## Explain the need and Benefits of component life cycle

The **component life cycle** refers to the sequence of events that occurs from the creation of a React component to its removal from the DOM. React provides built-in **lifecycle methods** (for class components) and **hooks** (in functional components) that allow you to run code at specific stages.

Needs:

* Fetch data from API, set up subscriptions, timers after component is rendered (componentDidMount)
* React to state/prop changes (componentDidUpdate)
* Clean up memory (componentWillUnmount)
* Gracefully handle JavaScript errors in the UI and log them (componentDidCatch)

Benefits:

* Controlled Execution
* Performance Optimization
* Error Resilience

## Identify various life cycle hook methods

The methods:

* componentDidMount -> Fetch data from API, set up subscriptions, timers after component is rendered
* componentDidUpdate -> React to state/prop changes
* componentWillUnmount -> Clean up memory
* componentDidCatch -> Gracefully handle JavaScript errors in the UI and log them

## List the sequence of steps in rendering a component

| **Phase** | **Lifecycle Method** |
| --- | --- |
| Mounting | constructor → getDerivedStateFromProps → render → componentDidMount |
| Updating | getDerivedStateFromProps → shouldComponentUpdate → render → getSnapshotBeforeUpdate → componentDidUpdate |
| Unmounting | componentWillUnmount |
| Error | getDerivedStateFromError → componentDidCatch |