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React JS Syllabus - Hinglish

1. Introduction to React

- **React kya hai?:** React ek JavaScript library hai jo user interfaces banane ke liye use hota hai. Yeh mainly **single-page applications** (SPAs) mein kaam aata hai.
- **React ka setup:** React app ko kaise setup karein with `create-react-app`.
- **React ka structure samajhna:** `src/`, `public/` directories, and main `index.js` file.

2. Basic Concepts

- **JSX (JavaScript XML):** HTML jaise syntax ko JavaScript mein likhna.
 - Example: `<h1>Hello World!</h1>`
- **Components:**
 - **Functional Components:** Simple functions jo UI render karte hain.
 - **Class Components:** Purely JavaScript classes jo React ke lifecycle methods ko use karte hain.
- **Props:** Parent component se child component ko data pass karna.
- **State:** Component ke andar data ko track karna, jo dynamically change hota hai.

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3. Handling Events

- **Event Handling:** React mein events handle karna (`onClick`, `onChange`, etc.).
- **State ko events ke saath update karna:** Button click ya form submit hone par state update karna.

4. React Lifecycle Methods (for Class Components)

- **Mounting:** `componentDidMount`, `constructor` method ka use.
- **Updating:** `shouldComponentUpdate`, `componentDidUpdate` methods.
- **Unmounting:** `componentWillUnmount` method ka use.

5. React Hooks (Functional Components)

- **useState:** State ko manage karne ke liye hook ka use.
- **useEffect:** Side effects handle karne ke liye hook ka use, jaise API calls, subscriptions, etc.
- **useContext:** Global state manage karna with Context API.
- **useRef:** DOM elements ko directly access karna.
- **useReducer:** Complex state management ke liye.

6. Forms in React

- **Controlled Components:** Form inputs ka state React ke state ke through control karna.
- **Uncontrolled Components:** `ref` ka use kar ke form values ko directly manage karna.
- **Form Validation:** Input fields ko validate karna (required, pattern matching, etc.).

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7. Conditional Rendering

- **If-Else in JSX:** Conditions ke according content render karna.
 - **Example:**

```
if (isLoggedIn) { return <Welcome /> }  
else { return <Login /> }
```
- **Ternary Operator:** Shorter syntax for conditions in JSX.

8. Lists and Keys

- **Rendering Lists:** Arrays ko map kar ke list items render karna.
- **Keys:** List items ko uniquely identify karna for better performance.

9. React Router

- **Routing Basics:** React applications mein multiple pages ke liye routing.
 - `<Route>`, `<Switch>`, `<Link>` ka use.
- **Dynamic Routing:** URL parameters ka use karna, like `"/user/:id"`.

10. State Management

- **Context API:** Application-wide state share karne ke liye context banana.
- **Redux** (Optional): Redux ko use kar ke complex state management handle karna.
 - **Actions, Reducers, Store** ka concept samajhna.
 - **Redux Toolkit** ka use as a simpler alternative.

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11. API Integration

- **Fetching Data:** `fetch()` API ya `axios` ka use kar ke data fetch karna.
- **useEffect with API:** Component ke mount hone par API call karna.
- **Error Handling:** API calls mein errors ko handle karna.

12. Styling in React

- **Inline Styling:** JavaScript objects ke through inline CSS apply karna.
- **CSS Modules:** Component-specific CSS classes ka use.
- **Styled Components:** JavaScript me style likhne ka ek advanced tareeka.

13. Testing React Applications

- **Jest:** Unit tests likhna for React components.
- **React Testing Library:** Components ko test karne ke liye ek modern tool.
- **Mocking API Calls:** Network requests ko mock karna during tests.

14. Performance Optimization

- **React Memoization:** `React.memo()`, `useMemo()`, and `useCallback()` ka use for optimization.
- **Lazy Loading:** Components ko lazily load karna using `React.lazy()` and `Suspense`.

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- **Code Splitting:** Application ka bundle size chhota karna for better performance.

15. Deployment

- **Build Command:** React app ko production ke liye build karna (`npm run build`).
- **Deployment:** Apps ko deploy karna using platforms like **Netlify, Vercel, or Heroku.**

Practice Tips:

- **Code regularly:** React ko samajhne ke liye practice bohot zaroori hai. Har day ek chhota project banayein.
- **Projects:** Blog website, To-Do List, E-commerce cart bana kar React ke concepts ko apply karein.