Why I am hooked on the future of React

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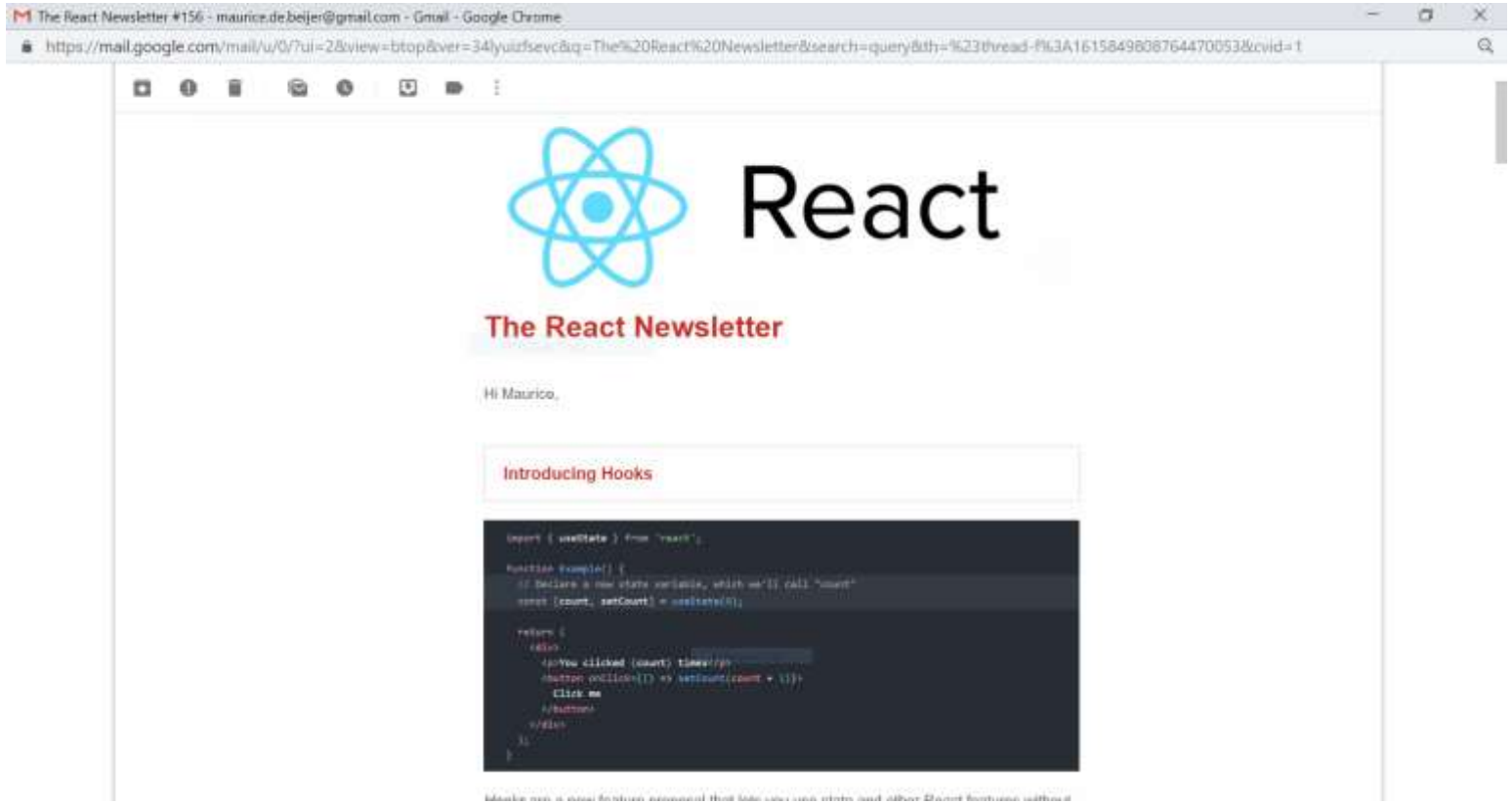
The React Newsletter



http://bit.ly/ReactNewsletter

History of Components

Original Component API

```
1 import React from 'react';
2
3 const Greeter = React.createClass({
4   render: function() {
5     return <div>Hello {this.props.firstName}</div>;
6   }
7 });
8
9 export default Greeter;
```

Class Components

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

class Greeter extends Component {
  render() {
    return <div>Hello {this.props.firstName}</div>;
  }
}

export default Greeter;
```

State & Lifecycle

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

class Greeter extends Component {
  state = {
    loaded: false
  };

  componentDidMount() {
    this.setState({ loaded: true });
  }

  render() {
    return <div>Hello {this.props.firstName}</div>;
  }
}

export default Greeter;
```

The problem with classes

this

```
1 class Counter extends Component {
2   state = { count: 0 };
3
4   onClick() {
5     this.setState({ count: this.state.count + 1 });
```

```
▶ Uncaught TypeError: Cannot read property 'setState' of undefined
    at onClick (Counter.js:79)
    at HTMLUnknownElement.callCallback (react-dom.development.js:147)
    at Object.invokeGuardedCallbackDev (react-dom.development.js:196)
    at invokeGuardedCallback (react-dom.development.js:250)
    at invokeGuardedCallbackAndCatchFirstError (react-dom.development.js:265)
    at executeDispatch (react-dom.development.js:622)
    at executeDispatchesInOrder (react-dom.development.js:647)
```

```
12         </button>
13       );
14     }
15 }
```

Fat arrow for some functions

```
class Counter extends Component {
  state = { count: 0 };

  onClick = () => {
    this.setState({ count: this.state.count + 1 });
  };

  render() {
    return (
      <button onClick={this.onClick}>
        Click me
      </button>
    );
  }
}
```

Single responsibility in multiple functions

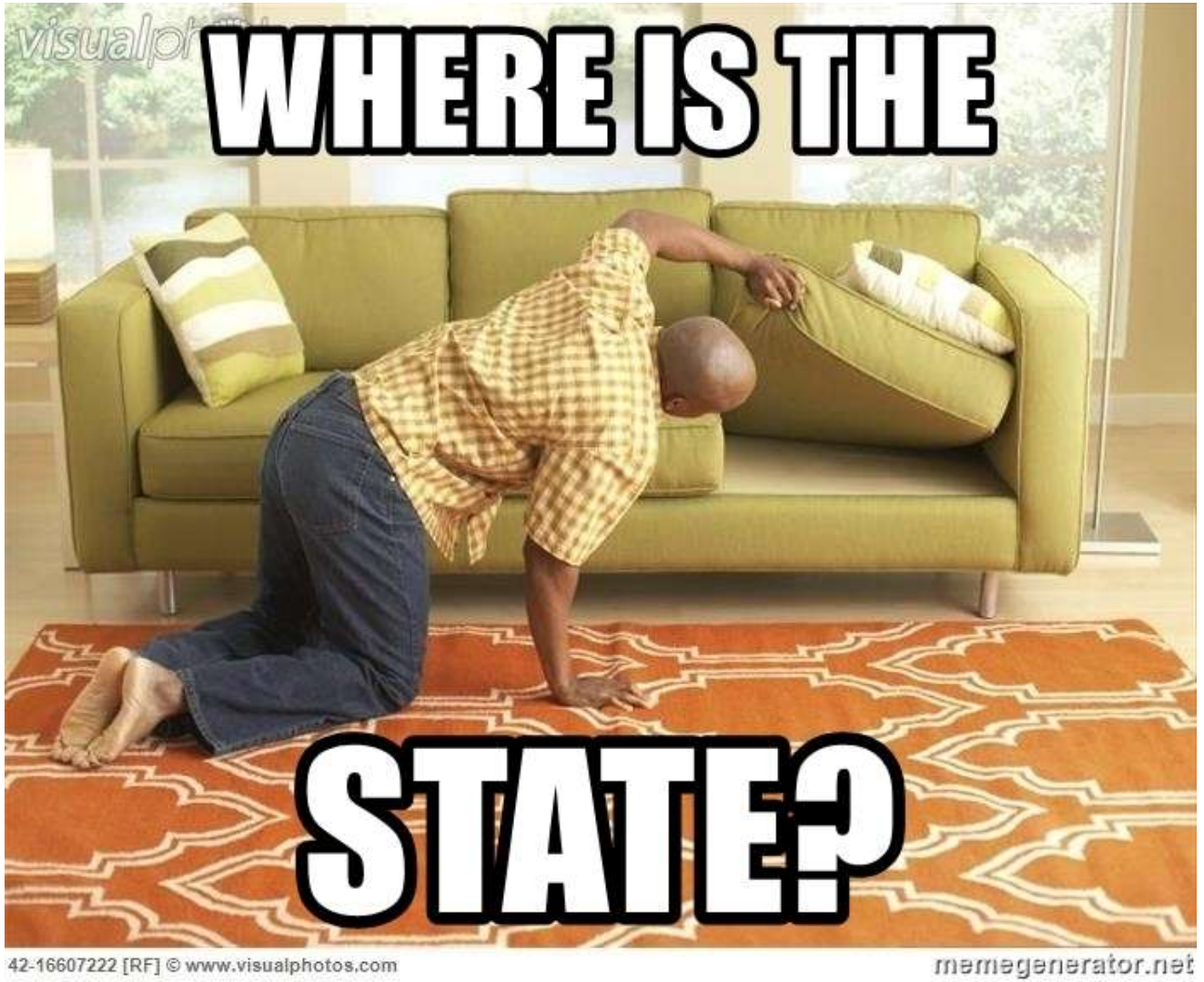
```
class Clock extends Component {
  state = { now: new Date().toLocaleTimeString() };

  componentDidMount() {
    this.handle = setInterval(
      () ⇒
        this.setState({
          now: new Date().toLocaleTimeString()
        }),
      1000
    );
  }
  componentWillUnmount() {
    clearInterval(this.handle);
  }
  render() {
    return <div>{this.state.now}</div>;
  }
}
```

Functional Components

```
1 import React from 'react';
2
3 const Greeter = props ⇒ {
4   return <div>Hello {props.firstName}</div>;
5 };
6
7 export default Greeter;
```

The Problem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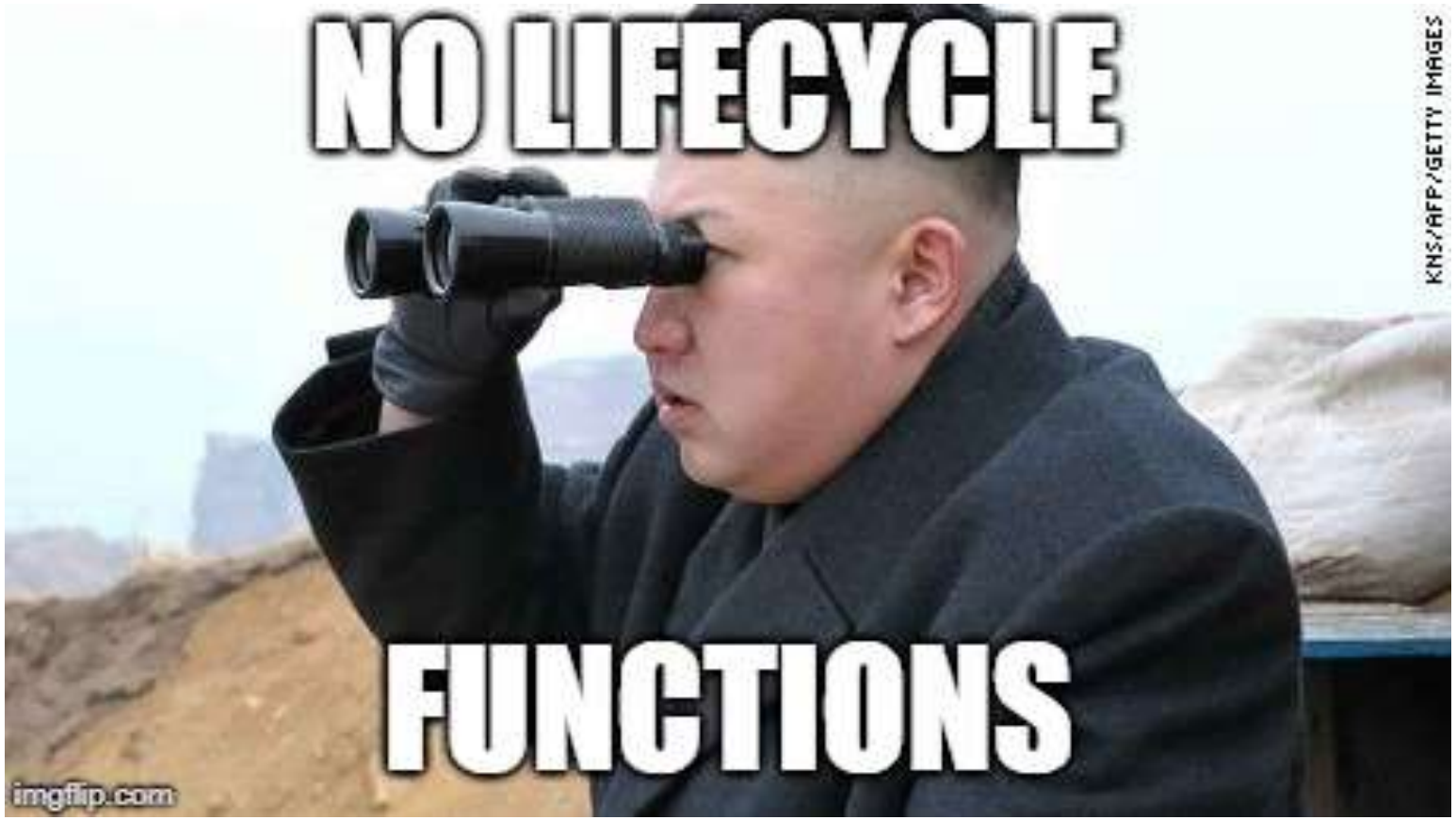
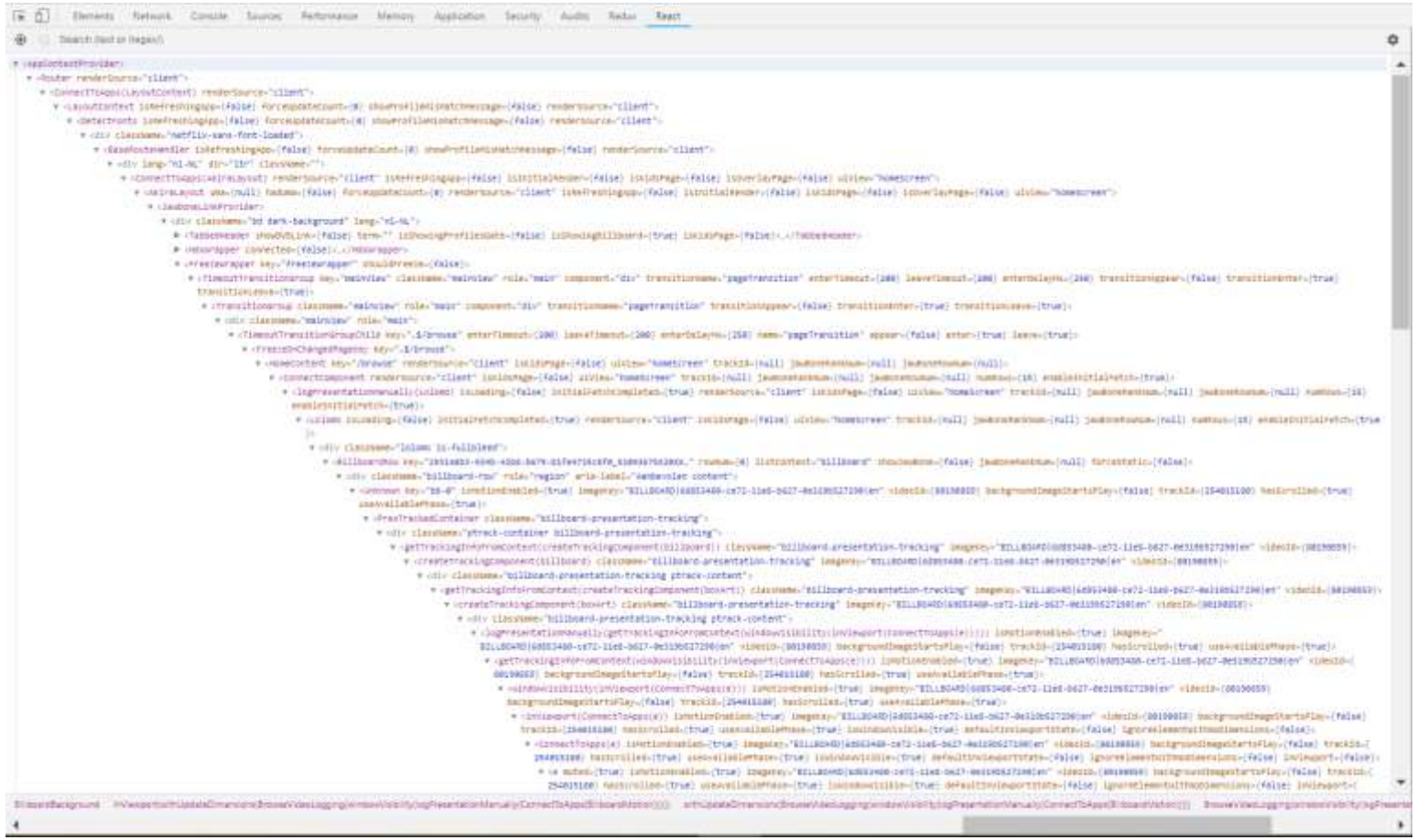
And



If your only tool …

Deeply Nested Components



Many are wrappers to add props

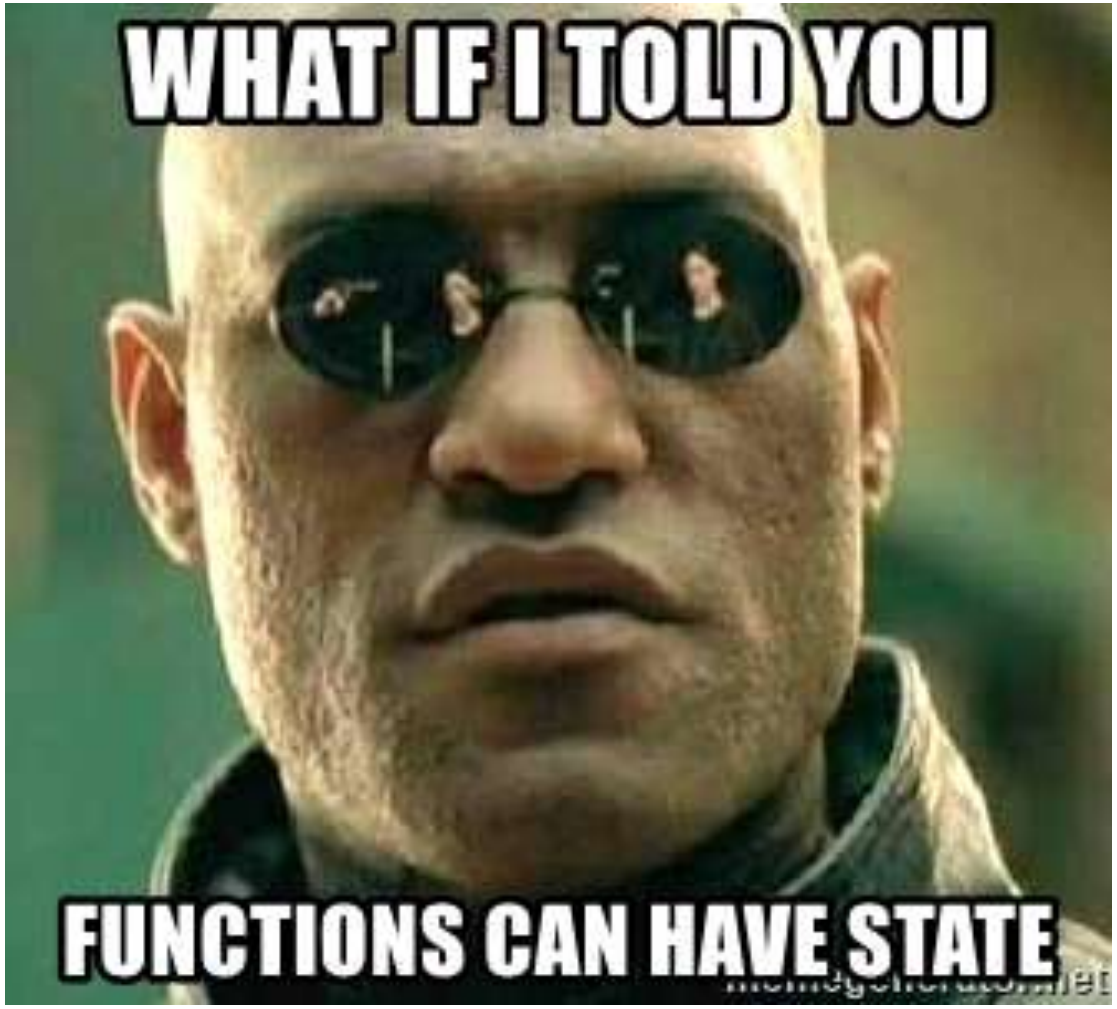
Render Props

```jsx
import React, { Component } from 'react';
import TimeContext from './TimeContext';
import ThemeContext from './ThemeContext';
import AnalogClock from './AnalogClock';

class Clock extends Component {
  render() {
    return (
      <TimeContext.Consumer>
        {({ time }) => (
          <ThemeContext.Consumer>
            {({ theme }) => (
                <AnalogClock time={time} theme={theme} />
            )}
          </ThemeContext.Consumer>
        )}
      </TimeContext.Consumer>
    );
  }
}

export default Clock;
```

But...



Introducing Hooks

Open Mind

useState()

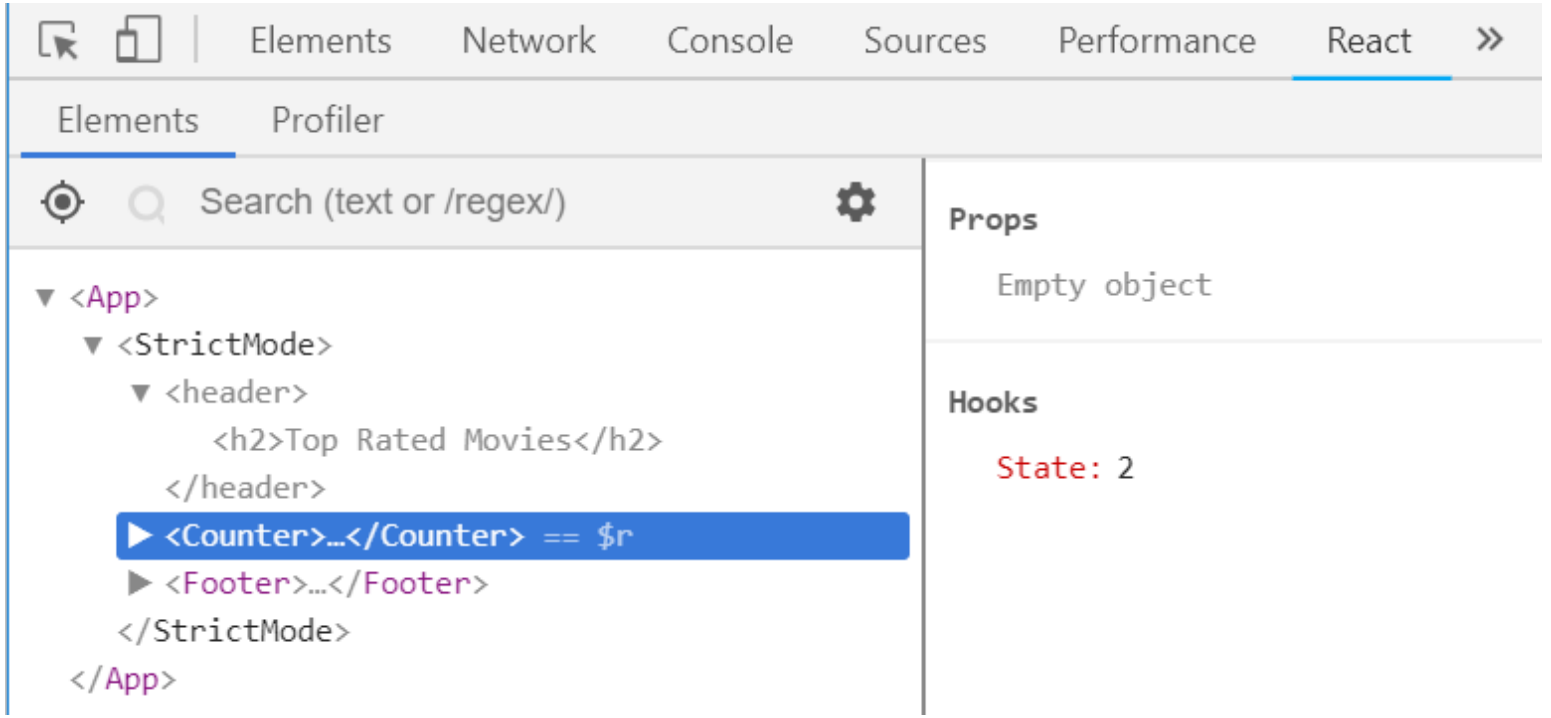
```jsx
import React, { useState } from 'react';

const Counter = () => {
  const [count, setCount] = useState(1);

  return (
    <div>
      <p>The counter is: {count}</p>
      <button onClick={
          () => setCount(count + 1)}>
        Increment
      </button>
    </div>
  );
};

export default Counter;
```

Just State



useEffect()

```jsx
import React, { useEffect, useState } from 'react';
import AnalogClock from './AnalogClock';

const Clock = ({ interval }) => {
  const [time, setTime] = useState(new Date());

  useEffect(
    () => {
      const handle = setInterval(
        () => setTime(new Date()), interval);

      return () => clearInterval(handle);
    },
    [interval]
  );

  return <AnalogClock time={time} />;
};

export default Clock;
```

The Context

```
1 import { createContext } from 'react';
2
3 const TimeContext = createContext(new Date());
4
5 export default TimeContext;
```

Render Props

```jsx
import React, { Component } from 'react';
import TimeContext from './TimeContext';
import ThemeContext from './ThemeContext';
import AnalogClock from './AnalogClock';

class Clock extends Component {
  render() {
    return (
      <TimeContext.Consumer>
        {({ time }) => (
          <ThemeContext.Consumer>
            {({ theme }) => (
                <AnalogClock time={time} theme={theme} />
            )}
          </ThemeContext.Consumer>
        )}
      </TimeContext.Consumer>
    );
  }
}

export default Clock;
```

useContext()

```jsx
import React, { useContext } from 'react';
import TimeContext from './TimeContext';
import ThemeContext from './ThemeContext';
import AnalogClock from './AnalogClock';

const Clock = () => {
  const time = useContext(TimeContext);
  const theme = useContext(ThemeContext);

  return <AnalogClock time={time} theme={theme} />;
};

export default Clock;
```

All hooks

- Basic hooks
  - useState()
  - useEffect()
  - useContext()
- Additional Hooks
  - useReducer()
  - useCallback()
  - useMemo()
  - useRef()
  - useDebugValue()
  - useLayoutEffect()
  - useImperativeHandle()
- Custom hooks
  - ...

Custom Hooks

```jsx
import { useEffect, useState } from 'react';

const useTime = interval => {
  const [time, setTime] = useState(new Date());

  useEffect(
    () => {
      const handle = setInterval(
        () => setTime(new Date()), interval);

      return () => clearInterval(handle);
    },
    [interval]
  );
  return time;
};

export default useTime;
```

Using The Hook

```
1 import React from 'react';
2 import useTime from './useTime';
3 import AnalogClock from './AnalogClock';
4
5 const Clock = ({ interval }) ⇒ {
6   const time = useTime(interval);
7
8   return <AnalogClock time={time} />;
9 };
10
11 export default Clock;
```

Abortable Fetch Hook

```jsx
import {
  useState, useEffect, useLayoutEffect, useRef
} from 'react';
import fetchData from './fetchData';

const useAbortableFetch = url => {
  const [state, setState] = useState({
    json: null,
    loading: false,
    error: null,
    controller: null
  });

  const isMounted = useRef(false);
  useLayoutEffect(() => {
    isMounted.current = true;
    return () => {
      isMounted.current = false;
    };
  }, []);

  useEffect(
    () => {
      const controller = new AbortController();
      setState({
        json: null,
        loading: true,
        error: null,
        controller
      });

      fetchData(url, controller.signal, state => {
        if (isMounted.current) {
          setState(state);
        }
      });

      return () => controller.abort();
    },
    [url]
  );

  return {
    json: state.json,
    loading: state.loading,
    error: state.error,
    abort: () => state.controller && state.controller.abort()
  };
};

export default useAbortableFetch;
```

Fetch Request

```
const fetchData = async (url, signal, setState) => {
  try {
    const rsp = await fetch(url, { signal });
    const json = await rsp.json();

    setState(oldState => ({
      ...oldState,
      json,
      loading: false
    }));
  } catch (err) {
    const error = err.name !== 'AbortError' ? err.message :
null;
    setState(oldState => ({
      ...oldState,
      error,
      loading: false
    }));
  }
};

export default fetchData;
```

Rules of Hooks

- Hooks can only be used in functional components
  - Or in other hooks
  - Not in class based components
- Hooks must always be created in the same order
  - Must be outside loops, conditions or nested functions
- Hooks names must be prefixed with `use`
- There is an ESLint plugin to enforce these rules

Hooks are optional

Classes will keep on working

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