

Assignment 04

Aim:

Enhance web page developed in earlier assignment by sending lists and ports, error handling, routers and style with React CSS also make it responsive design to scale well across PC, tablet and mobile phone.

Objectives:

- i) Enhance User Interface and the experience
- ii) improve application robustness and navigation.

Theory:

1) Lists and Keys in React

- i) lists in React are used to render multiple items dynamically using the `map()` function.
- ii) each item in the list should have a unique key prop so that React can identify which items have changed, been added or removed.
- iii) keys help React optimize rendering and improve performance.

iv) without proper keys, the UI may not update correctly.

② React portal ans.

- i) A React portal is a way to render a component's output into a DOM node that exists outside the main parent component hierarchy.
- ii) it is commonly used for modals, tooltips, dialogs or dropdowns whose content needs to visually break out of its container but still remain part of the React tree.

③ Error Boundaries in React ans.

- i) the error boundaries are special components that catch JavaScript errors in their child component tree and display a fallback UI instead of crashing the entire application.
- ii) they improve robustness by preventing one component error from breaking the whole app.
- iii) error boundaries can be created using a class component with lifecycle methods like `componentDidCatch` and `getDerivedStateFromError`.

React
ans.

the React
the build
(SPAs)
within
the web
it means
component
UI design
the design
this gives
faster
native

styling
and.

CSS styles
files
inherent
directly
JavaScript
CSS Modules
that can
CSS in
styled
to use
UI frameworks
Bootstrap
CSS for
design.

Q) React Router and SPA.
ans.

Q) the React Router allows developers to build single page Applications (SPAs) by handling navigation within React without reloading the whole page.

Q) it maps different URLs to components and updates the UI dynamically while keeping the user on the same page.

Q) this gives smooth navigation, faster performance and a native app like experience.

Q) Styling a React Application
ans.

Q) CSS stylesheets - using normal .css files and class names

Q) inline styling - Applying styles directly to elements using JavaScript objects

Q) CSS Modules - Scoped CSS files that avoid class name conflicts

Q) CSS in JS libraries - tools like styled components or emotion to write CSS inside JavaScript

Q) UI frameworks - libraries like Bootstrap, Material-UI or Tailwind CSS for responsive and consistent design.