1. Need and Benefits of Component Lifecycle

◆ **Need:**

React's **component lifecycle** refers to the different phases a component goes through during its existence:

- **Mounting** (creation)

- **Updating** (re-rendering due to state/prop changes)

- **Unmounting** (removal from the DOM)

- **Error Handling**

Each phase gives us **hooks** (like componentDidMount) where we can write custom logic, such as:

- Fetching data

- Setting up timers or subscriptions

- Cleaning up resources

◆ **Benefits:**

- 🧠 **Better control:** Lets you manage what happens when a component appears, updates, or disappears.

- ⚙️ **Resource management:** Helps avoid memory leaks by cleaning up things like timers or subscriptions.

- 📡 **Async operations:** Fetch data from APIs at the correct time (componentDidMount).

- 🐛 **Error handling:** Use componentDidCatch to handle rendering errors gracefully.

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2. Various Lifecycle Hook Methods (Class Components)

Phase	Method	Description
Mounting	constructor()	Initializes state and binds methods
	static getDerivedStateFromProps()	Sync state with props before rendering
	render()	Renders the JSX to the DOM

Phase	Method	Description
	componentDidMount()	Called after component is inserted into the DOM
Updating	static getDerivedStateFromProps()	Called again when props/state changes
	shouldComponentUpdate()	Optimizes rendering by returning true/false
	render()	Re-renders UI on state/prop change
	getSnapshotBeforeUpdate()	Captures info (like scroll) before DOM updates
	componentDidUpdate()	Called after DOM updates
Unmounting	componentWillUnmount()	Cleanup before component is removed
Error Handling	componentDidCatch()	Catches rendering errors in child components

3. Sequence of Steps in Rendering a Component

For Class Components:

Mounting (initial load):

1. constructor()
2. getDerivedStateFromProps()
3. render()
4. componentDidMount()

Updating (on state/prop change):

1. getDerivedStateFromProps()
2. shouldComponentUpdate()
3. render()
4. getSnapshotBeforeUpdate()
5. componentDidUpdate()

Unmounting (on removal):

- componentWillUnmount()

Error Handling (any phase):

- componentDidCatch()