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Week 6:

1. REACT-JS-HOL – First React App

1. Define SPA and Its Benefits

SPA (Single-Page Application) is a type of web application where the entire site loads only once, and subsequent navigations do not reload the entire page but instead update content dynamically using JavaScript.

Benefits of SPA:

- **Faster navigation:** Only the data changes instead of reloading full pages.
- **Better user experience:** Smooth transitions, similar to desktop apps.
- **Reduced server load:** Fewer full-page requests.
- **Offline support:** Can cache data using Service Workers.

2. Define React and Identify Its Working

React is an open-source JavaScript library created by Facebook for building fast, interactive user interfaces.

How React works:

- Uses components to build UIs.
- Employs a virtual DOM to efficiently update only changed parts of the page.
- Uses unidirectional data flow (data flows from parent to child).
- Supports JSX (JavaScript XML), allowing HTML and JavaScript to mix.

3. Differences Between SPA and MPA

SPA (Single Page Application)	MPA (Multi Page Application)
Loads a single HTML page initially.	Loads multiple HTML pages (each request).
Faster after initial load.	Slower due to full-page reloads.
Heavily relies on JavaScript (React/Angular).	Works with traditional server-side rendering.
Better for dynamic content.	Better for SEO and static content.

4. Pros & Cons of SPA

Pros:

- Smooth user experience.
- Fast transitions.
- Easier code splitting and component reusability.

Cons:

- SEO challenges (content not easily crawled by search engines).
- Initial load time is higher (JavaScript bundle must load).
- Browser Back button issues if routing isn't handled well.

5. Explain About React

- React is component-based, meaning UI is broken down into reusable parts.
- It follows a declarative approach—you describe *what* UI should look like, and React takes care of rendering it efficiently.
- It is widely used for SPAs due to its performance and modularity.

6. Define Virtual DOM

- The Virtual DOM is a lightweight copy of the real DOM in memory.
- When state changes, React first updates the virtual DOM, then calculates the difference (diffing algorithm), and finally updates only the changed elements in the real DOM.
- This makes React very fast and efficient.

7. Features of React

- Component-based architecture.
- Virtual DOM for faster rendering.
- JSX for writing HTML in JS.
- Unidirectional Data Flow.
- React Hooks (useState, useEffect) for state and lifecycle in function components.
- Large community and ecosystem.

```
Compiled successfully!
```

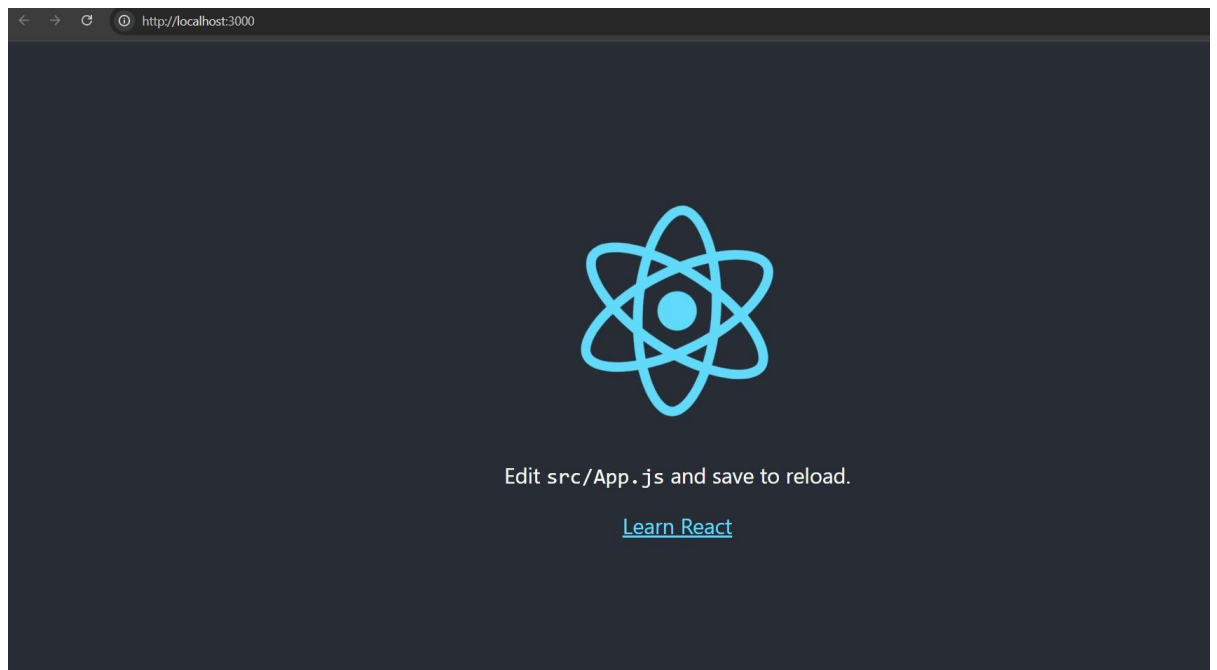
```
You can now view myfirstreact in the browser.
```

```
Local: http://localhost:3000
```

```
On Your Network: http://10.136.57.77:3000
```

```
Note that the development build is not optimized.  
To create a production build, use npm run build.
```

```
webpack compiled successfully
```



Output:

