Student Project Report

1. Project Name

Blink Micro-Blog

2. Project Description

This project aims to develop a comprehensive, full-stack content creation platform that goes beyond simple micro-blogging to become a versatile minimalist blog. The architecture will showcase advanced knowledge of secure authentication (JWT and Refresh Tokens), custom API integration (CRUD operations for posts and comments), and integration with external services. We will focus on integrating Generative AI directly into the content creation flow to improve user experience, resulting in a highly secure, responsive, and intelligently assisted web application.

3. Team Members

Name	Student ID	Name	Student ID
Hoang Duy Le (David)	000489522	Jianhua Yu (Jonny)	000483746
You An Lin (Mackenzie)	000488471	Alice (Yee Sin) Yu	000488835

- Leads the implementation of the secure JWT authentication system and API route protection. Manages client-side token workflow. Oversees all AI API, AI Assist features, and Firebase Storage for images.
- Leads the Core Backend API (Node/Express) and Firestore Data Modeling for Posts, Comments, and Likes. Manages the entire Frontend UI/UX (React, Tailwind CSS) and oversees GitHub and Deployment pipelines.

4. Features

- User Authentication – implements secure registration, login, and logout functions using JWT and Refresh Tokens to safeguard all backend API routes.
- Post CRUD – Full create, read, update, and delete functions for posts, including title, content, tags, optional cover image (via Firebase Storage), author, and slug.
- Comment CRUD – Enables authenticated users to create, view, update, and delete comments linked to a post (one-to-many relationship).
- Liking/Unliking – Implements the like feature using database transactions to handle counts and relationships between users and posts.
- AI Assist – Connects to the AI API for real-time content improvement, suggesting titles and tags, summarizing content, and offering tone and editing feedback.
- Image Uploads – Allows users to upload and manage an optional cover image for their posts, using secure Firebase Storage buckets.

5. Tools & Technologies Used

The foundational technologies for this project include:

Frontend:

- React – Core component-based architecture, declarative UI, and state management.
- React Router – Effective client-side view navigation.
- Tailwind CSS – Utility-first styling for a professional and completely responsive design.

Backend & Security:

- Node.js/Express.js – Custom server setup for handling API routes and business logic.
- JWT and Refresh Tokens – Implementing a secure, stateless authentication system for protecting API routes and managing user sessions.

Services:

- Firebase Firestore – Serves as the main database for storing posts, comments, and user metadata.
- AI API – Embedded directly into the application for real-time AI assistance features (summaries, title suggestions, tone feedback).
- Firebase Storage – Used for secure storage and delivery of post cover images.
- GitHub – Version control, collaboration, and deployment management.