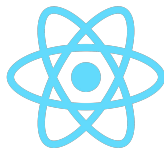


# REACT NEW FEATURES AND INTRO TO HOOKS

Nir Hadassi

Software Engineer @ Soluto



This talk was supposed to be about...


# High-Order-Components and Recompose

---

But then...



And then...



**Andrew Clark**  
@acd\_lite

Following

Happy Hooks Day!


Before I get bombarded with the same question over and over again, here you go: [github.com/acdlite/recomp](https://github.com/acdlite/recomp) ...





### A Note from the Author (acd\_lite, Oct 25 2018):

Hi! I created Recompose about three years ago. About a year after that, I joined the React team. Today, we announced a proposal for [Hooks](#). Hooks solves all the problems I attempted to address with Recompose three years ago, and more on top of that. I will be discontinuing active maintenance of this package (excluding perhaps bugfixes or patches for compatibility with future React releases), and recommending that people use Hooks instead. **Your existing code with Recompose will still work**, just don't expect any new features. Thank you so, so much to [@wuct](#) and [@istarkov](#) for their heroic work

11:15 AM - 25 Oct 2018

77 Retweets 305 Likes



 13  77  305 

# About Myself

## Nir Hadassi

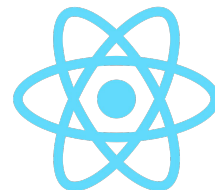
4 years

working at  
**Soluto**



3 years

working with  
**React**



nirsky

# 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



0

# Class with state

```
class CounterButton extends Component {  
  constructor() {  
    super();  
    this.state = {  
      count: 0  
    }  
  }  
  
  render() {  
    return <button onClick={() => this.setState(prevState => ({ count: prevState.count + 1  
    })))}>  
      { this.state.count }  
    </button>  
  }  
}
```

## With useState

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

const Counter = props => {
  const [count, setCount] = useState(0);

  return <button onClick={() => setCount(count + 1)}>
    { count }
  </button>
}
```

## With useState

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

const Counter = props => {
  const [count, setCount] = useState(0);

  return <button onClick={() => setCount(count + 1)}>
    { count }
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## With useState

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

const Counter = props => {
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## With useState

```
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={...}>
      {count}
    </Button>
  )
}
```

# useRef

Focus on input

# useRef

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



# useRef

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

# useRef

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

# useRef

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

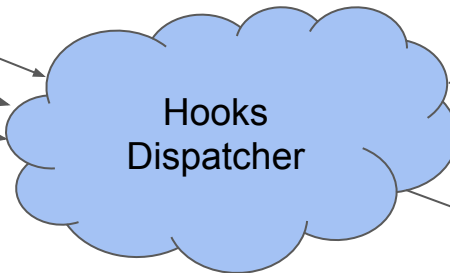
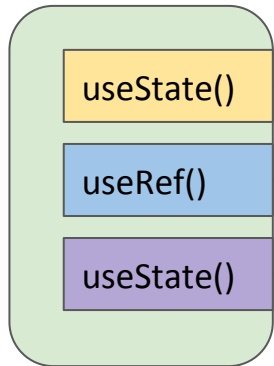
# Rules of Hooks

- 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

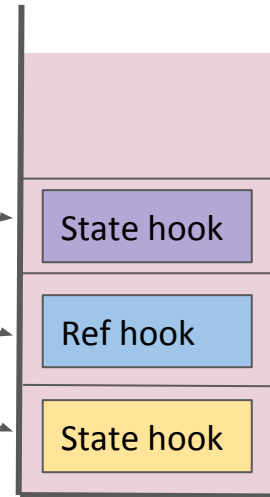


# Under the hood

MyComponent  
- Initial Render

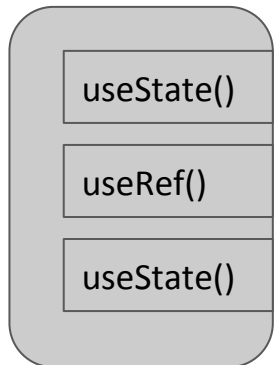


MyComponent  
Memoized State Array

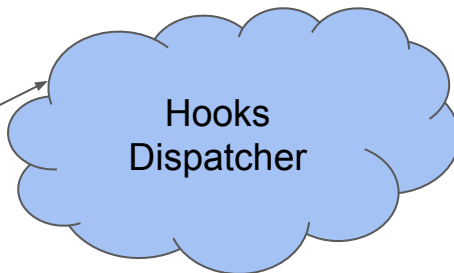
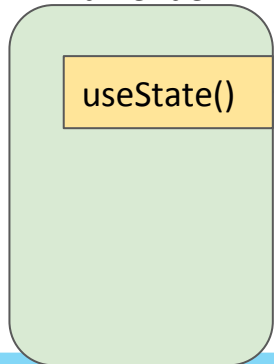


# Under the hood

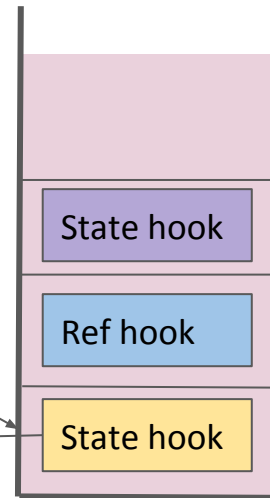
MyComponent  
- Initial Render



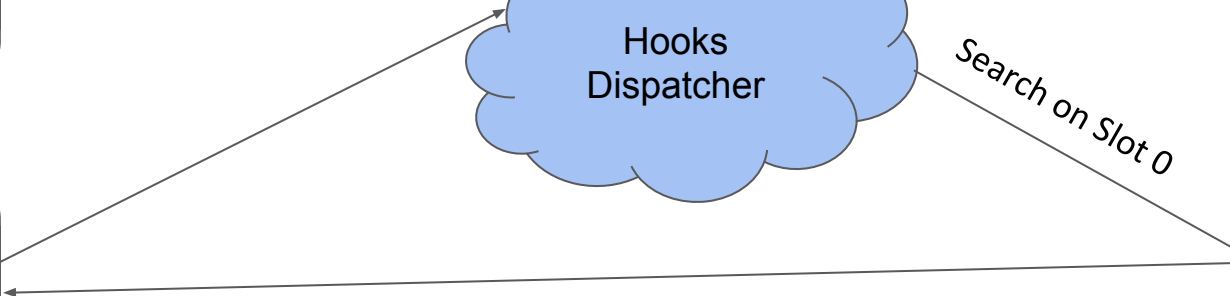
MyComponent  
- 2nd Render



MyComponent  
Memoized State Array

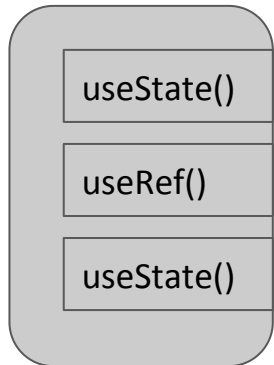


Search on Slot 0

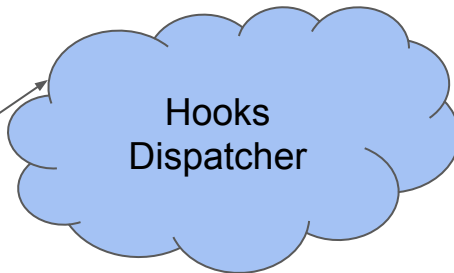
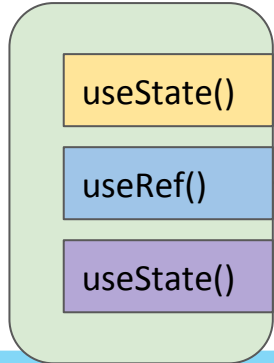


# Under the hood

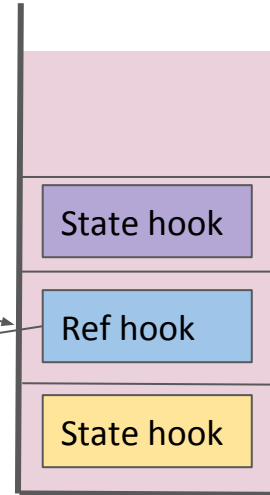
MyComponent  
- Initial Render



MyComponent  
- 2nd Render



MyComponent  
Memoized State Array



*Search on Slot 1*

# 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)}>  
    { count }  
  </button>  
}
```

# 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}>
    { count }
  </MyComponent>
}
```



31 The count is now 0

71 The count is now 0

The count is now 1

The count is now 1

46 The count is now 1

The count is now 2

The count is now 2

34 The count is now 2

The count is now 3

100 The count is now 3

>



## 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

---

Search...

Luis Yankee

05:30 am

Lorem ipsum dolor sit amet...

Joi Chak

3 day

Lorem ipsum dolor sit amet...

Lajy Ion

4 day

Lorem ipsum dolor sit amet...

Lod Kine

18 day

Lorem ipsum dolor sit amet...

Nik Minaj

11:50 am

Lorem ipsum dolor sit amet...

Win Sina

20 day

Lorem ipsum dolor sit amet...

Jack Clerk

18 day

Lorem ipsum dolor sit amet...

Win Sina

20 day

Lorem ipsum dolor sit amet...

Lajy Ion

Lorem ipsum dolor sit amet...

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05:25 am

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type here...

```
class ChatPage extends Component {
  constructor() {
    super();
    this.state = {
      messages: []
    }
    this.onNewMessage = this.onNewMessage.bind(this);
  }
  componentDidMount () {
    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>)
  }
}
```



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    }  
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  }  
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    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 () {  
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  }  
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  this.setState({  
    messages: [...this.state.messages, message]  
  })  
}
```

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class ChatPage extends Component {  
  constructor() {  
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      messages: []  
    }  
    this.onNewMessage = this.onNewMessage  
  }  
  componentDidMount () {  
    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) {  
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  }  
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    this.props.roomId,  
    this.onNewMessage  
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    }  
  }  
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    this.setState ({ messages: [...this.state.messages, message] })  
  }  
  render () {  
    return this.state.messages.map ((text, i) => <div key={i}>{text}</div>)  
  }  
}
```

```
componentWillUnmount () {  
  SocketClient.unsubscribe (  
    this.props.roomId  
  );  
}
```

```
class ChatPage extends Component {
```

```
  constructor() {
```

```
    super();
```

```
    this.state = {
```

```
      messages: []
```

```
    }
```

```
    this.onNewMessage = this.onNewMessage.bind(this);
```

```
  }
```

```
  componentDidMount () {
```

```
    SocketClient.subscribeForNewMessages (this.props.roomId);
```

```
  }
```

```
  componentWillUnmount () {
```

```
    SocketClient.unsubscribe (this.props.roomId);
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    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>)
```

```
  }
```

```
}
```

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  componentWillReceiveProps (nextProps) {
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```
    if (nextProps.roomId !== this.props.roomId) {
```

```
      this.setState ({ messages: [] });
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```
      SocketClient.unsubscribe (this.props.roomId);
```

```
      SocketClient.subscribeForNewMessages (
```

```
        nextProps.roomId,
```

```
        this.onNewMessage
```

```
      );
```

```
    }
```

```
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    }  
  }  
  onNewMessage (message) {  
    this.setState ({ messages: [...this.state.messages, message] })  
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  }  
}
```

```
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(() => {  
    setMessages([]);  
  
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    SocketClient.subscribeForNewMessages(roomId, onNewMessage);  
  
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  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(() => {  
    setMessages([]);  
    const onNewMessage = (message) => setMessages([...messages, message]);  
    SocketClient.subscribeForNewMessages(roomId, onNewMessage);  
  
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const ChatPage = ({ roomId }) => {  
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    SocketClient.subscribeForNewMessages(roomId, onNewMessage);  
  
    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 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>  
  )  
}
```

Remember how it used to look?  
28 lines vs. 5 with custom hook

```
class ChatPage extends Component {  
  constructor() {  
    super();  
    this.state = {  
      messages: []  
    }  
    this.onNewMessage = this.onNewMessage.bind(this);  
  }  
  componentDidMount () {  
    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
-

# useHooks

One new React

<https://vikaraf.github.io/react-hooks>

- [react-i18next/hooks](#) Internationalization for react done right.
- [react-immers-hooks](#) useState and useReducer using Immer to update state.
- [react-intersection-visible-hook](#) React hook to track the visibility of a functional component.
- [react-pirate](#) React lifecycle and utilities hooks.
- [react-powerhooks](#) Hooks api for react-powerlun.
- [react-selector-hook](#) Collection of hook-based selector factories for declarations outside of render.
- [react-use](#) Collection of essential hooks.
- [react-useFormless](#) React hook to handle form state.
- [react-use-form-state](#) React hook for managing form and inputs state.
- [react-use-idb](#) React hook for storing value in the browser using IndexedDB.
- [react-wait](#) Complex Loader Management Hook for React Applications.
- [react-window-communication-hook](#) React hook to communicate among browser components (windows, iframes).
- [react-with-hooks](#) Ponyfill for the proposed React Hooks API.
- [reaktion](#) useState like hook for state management.
- [redux-react-hook](#) React hook for using mapped state from Redux store.
- [react-hooks-visibility-sensor](#) Hook to determine whether an element has scrolled into view or not.
- [resynched](#) Multiple state management using React Hooks API.
- [rxjs-hooks](#) An easy way to use RxJS v6+ with react hooks.
- [the-platform](#) Browser API's turned into React Hooks and Suspense-friendly React elements for common situations.
- [use-abortable-fetch](#) React hook that does a fetch and aborts when the components is unloaded or a different request is made.
- [use-events](#) A set of React Hooks to handle mouse events.
- [use-immers](#) A hook to use immer to manipulate state.
- [use-redux](#) A hook to bind redux.
- [use-simple-undo](#) Simple implementation of undo/redo functionality.
- [use-socketio](#) React hooks to use with <https://socket.io/>.
- [use-state](#) React hook for subscribing to your single app state (works with your current Redux app).
- [use-undo](#) React hook to implement Undo and Redo functionality.
- [usePosition](#) React hook to get position top left of an element.
- [useScroll](#) React hook to automatically 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 => { ... }

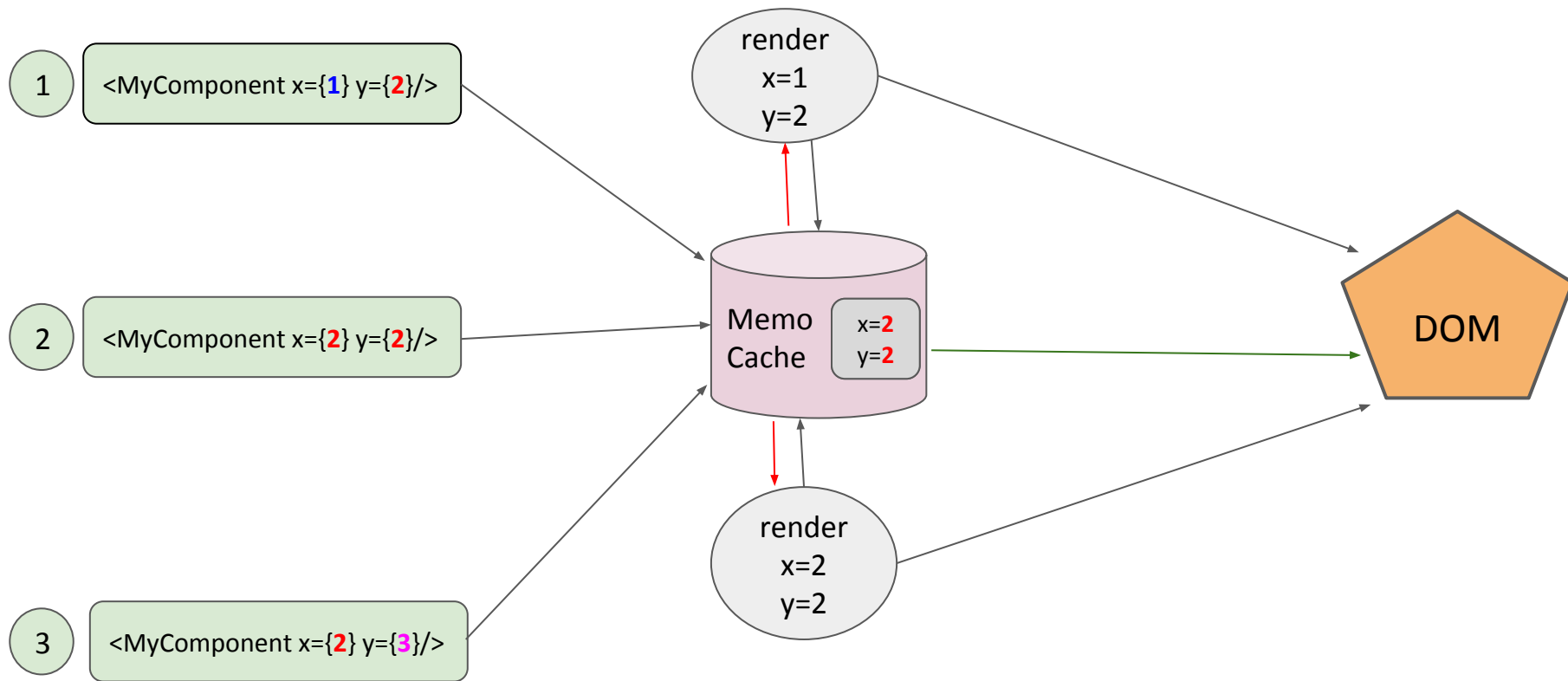
const areEqual = (prevProps, nextProps) => { ... }

export default memo(MyComponent, areEqual);
```



## Rendering "MyComponent" with Memo

`areEqual = (prev, next) => prev.x === next.x`



Suspense + Lazy

---

# Lazy

## *Code-Splitting*

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

const OtherComponent = React.lazy(() => import('./OtherComponent'));

const MyComponent = (props) =>
  <div>
    <OtherComponent />
  </div>
```

# Lazy

## *Code-Splitting*

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

const OtherComponent = React.lazy(() => import('./OtherComponent'));

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  <div>
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    <OtherComponent />
  </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>
```

Introduced on React 16.6

# Lazy + Suspense

## *Code-Splitting*

```
import React, { lazy, Suspense } from 'react';

const OtherComponent = React.lazy(() => import('./OtherComponent'));

const MyComponent = (props) =>
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# 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>
```

Introduced on React 16.6

```
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>
)
```

## App

What is Lorem Ipsum? Lorem Ipsum is simply dummy text of the printing and typesetting industry. Lorem Ipsum has been the industry's standard dummy text ever since the 1500s, when an unknown printer took a galley of type and scrambled it to make a type specimen book. It has survived not only five centuries, but also the leap into electronic typesetting, remaining essentially unchanged. It was popularised in the 1960s with the release of Letraset sheets containing Lorem Ipsum passages, and more recently with desktop publishing software like Aldus PageMaker including versions of Lorem Ipsum.

## Why do we use it?

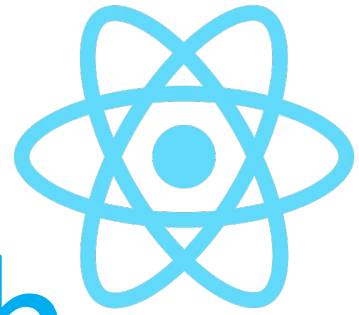
It is a long established fact that a reader will be distracted by the readable content of a page when looking at its layout. The point of using Lorem Ipsum is that it has a more-or-less normal distribution of letters, as opposed to using 'Content here, content here', making it look like readable English. Many desktop publishing packages and web page editors now use Lorem Ipsum as their default model text, and a search for 'lorem ipsum' will uncover many web sites still in their infancy. Various versions have evolved over the years, sometimes by accident, sometimes on purpose (injected humour and the like).

What is Lorem Ipsum? Lorem Ipsum is simply dummy text of the printing and typesetting industry. Lorem Ipsum has been the industry's standard dummy text ever since the 1500s, when an unknown printer took a galley of type and scrambled it to make a type specimen book. It has survived not only five centuries, but also the leap into electronic

The screenshot shows the Network tab in a web browser's developer tools. The 'localhost' resource is selected, showing a 200 status and a response size of 841 B. The total time for the request is 579 ms. The table below shows the details of the request.

Name	S...	Type	Initi...	Size	Time	P...	Waterfall
localhost	200	d...	Other	8...	579...	...	
main.0...	(...	st...	(ind...	0 B	Pen...	...	
main.bf...	(...	sc...	(ind...	0 B	Pen...	...	

3 requests | 841 B transferred | Finish: 579 ms



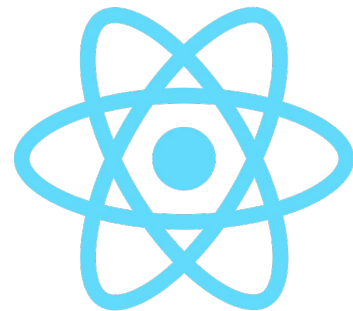
# Hook me up with Questions



Nir\_Hadassi



nirsky



# THANKS!



Nir\_Hadassi



nirsky