Introduction to

React Hooks

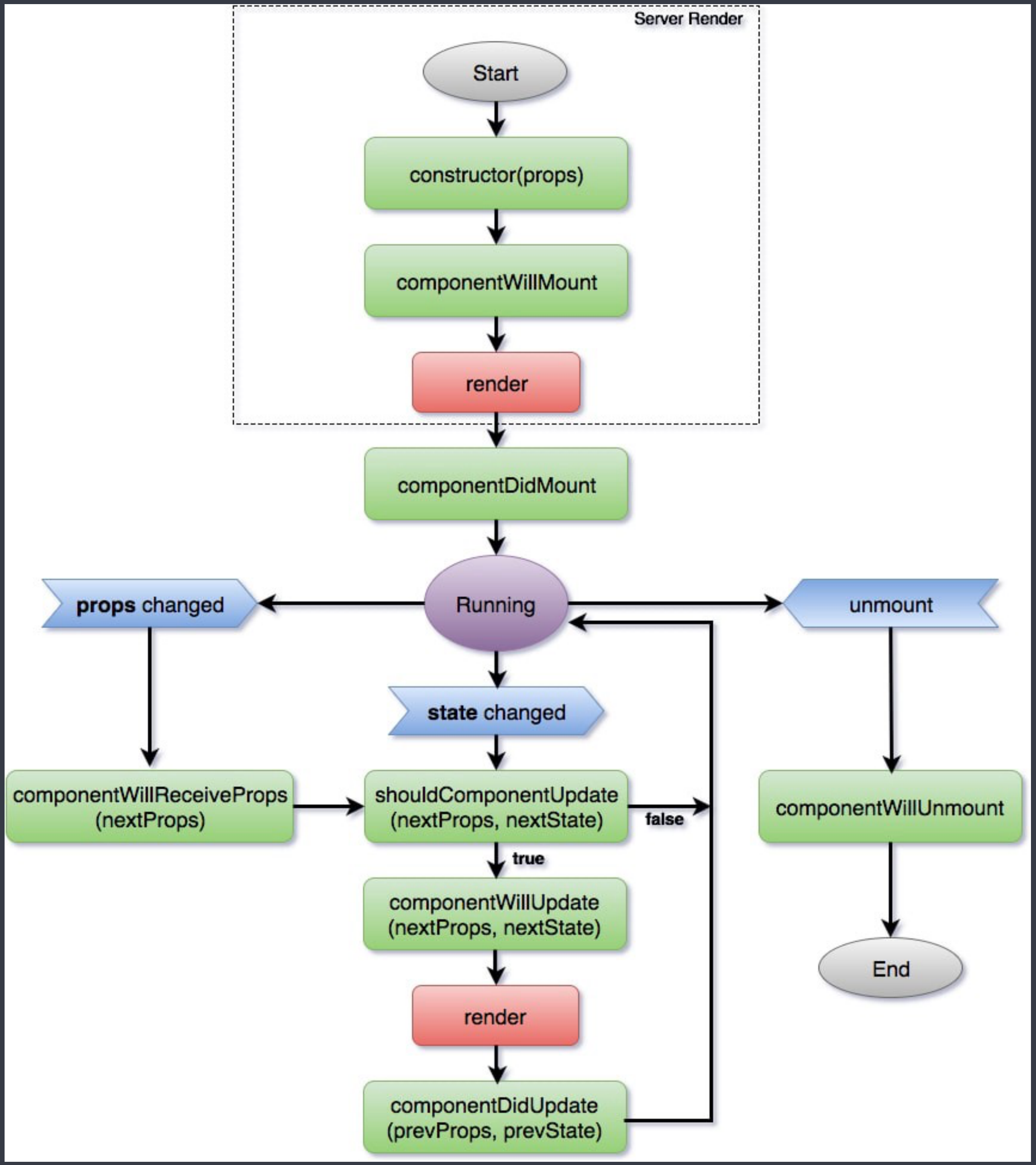
The Problem

You can’t use React state without classes!

But there’s more…

The Component Lifecycle is Complicated & Redundant

- On component initialization, there's `constructor`, `getDerivedStateFromProps`, `componentWillMount`, `render`, and `componentDidMount`.
- On update, there's `getDerivedStateFromProps` again, `componentWillReceiveProps`, `shouldComponentUpdate`, `getSnapshotBeforeUpdate`, `componentWillUpdate`, `render` again, and `componentDidUpdate`.
- There's also `componentWillUnmount`, `componentDidCatch`, and `getDerivedStateFromError`.
- And typically, the implementations for these methods are almost exactly the same.

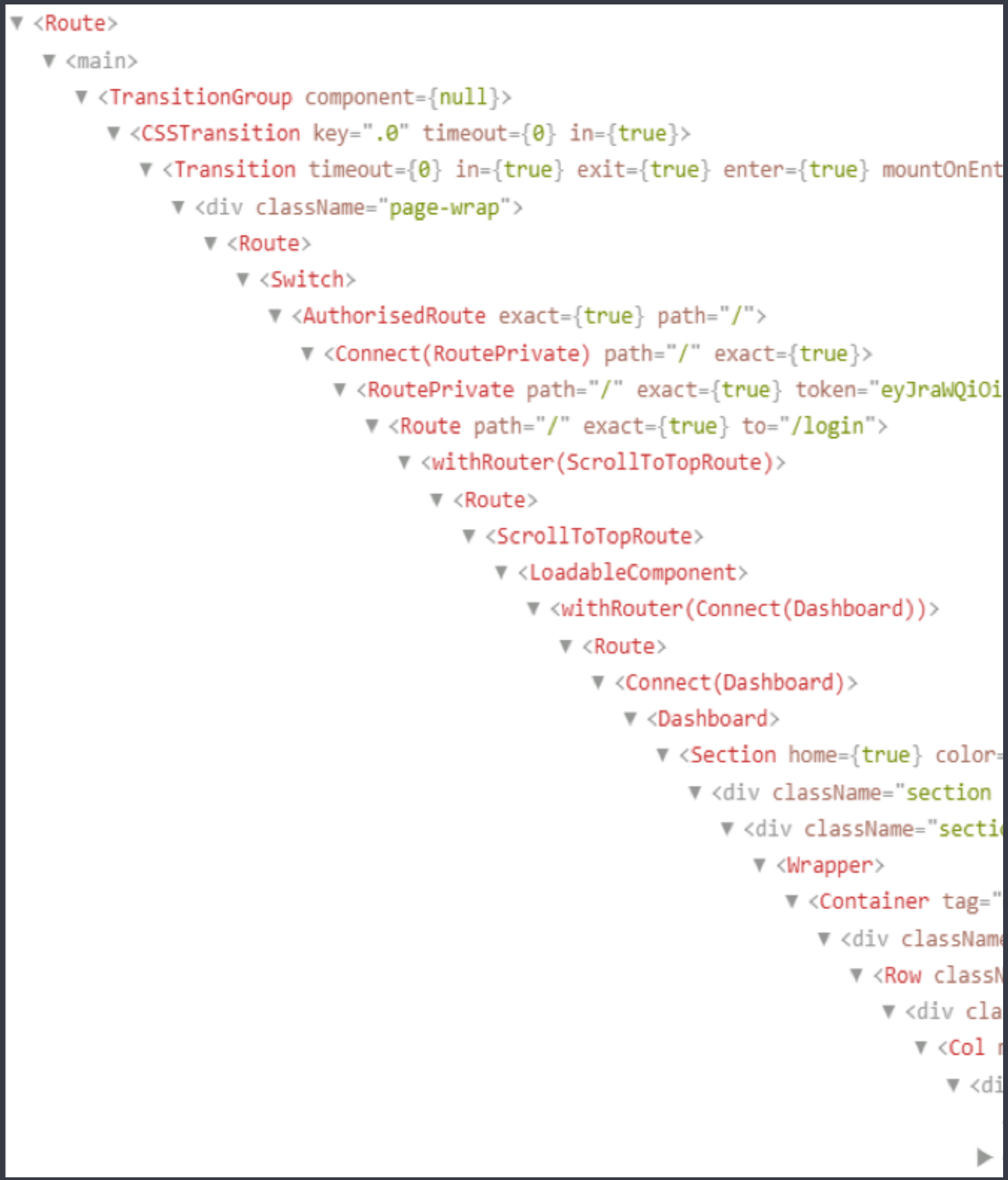

Server Render
Start
constructor(props)
componentWillMount
render
componentDidMount
props changed
Running
unmount
state changed
componentWillReceiveProps (nextProps)
shouldComponentUpdate (nextProps, nextState)
false
true
componentWillUnmount
componentWillUpdate (nextProps, nextState)
End
render
componentDidUpdate (prevProps, prevState)

Component Logic Isn't Easily Reusable

- Often, we have code that interacts with the lifecycle and state that we'd like to use in multiple React components.
- But, doing so typically requires ugly patterns, like render props or higher order components.
- These patterns lead to bigger and bigger component classes, shared state between components, and poor readability.
- Commonly, we mitigate these problems by extracting code into wrapper components, but wrappers come with their own set of issues…

“Wrapper Hell”

- Deep nesting makes element inspectors especially painful to use.
- Deeply nested components encourage deeply nested HTML which is non-semantic and difficult to style.
- Deep nesting breaks many React tooling libraries, like Prepack.
- Deeply nested render calls means more memory usage at runtime and slower DOM updates.



```
▼ <Route>
  ▼ <main>
    ▼ <TransitionGroup component={null}>
      ▼ <CSSTransition key=".0" timeout={0} in={true}>
        ▼ <Transition timeout={0} in={true} exit={true} enter={true} mountOnEnt
          ▼ <div className="page-wrap">
            ▼ <Route>
              ▼ <Switch>
                ▼ <AuthorisedRoute exact={true} path="/">
                  ▼ <Connect(RoutePrivate) path="/" exact={true}>
                    ▼ <RoutePrivate path="/" exact={true} token="eyJraWQiOi
                      ▼ <Route path="/" exact={true} to="/login">
                        ▼ <withRouter(ScrollToTopRoute)>
                          ▼ <Route>
                            ▼ <ScrollToTopRoute>
                              ▼ <LoadableComponent>
                                ▼ <withRouter(Connect(Dashboard))>
                                  ▼ <Route>
                                    ▼ <Connect(Dashboard)>
                                      ▼ <Dashboard>
                                        ▼ <Section home={true} color=
                                          ▼ <div className="section
                                            ▼ <div className="secti
                                              ▼ <Wrapper>
                                                ▼ <Container tag="
                                                  ▼ <div classNam
                                                    ▼ <Row classN
                                                      ▼ <div cla
                                                        ▼ <Col r
                                                          ▼ <di

                                                                ▶
```

The Solution

The State Hook

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

function Example() {
  const [count, setCount] = useState(0);

  return (
    <div>
      <p>You clicked {count} times</p>
      <button onClick={() => setCount(count + 1)}>
        Click me
      </button>
    </div>
  );
}
```

Functional Updates

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

function Example() {
  const [count, setCount] = useState(0);

  return (
    <div>
      <p>You clicked {count} times</p>
      <button onClick={() => setCount(prevCount => prevCount + 1)}>
        Click me
      </button>
    </div>
  );
}
```

Lazy Initialization

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

function Example() {
  const [count, setCount] = useState(() => 0);

  return (
    <div>
      <p>You clicked {count} times</p>
      <button onClick={() => setCount(prevCount => prevCount + 1)}>
        Click me
      </button>
    </div>
  );
}
```

The Effect Hook

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

function Example() {
  const [count, setCount] = useState(() => 0);

  useEffect(() => {
    document.title = `You clicked ${count} times`;
  });

  return (
    <div>
      <p>You clicked {count} times</p>
      <button onClick={() => setCount(prevCount => prevCount + 1)}>
        Click me
      </button>
    </div>
  );
}
```

Conditional Effects

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

function Example() {
  const [count, setCount] = useState(() => 0);

  useEffect(() => {
    document.title = `You clicked ${count} times`;
  }, [count]);

  return (
    <div>
      <p>You clicked {count} times</p>
      <button onClick={() => setCount(prevCount => prevCount + 1)}>
        Click me
      </button>
    </div>
  );
}
```

Clean Up Functions

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

function Example() {
  const [count, setCount] = useState(() => 0);

  useEffect(() => {
    document.title = `You clicked ${count} times`;
    return () => console.log(`Last count was ${count}`);
  }, [count]);

  return (
    <div>
      <p>You clicked {count} times</p>
      <button onClick={() => setCount(prevCount => prevCount + 1)}>
        Click me
      </button>
    </div>
  );
}
```

Bonus Hooks

- useDebugValue - Allows you to expose helpful data on components in the React debugger
- useContext - Accepts a context object and returns the current context value for that context
- useReducer - Accepts a reducer function and returns the current state paired with a dispatch method, similar to Redux
- useCallback - Accepts a function and a list of dependencies then returns a memoized version of the function that only executes when the dependencies change
- useMemo - Similar to useCallback, but returns a value instead of a function
- useLayoutEffect - Just like useEffect, but executes prior to render for easier DOM mutation
- useRef - Old fashioned refs + a convenient default value prior to render
- useImperativeHandle - A terrible, awful thing that should never be used

Questions

Thanks

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