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ASSIGNMENT NO :- 4

Aim :- Enhance web page developed in easlies assignment by rendering Lists and Portals, Error Handling, Routers and style with React CSS also make it a responsive design to a scale well across PC tablet and Mobile phone.

Objective :-

- Enhance Uses Intesface and Expesience
- Improve Application Robustness and Navigation.

Theory :-

Q1] How do Lists and keys work in React?

→ Lists : Rendes dynamic arrays of elements using map().

Keys : Unique identifiers for elements in a list, helping React track changes, additions, and removals.

Key Matters because it ensure efficient updates and prevent bugs

Ex:-

```
Const items = [{id: 1, name: "Item 1"}, {id: 2, name:
'Item 2'}];
Const listItems = items.map(item => (
  <li key={item.id}>{item.name}</li>
));
```

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Q2) What is a React Portal and when would you use one?

→ Portal : A way to renders children into a DOM node outside the parent component's hierarchy.

Use Cases:

1) Modals
2) Tooltips
3) Overlays.

It prevents styling issues and ensure proper layering

Q3) Discuss the importance of Error Boundaries in React.

→ Error Boundary is a component that catches JavaScript errors in its child tree and display a fallback UI.

- Importance:

1) Prevent app crashes
2) Provides a better user experience
3) Helps with debugging.

Implement static getDerivedStateFromError() and/or componentDidCatch().

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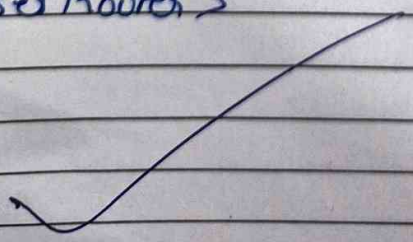
Q4] How does React Routes enable Single Page Application [SPA] functionality?

→ React Routes enables client-side routing allowing users to navigate between views without full page reloads.

How:-
1) Routes : Define paths and components to render
2) Link : Navigate between routes.
3) useParams, useLocation : Access route parameters and query settings.

Ex:-

```
import { BrowserRouter, Routes, Route, Link } from 'react-router-dom';
function App() {
return (
<BrowserRouter>
<Link to = "/home" > Home </link>
<Routes>
<Route path = "/home" element = { <Home /> } />
<Route path = "/about" element = { <About /> } />
</Routes>
</BrowserRouter>
);
}
```



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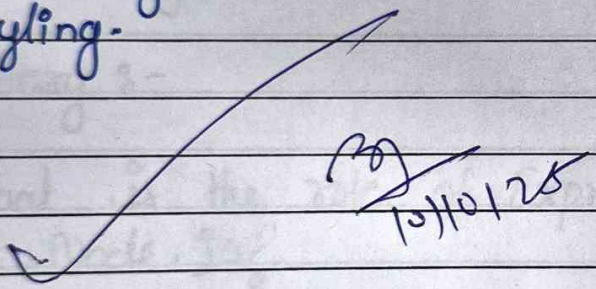
Q5) Explain the different ways to style a React application

→ • Inline Styles : Use the style attribute with a JavaScript object.
• CSS Modules : import CSS files as modules to avoid naming conflicts.
• Styled Components : Use libraries like styled-components for CSS-in-JS.
• Sass/SCSS : Use preprocessors for more powerful styling.
• Utility Libraries : Tailwind CSS for utility-first styling.



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