>
```

Lazy + Suspense

Code-Splitting

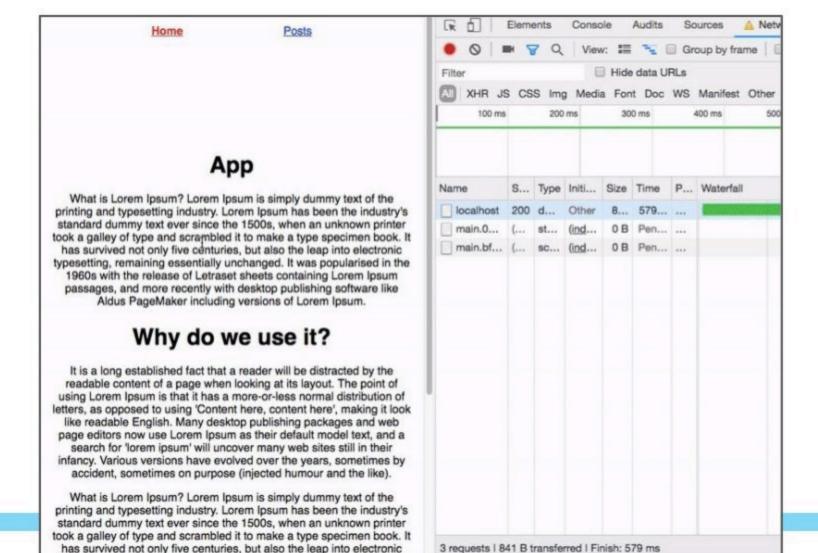
```
import React, { lazy, Suspense } from 'react';
const OtherComponent = React.lazy(() => import('./OtherComponent'));
const MyComponent = (props) =>
  <div>
  </div>
```

Lazy + Suspense

Code-Splitting

```
import React, { lazy, Suspense } from 'react';
const OtherComponent = React.lazy(() => import('./OtherComponent'));
const MyComponent = (props) =>
  <div>
       <Suspense fallback={<div>Loading..</div>}>
           <OtherComponent />
      </Suspense>
  </div>
```

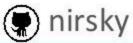
```
const Home = lazy(() => import('./components/Home));
const Posts = lazy(() => import('./components/Posts'));
const App = () => (
   <Router>
      <Suspense fallback={<Loading />}>
           <Switch>
               <Route exact path="/" component={Home} />
               <Route path="/posts" component={Posts} />
           </Switch>
      </Suspense>
   </Router>
```



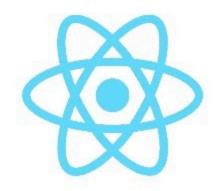


Hook me up with Questions









THANKS!



