**React Js HandsOn-4**

**1.** **Explain the need and Benefits of component life cycle**

In React, every component goes through a lifecycle of stages—from being created (mounted), updated, and finally removed (unmounted) from the DOM.

Need and Benefits:

* Helps you control what happens and when in a component’s life (e.g., fetching data after rendering).
* Enables resource management (e.g., set up and cleanup like event listeners or timers).
* Allows you to optimize performance by running code only when needed.
* Essential for debugging, state management, and handling side effects properly.

**2.** **Identify various life cycle hook methods**

**Mounting Phase (When the component is created and added to the DOM):**

1. constructor() – Initializes state and binds methods.
2. static getDerivedStateFromProps() – Updates state based on props (rarely used).
3. render() – Returns JSX to display UI.
4. componentDidMount() – Runs after the component is mounted (used for API calls, subscriptions).

**Updating Phase (When props or state change):**

1. static getDerivedStateFromProps() – Called again if props change.
2. shouldComponentUpdate() – Determines if re-rendering is needed.
3. render() – Re-renders the component.
4. getSnapshotBeforeUpdate() – Captures some info (like scroll position) before update.
5. componentDidUpdate() – Executes after the update is completed.

**Unmounting Phase (When the component is removed from the DOM):**

1. componentWillUnmount() – Used to clean up (e.g., clear timers, remove event listeners).

**Error Handling Phase (When an error occurs in child components):**

1. componentDidCatch() – Catches errors and allows fallback UI rendering.
2. **List the sequence of steps in rendering a component**

**Component Mounting Sequence:**

1. constructor()
2. static getDerivedStateFromProps()
3. render()
4. DOM is updated
5. componentDidMount()

**Component Updating Sequence:**

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

**Component Unmounting:**

1. componentWillUnmount()