30 Days Of React: Class Components

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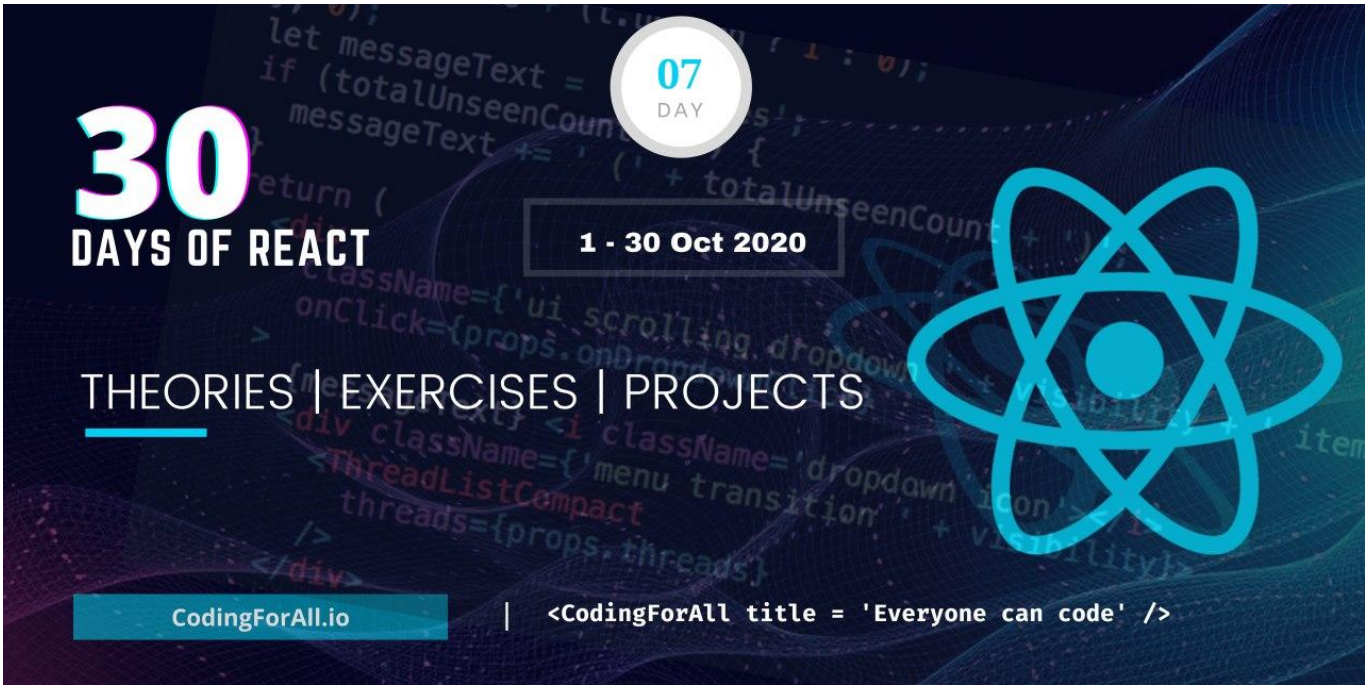

Class Components

In the previous sections, we have covered JSX, functional component and props. In this section, we will cover class components or stateful component. Only class based components used to have state and life cycle methods. However, after React version 16.8.0 functional components can have state and life cycle using React Hooks. In 30 Days Of React challenge, we will cover React before 16.8.0 and after, that mean both old and newest version. There are lots of codes written in older version and at some point it may need migration. In addition, to understand React very well someone has to understand class based component too.

All the previous components are functional components. Let us make also class based component. Class based component is made using JavaScript class and it inherits from react Component. Let us learn how to make a class based component by converting all the functional components we made previously. It is not

important to convert all but we are converting them for the sake of learning how to change functional components to class components.

```
// Pure JavaScript class and child
// Imagine this what we import from React package
class Component {
  constructor(props) {}
}

// This how we make class based components by inheriting from the parent
class Child extends Component {
  constructor(props) {
    super(props)
  }
}
```

Functional React component

```
// index.js

import React from 'react'
import ReactDOM from 'react-dom'
// Header Component
// Functional component
const Header = () => (
  <header>
    <div className='header-wrapper'>
      <h1>Welcome to 30 Days Of React</h1>
      <h2>Getting Started React</h2>
      <h3>JavaScript Library</h3>
      <p>Asabeneh Yetayeh</p>
      <small>Oct 6, 2020</small>
    </div>
  </header>
)
const rootElement = document.getElementById('root')
ReactDOM.render(<Header />, rootElement)
```

Class based React component is a child of React.Component and it has a built-in render method and it may have a constructor.

```
//index.js

import React from 'react'
import ReactDOM from 'react-dom'

// class based component
class Header extends React.Component {
```

```
  render() {
    return (
      <header>
        <div className='header-wrapper'>
          <h1>Welcome to 30 Days Of React</h1>
          <h2>Getting Started React</h2>
          <h3>JavaScript Library</h3>
          <p>Asabeneh Yetayeh</p>
          <small>Oct 7, 2020</small>
        </div>
      </header>
    )
  }
}

const rootElement = document.getElementById('root')
ReactDOM.render(<Header />, rootElement)
```

Let's see the above component with a constructor

```
//index.js

import React from 'react'
import ReactDOM from 'react-dom'

// class base component
class Header extends React.Component {
  constructor(props) {
    super(props)
    // the code inside the constructor run before any other code
  }
  render() {
    return (
      <header>
        <div className='header-wrapper'>
          <h1>Welcome to 30 Days Of React</h1>
          <h2>Getting Started React</h2>
          <h3>JavaScript Library</h3>
          <p>Asabeneh Yetayeh</p>
          <small>Oct 7, 2020</small>
        </div>
      </header>
    )
  }
}
const rootElement = document.getElementById('root')
ReactDOM.render(<Header />, rootElement)
```

Let's change all the functional component to class based components

```
// TechList Component
// functional component
const TechList = () => {
  const techs = ['HTML', 'CSS', 'JavaScript']
  const techsFormatted = techs.map((tech) => <li key={tech}>{tech}</li>)
  return techsFormatted
}

// TechList Component
// class base component
class TechList extends React.Component {
  constructor(props) {
    super(props)
  }
  render() {
    const techs = ['HTML', 'CSS', 'JavaScript']
    const techsFormatted = techs.map((tech) => <li key={tech}>{tech}</li>)
    return techsFormatted
  }
}

// Main Component
// Functional Component
const Main = () => (
  <main>
    <div className='main-wrapper'>
      <p>Prerequisite to get started react.js:</p>
      <ul>
        <TechList />
      </ul>
    </div>
  </main>
)

// Main Component
// Class Component
class Main extends React.Component {
  constructor(props) {
    super(props)
  }
  render() {
    return (
      <main>
        <div className='main-wrapper'>
          <p>Prerequisite to get started react.js:</p>
          <ul>
            <TechList />
          </ul>
        </div>
      </main>
    )
  }
}
```

```
// Footer Component
// Functional component
const Footer = () => (
  <footer>
    <div className='footer-wrapper'>
      <p>Copyright 2020</p>
    </div>
  </footer>
)

// Footer Component
// Class component
class Footer extends React.Component {
  constructor(props) {
    super(props)
  }
  render() {
    return (
      <footer>
        <div className='footer-wrapper'>
          <p>Copyright 2020</p>
        </div>
      </footer>
    )
  }
}

// The App, or the parent or the container component
// Functional Component
const App = () => (
  <div className='app'>
    <Header />
    <Main />
    <Footer />
  </div>
)

// The App, or the parent or the container component
// Class Component
class App extends React.Component {
  constructor(props) {
    super(props)
  }
  render() {
    return (
      <div className='app'>
        <Header />
        <Main />
        <Footer />
      </div>
    )
  }
}
```

Let's put all the class based components together in one file.

```
//index.js

import React from 'react'
import ReactDOM from 'react-dom'

// class base component
class Header extends React.Component {
  constructor(props) {
    super(props)
    // the code inside the constructor run before any other code
  }
  render() {
    return (
      <header>
        <div className='header-wrapper'>
          <h1>Welcome to 30 Days Of React</h1>
          <h2>Getting Started React</h2>
          <h3>JavaScript Library</h3>
          <p>Asabeneh Yetayeh</p>
          <small>Oct 7, 2020</small>
        </div>
      </header>
    )
  }
}

// TechList Component
// class base component
class TechList extends React.Component {
  constructor(props) {
    super(props)
  }
  render() {
    const techs = ['HTML', 'CSS', 'JavaScript']
    const techsFormatted = techs.map((tech) => <li key={tech}>{tech}</li>)
    return techsFormatted
  }
}

// Main Component
// Class Component
class Main extends React.Component {
  constructor(props) {
    super(props)
  }
  render() {
    return (
      <main>
        <div className='main-wrapper'>
```

```
            <p>Prerequisite to get started react.js:</p>
            <ul>
              <TechList />
            </ul>
          </div>
        </main>
      )
    }
  }

  // Footer Component
  // Class component
  class Footer extends React.Component {
    constructor(props) {
      super(props)
    }
    render() {
      return (
        <footer>
          <div className='footer-wrapper'>
            <p>Copyright 2020</p>
          </div>
        </footer>
      )
    }
  }

  // The App, or the parent or the container component
  // Class Component
  class App extends React.Component {
    constructor(props) {
      super(props)
    }
    render() {
      return (
        <div className='app'>
          <Header />
          <Main />
          <Footer />
        </div>
      )
    }
  }

  const rootElement = document.getElementById('root')
  ReactDOM.render(<App />, rootElement)
```

Accessing props in Class components

We stated that props is a means to send data from on component to another or we can call it that props is a data carrier. Therefore, we should handle props in class based component too. We can access props of a class based component using the keyword *this*. See the example below.

```
// index.js

import React from 'react'
import ReactDOM from 'react-dom'

// class based component
class Header extends React.Component {
  constructor(props) {
    super(props)
    // the code inside the constructor run before any other code
  }
  render() {
    return (
      <header>
        <div className='header-wrapper'>
          <h1>{this.props.data.welcome}</h1>
          <h2>{this.props.data.title}</h2>
          <h3>
            {this.props.data.author.firstName} {this.props.data.author.lastName}
          </h3>
          <small>{this.props.data.date}</small>
        </div>
      </header>
    )
  }
}
const App = () => {
  const data = {
    welcome: 'Welcome to 30 Days Of React',
    title: 'Getting Started React',
    subtitle: 'JavaScript Library',
    author: {
      firstName: 'Asabeneh',
      lastName: 'Yetayeh',
    },
    date: 'Oct 7, 2020',
  }

  return (
    <div className='app'>
      <Header data={data} />
    </div>
  )
}

const rootElement = document.getElementById('root')
ReactDOM.render(<App />, rootElement)
```

As you can see in the above example, to get the data out from props we have write *props.data* every time. We can avoid this repetition using destructuring.

```
// index.js

import React from 'react'
import ReactDOM from 'react-dom'

// class based component
class Header extends React.Component {
  constructor(props) {
    super(props)
    // the code inside the constructor run before any other code
  }
  render() {
    console.log(this.props.data)
    const {
      welcome,
      title,
      subtitle,
      author: { firstName, lastName },
      date,
    } = this.props.data

    return (
      <header>
        <div className='header-wrapper'>
          <h1>{welcome}</h1>
          <h2>{title}</h2>
          <h3>{subtitle}</h3>
          <p>
            {firstName} {lastName}
          </p>
          <small>{date}</small>
        </div>
      </header>
    )
  }
}
const App = () => {
  const data = {
    welcome: 'Welcome to 30 Days Of React',
    title: 'Getting Started React',
    subtitle: 'JavaScript Library',
    author: {
      firstName: 'Asabeneh',
      lastName: 'Yetayeh',
    },
    date: 'Oct 6, 2020',
  }

  return (
    <div className='app'>
      <Header data={data} />
    </div>
  )
```

```
}

const rootElement = document.getElementById('root')
ReactDOM.render(<App />, rootElement)
```

As you can see, the above code cleaner than the previous. Now, let's clean all the components we have and put all together.

```
// index.js

import React from 'react'
import ReactDOM from 'react-dom'

// class based component
class Header extends React.Component {
  constructor(props) {
    super(props)
    // the code inside the constructor run before any other code
  }
  render() {
    console.log(this.props.data)
    const {
      welcome,
      title,
      subtitle,
      author: { firstName, lastName },
      date,
    } = this.props.data

    return (
      <header>
        <div className='header-wrapper'>
          <h1>{welcome}</h1>
          <h2>{title}</h2>
          <h3>{subtitle}</h3>
          <p>
            {firstName} {lastName}
          </p>
          <small>{date}</small>
        </div>
      </header>
    )
  }
}

// TechList Component
// class base component
class TechList extends React.Component {
  constructor(props) {
    super(props)
  }
```

```
    render() {
      const { techs } = this.props
      const techsFormatted = techs.map((tech) => <li key={tech}>{tech}</li>)
      return techsFormatted
    }
  }

  // Main Component
  // Class Component
  class Main extends React.Component {
    constructor(props) {
      super(props)
    }
    render() {
      return (
        <main>
          <div className='main-wrapper'>
            <p>Prerequisite to get started react.js:</p>
            <ul>
              <TechList techs={this.props.techs} />
            </ul>
          </div>
        </main>
      )
    }
  }

  // Footer Component
  // Class component
  class Footer extends React.Component {
    constructor(props) {
      super(props)
    }
    render() {
      return (
        <footer>
          <div className='footer-wrapper'>
            <p>Copyright {this.props.date.getFullYear()}</p>
          </div>
        </footer>
      )
    }
  }

  class App extends React.Component {
    render() {
      const data = {
        welcome: 'Welcome to 30 Days Of React',
        title: 'Getting Started React',
        subtitle: 'JavaScript Library',
        author: {
          firstName: 'Asabeneh',
          lastName: 'Yetayeh',
        },
```

```
      date: 'Oct 7, 2020',
    }
    const techs = ['HTML', 'CSS', 'JavaScript']

    return (
      <div className='app'>
        <Header data={data} />
        <Main techs={techs} />
        <Footer date={new Date()} />
      </div>
    )
  }
}

const rootElement = document.getElementById('root')
ReactDOM.render(<App />, rootElement)
```

Methods in Class based component

We access methods in class based component. Most of the time, we write different methods on the parent component and we pass them to child components. Let's see the implementation.

Let's add a method on this component.

```
//index.js

import React from 'react'
import ReactDOM from 'react-dom'

// class based component
class Header extends React.Component {
  greetPeople = () => {
    alert('Welcome to 30 Days Of React Challenge, 2020')
  }
  render() {
    return (
      <header>
        <div className='header-wrapper'>
          <h1>Welcome to 30 Days Of React</h1>
          <h2>Getting Started React</h2>
          <h3>JavaScript Library</h3>
          <p>Asabeneh Yetayeh</p>
          <small>Oct 7, 2020</small>
          <button onClick={this.greetPeople}> Greet </button>
        </div>
      </header>
    )
  }
}
```

```
const rootElement = document.getElementById('root')
ReactDOM.render(<Header />, rootElement)
```

The invoking or calling of the method triggers when the event occurs. Therefore, whenever you pass a method to an event listener do not invoke the method.

Now, let's the code we had add all the necessary methods.

```
// index.js

import React from 'react'
import ReactDOM from 'react-dom'
import asabenehImage from './images/asabeneh.jpg'

// Fuction to show month date year

// User Card Component
const UserCard = ({ user: { firstName, lastName, image } }) => (
  <div className='user-card'>
    <img src={image} alt={firstName} />
    <h2>
      {firstName}
      {lastName}
    </h2>
  </div>
)

// A button component
const Button = ({ text, onClick, style }) => (
  <button style={style} onClick={onClick}>
    {text}
  </button>
)

// CSS styles in JavaScript Object
const buttonStyles = {
  backgroundColor: '#61dbfb',
  padding: 10,
  border: 'none',
  borderRadius: 5,
  margin: 3,
  cursor: 'pointer',
  fontSize: 18,
  color: 'white',
}

// class based component
class Header extends React.Component {
  constructor(props) {
    super(props)
    // the code inside the constructor run before any other code
```

```
  }
  render() {
    console.log(this.props.data)
    const {
      welcome,
      title,
      subtitle,
      author: { firstName, lastName },
      date,
    } = this.props.data

    return (
      <header>
        <div className='header-wrapper'>
          <h1>{welcome}</h1>
          <h2>{title}</h2>
          <h3>{subtitle}</h3>
          <p>
            {firstName} {lastName}
          </p>
          <small>{date}</small>
        </div>
      </header>
    )
  }
}

// TechList Component
// class base component
class TechList extends React.Component {
  constructor(props) {
    super(props)
  }
  render() {
    const { techs } = this.props
    const techsFormatted = techs.map((tech) => <li key={tech}>{tech}</li>)
    return techsFormatted
  }
}

// Main Component
// Class Component
class Main extends React.Component {
  constructor(props) {
    super(props)
  }
  render() {
    return (
      <main>
        <div className='main-wrapper'>
          <p>Prerequisite to get started react.js:</p>
          <ul>
            <TechList techs={this.props.techs} />
          </ul>
```

```
            <UserCard user={this.props.user} />
            <Button
              text='Greet People'
              onClick={this.props.greetPeople}
              style={buttonStyles}
            />
            <Button
              text='Show Time'
              onClick={this.props.handleTime}
              style={buttonStyles}
            />
          </div>
        </main>
      )
    }
  }

  // Footer Component
  // Class component
  class Footer extends React.Component {
    constructor(props) {
      super(props)
    }
    render() {
      return (
        <footer>
          <div className='footer-wrapper'>
            <p>Copyright {this.props.date.getFullYear()}</p>
          </div>
        </footer>
      )
    }
  }

  class App extends React.Component {
    showDate = (time) => {
      const months = [
        'January',
        'February',
        'March',
        'April',
        'May',
        'June',
        'July',
        'August',
        'September',
        'October',
        'November',
        'December',
      ]

      const month = months[time.getMonth()].slice(0, 3)
      const year = time.getFullYear()
      const date = time.getDate()
```

```
    return ` ${month} ${date}, ${year}`
  }
  handleTime = () => {
    alert(this.showDate(new Date()))
  }
  greetPeople = () => {
    alert('Welcome to 30 Days Of React Challenge, 2020')
  }
  render() {
    const data = {
      welcome: 'Welcome to 30 Days Of React',
      title: 'Getting Started React',
      subtitle: 'JavaScript Library',
      author: {
        firstName: 'Asabeneh',
        lastName: 'Yetayeh',
      },
      date: 'Oct 7, 2020',
    }
    const techs = ['HTML', 'CSS', 'JavaScript']

    // copying the author from data object to user variable using spread operator
    const user = { ...data.author, image: asabenehImage }

    return (
      <div className='app'>
        <Header data={data} />
        <Main
          user={user}
          techs={techs}
          handleTime={this.handleTime}
          greetPeople={this.greetPeople}
        />

        <Footer date={new Date()} />
      </div>
    )
  }
}

const rootElement = document.getElementById('root')
ReactDOM.render(<App />, rootElement)
```

Most of the time the container or the parent component can be written as class component and others as functional or presentational components. Data usually flows from parent components to child component and it is unidirectional. However, the latest version of react can allow us to write every component in our application only with functional components. This was impossible in previous versions. In next section, we will cover state which is the heart of React. State allows React component to rerender when whenever there is a change in state.

Exercises

Exercises: Level 1

1. How do you write a pure JavaScript function
2. What is inheritance and how do you make a child from a parent class?
3. What is class based React component ?
4. What is the difference between functional React component and class based React component ?
5. When do we need to use class based components instead of functional components
6. What is the use cases of class based component ?
7. Which type of component do use most frequently ? functional or class-based component
8. What is React life cycle ? (not covered yet) ?
9. What is state in React ? (not covered yet)

Exercises: Level 2

Learn more about class based component by changing previous days exercises to class based components

Exercises: Level 3

Coming ...

🎉 CONGRATULATIONS ! 🎉

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