React Component Lifecycle Methods With React Hooks

How to think about component lifecycle when switching to Hooks

Image provided by the author.

For working with any tech you must know the lifecycle. When writing React components, we need access to lifecycle events to handle a variety of side effects: like fetching data on mount, changing props when the component updates, cleaning up before the component unmounts, etc.

React Lifecycle Method Explained

First, let's take a look at how it's been done traditionally. As you probably know, each React component has a life cycle, which consists of three phases:

- Mounting, that is putting inserting elements into the DOM.
- Updating, which involves methods for updating components in the DOM.
- Unmounting, that is removing a component from the DOM.

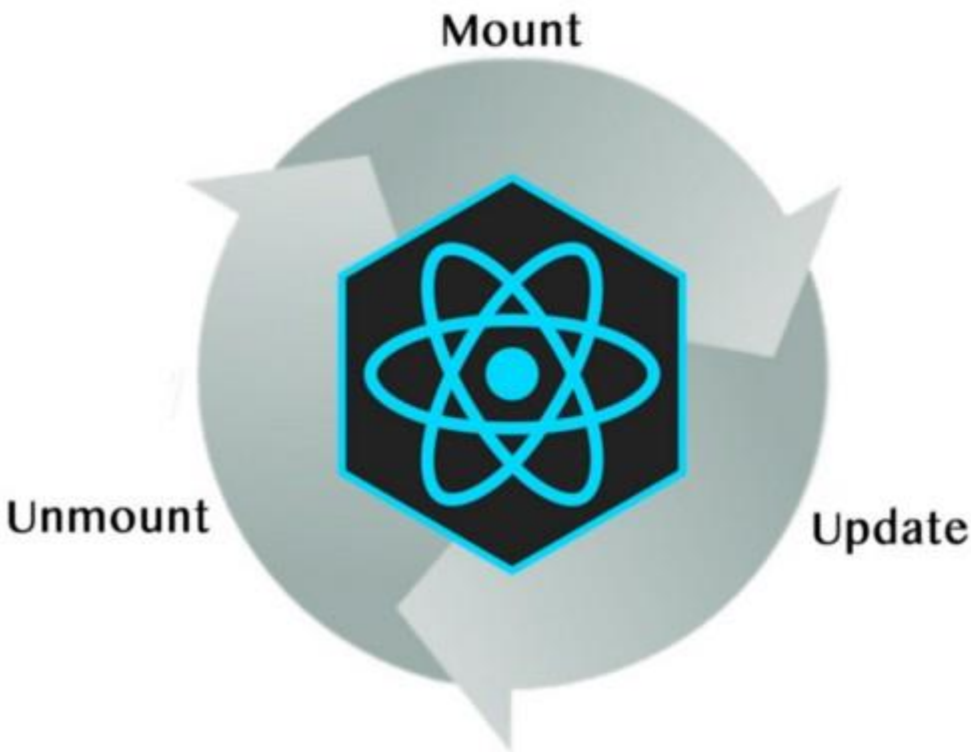
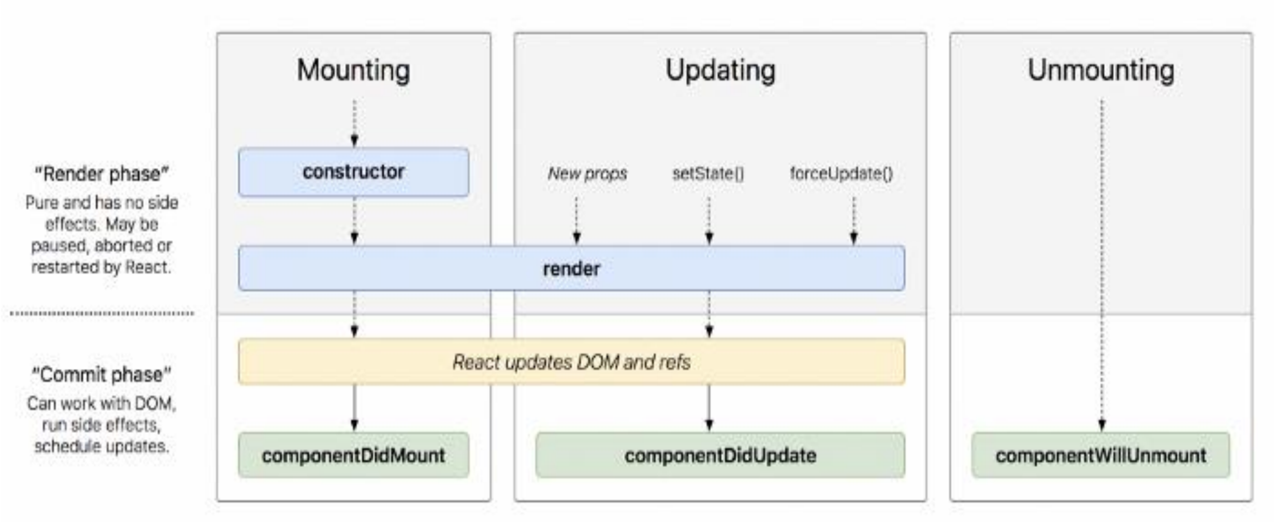


Image provided by the author.

Each phase has its own methods, which make it easier to perform typical operations on the components. With class-based components, React developers directly extend from the `React.Component` in order to access the methods.

Until React `16.8`, the most common solution for handling lifecycle events required ES6 class-based components. In other words, if our code was already written using functional React components, then we first would have to rewrite those components as classes that extend `React.Component` with a dedicated `render` function. Only then would it be possible to access the three most common lifecycle methods: `componentDidMount`, `componentDidUpdate`, and `componentWillUnmount`. (For the purposes of this article, we will only cover these three lifecycle methods. Since other lifecycle methods will be deprecated in React 17, and, in the interim, require the use of the `UNSAFE_` prefix, we will not cover them in this post.) The following diagram illustrates when these methods are invoked in the context of the component lifecycle:



Lifecycle of React.

Enter React Hooks!

Hooks allow us to write functional React components and still be able to “hook” into all of the `React.Component` functionality, including lifecycle methods. For each of the three lifecycle methods, let’s take a look at what a class-based approach looks like and how you can use Hooks to achieve the same result with a functional component.

`componentDidMount`

Before (class-based component):

```
import React from "react";

class Component extends React.Component {
  componentDidMount() {
    console.log("Behavior before the component is added to the DOM");
  }

  render() {
    return <h1>Hello World</h1>;
  }
};
```

After (functional component using Hooks):

```
import React, { useEffect } from "react";const Component = () => {useEffect(() => {  console.log("Behavior before the component is added to the DOM");}, []); // Mark [] here.return <h1>Hello World</h1>;};
```

In the above example, the `useEffect` Hook will be invoked when the component mounts. Notice the empty array `[]` as the second argument, that informs the `useEffect` Hook that it only needs to execute once, when the component mounts.

`componentDidUpdate`

Before (class-based component):

```
import React from "react";

class Component extends React.Component {
  componentDidUpdate() {
    console.log("Behavior when the component receives new state or props.");
  }
```

```
  render() {
    return <h1>Hello World</h1>;
  }
};
```

After (functional component using Hooks):

```
import React, { useEffect } from "react";

const Component = () => {
  useEffect(() => {
    console.log("Behavior when the component receives new state
or props.");
  });

  return <h1>Hello World</h1>;
};
```

Wait a minute. This looks *very* similar to how we handled `componentDidMount`. What is the difference? The most important thing to note is the optional second argument (`[]`) is no longer present. This means that the Hook will be evaluated on every re-render of the component. The optional second argument represents an array of dependency values that will trigger the re-evaluation of the `useEffect` Hook. If no values are provided in the array, it will only evaluate the Hook on mount. If the array itself is not provided, it will be evaluated every re-render.

To elaborate on this a bit more, if we wanted to add a gate to `componentDidUpdate` we might do something like this in a class-based component:

```
import React from "react";

class Component extends React.Component {
  componentDidUpdate(prevProps) {
        if (this.props.foo !== prevProps.foo) {
        console.log("Behavior when the value of 'foo'
changes.");
        }
```

```
  }

  render() {
    return <h1>Hello World</h1>;
  }
};
```

This allows us to conditionally execute behavior based on the `foo` prop value changing. With Hooks, this becomes trivial:

```
import React, { useEffect } from "react";

const Component = ({ foo }) => {
  useEffect(() => {
    console.log("Behavior when the value of 'foo' changes.");
  }, [foo]);

  return <h1>Hello World</h1>;
};
```

The `useEffect` Hook will now only be evaluated if the value of `foo` changes since it is included in the option dependency array.

`componentWillUnmount`

Before (class-based component):

```
import React from "react";

class Component extends React.Component {
  componentWillUnmount() {
    console.log("Behavior right before the component is removed
from the DOM.");
  }

  render() {
    return <h1>Hello World</h1>;
  }
};
```

After (functional component using Hooks):

```
import React, { useEffect } from "react";

const Component = () => {
  useEffect(() => {
```

```
    return () => {
            console.log("Behavior right before the component is
removed from the DOM.");
        }
  }, []);

  return <h1>Hello World</h1>;
};
```

Wait another minute! This looks *even more* similar to how we handled `componentDidMount`! They are, in fact, very similar. The only difference is the `return` statement inside of the `useEffect` function body. If a function is returned from `useEffect`, that function is invoked *only* when the component is removed from the DOM.

Putting It All Together

It’s easy to talk about each of these lifecycle methods in isolation, so let’s take a look at a simple example of how all of these lifecycle methods can be used together with Hooks:

```
import React, { useEffect } from "react";

const Component = () => {
  useEffect(() => {
    const intervalId = setInterval(() => {
      document.title = `Time is: ${new Date()}`;
    }, 1000);

    return () => {
      document.title = "Time stopped.";
      clearInterval(intervalId);
    }
  }, []);

  return <h1>What time is it?</h1>;
};
```

In the example above, the component updates the title of the page to be current time based on an interval set on the component mount inside the Hook. Then, on unmount, the interval is cleared.

Conclusion: Class Components vs Hooks

React Hooks provide a great deal of flexibility around implementing lifecycle methods. Unlike the class-based component approach, the Hooks lifecycle methods in a functional Hooks component allow the developer to decide how tightly or loosely coupled the lifecycle methods are. In the class-based approach, any setup that was done in `componentDidMount` would have to make values available to `componentWillUnmount` in order to clean up (i.e. the interval ID when calling `setInterval`). Using Hooks, there is no need to do this since the mounting and unmounting logic is enclosed inside the same function scope. Additionally, if there were a need to have a separation between the mounting Hook and the unmounting Hook, the developer can opt to use two separate Hooks and handle the cases independently.

Even if writing class-based components doesn't seem like a big deal, it's hard to argue that switching contexts between class-based and functional React components is a delightful developer experience. Using React Hooks, it is possible to have the best of both worlds in a simple and reusable way.