

Integrated Application Development

Project Presentation

Course Code : DSE204/03 & MCDSE104/03-FT

Course Lead: Tok Bee Choo (Grace)

Start Date : 25-06-2025

End Date : 06-07-2025

Submission Date : 06-07-2025

Student Name : Benjamin Tan Zhi Hong

Student ID : 041240323

Presentation Date : 02-07-2025



Contents

No	Description
01	Introduction
02	APIs and Their Role
03	Relationship Between API and SDK
04	Types of API and Their Uses
05	API Security and Evaluation
06	Screen Capture of The Develop Application

1. Introduction

- **Project Title:** Know-Your-Neighborhood
- **Objective:** Enhance the existing application with API-based login
- **Scope:** To research of different APIs and identifying any potential security issue and build a login with selected API in existing website.

2. APIs and Their Role

What is an API?

- Application Programming Interface (API) enables communication between different software systems.
- Acts as an intermediary, allowing data and functionality exchange without exposing internal code.

Role and Need for APIs

- Enhances application scalability and modularity.
- Enables rapid development without building it from scratch every time.
- Enables integration of third-party services

2. APIs and Their Role

APIs used in KYN?

- **Google OAuth2 API:** Secure authentication for user login.
- **Google Weather API:** Provides real-time and forecasted weather data.

3. Relationship Between API and SDK

Relationship:

- APIs are components within SDKs.
- SDKs provide a framework to use APIs efficiently, often with language-specific libraries (e.g., JavaScript SDK for Google APIs).

Example in KYN:

- Google OAuth2 API is used directly in Login.js via HTTP requests, but Google provides an SDK for easier integration in larger applications.

4. Types of APIs and Their Uses

1. REST APIs:

- 1.Allow different software application to communicate over the internet using HTTP methods.
- 2.Use Case: Data Exchange & Scalability

2. OAuth APIs:

- 1.Used for secure authentication and authorization.
- 2.Use Case: 3rd party Authentication and Secure API Access

5. API Security Issues and Evaluation

Potential Security Issues:

- **Data Exposure:** APIs may return sensitive information (e.g., user email, name, or location) beyond what is necessary, violating the principle of least privilege.
- **Rate Limiting:** Uncontrolled API calls can lead to service abuse or cost overruns.
- **Weak Authentication:** If API keys, tokens, or credentials are not securely managed, attackers can gain unauthorized access.

5. API Security Issues and Evaluation

Evaluation of Google OAuth2 API:

Strengths:

- Ease of integration, Google OAuth2 is widely adopted standard
- Secure Token Management, provide short-lived access tokens and refresh tokens, ensuring secure authentication

Weaknesses:

- Dependency on Google policies

Security Mitigation:

- Store tokens securely on server side, not in client-side storage such as local storage.
- Limit token scope to openid, profile, email.

5. API Security Issues and Evaluation

Evaluation of Google Weather API:

Strengths:

- Reliability, Google APIs are backed by robust infrastructure, ensuring uptime and scalability
- Integration, integrated with other Google Service providing a cohesive experience

Weaknesses:

- Privacy Risks, location data is sent to the API, must be carefully to avoid exposing user location.

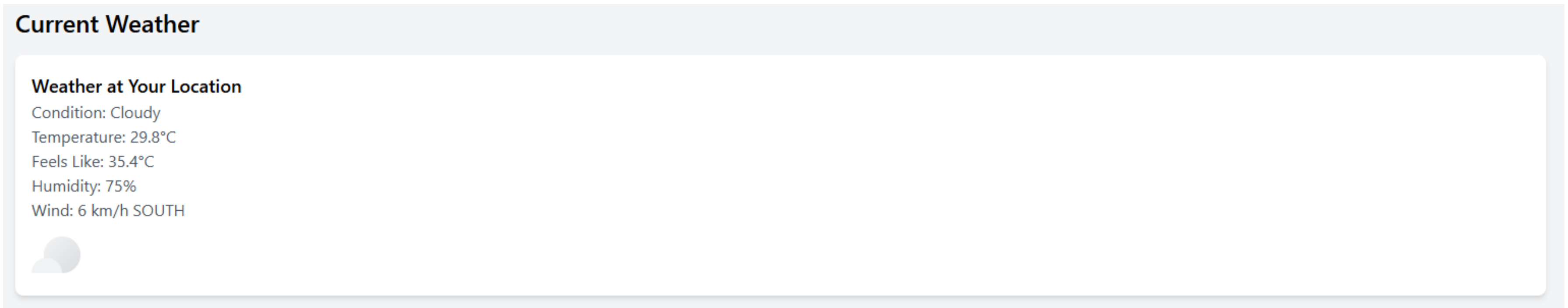
Security Mitigation:

- Store tokens securely on server side and use environment variables, not client-side code.
- Sanitize user inputs (e.g., location queries) to prevent injection attacks.

6. Screen Capture of Developed Application

Home Page With Weather:

Displays user's location-based weather using Google Weather API.



6. Screen Capture of Developed Application

Login Page with Google OAuth2:

- Google OAuth2 login button integrated in Login.js

The screenshot displays the login interface of a web application titled "Know-Your-Neighborhood". The page features a dark blue header with the site name on the left and a navigation menu (Home, Contact Us, About Us, Forums, Register, Login) on the right. The main content area has a light gray background with the word "Login" in bold on the left. In the center, a white login form is presented with a subtle drop shadow. This form contains two input fields: "Email" and "Password", each with a small label above it. Below these fields are two blue buttons: "Login" and "Login with Google". The footer consists of a dark blue bar containing the copyright notice "© 2025 Know-Your-Neighborhood. All rights reserved." and a link to "Terms and Conditions".

Know-Your-Neighborhood

Home Contact Us About Us Forums Register Login

Login

Email

Password

Login

Login with Google

© 2025 Know-Your-Neighborhood. All rights reserved.
Terms and Conditions



6. Screen Capture of Developed Application

Forum Page:

- Displays forums created via REST API (/api/forums)

Know-Your-Neighborhood Home Contact Us About Us Forums My Profile

Discussion Forums

Title

Description

Create Forum

Test
a123
Created by: btzh1_PG@student.wou.edu.my
[View Posts](#)

© 2025 Know-Your-Neighborhood. All rights reserved.
[Terms and Conditions](#)



6. Screen Capture of Developed Application

User Profile Page:

- Shows user details fetched via `/api/user/info` after OAuth2 authentication

