CS390
WEB APPLICATION DEVELOPMENT

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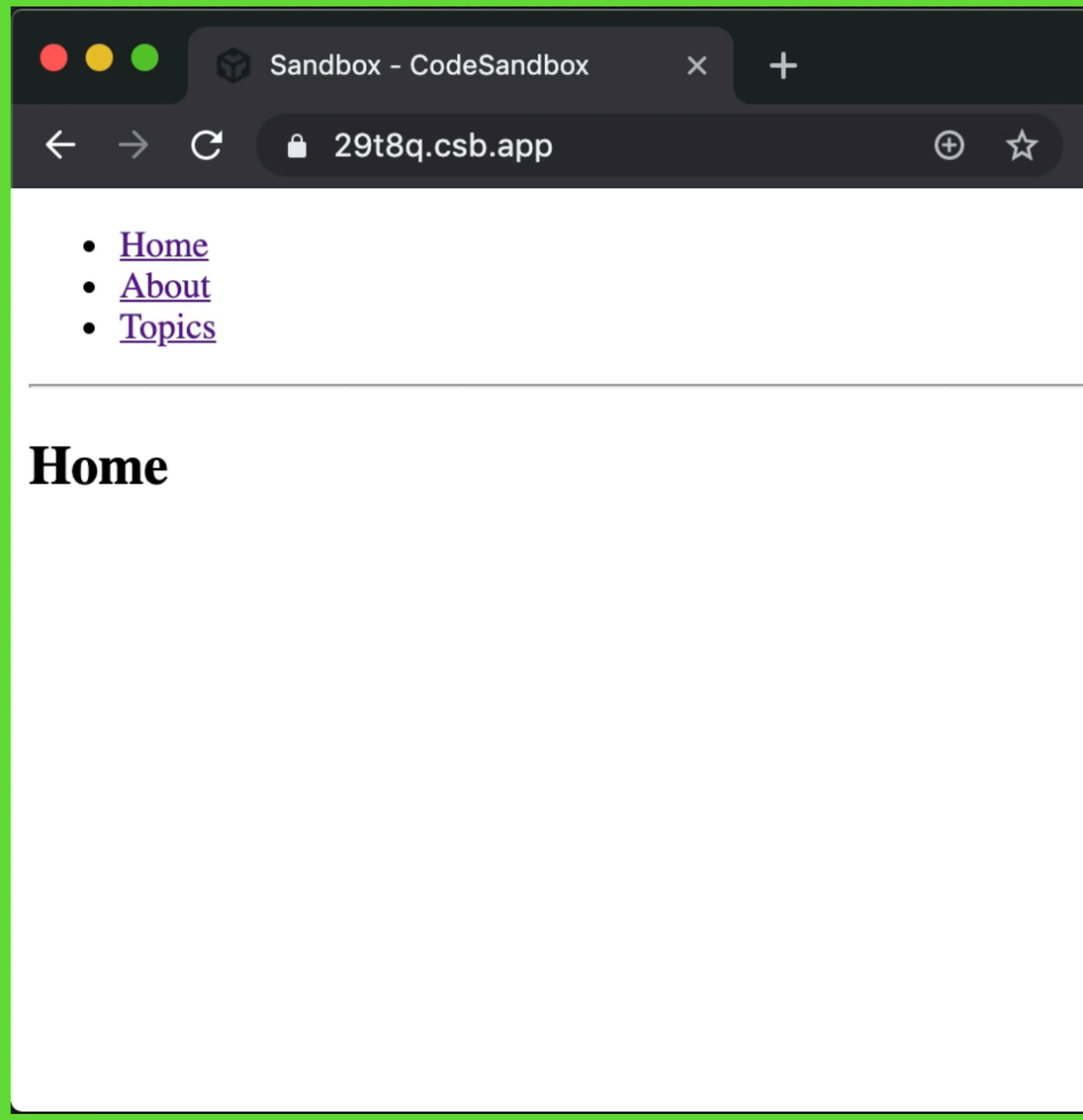
Routing

Routing

React apps work more like apps than websites.

Adding routing makes your UI in sync with the URL, making it behave more like a website.



Routing

Use **react-router**.
Easy to use.
Cross compatible with React Native.

https://reacttraining.com/react-router/

```
npm i --save react-router
```

Talking with the server

Talking with the server

There are some things which you **can't** or just **shouldn't** do on the front-end.

Eg. authentication, storing global data, heavy computations etc.

Talking with the server

Use **Axios**.
Makes XMLHttpRequests from the browser.
Returns a **promise**.

```
npm i --save axios
```

When to make a request?

- componentDidMount()
- componentDidUpdate()
- Action function
- **NOT** in render()!

Example request

Specify the URL and HTTP request type

Callback function returning the data

Callback function in case the request fails

Callback function which always executes after the query

```
axios.get('/user?ID=12345')
  .then(function (response) {
    // handle success
    console.log(response);
  })
  .catch(function (error) {
    // handle error
    console.log(error);
  })
  .finally(function () {
    // always executed
  });
```

Resources to learn more about Axios

Using Axios with React:

https://alligator.io/react/axios-react/

Axios docs:

https://github.com/axios/axios

Hooks!

Hooks

lets you use **state** and **lifecycle** features without using **class** and React component lifecycle methods.

Custom hooks let you share **state logic** between components!

State hook

```
class Example extends React.Component {
  constructor(props) {
    super(props);
    this.state = {
      count: 0
    };
  }

  render() {
    return (
      <div>
        <p>You clicked {this.state.count} times</p>
        <button
          onClick={() =>
            this.setState({count:this.state.count+1})
          }>
          Click me
        </button>
      </div>
    );
  }
}
```

State hook

```
class Example extends React.Component {
  constructor(props) {
    super(props);
    this.state = {
      count: 0
    };
  }

  render() {
    return (
      <div>
        <p>You clicked {this.state.count} times</p>
        <button
          onClick={() =>
            this.setState({count:this.state.count+1})
        }>
          Click me
        </button>
      </div>
    );
  }
}
```

with hooks:

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

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

State hook

```
[count, setCount] = useState(0)
```

Effect hook

```
componentDidMount() {
    document.title = `You clicked ${this.state.count} times`;
}

componentDidUpdate() {
  document.title = `You clicked ${this.state.count} times`;
}
```

Effect hook

```
componentDidMount() {
    document.title = `You clicked ${this.state.count} times`;
}

componentDidUpdate() {
    document.title = `You clicked ${this.state.count} times`;
}
```

with hooks:

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

Effect hook

```
componentDidMount() {
    document.title = `You clicked ${this.state.count} times`;
}

componentDidUpdate() {
    document.title = `You clicked ${this.state.count} times`;
}

componentWillUnmount() {
    document.title = `Component unmounted`;
}
```

with hooks:

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

Resources to learn more about Hooks

React Hooks Documentation:

https://reactjs.org/docs/hooks-intro.html

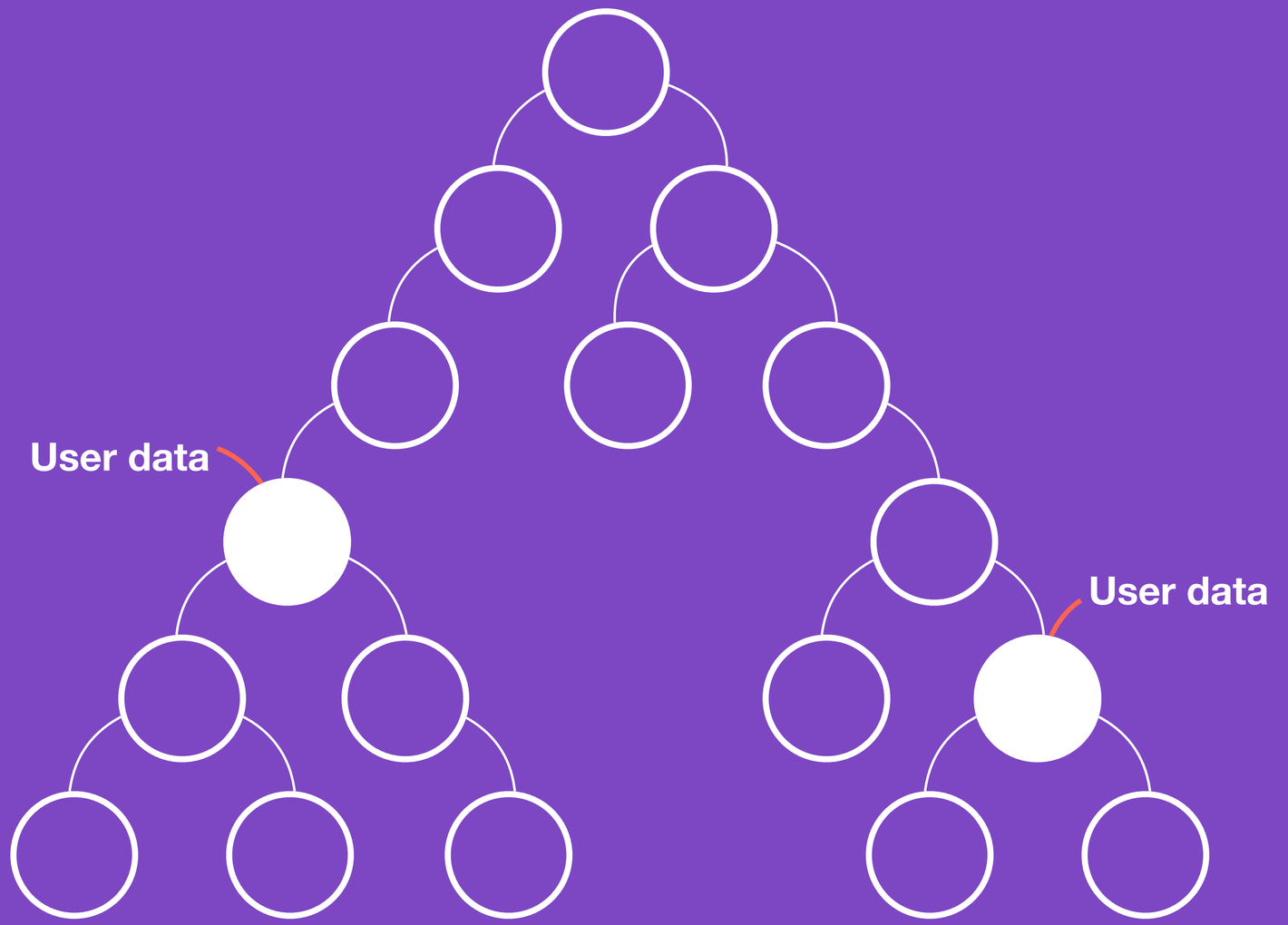
Why React Hooks?:

https://tylermcginnis.com/why-react-hooks/

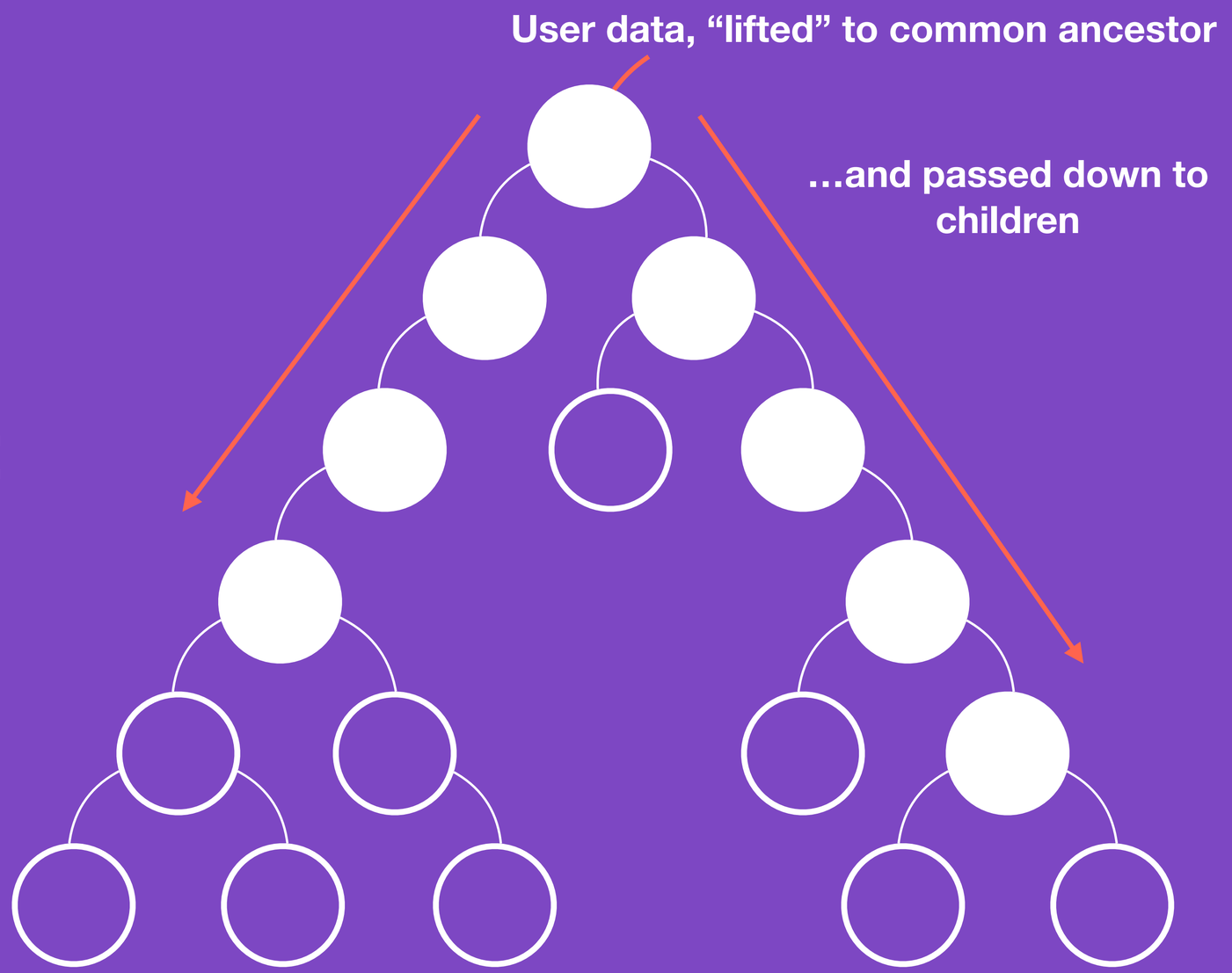
Redux

Do I need Redux?

What if components in different parts need the same data?

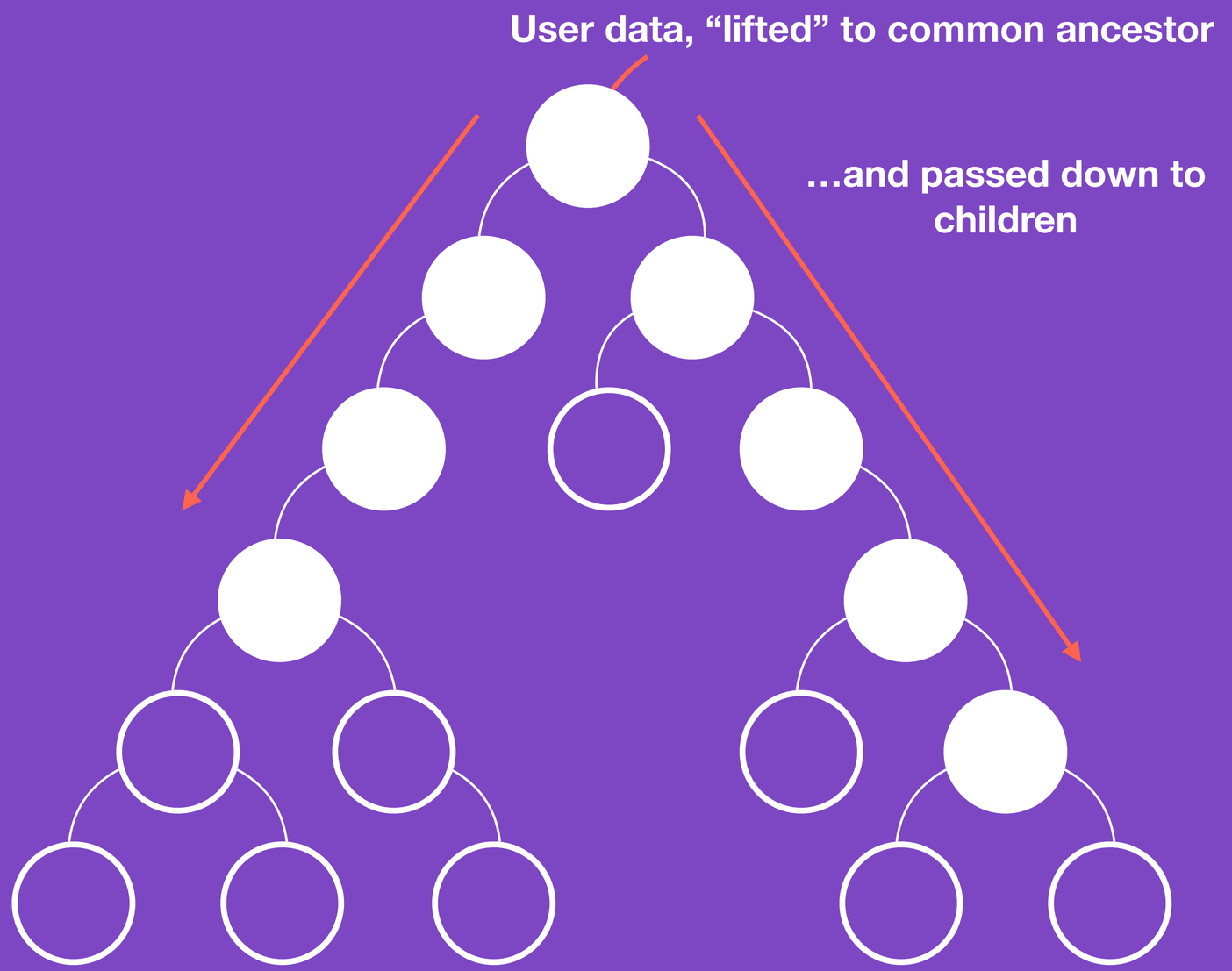


Solution 1:
Lift the state to the first common ancestor.

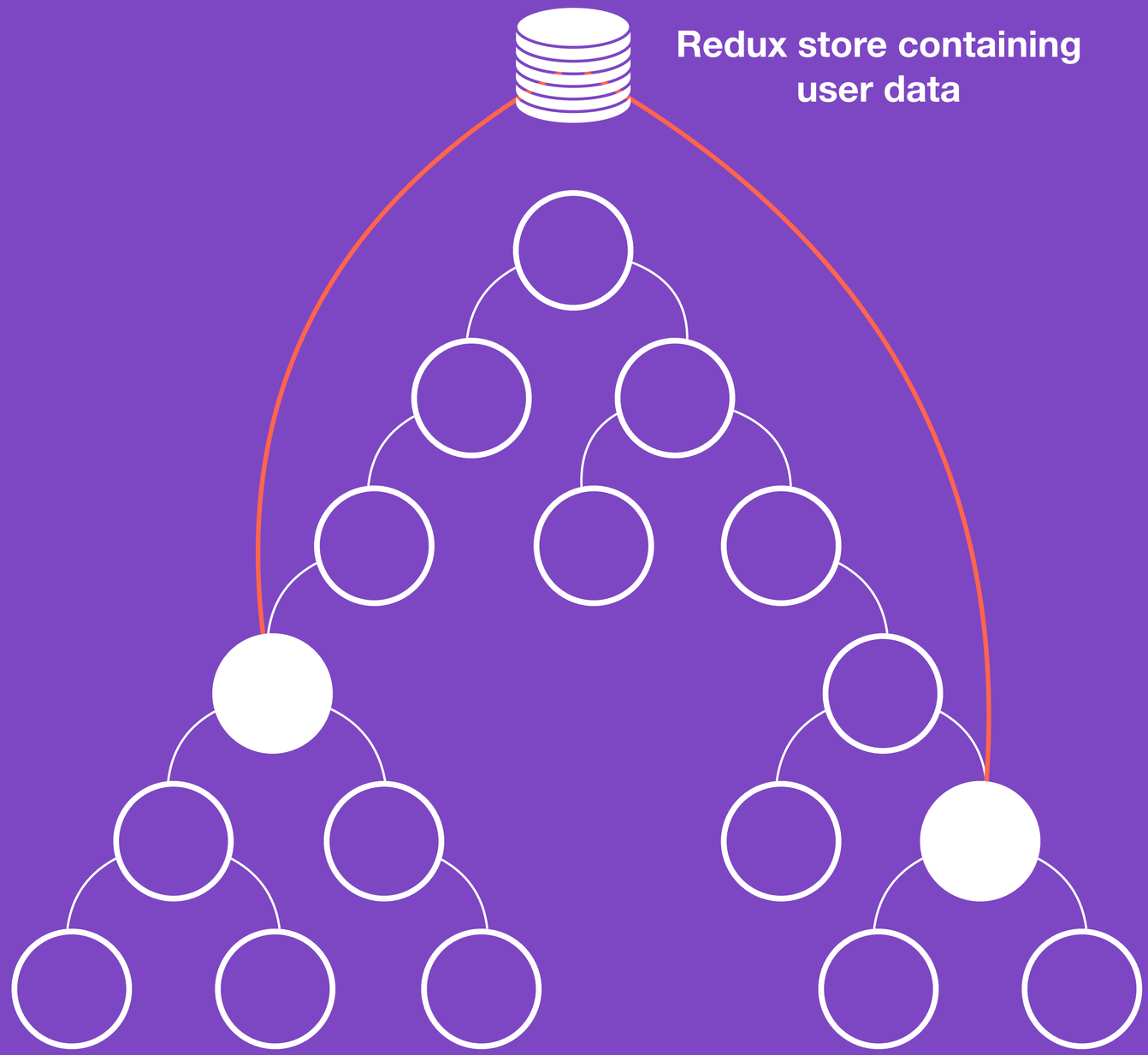


Solution 1:
Lift the state to the first common ancestor.

Problem:
Prop drilling, components having props just to pass it down



Solution 2:
Use a single source of truth (Redux)



Resources to learn Redux

LearnCode.academy Redux tutorial (highly recommended):

https://www.youtube.com/playlist?list=PLoYCgNOIyGADIlc3iUJzygCqC8Tt3bRXt

A Cartoon Intro to Redux:

https://code-cartoons.com/a-cartoon-intro-to-redux-3afb775501a6

Is that it in React?

Portals

Testing

Higher-Order Components

Render props

Is that it in React? Nope.

Context

Forwarding Refs

Relay

Typechecking With PropTypes