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Experiment 3

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Branch: BE CSE **Section/Group: KRG 3A**
Semester: 6th **Date of Performance: 27/01/26**
Subject Name: Full Stack Development **Subject Code: 23CSH-309**

Aim:

To implement centralized state management in the EcoTrack application using Redux Toolkit and to handle asynchronous data operations using Redux async thunks with proper loading and error states.

Objective:

After completing this experiment and its follow-up task, the student will be able to:

- Configure a Redux store in a React application using Redux Toolkit
- Create and integrate Redux slices for managing application data
- Implement asynchronous actions using Redux async thunks
- Manage loading, success, and error states during asynchronous operations
- Connect React components to Redux state using React-Redux hooks
- Trigger asynchronous data fetching through Redux actions from UI components
- Use Redux state to derive filtered views without modifying the global store
- Enhance user experience by handling refresh actions and improving async UI feedback

Implementation/Code: logsSlice.js:

```
import { createSlice, createAsyncThunk } from "@reduxjs/toolkit"; import
{ logs as logsData } from "../data/logs";

export const fetchLogs = createAsyncThunk(
  "logs/fetchLogs",
async () => {
   await new Promise(resolve => setTimeout(resolve, 1000));
return logsData;
  }

);
```

```
const logsSlice = createSlice({
name: "logs",   initialState: {
data: [],     loading: false,
error: null,
  },   reducers: {},
extraReducers: builder => {
   builder
     .addCase(fetchLogs.pending, state => {
       state.loading = true;
state.error = null;
     })
     .addCase(fetchLogs.fulfilled, (state, action) => {
       state.loading = false;
       state.data = action.payload;
     })
     .addCase(fetchLogs.rejected, state => {
state.loading = false;
       state.error = "Failed to fetch logs";
     });
  },
});

export default logsSlice.reducer;
```

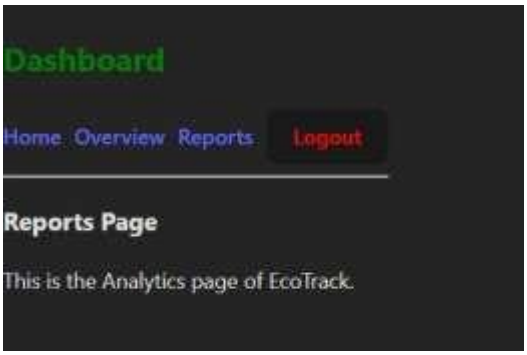
store.js:

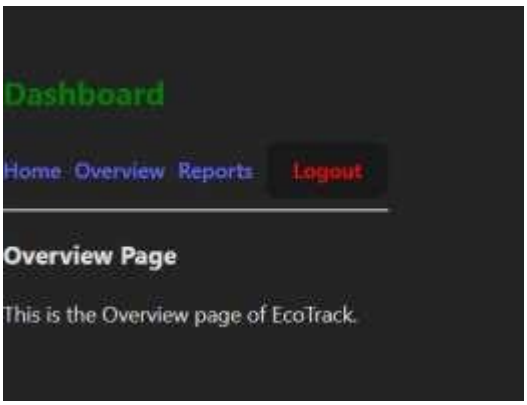
```
import { configureStore } from "@reduxjs/toolkit";
import logsReducer from "./logsSlice";

export const store = configureStore({
  reducer: {     logs:
logsReducer,
  },
});
```

Main.jsx: import React from "react"; import ReactDOM from "react-dom/client"; import App from

```
"./App"; import { BrowserRouter } from "react-router-
dom"; import { AuthProvider } from
"./context/AuthContext"; import { Provider } from
"react-redux"; import { store } from "./redux/store";
import "./index.css";

ReactDOM.createRoot(document.getElementById("root")).render(
  <React.StrictMode>
    <Provider store={store}>
      <BrowserRouter>
        <AuthProvider>
          <App />
        </AuthProvider>
      </BrowserRouter>
    </Provider>
  </React.StrictMode>
);
```

Output:





Learning Outcome:

- Configured and integrated a Redux store in a React application using Redux Toolkit.
- Created Redux slices to manage centralized application state efficiently.
- Implemented asynchronous data fetching using Redux createAsyncThunk.
- Handled loading and error states to improve user experience during async operations.
- Connected React components to Redux state using React-Redux Provider and hooks.