4. ReactJS-HOL

**1. Explain the need and Benefits of Component Lifecycle**

* In React, components go through a lifecycle from creation to destruction.
* Lifecycle methods allow you to **run code at specific points**, such as when a component is added to the DOM, updated, or removed.
* **Benefits:**
  + Manage resources (e.g., start/stop timers or API calls).
  + Update UI or fetch data at the right time.
  + Improve performance and debugging.

**2. Identify various lifecycle hook methods**

Lifecycle methods are **categorized into 3 phases**:

* **Mounting (when component is created)**:
  + constructor()
  + render()
  + componentDidMount()
* **Updating (when props/state change)**:
  + shouldComponentUpdate()
  + render()
  + componentDidUpdate()
* **Unmounting (when component is removed)**:
  + componentWillUnmount()
* **Error Handling**:
  + componentDidCatch()
  + getDerivedStateFromError()

**3. List the sequence of steps in rendering a component**

When a component is rendered, the following steps happen:

**Mounting Phase:**

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

**Updating Phase (when state/props change):**

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

**Unmounting Phase:**

1. componentWillUnmount()