

Final project Self-assessment report

Team: 22120252-22120427-22120450

GitHub repo URL: <https://github.com/ducnhat24/AWD-G04>

TEAM INFORMATION

| Student ID | Full name | Git account | Contribution | Contribution percentage (100% total) | Expected total points | Final total points |
|------------|-----------------|-------------|---|--------------------------------------|-----------------------|--------------------|
| 22120252 | Giang Đức Nhật | ducnhat24 | BE: <ul style="list-style-type: none">- Google OAuth 2.0 integration- Email Synchronization- Snooze Mechanism- AI Features- Search Features- Filtering & Sorting- Email Actions | 33% | 10 | |
| | | | | | | |
| 22120427 | Nguyễn Mạnh Văn | nmvan | FE: <ul style="list-style-type: none">- Email Display- Kanban Board Interface- Snooze Mechanism- Search & Sort & Filter Email UI- Email Action- UI AI summary- Mockdata Email | 33% | 10 | |
| | | | | | | |

| Student ID | Full name | Git account | Contribution | Contribution percentage (100% total) | Expected total points | Final total points |
|------------|-----------------|-------------|--|--------------------------------------|-----------------------|--------------------|
| 22120450 | Bùi Đình Gia Vỹ | VyBui13 | BE: - Authentication & Token Management | 34% | 10 | |
| | | | FE: - Concurrency handling - Login Page - Signup Page - Dynamic Kanban Configuration | | | |

FEATURE LIST

Project: React Email Client with Gmail Integration & AI-Powered Kanban

Students must input minus points to every uncompleted feature in the SE column.

*SE: Self-evaluation

*TR: Teacher review

| ID | Features | Grade | | | Notes |
|----|-------------------------------------|-------|-----|-----|---|
| | | Point | SE* | TR* | |
| 1 | Overall requirements | | | | |
| | User-centered design | -5 | 0 | | Built with user experience in mind. Kanban-style email management, AI summarization, semantic search for efficient email workflow |
| | Database design | -1 | | | Database with tables: users, emails, email_vectors , kanban_columns, snooze_schedules, labels |
| | Database mock data | -1 | | | Sample emails, kanban configurations, and test data |
| | Website layout | -2 | 0 | | 3-column layout: mailbox list, email list, email detail. Kanban board view |
| | Website architect | -3 | 0 | | React SPA with backend API. Clear separation of concerns. OAuth2 flow, token handling |
| | Website stability and compatibility | -4 | 0 | | Responsive design, tested on Chrome, Safari, Firefox, and Edge |

| ID | Features | Grade | | Notes |
|----------|--|-------|---|---|
| | Document | -2 | | README with setup guide, API endpoints, Google OAuth setup, token storage explanation, security considerations |
| | Demo video | -5 | | Video demonstrating: Gmail login, inbox sync, Kanban board, AI summarization, semantic search, drag-drop |
| | Publish to public hosts | -1 | 0 | Frontend deployed (Netlify/Vercel), Backend deployed (Render/Railway/Cloud Run) |
| | Development progress is recorded in Github | -7 | 0 | Git history with meaningful commits, branches for features, pull requests |
| 2 | Authentication & Token Management | | | |
| | Google OAuth 2.0 integration | -0.5 | 0 | Login with Google, grant Gmail access permissions |
| | Authorization Code flow | -0.5 | 0 | Backend exchanges code for tokens, stores refresh token securely |
| | Token storage & security | -0.5 | 0 | Access token in-memory (frontend), refresh token server-side only |
| | Automatic token refresh | -0.5 | 0 | Backend refreshes expired access tokens automatically |
| | Concurrency handling | -0.25 | 0 | Single refresh request when multiple 401s occur |
| | Forced logout on invalid refresh | -0.25 | 0 | Clear tokens and logout if refresh token fails |
| | Logout & token cleanup | -0.25 | 0 | Clear all tokens server-side and client-side on logout |
| 3 | Email Synchronization & Display | | | |
| | Fetch emails from Gmail | -0.5 | 0 | Use Gmail API to fetch inbox emails |
| | Email list with pagination | -0.25 | 0 | Paginated/virtualized email list |
| | Email detail view | -0.25 | 0 | Full email content with HTML/plain text support |
| | Mailbox/Labels list | -0.25 | 0 | Display Gmail labels/folders in sidebar |
| | Open in Gmail link | -0.25 | | Button/icon to open email in Gmail |




| ID | Features | Grade | | Notes |
|----|--|-------|---|---|
| 4 | Kanban Board Interface | | | |
| | Kanban board layout | -0.5 | 0 | Board with columns: Inbox, To Do, Done, etc. |
| | Email cards display | -0.25 | 0 | Cards showing sender, subject, snippet |
| | Drag-and-drop between columns | -0.5 | 0 | Drag cards to change email status |
| | Status persistence | -0.25 | 0 | Status changes saved and persisted |
| | Dynamic Kanban Configuration | | | |
| | › Settings interface | -0.25 | 0 | Modal/page to create, rename, delete columns |
| | › Configuration persistence | -0.25 | 0 | Custom columns saved and restored after reload |
| | › Gmail label mapping | -0.5 | 0 | Columns map to Gmail labels, moving cards syncs labels |
| 5 | Snooze Mechanism | | | |
| | Select snooze time | -0.25 | 0 | Choose snooze duration (Tomorrow, Next week, custom) |
| | Hide snoozed emails | -0.25 | 0 | Email disappears from Kanban after snooze |
| | Auto-return on schedule | -0.5 | 0 | Email automatically returns to board at scheduled time |
| 6 | AI Features | | | |
| | AI Summarization | | | |
| | › Backend summarization API | -0.5 | 0 | LLM integration (Gemini API) to summarize email content |
| | › Summary UI on cards | -0.25 | 0 | Display 2-3 line summary on email cards |
| | Text Embedding | | | |
| | › Embedding generation | -0.5 | 0 | Generate vector embeddings for emails using embedding model |
| | › Vector database storage | -0.5 | 0 | Store embeddings in MongoDB Atlas Vector Search with vector index for similarity search |
| 7 | Search Features | | | |
| | Fuzzy Search (Backend) chưa integrate đúng cách | | | |

| ID | Features | Grade | | Notes |
|----------------------------|--------------------------------------|-------|---|--|
| | › Typo tolerance | -0.5 | 0 | "marketng" finds "marketing" |
| | › Partial matches | -0.5 | 0 | "Nguy" finds "Nguyen Van A" |
| | › Relevance ranking | -0.25 | 0 | Best matches ranked first |
| Fuzzy Search UI (Frontend) | | | | |
| | › Search bar integration | -0.25 | 0 | Search bar in header/main UI |
| | › Search results as cards | -0.25 | 0 | Results displayed as email cards with sender, subject, snippet |
| | › Loading/empty/error states | -0.25 | 0 | Handle UX states properly |
| | › Navigation back to main view | -0.25 | 0 | Clear way to return to Kanban view |
| Semantic Search | | | | |
| | › Conceptual relevance search | -0.5 | 0 | Query "money" finds "invoice", "price", "salary" |
| | › Semantic search API endpoint | -0.25 | 0 | POST /api/search/semantic endpoint |
| Search Auto-Suggestion | | | | |
| | › Type-ahead dropdown | -0.25 | | Dropdown appears while typing with 3-5 suggestions Note: Type-ahead suggestion khác Suggestion từ keyword / sender nha ae |
| | › Suggestions from contacts/keywords | -0.25 | | Suggestions populated from sender names , subject keywords |
| | › Trigger search on selection | -0.25 | 0 | Clicking suggestion triggers semantic search |
| 8 | Filtering & Sorting | | | |
| | Sort by date (newest/oldest) | -0.25 | | At least two sorting options (chưa có ở Email dạng list) |
| | Filter by unread | -0.25 | | Show only unread emails (chưa có ở Email dạng list) |
| | Filter by attachments | -0.25 | | Show only emails with attachments (chưa có ở Email dạng list) |

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|----|--------------------------|-------|---|--|
| | Real-time filter updates | -0.25 | | Changes apply immediately without page reload (chưa có ở Email dạng list) |
| 9 | Email Actions | | | |
| | Mark as read/unread | -0.25 | | Toggle read status via Gmail API |
| | Compose modal | -0.25 | 0 | Modal to compose new email |
| | Reply/Forward flow | -0.25 | 0 | Reply to and forward emails |
| | Send via Gmail API | -0.25 | 0 | Send emails through Gmail API |
| | View attachments | -0.25 | | Display attachments in email detail |
| | Download attachments | -0.25 | 0 | Download attachment files |
| | Delete emails | -0.25 | | Move to trash via Gmail API |
| 10 | Advanced features | | | |
| | Gmail Push Notifications | 0.25 | | Real-time inbox updates via Gmail watch + Pub/Sub |
| | Multi-tab logout sync | 0.25 | | BroadcastChannel for logout sync across tabs |
| | Offline caching | 0.25 | | IndexedDB + stale-while-revalidate for emails |
| | Keyboard navigation | 0.25 | | Navigate emails with keyboard shortcuts |
| | Dockerize your project | 0.25 | | Docker containers for backend, frontend |
| | CI/CD | 0.25 | | Automated testing and deployment pipeline |

GIT HISTORY

Contributors

| Avatar | Username | Commits | Additions | Deletions |
|---|------------|---------|-----------|-----------|
|  | ducnhhat24 | 39 | 27267 | 2636 |
|  | nmvan | 43 | 4721 | 2200 |
|  | VyBui13 | 15 | 8015 | 4887 |

Commits

List significant commits here with format:

| Date | Author | Commit Message | Files Changed |
|------------|----------|------------------|---------------|
| YYYY-MM-DD | <author> | <commit message> | <number> |

PROJECT SUMMARY

System Overview

React Email Client with Gmail Integration is a web-based email client that transforms Gmail into a Kanban-style productivity tool:

- Gmail OAuth2 authentication with secure token handling
- Kanban board interface for email workflow management (Inbox, To Do, Done)
- AI-powered email summarization using LLM (OpenAI/Gemini)
- Snooze mechanism to temporarily hide and auto-return emails
- Fuzzy search with typo tolerance and partial matching
- Semantic search using vector embeddings for conceptual relevance
- Dynamic Kanban configuration with Gmail label mapping
- Full email actions: compose, reply, forward, delete, attachments

Technology Stack

- **Architecture:** React SPA + Backend API (Node.js)
- **Frontend:** React, react-window (virtualization), drag-and-drop library
- **Backend:** Node.js with Express
- **Database:** MongoDB with MongoDB Vector Search for embeddings
- **Authentication:** Google OAuth2 (Authorization Code flow)
- **AI/ML:** OpenAI API or Gemini API for summarization and embeddings
- **Email:** Gmail REST API
- **Vector Search:** pgvector or similar vector database
- **Deployment:** Frontend (Vercel), Backend(Vercel)

API Endpoints

| Endpoint | Description |
|----------------------------|---|
| Auth | |
| POST /auth/login | Đăng nhập hệ thống (trả về Access Token & User Info). |
| Search Features | |
| GET /mail/search | Fuzzy Search: Tìm kiếm email theo từ khóa (Subject, Sender) dùng Fuse.js. |
| POST /mail/search/semantic | Semantic Search: Tìm kiếm email theo ngữ nghĩa dùng Vector Search (Gemini embedding). |

| Endpoint | Description |
|-------------------------------------|--|
| GET /mail/suggestions | Auto-suggestion: Gợi ý từ khóa/người gửi khi user đang nhập liệu. |
| Mail Operations | |
| GET /mail/mailboxes | Lấy danh sách các hộp thư (Inbox, Sent, Drafts, Trash...). |
| GET /mail/mailboxes/:labelId/emails | Lấy danh sách email trong một hộp thư cụ thể (có phân trang). |
| GET /mail/emails/:id | Lấy chi tiết nội dung của một email. |
| GET /mail/emails/:id/summary | AI Summary: Lấy tóm tắt nội dung email do AI tạo ra. |
| POST /mail/send | Gửi email mới. |
| POST /mail/emails/:id/reply | Trả lời (Reply) một email. |
| POST /mail/emails/:id/forward | Chuyển tiếp (Forward) một email. |
| POST /mail/emails/:id/modify | Thay đổi trạng thái email (Đánh dấu đã đọc, Xóa, Gán nhãn...). |
| GET /mail/attachments/:msgId/:attId | Tải xuống file đính kèm của email. |
| Kanban Configuration | |
| GET /kanban/config | Lấy cấu hình bảng Kanban cá nhân của user (danh sách cột, màu sắc, label mapping). |
| POST /kanban/config | Khởi tạo cấu hình Kanban mới (thường gọi khi user lần đầu vào Dashboard). |
| PUT /kanban/config | Cập nhật toàn bộ cấu hình Kanban (ví dụ: thay đổi thứ tự các cột, đổi tên nhiều cột cùng lúc). |
| DELETE /kanban/config | Xóa cấu hình Kanban hiện tại (Reset về mặc định). |
| PATCH /kanban/config/column/:id | Cập nhật thông tin chi tiết của một cột cụ thể (đổi tên cột, đổi màu, đổi Gmail Label liên kết). |
| DELETE /kanban/config/column/:id | Xóa một cột cụ thể khỏi bảng Kanban. |

Key User Flows

- Authentication:** Google Sign-In → Backend token exchange → Session created → Redirect to Kanban
- Email Sync:** Login → Fetch Gmail inbox → Display as Kanban cards → Real-time updates
- Kanban Workflow:** View cards → Drag to columns → Status synced → Gmail labels updated
- AI Summary:** Email synced → LLM summarizes → Summary displayed on card
- Semantic Search:** User types query → Embedding generated → Vector search → Related emails returned
- Snooze:** Select email → Choose snooze time → Email hidden → Auto-returns at scheduled time

Development Timeline

| Week | Focus | Key Deliverables |
|--------|---------------------------|---|
| Week 1 | Basic Application | Gmail OAuth, email sync, Kanban interface with cards |
| Week 2 | Core Workflow & AI | Drag-and-drop, snooze mechanism, AI summarization |
| Week 3 | Fuzzy Search & Filtering | Fuzzy search (BE+FE), sorting, filtering on Kanban |
| Week 4 | Semantic Search & Config | Vector embeddings, semantic search, dynamic Kanban config |
| Week 5 | Deployment & Deliverables | Testing, deployment, demo video |

Security Considerations

- **Access Token:** Stored in-memory on frontend only
 - **Refresh Token:** Stored server-side in secure datastore (never exposed to frontend)
 - **OAuth Flow:** Authorization Code flow (not implicit) for security
 - **Token Refresh:** Handled server-side with concurrency protection
 - **Logout:** Clears all tokens and optionally revokes OAuth refresh token
-
- Note: Fill in the student information, contribution details, self-evaluation scores, and git history before submission.*