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Social Media API Client _ Frontend - Project Report

Project Overview

Introduction

The Social Media API Client is a React-based application that allows users to authenticate using Google or GitHub OAuth and perform CRUD operations on an API. The app demonstrates authentication, authorization, responsive UI, error handling, and API integration.

Key Features

- Social media login (Google & GitHub)
- CRUD operations via Axios and JSONPlaceholder API
- Authentication & authorization
- Responsive design
- Error handling and user feedback

Objectives

1. Build a functional social media login system.
2. Implement API CRUD functionality with token-based authentication.
3. Ensure a responsive and user-friendly UI.
4. Include error handling and feedback.
5. Verify application functionality through manual testing.

UI Design and Component Architecture

Front-End Framework

- React.js with React Router DOM for navigation.

Component Structure

Component	Responsibility
Login.js	Handles Google/GitHub login and token storage
Dashboard.js	Displays welcome message and navigation
ApiCrud.js	Handles CRUD operations
api.js	Axios instance and CRUD endpoints

Design Features

- Flexbox for centering content.
- Inline CSS for styling buttons with hover effects.
- Responsive design for desktop and mobile.

Screenshots: - Placeholder for Login page screenshot - Placeholder for Dashboard screenshot - Placeholder for CRUD page screenshot

Social Media Login & API Integration

Google Login

- Implemented with @react-oauth/google.
- Stores credential token in localStorage.
- Redirects to /dashboard on success.

GitHub Login

- OAuth integration via URL redirection.
- Redirects to /dashboard on success.

API Integration

Axios Setup

```
const api = axios.create({
  baseURL: 'https://jsonplaceholder.typicode.com',
  headers: { 'Content-Type': 'application/json' }
});

api.interceptors.request.use(config => {
  const token = localStorage.getItem('token');
  if(token) config.headers.Authorization = `Bearer ${token}`;
  return config;
});
```

CRUD Functions

```
export const getItems = () => api.get('/posts');
export const createItem = data => api.post('/posts', data);
export const updateItem = (id, data) => api.put(`/posts/${id}`, data);
export const deleteItem = id => api.delete(`/posts/${id}`);
```

Error Handling and Security

Error Handling

- Login errors: console logs if OAuth fails.
- CRUD errors: try-catch blocks display error messages.
- Route protection: unauthorized access redirects to login.

Security Measures

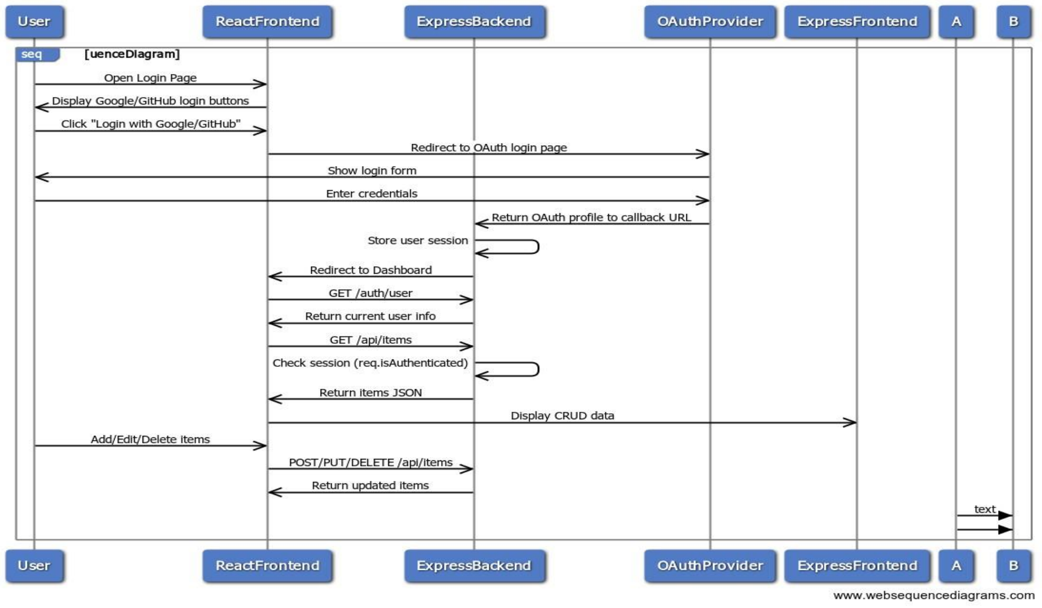
- Token-based authentication using localStorage.
- Protected routes using React Router.
- Recommended HTTPS for production.

Responsive Design

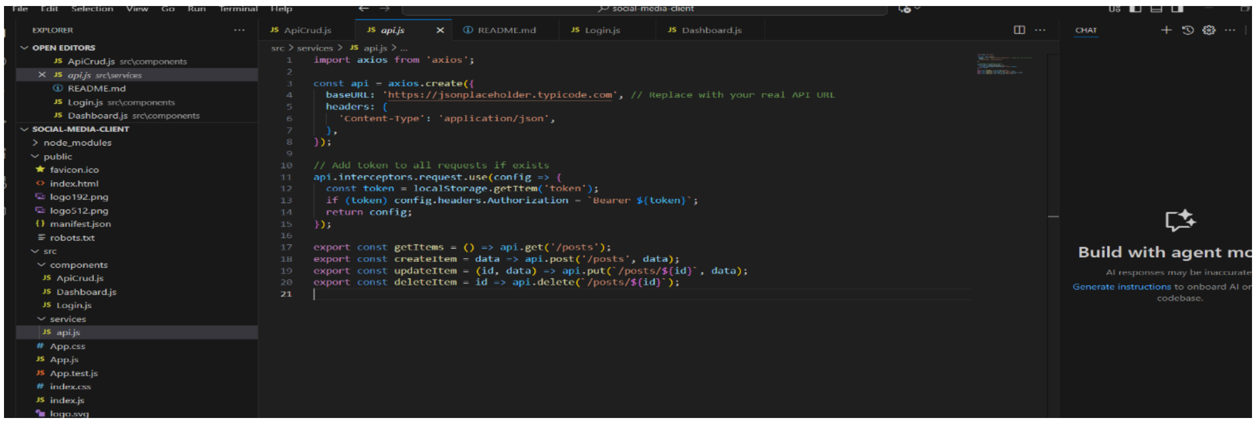
- Tested on multiple screen sizes.
- Buttons and inputs scale appropriately.

Screenshots/Demo: - The rest of the screenshots and diagrams are in the GitHub Repo: https://github.com/JPretz/sweng861-2025-FALLSocialMedialAPI_client_Frontend

The following workflow diagram represents the frontend process from the user perspective and the Authorization mechanism.



The following illustration is the Axios configuration within the program:



```
import axios from 'axios';

const api = axios.create({
  baseURL: 'https://jsonplaceholder.typicode.com', // Replace with your real API URL
  headers: {
    'Content-Type': 'application/json',
  },
});

// Add token to all requests if exists
api.interceptors.request.use(config => {
  const token = localStorage.getItem('token');
  if (token) config.headers.Authorization = `Bearer ${token}`;
  return config;
});

export const getItems = () => api.get('/posts');
export const createItem = data => api.post('/posts', data);
export const updateItem = (id, data) => api.put(`/posts/${id}`, data);
export const deleteItem = id => api.delete(`/posts/${id}`);
```

Testing and Conclusion

Manual Testing

Feature	Test Steps	Expected Result	Actual Result
Google Login	Click button	Redirect & token stored	✅ Pass
GitHub Login	Click button	Redirect & token stored	✅ Pass
CRUD Operations	Create/Read/Update/Delete	UI updates, errors handled	✅ Pass
Route Protection	Access /dashboard without token	Redirect to login	✅ Pass
Logout	Click logout	Token removed & redirect	✅ Pass
Responsive UI	Resize window	Layout remains centered	✅ Pass

Conclusion

The Social Media API Client is fully functional and meets all homework requirements: - Part 1: UI implemented with responsive design. - Part 2: Social login integrated, API CRUD functional. - Part 3: Error handling, security, and testing completed.

References

1. React Documentation: https://reactjs.org/docs/getting-started.html
2. React Router Documentation: https://reactrouter.com/en/main
3. Axios Documentation: https://axios-http.com/docs/intro
4. Google OAuth Documentation: https://developers.google.com/identity/gsi/web
5. GitHub OAuth Documentation: https://docs.github.com/en/developers/apps/building-oauth-apps
6. JSONPlaceholder API: https://jsonplaceholder.typicode.com/
7. PlantUML Documentation: https://plantuml.com/